

Report No. : E5/2017/90025 Page : 1 of 286

SAR TEST REPORT



The following samples were submitted and identified on behalf of the client as:

Equipment Under Test	Smart Phone
Brand Name	Nokia
Model No.	TA-1023
Company Name	HMD Global Oy
Company Address	Karaportti 2, 02610 Espoo, Finland
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013,
	KDB248227D01v02r02,KDB865664D01v01r04,
	KDB865664D02v01r02,KDB941225D01v03r01,
	KDB941225D05v02r05,KDB941225D06v02r01,
	KDB447498D01v06,KDB648474D04v01r03,
FCC ID	2AJOTTA-1023
Date of Receipt	Jun. 24, 2017
Date of Test(s)	Jun. 28, 2017 ~ Aug. 25, 2017
	Oct. 01, 2017 ~ Oct. 03, 2017
Date of Issue	Oct. 12, 2017

In the configuration tested, the EUT complied with the standards specified above. **Remarks:**

This report details the results of the testing carried out on one sample, the results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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Signed on behalf of SGS

Engineer

Bond Tsai

Supervisor

John Teh

John Yeh Date: Oct. 12, 2017

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Revision History

Report Number	Revision	Description	Issue Date
E5/2017/90025	Rev.00	Initial creation of document	Oct. 12, 2017

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1. General Information

1.1 Testing Laboratory

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No. 2, Keji 1 st Rd., Guishan Township, Taoyuan County, 33383, Taiwan			
Tel	+886-2-2299-3279		
Fax	+886-2-2298-0488		
Internet	http://www.tw.sgs.com/		

1.2 Details of Applicant

Company Name	HMD Global Oy
Company Address	Karaportti 2, 02610 Espoo, Finland

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1.3 Description of EUT

EUT Name	Smart Phone				
Brand Name	Nokia				
Model No.	TA-1023				
FCC ID	2AJOTTA-10)23			
	TA 4005	WWAN 35604108000317	5 / 356041080003167		
	TA-1035	WLAN 35604108000309	2 / 356041080003084		
IMEI	TA 4000	WWAN 35604008000075	51		
	TA-1023	WLAN 35604008000080	1		
	2 nd solution	356040080004803			
	⊠GSM	GPRS SEDGE			
Mada of Onemation	⊠HSDPA		+ 🖾 DC-HSDPA		
Mode of Operation		\square \square \square \square \square			
	Bluetooth	⊠WLAN802.11 b/g/n(20M)		
	GSM		1/8.3		
	(DTM multi class B)				
	GPRS		1/2 (1Dn4UP) 1/2.76 (1Dn3UP)		
		ti class 12 max)	1/4.1 (1Dn2UP)		
	(support multi class 12 max)		1/8.3 (1Dn1UP)		
			1/2 (1Dn4UP)		
	EDGE		1/2.76 (1Dn3UP)		
	(support mul	ti class 12 max)	1/4.1 (1Dn2UP)		
Duty Cycle		,	1/8.3 (1Dn1UP)		
Duly Cycle	LTE FDD				
	(LTE Releas	e Version: R8)	1		
	LTE TDD		0.633		
	(LTE Releas	e Version: R8)	0.035		
	WCDMA				
	(HSDPA Cat		1		
	(HSUPA Cat	tegory 7)			
	WLAN802.1	1 b/g/n(20M)	1		
	Bluetooth		1		

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	GSM850	824	_	849
	GSM1900	1850	_	1910
	WCDMA Band II	1850	_	1910
	WCDMA Band IV	1710	_	1755
	WCDMA Band V	824	_	849
	LTE FDD Band 2	1850	—	1910
TX Frequency Range	LTE FDD Band 4	1710	_	1755
(MHz)	LTE FDD Band 5	824	_	849
	LTE FDD Band 7	2500	_	2570
	LTE FDD Band 12	699	-	716
	LTE FDD Band 17	704	—	716
	LTE TDD Band 38	2570		2620
	WLAN802.11 b/g/n(20M)	2412	_	2462
	Bluetooth	2402	_	2480
	GSM850	128	_	251
	GSM1900	512	—	810
	WCDMA Band II	9262	—	9538
	WCDMA Band IV	1312	_	1513
	WCDMA Band V	4132	_	4233
	LTE FDD Band 2	18607	—	19193
Channel Number	LTE FDD Band 4	19957	—	20393
(ARFCN)	LTE FDD Band 5	20407	_	20643
	LTE FDD Band 7	20775	_	21425
	LTE FDD Band 12	23017	—	23173
	LTE FDD Band 17	23755	_	23825
	LTE TDD Band 38	37775		38225
	WLAN802.11 b/g/n(20M)	1		11
	Bluetooth	0	—	78

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Max. SAR (1 g) (Unit: W/Kg)					
Mode	Band	Measured	Reported	Position / Channel	
	GSM 850	0.26	0.32	⊠Left ☐Right ⊠Cheek ☐Tilt <u>190</u> Channel	
	GSM 1900	0.14	0.17	☐Left ⊠Right ⊠Cheek ☐Tilt <u>810</u> Channel	
	WCDMA Band II	0.16	0.16	☐Left ⊠Right ⊠Cheek ☐Tilt <u>9262</u> Channel	
	WCDMA Band IV	0.25	0.26	☐Left ⊠Right ⊠Cheek ☐Tilt <u>1412</u> Channel	
	WCDMA Band V	0.31	0.34	Left Right Cheek Tilt <u>4233</u> Channel	
Head	LTE FDD Band 2	0.16	0.16	□Left ⊠Right ⊠Cheek □Tilt 18700 Channel	
	LTE FDD Band 4	0.23	0.27	☐Left ⊠Right ⊠Cheek ☐Tilt 20050 Channel	
	LTE FDD Band 5	0.27	0.30	✓Left ☐Right ✓Cheek ☐Tilt 20450 Channel	
	LTE FDD Band 7	0.10	0.10	⊠Left □Right ⊠Cheek □Tilt <u>21350</u> Channel	
	LTE FDD Band 12	0.21	0.21	□Left ⊠Right ⊠Cheek □Tilt <u>23130</u> Channel	
	LTE FDD Band 17	0.21	0.21	□Left ⊠Right ⊠Cheek □Tilt 23780 Channel	

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Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
	LTE TDD Band 38	0.06	0.06	Left Right Cheek Tilt <u>38000</u> Channel
Head	WLAN802.11 b	0.46	0.48	□Left ⊠Right ⊠Cheek □Tilt 1Channel

Max. SAR (1 g) (Unit: W/Kg)					
Mode	Band	Measured	Reported	Position / Channel	
	GSM 850	0.26	0.32	⊠Front ⊡Back <u>190</u> Channel	
Body-worn (15mm)	GSM 1900	0.21	0.24	⊠Front ⊡Back 810 Channel	
	WCDMA Band IV	0.47	0.49	⊠Front ⊡Back <u>1412</u> Channel	
	LTE FDD Band 4	0.39	0.46	Front Back 20050 Channel	
	LTE FDD Band 7	0.36	0.37	⊠Front ⊡Back <u>21350</u> Channel	

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Max. SAR (1 g) (Unit: W/Kg)					
Mode	Band	Measured	Reported	Position / Channel	
	GPRS 850 (1Dn1UP)	0.45	0.54	Front Back Bottom Right Left <u>190</u> Channel	
	GPRS 1900 (1Dn4UP)	0.72	0.88	Front Back Bottom Right Left 512 Channel	
·	WCDMA Band II	1.11	1.23	☐Front ☐Back ⊠Bottom ☐Right ☐Left 9400 Channel	
Hotspot Mode (10mm)	WCDMA Band IV	1.21	1.28	☐Front ☐Back ⊠Bottom ☐Right ☐Left <u>1312</u> Channel	
	WCDMA Band V	0.53	0.58	Front Back Bottom Right Left <u>4233</u> Channel	
	LTE FDD Band 2	1.10	1.26	Front Back Bottom Right Left <u>19100</u> Channel	
	LTE FDD Band 4	1.15	1.25	Front Back Bottom Right Left <u>20175</u> Channel	
	LTE FDD Band 5	0.36	0.40	Front Back Bottom Right Left 20450 Channel	
	LTE FDD Band 7	1.17	1.21	Front Back Bottom Right Left 21350 Channel	

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Max. SAR (1 g) (Unit: W/Kg)				
Mode	Band	Measured	Reported	Position / Channel
Hotspot Mode (10mm)	LTE FDD Band 12	0.44	0.44	Front Back Bottom Right Left 23130 Channel
	LTE FDD Band 17	0.44	0.45	Front Back Bottom Right Left 23780 Channel
	LTE TDD Band 38	0.69	0.72	☐Front ☐Back ⊠Bottom ☐Right ☐Left <u>38000</u> Channel
	WLAN802.11 b	0.21	0.22	☐Front ⊠Back ☐Bottom ☐Right ☐Left <u>1</u> Channel

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Difference Description:

The only difference between TA-1035 and TA-1023 is SIM card slot,

where the TA-1035 is Dual-SIM (FCC ID: 2AJOTTA-1035), the TA-1023 is Single SIM.

Other parts of the Smart Phone are the same, including the appearance, the antennas, Chipset, RF parameters, Battery, Mainboard and so on.

Note:

According to the difference description above, TA-1023 is tested at the worst case of TA-1035 (FCC ID: 2AJOTTA-1035).

Change Note

The major change filed under this application is:

- 1. Hardware changes in order to improve performance without impact on RF characteristics, please refer to attachment for details of this modification.
- 2. The Radio parameters, PCB layout, RF active components and antenna are remained no changed in this modification.
- 3. WWAN antenna matching components are changed in order to improve operation performance, all other components are kept as same as the exhibitions in original certification.

The antenna is remained equivalent, therefore radiated performance in the intentional frequency bands is expected to be equal to that measured in the original certification.

For SAR evaluation in this modified device, worst case SAR is measured in each exposure/band and the highest SAR of the modified device for each configuration is less than the highest SAR for the original device under similar test configurations.

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GSM 850 - conducted power table:

			Max.		Source	
			Rated	Burst	-based	
	Frequency		Avg.	average	time	
EUT mode	(MHz)	CH	Power +	power	average	
	(11112)		Max.		power	
			Tolerance	Avg.	Avg.	
			(dBm)	(dBm)	(dBm)	
0014050	824.2	128	34.5	33.54	24.51	
GSM850 (GMSK)	836.6	190	34.5	33.67	24.64	
	848.8	251	34.5	33.63	24.6	
The di	vision facto	r compared	to the numb	per of TX tir	ne slot	
	Divisio		1 TX time slot			
	DIVISIO		-9.03			

GPRS 850 - conducted power table:

		-	Burst avera	age power		
	ted Avg. Power olerance (dBr		34.5	30	28.5	27.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	node Frequency CH		Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS	824.2	128	33.54	29.18	28.21	26.93
850	836.6	190	33.67	29.31	28.33	26.82
000	848.8 251		33.63	29.07	28.31	26.92
		Sc	ource-based tim	e average powe	er	
GPRS	824.2	128	24.51	23.16	23.95	23.92
850	836.6	190	24.64	23.29	24.07	23.81
050	848.8	251	24.60	23.05	24.05	23.91
	The div	ision fa	ctor compared	to the number o	of TX time slot	
Div	vision factor		1 TX time slot -9.03	2 TX time slot -6.02	3 TX time slot -4.26	4 TX time slot -3.01

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EDGE 850 - conducted power table:

	Burst average power									
	ted Avg. Powe olerance (dBr		27	26	25	23.5				
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP				
EUT mode	Frequency (MHz) CH		Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)				
EDGE	824.2	128	26.98	25.95	24.88	23.46				
850	836.6	190	26.89	25.91	24.25	23.04				
050	848.8 251		26.84	25.88	24.25	22.95				
		Sc	ource-based tim	e average powe	er					
EDGE	824.2	128	17.95	19.93	20.62	20.45				
850	836.6	190	17.86	19.89	19.99	20.03				
050	848.8	251	17.81	19.86	19.99	19.94				
	The div	ision fa	ctor compared	to the number c	of TX time slot					
Div	ision factor		1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot				
			-9.03	-6.02	-4.26	-3.01				

GSM 1900 - conducted power table:

			Max.		Source					
			Rated	Burst	-based					
	Frequency	,	Avg.	average	time					
EUT mode	Frequency (MHz)	CH	Power +	power	average					
	(101112)		Max.		power					
			Tolerance	Avg.	Avg.					
			(dBm)	(dBm)	(dBm)					
0014000	1850.2	512	31.5	30.07	21.04					
GSM1900 (GMSK)	1800	661	31.5	30.44	21.41					
	1909.8	810	31.5	30.82	21.79					
The di	The division factor compared to the number of TX time slot									
	Divisio		1 TX time slot							
	DIVISIO	ITALIUI		-9.03						

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GPRS 1900 - conducted power table:

	Burst average power									
	ted Avg. Powe olerance (dBr		31.5	29	27.5	26.5				
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP				
EUT mode	de Frequency CH		A∨g. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)				
GPRS	1850.2	1850.2 512		27.99	26.87	25.61				
1900	1880	661	30.44	28.44	26.75	25.46				
1900	1909.8	810	30.82	28.50	26.88	25.54				
		So	ource-based tim	e average powe	er					
GPRS	1850.2	512	21.04	21.97	22.61	22.60				
1900	1880	661	21.41	22.42	22.49	22.45				
1900	1909.8	810	21.79	22.48	22.62	22.53				
	The div	ision fa	ctor compared	to the number c	of TX time slot					
Div	ision factor		1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot				
DI			-9.03	-6.02	-4.26	-3.01				

EDGE 1900 - conducted power table:

	Burst average power										
	ted Avg. Powe olerance (dBr		26.5 25.5 24		24	22.5					
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP					
EUT mode	node Frequency CH		Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)					
EDGE	1850.2	512	25.66	25.14	23.92	22.42					
1900	1880	661	26.04	25.34	23.68	22.29					
1900	1909.8 810		26.24	25.47	23.70	22.41					
		Sc	ource-based tim	e average powe	er						
EDGE	1850.2	512	16.63	19.12	19.66	19.41					
1900	1880	661	17.01	19.32	19.42	19.28					
1900	1909.8	810	17.21	19.45	19.44	19.40					
	The div	ision fa	ctor compared	to the number o	of TX time slot						
Div	vision factor		1 TX time slot -9.03	2 TX time slot -6.02	3 TX time slot -4.26	4 TX time slot -3.01					

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WCDMA Band II - HSDPA / HSUPA / HSPA+ / DC-HSDPA Conducted power table (Unit: dBm):

	Band	V	VCDMA	
	TX Channel	9262	9400	9538
Fre	equency (MHz)	1852.4	1880	1907.6
Max. Rated Avg.	Power+Max. Tolerance (dBm)		23.50	
3GPP Rel 99	RMC 12.2Kbps	23.43	23.05	22.91
Max. Rated Avg.	Power+Max. Tolerance (dBm)		22.50	
	HSDPA Subtest-1	22.35	22.06	21.87
3GPP Rel 5	HSDPA Subtest-2	21.83	21.57	21.47
	HSDPA Subtest-3	21.98	21.73	21.44
	HSDPA Subtest-4	21.97	21.71	21.43
	HSUPA Subtest-1	22.42	21.70	21.26
	HSUPA Subtest-2	21.44	21.02	20.85
3GPP Rel 6	HSUPA Subtest-3	21.08	21.05	20.96
	HSUPA Subtest-4	21.56	21.01	20.96
	HSUPA Subtest-5	22.40	21.90	21.70
3GPP Rel 7	HSPA+ Subtest-1	22.05	21.43	21.08
	DC-HSDPA Subtest-1	22.00	21.90	21.72
3GPP Rel 8	DC-HSDPA Subtest-2	21.59	21.52	21.44
JUFF Kelo	DC-HSDPA Subtest-3	21.63	21.60	21.49
	DC-HSDPA Subtest-4	21.60	21.53	21.46

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WCDMA Band IV – HSDPA / HSUPA / HSPA+ / DC-HSDPA (Hotspot OFF) Conducted power table (Unit: dBm):

	Band	V	VCDMA I	V
	TX Channel	1312	1412	1513
Fre	equency (MHz)	1712.4	1732.4	1752.6
Max. Rated Avg.		24.50		
3GPP Rel 99	RMC 12.2Kbps	24.30	24.32	24.24
Max. Rated Avg.	Power+Max. Tolerance (dBm)		23.50	
3GPP Rel 5	HSDPA Subtest-1	23.16	23.14	23.31
	HSDPA Subtest-2	22.73	22.61	22.80
	HSDPA Subtest-3	22.77	22.75	22.83
	HSDPA Subtest-4	22.66	22.75	22.95
	HSUPA Subtest-1	23.01	23.11	23.14
	HSUPA Subtest-2	22.51	22.54	22.73
3GPP Rel 6	HSUPA Subtest-3	23.14	23.08	23.04
	HSUPA Subtest-4	23.02	23.03	23.18
	HSUPA Subtest-5	23.10	23.12	23.19
3GPP Rel 7	HSPA+ Subtest-1	22.92	22.98	23.04
	DC-HSDPA Subtest-1	22.92	22.85	22.98
3GPP Rel 8	DC-HSDPA Subtest-2	22.44	22.40	22.47
JUFF Nel O	DC-HSDPA Subtest-3	22.49	22.45	22.52
	DC-HSDPA Subtest-4	22.34	22.31	22.39

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WCDMA Band IV – HSDPA / HSUPA / HSPA+ / DC-HSDPA (Hotspot ON) Conducted power table (Unit: dBm):

	Band	V	VCDMA I	V
	TX Channel	1312	1412	1513
Fre	equency (MHz)	1712.4	1732.4	1752.6
Max. Rated Avg.		23.00		
3GPP Rel 99	RMC 12.2Kbps	22.76	22.80	22.93
Max. Rated Avg.	Power+Max. Tolerance (dBm)		22.00	
	HSDPA Subtest-1	21.79	21.88	21.97
3GPP Rel 5	HSDPA Subtest-2	21.71	21.81	21.86
	HSDPA Subtest-3	21.17	21.22	21.26
	HSDPA Subtest-4	21.18	21.25	21.29
	HSUPA Subtest-1	21.75	21.75	21.81
	HSUPA Subtest-2	21.20	21.24	21.30
3GPP Rel 6	HSUPA Subtest-3	21.72	21.73	21.82
	HSUPA Subtest-4	21.71	21.72	21.79
	HSUPA Subtest-5	21.78	21.76	21.85
3GPP Rel 7	HSPA+ Subtest-1	21.67	21.68	21.73
	DC-HSDPA Subtest-1	21.55	21.61	21.72
3GPP Rel 8	DC-HSDPA Subtest-2	21.50	21.52	21.59
JOFP Relo	DC-HSDPA Subtest-3	21.00	21.05	21.13
	DC-HSDPA Subtest-4	21.02	21.08	21.13

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WCDMA Band V - HSDPA / HSUPA / HSPA+ / DC-HSDPA Conducted power table (Unit: dBm):

	Band	١	VCDMA '	V
	TX Channel	4132	4183	4233
Fre	equency (MHz)	826.4	836.6	846.6
Max. Rated Avg.		25.00		
3GPP Rel 99	RMC 12.2Kbps	24.54	24.55	24.63
Max. Rated Avg.	Power+Max. Tolerance (dBm)		24.00	
	HSDPA Subtest-1	23.40	23.30	23.45
3GPP Rel 5	HSDPA Subtest-2	23.21	23.12	23.17
	HSDPA Subtest-3	23.14	23.13	23.06
	HSDPA Subtest-4	23.14	23.13	23.06
	HSUPA Subtest-1	23.33	23.23	23.28
	HSUPA Subtest-2	23.03	23.01	23.03
3GPP Rel 6	HSUPA Subtest-3	23.25	23.15	23.29
	HSUPA Subtest-4	23.36	23.21	23.33
	HSUPA Subtest-5	23.39	23.27	23.34
3GPP Rel 7	HSPA+ Subtest-1	23.24	23.13	23.17
	DC-HSDPA Subtest-1	23.19	23.10	23.25
3GPP Rel 8	DC-HSDPA Subtest-2	23.05	23.00	22.08
JUFF REIO	DC-HSDPA Subtest-3	23.01	22.92	23.05
	DC-HSDPA Subtest-4	22.91	22.85	22.99

Subtests for WCDMA Release 5 HSDPA

SUB-TEST	β _c	β_d	β _d (SF)	β _c /β _d	β _{HS} (Note1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15	15/15	64	12/15	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	<mark>6</mark> 4	15/4	30/15	1.5	0.5

Subtests for WCDMA Release 6 HSUPA

SUB-TEST	βc	βd	β₀ (SF)	β _o /β _d	β _{HS} (Note1)	β _{ec}	^{β_{ed} (Note 5) (Note 6)}	β _{ed} (SF)	β _{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	<mark>9/15</mark>	64	15/9	30/15	30/15	β _{ed} 1: 47/15 β _{ed} 2: 47/15	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	15/15	64	15/15	30/15	24/15	134/15	4	1	1.0	0.0	21	81

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FDD Band 2										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1860	18700	23.41	23.5	0		
			0	1880	18900	22.89	23.5	0		
				1900	19100	22.87	23.5	0		
				1860	18700	23.48	23.5	0		
		1 RB	50	1880	18900	23.03	23.5	0		
				1900	19100	22.67	23.5	0		
				1860	18700	22.99	23.5	0		
			99	1880	18900	22.84	23.5	0		
				1900	19100	22.50	23.5	0		
				1860	18700	22.30	22.5	0-1		
	QPSK		0	1880	18900	21.82	22.5	0-1		
				1900	19100	21.72	22.5	0-1		
				1860	18700	22.22	22.5	0-1		
		50 RB	25	1880	18900	21.84	22.5	0-1		
				1900	19100	21.71	22.5	0-1		
				1860	18700	22.06	22.5	0-1		
			50	1880	18900	21.88	22.5	0-1		
				1900	19100	21.63	22.5	0-1		
				1860	18700	22.05	22.5	0-1		
		100)RB	1880	18900	21.78	22.5	0-1		
20			-	1900	19100	21.74	22.5	0-1		
20				1860	18700	22.48	22.5	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0		
			0	1880	18900	21.90	22.5	0-1		
				1900	19100	22.05	22.5	0-1		
				1860	18700	22.38	22.5	0-1		
		1 RB	50	1880	18900	21.96	22.5	0-1		
				1900	19100	22.34	22.5	0-1		
				1860	18700	21.29	22.5	0-1		
			99	1880	18900	22.06	22.5			
				1900	19100	22.21	22.5			
				1860	18700	21.31	21.5			
	16-QAM		0	1880	18900	20.82	21.5			
				1900	19100	20.73	21.5	0-2		
				1860	18700	21.09	21.5			
		50 RB	25	1880	18900	20.94	21.5			
				1900	19100	20.61	21.5			
			50	1860	18700	21.09	21.5			
			50	1880	18900	20.85	21.5			
				1900	19100	20.54	21.5			
		100	חחו	1860	18700	21.17	21.5			
		100)RB	1880	18900	20.90	21.5			
				1900	19100	20.63	21.5	0-2		

LTE FDD Band 2 - conducted power table:

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	FDD Band 2											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1857.5	18675	23.26	23.5	0				
			0	1880	18900	22.89	23.5	0				
				1902.5	19125	22.77	23.5	0				
				1857.5	18675	23.24	23.5	0				
		1 RB	36	1880	18900	22.91	23.5	0				
				1902.5	19125	22.62	23.5	0				
				1857.5	18675	23.09	23.5	0				
			74	1880	18900	22.83	23.5	0				
				1902.5	19125	22.85	23.5	0				
				1857.5	18675	22.26	22.5	0-1				
	QPSK		0	1880	18900	21.97	22.5	0-1				
				1902.5	19125	21.75	22.5	0-1				
				1857.5	18675	22.19	22.5	0-1				
		36 RB	18	1880	18900	21.86	22.5	0-1				
				1902.5	19125	21.74	22.5	0-1				
				1857.5	18675	22.10	22.5	0-1				
			37	1880	18900	21.89	22.5	0-1				
				1902.5	19125	21.72	22.5	0-1				
				1857.5	18675	22.16	22.5	0-1				
		75	RB	1880	18900	21.85	22.5	0-1				
15			•	1902.5	19125	21.78	22.5	0-1				
				1857.5	18675	22.50	22.5	0-1				
			0	1880	18900	21.87	22.5	0-1				
				1902.5	19125	22.12	22.5	0-1				
				1857.5	18675	22.45	22.5	0-1				
		1 RB	36	1880	18900	22.43	22.5	0-1				
				1902.5	19125	21.66	22.5	0-1				
				1857.5	18675	22.47	22.5	0-1				
			74	1880	18900	22.03	22.5	0-1				
				1902.5	19125	21.95	22.5	0-1				
			_	1857.5	18675	21.32	21.5	0-2				
	16-QAM		0	1880	18900	20.97	21.5	0-2				
				1902.5	19125	20.66	21.5	0-2				
				1857.5	18675	21.27	21.5	0-2				
		36 RB	18	1880	18900	20.84	21.5	0-2				
				1902.5	19125	20.71	21.5	0-2				
			-	1857.5	18675	21.17	21.5	0-2				
			37	1880	18900	20.92	21.5	0-2				
				1902.5	19125	20.72	21.5	0-2				
				1857.5	18675	21.32	21.5	0-2				
	75R	KB	1880	18900	20.90	21.5	0-2					
				1902.5	19125	20.73	21.5	0-2				

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	FDD Band 2											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1855	18650	23.09	23.5	0				
			0	1880	18900	22.91	23.5	0				
				1905	19150	22.60	23.5	0				
				1855	18650	22.40	23.5	0				
		1 RB	25	1880	18900	23.04	23.5	0				
				1905	19150	22.93	23.5	0				
				1855	18650	23.40	23.5	0				
			49	1880	18900	22.94	23.5	0				
				1905	19150	22.85	23.5	0				
				1855	18650	22.28	22.5	0-1				
	QPSK		0	1880	18900	21.91	22.5	0-1				
				1905	19150	21.86	22.5	0-1				
				1855	18650	22.20	22.5	0-1				
		25 RB	12	1880	18900	21.96	22.5	0-1				
				1905	19150	21.81	22.5	0-1				
				1855	18650	22.22	22.5	0-1				
			25	1880	18900	21.92	22.5	0-1				
				1905	19150	21.78	22.5	0-1				
				1855	18650	22.22	22.5	0-1				
		50	RB	1880	18900	21.95	22.5	0-1				
10				1905	19150	21.77	22.5	0-1				
-				1855	18650	22.37	22.5					
			0	1880	18900	21.70	22.5					
				1905	19150	21.76	22.5					
				1855	18650	22.36	22.5					
		1 RB	25	1880	18900	22.40	22.5					
				1905	19150	22.33	22.5					
				1855	18650	22.45	22.5					
			49	1880	18900	22.41	22.5					
				1905	19150	21.99	22.5					
				1855	18650	21.23	21.5					
	16-QAM		0	1880	18900	21.06	21.5					
				1905	19150	20.71	21.5					
			10	1855	18650	21.30	21.5	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
		25 RB	12	1880	18900	21.14	21.5					
				1905	19150	20.67	21.5					
			05	1855	18650	21.35	21.5					
			25	1880	18900	21.22	21.5					
				1905	19150	20.57	21.5					
			DD	1855	18650	21.39	21.5					
		50RI	ΝĎ	1880	18900	20.96	21.5					
		30115		1905	19150	20.73	21.5	0-2				

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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1852.5	18625	23.19	23.5	0
			0	1880	18900	22.93	23.5	0
				1907.5	19175	22.63	23.5	0
				1852.5	18625	23.31	23.5	0
		1 RB	12	1880	18900	22.87	23.5	0
				1907.5	19175	23.00	23.5	0
				1852.5	18625	23.18	23.5	0
			24	1880	18900	22.89	23.5	0
				1907.5	19175	22.87	23.5	0
				1852.5	18625	22.16	22.5	0-1
	QPSK		0	1880	18900	21.85	22.5	0-1
				1907.5	19175	21.66	22.5	0-1
				1852.5	18625	22.21	22.5	0-1
		12 RB	6	1880	18900	21.88	22.5	0-1
				1907.5	19175	21.65	22.5	0-1
				1852.5	18625	22.22	22.5	0-1
			13	1880	18900	21.96	22.5	0-1
				1907.5	19175	21.71	22.5	0-1
				1852.5	18625	22.18	22.5	0-1
		25	RB	1880	18900	21.86	22.5	0-1
5			•	1907.5	19175	21.68	22.5	0-1
				1852.5	18625	22.29	22.5	0-1
			0	1880	18900	22.49	22.5	0-1
				1907.5	19175	21.71	22.5	0-1
		(55	10	1852.5	18625	22.07	22.5	0-1
		1 RB	12	1880	18900	22.05	22.5	0-1
				1907.5	19175	21.67	22.5	0-1
				1852.5	18625	22.14	22.5	0-1
			24	1880	18900	21.83	22.5	0-1
				1907.5	19175	22.25	22.5	0-1
	16 0 4 14		0	1852.5	18625	21.03	21.5	0-2
	16-QAM		0	1880	18900	20.78	21.5	0-2
				1907.5	19175	20.95	21.5	0-2
		10 00	G	1852.5	18625	21.21	21.5	0-2
		12 RB	6	1880	18900	20.84	21.5	0-2
				1907.5	19175	20.61	21.5	0-2
			10	1852.5	18625	21.17	21.5	0-2
			13	1880	18900	20.80	21.5	0-2
				1907.5	19175	20.54	21.5	0-2
		0E	PB	1852.5	18625	21.16	21.5	0-2
		25R		1880 1907.5	18900	20.84	21.5	0-2
					19175	20.80	21.5	0-2

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	FDD Band 2											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1851.5	18615	22.93	23.5	0				
			0	1880	18900	22.88	23.5	0				
				1908.5	19185	22.64	23.5	0				
				1851.5	18615	23.05	23.5	0				
		1 RB	7	1880	18900	23.12	23.5	0				
				1908.5	19185	22.73	23.5	0				
				1851.5	18615	23.18	23.5	0				
			14	1880	18900	22.89	23.5	0				
				1908.5	19185	22.74	23.5	0				
				1851.5	18615	22.09	22.5	0-1				
	QPSK		0	1880	18900	21.88	22.5	0-1				
				1908.5	19185	21.72	22.5	0-1				
				1851.5	18615	22.22	22.5	0-1				
		8 RB	4	1880	18900	21.89	22.5	0-1				
				1908.5	19185	21.77	22.5	0-1				
				1851.5	18615	22.26	22.5	0-1				
			7	1880	18900	21.93	22.5	0-1				
				1908.5	19185	21.70	22.5	0-1				
				1851.5	18615	22.13	22.5	0-1				
		15	RB	1880	18900	21.88	22.5	0-1				
3				1908.5	19185	21.65	22.5	0-1				
-				1851.5	18615	22.04	22.5	0-1				
			0	1880	18900	22.09	22.5	0-1				
				1908.5	19185	22.14	22.5	0-1				
				1851.5	18615	22.10	22.5	0-1				
		1 RB	7	1880	18900	22.21	22.5	0-1				
				1908.5	19185	21.56	22.5	0-1				
				1851.5	18615	22.17	22.5	0-1				
			14	1880	18900	21.87	22.5	0-1				
				1908.5	19185	21.46	22.5	0-1				
				1851.5	18615	21.25	21.5	0-2				
	16-QAM		0	1880	18900	20.77	21.5	0-2				
				1908.5	19185	20.85	21.5	0-2				
		0.00		1851.5	18615	21.27	21.5	0-2				
		8 RB	4	1880	18900	21.02	21.5	0-2				
				1908.5	19185	20.99	21.5	0-2				
			-	1851.5	18615	21.24	21.5	0-2				
			7	1880	18900	21.07	21.5	0-2				
				1908.5	19185	20.85	21.5	0-2				
		4 5	DD	1851.5	18615	21.17	21.5	0-2				
		15R		1880	18900	20.87	21.5	0-2				
				1908.5	19185	20.84	21.5	0-2				

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	FDD Band 2											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1850.7	18607	23.18	23.5	0				
			0	1880	18900	22.89	23.5	0				
				1909.3	19193	22.77	23.5	0				
				1850.7	18607	23.39	23.5	0				
		1 RB	2	1880	18900	22.96	23.5	0				
				1909.3	19193	22.69	23.5	0				
				1850.7	18607	23.23	23.5	0				
			5	1880	18900	23.02	23.5	0				
				1909.3	19193	22.64	23.5	0				
				1850.7	18607	23.23	23.5	0				
	QPSK		0	1880	18900	23.04	23.5	0				
				1909.3	19193	22.82	23.5	0				
				1850.7	18607	23.34	23.5	0				
		3 RB	2	1880	18900	22.99	23.5	0				
				1909.3	19193	22.67	23.5	0				
				1850.7	18607	23.30	23.5	0				
			3	1880	18900	22.97	23.5	0				
				1909.3	19193	22.68	23.5	0				
				1850.7	18607	22.26	22.5					
		61	RB	1880	18900	21.92	22.5					
1.4				1909.3	19193	21.67	22.5					
				1850.7	18607	21.98	22.5	0 0 0 0 0 0 0 0 0 0 0 0 0 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1				
			0	1880	18900	22.37	22.5					
				1909.3	19193	21.52	22.5					
		(55		1850.7	18607	22.42	22.5					
		1 RB	2	1880	18900	21.87	22.5					
				1909.3	19193	22.04	22.5					
			_	1850.7	18607	22.39	22.5					
			5	1880	18900	21.48	22.5					
				1909.3	19193	22.04	22.5					
	10.0414		0	1850.7	18607	22.43	22.5					
	16-QAM		0	1880	18900	21.93	22.5					
				1909.3	19193	22.03	22.5					
		םם כ	2	1850.7	18607	22.42	22.5					
		3 RB	2	1880	18900	22.10	22.5					
				1909.3	19193	22.10	22.5					
			· ·	1850.7	18607	22.50	22.5					
			3	1880	18900	22.00	22.5	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
				1909.3	19193	21.98	22.5					
		61	2B	1850.7	18607	21.21	21.5					
		6RE		1880	18900	20.69	21.5					
				1909.3	19193	20.58	21.5	0-2				

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FDD Band 4 (Hotspot OFF)										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1720	20050	22.93	24	0		
			0	1732.5	20175	23.14	24	0		
				1745	20300	23.06	24	0		
				1720	20050	23.35	24	0		
		1 RB	50	1732.5	20175	22.97	24	0		
				1745	20300	23.02	24	0		
				1720	20050	22.92	24	0		
			99	1732.5	20175	22.83	24	0		
				1745	20300	22.82	24	0		
				1720	20050	22.33	23	0-1		
	QPSK		0	1732.5	20175	22.23	23	0-1		
				1745	20300	22.17	23	0-1		
				1720	20050	22.16	23	0-1		
		50 RB	25	1732.5	20175	22.01	23	0-1		
				1745	20300	22.18	23	0-1		
				1720	20050	22.15	23	0-1		
			50	1732.5	20175	22.00	23	0-1		
				1745	20300	22.03	23	0-1		
				1720	20050	22.08	23	0-1		
		100	DRB	1732.5	20175	22.07	23	0-1		
20				1745	20300	22.06	23	0-1		
			0	1720	20050	22.56	23	0-1		
			0	1732.5	20175	22.38	23	0-1		
				1745	20300	22.12	23	0-1		
				1720	20050	22.99	23	0-1		
		1 RB	50	1732.5	20175	21.92	23	0-1		
				1745	20300	22.64	23	0-1		
				1720	20050	22.05	23	0-1		
			99	1732.5	20175	21.58	23	0-1		
				1745	20300	22.12	23	0-1		
	40.000			1720	20050	21.18	22	0-2		
	16-QAM		0	1732.5	20175	21.18	22	0-2		
				1745	20300	21.20	22	0-2		
			05	1720	20050	21.09	22	0-2		
		50 RB	25	1732.5	20175	20.99	22	0-2		
				1745	20300	21.07	22	0-2		
			50	1720	20050	21.18	22	0-2		
			50	1732.5	20175	20.88	22	0-2		
				1745	20300	20.93	22	0-2		
		4.04	ססו	1720	20050	21.10	22	0-2		
		100)RB	1732.5	20175	21.10	22	0-2		
				1745	20300	21.12	22	0-2		

LTE FDD Band 4 - conducted power table (Hotspot OFF):

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	FDD Band 4 (Hotspot OFF)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1717.5	20025	23.11	24	0				
			0	1732.5	20175	23.15	24	0				
				1747.5	20325	23.05	24	0				
				1717.5	20025	23.15	24	0				
		1 RB	36	1732.5	20175	22.78	24	0				
				1747.5	20325	22.92	24	0				
				1717.5	20025	23.15	24	0				
			74	1732.5	20175	22.81	24	0				
				1747.5	20325	23.05	24	0				
				1717.5	20025	22.19	23	0-1				
	QPSK		0	1732.5	20175	22.22	23	0-1				
				1747.5	20325	22.15	23	0-1				
				1717.5	20025	22.23	23	0-1				
		36 RB	18	1732.5	20175	21.98	23	0-1				
				1747.5	20325	22.12	23	0-1				
				1717.5	20025	22.17	23	0-1				
			37	1732.5	20175	21.96	23	0-1				
				1747.5	20325	22.11	23	0-1				
				1717.5	20025	22.31	23	0-1				
		75	RB	1732.5	20175	22.01	23	0-1				
15				1747.5	20325	22.14	23	0-1				
				1717.5	20025	22.49	23	0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1				
			0	1732.5	20175	22.74	23	0-1				
				1747.5	20325	22.24	23	0-1				
				1717.5	20025	22.39	23	0-1				
		1 RB	36	1732.5	20175	22.04	23	0-1				
				1747.5	20325	22.32	23	0-1				
			_	1717.5	20025	22.44	23	0-1				
			74	1732.5	20175	21.92	23	0-1				
				1747.5	20325	22.17	23	0-1				
			_	1717.5	20025	21.03	22	0-2				
	16-QAM		0	1732.5	20175	21.25	22					
				1747.5	20325	21.06	22	0-2				
				1717.5	20025	21.26	22	0-2				
		36 RB	18	1732.5	20175	21.03	22	0-2				
				1747.5	20325	21.16	22	0-2				
			_	1717.5	20025	21.10	22	0-2				
			37	1732.5	20175	21.03	22	3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0				
				1747.5	20325	21.14	22					
				1717.5	20025	21.17	22					
		75RB		1732.5	20175	21.13	22					
				1747.5	20325	21.09	22	0-2				

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	FDD Band 4 (Hotspot OFF)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1715	20000	23.09	24	0				
			0	1732.5	20175	22.92	24	0				
				1750	20350	23.12	24	0				
				1715	20000	23.23	24	0				
		1 RB	25	1732.5	20175	22.93	24	0				
				1750	20350	23.16	24	0				
				1715	20000	23.24	24	0				
			49	1732.5	20175	22.72	24	0				
				1750	20350	22.99	24	0				
				1715	20000	22.16	23	0-1				
	QPSK		0	1732.5	20175	22.12	23	0-1				
				1750	20350	22.18	23	0-1				
				1715	20000	22.22	23	0-1				
		25 RB	12	1732.5	20175	22.09	23	0-1				
				1750	20350	22.14	23	0-1				
				1715	20000	22.11	23	0-1				
			25	1732.5	20175	21.99	23	0-1				
				1750	20350	22.00	23	0-1				
				1715	20000	22.07	23	0-1				
		50	RB	1732.5	20175	22.05	23	0-1				
10				1750	20350	22.04	23	0-1				
				1715	20000	21.81	23	0-1				
			0	1732.5	20175	21.89	23	0-1				
				1750	20350	22.52	23	0-1				
				1715	20000	22.27	23	0-1				
		1 RB	25	1732.5	20175	21.84	23	0-1				
				1750	20350	22.94	23	0-1				
				1715	20000	22.66	23	0-1				
			49	1732.5	20175	21.83	23	0-1				
				1750	20350	22.16	23	0-1				
			-	1715	20000	21.09	22	0-2				
	16-QAM		0	1732.5	20175	21.31	22	0-2				
				1750	20350	20.96	22	0-2				
				1715	20000	21.20	22	0-2				
		25 RB	12	1732.5	20175	21.25	22	0-2				
				1750	20350	21.08	22	0-2				
				1715	20000	21.09	22	0-2				
			25	1732.5	20175	21.21	22	0-2				
				1750	20350	21.09	22	0-2				
				1715	20000	21.17	22	0-2				
		50RB		1732.5	20175	21.05	22	0-2				
				1750	20350	21.12	22	0-2				

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	FDD Band 4 (Hotspot OFF)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1712.5	19975	23.13	24	0				
			0	1732.5	20175	22.96	24	0				
				1752.5	20375	22.89	24	0				
				1712.5	19975	23.34	24	0				
		1 RB	12	1732.5	20175	22.97	24	0				
				1752.5	20375	23.26	24	0				
				1712.5	19975	23.09	24	0				
			24	1732.5	20175	22.91	24	0				
				1752.5	20375	23.07	24	0				
				1712.5	19975	22.12	23	0-1				
	QPSK		0	1732.5	20175	22.07	23	0-1				
				1752.5	20375	22.16	23	0-1				
				1712.5	19975	22.00	23	0-1				
		12 RB	6	1732.5	20175	21.94	23	0-1				
				1752.5	20375	22.15	23	0-1				
				1712.5	19975	22.08	23	0-1				
			13	1732.5	20175	21.91	23	0-1				
				1752.5	20375	22.14	23	0-1				
				1712.5	19975	22.08	23	0-1				
		25	RB	1732.5	20175	21.98	23	0-1				
5				1752.5	20375	22.07	23	0-1				
5				1712.5	19975	21.98	23	0-1				
			0	1732.5	20175	22.73	23	0-1				
				1752.5	20375	22.46	23	0-1				
				1712.5	19975	22.67	23	0-1				
		1 RB	12	1732.5	20175	22.43	23	0-1				
				1752.5	20375	22.48	23	0-1				
				1712.5	19975	22.38	23	0-1				
			24	1732.5	20175	22.31	23	0-1				
				1752.5	20375	22.67	23	0-1				
				1712.5	19975	21.00	22	0-2				
	16-QAM		0	1732.5	20175	21.08	22	0-2				
				1752.5	20375	21.02	22	0-2				
				1712.5	19975	21.11	22	3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0				
		12 RB	6	1732.5	20175	20.97	22	0-2				
				1752.5	20375	21.10	22	0-2				
				1712.5	19975	21.22	22	0-2				
			13	1732.5	20175	20.94	22	0-2				
				1752.5	20375	21.05	22	0-2				
				1712.5	19975	21.32	22	0-2				
		25RB		1732.5	20175	21.03	22					
				1752.5	20375	21.28	22	0-2				

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	FDD Band 4 (Hotspot OFF)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1711.5	19965	23.28	24	0				
			0	1732.5	20175	23.00	24	0				
				1753.5	20385	23.06	24	0				
				1711.5	19965	23.28	24	0				
		1 RB	7	1732.5	20175	22.94	24	0				
				1753.5	20385	23.16	24	0				
				1711.5	19965	23.20	24	0				
			14	1732.5	20175	22.88	24	0				
				1753.5	20385	23.12	24	0				
				1711.5	19965	22.19	23	0-1				
	QPSK		0	1732.5	20175	22.13	23	0-1				
				1753.5	20385	22.24	23	0-1				
				1711.5	19965	22.07	23	0-1				
		8 RB	4	1732.5	20175	22.08	23	0-1				
				1753.5	20385	22.14	23	0-1				
				1711.5	19965	22.09	23	0-1				
			7	1732.5	20175	22.07	23	0-1				
				1753.5	20385	22.05	23	0-1				
				1711.5	19965	21.98	23	0-1				
		15	RB	1732.5	20175	22.08	23	0-1				
3				1753.5	20385	22.07	23	0-1				
			0	1711.5	19965	22.50	23	0-1				
			0	1732.5	20175	22.53	23	0-1				
				1753.5	20385	22.74	23	0-1				
			_	1711.5	19965	22.24	23	0-1				
		1 RB	7	1732.5	20175	22.03	23	0-1				
				1753.5	20385	22.20	23	0-1				
				1711.5	19965	22.18	23	0-1				
			14	1732.5	20175	22.01	23	0-1				
				1753.5	20385	22.23	23	0-1				
	10.0414		0	1711.5	19965	20.93	22	0-2				
	16-QAM		0	1732.5	20175	20.88	22	0-2				
				1753.5	20385	21.20	22	0-2				
		0 00	4	1711.5	19965	20.81	22	0-2				
		8 RB	4	1732.5	20175	20.86	22	0-2				
				1753.5	20385	21.28	22	0-2				
			-	1711.5	19965	20.97	22	0-2				
			7	1732.5	20175	21.08	22	0-2				
				1753.5	20385	21.16	22	0-2				
		16	RB	1711.5	19965	20.99	22	0-2				
		10		1732.5	20175	21.23	22	0-2				
				1753.5	20385	21.35	22	0-2				

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	FDD Band 4 (Hotspot OFF)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				1710.7	19957	22.96	24	0				
			0	1732.5	20175	22.91	24	0				
				1754.3	20393	22.99	24	0				
				1710.7	19957	23.00	24	0				
		1 RB	2	1732.5	20175	22.99	24	0				
				1754.3	20393	23.03	24	0				
				1710.7	19957	22.90	24	0				
			5	1732.5	20175	22.81	24	0				
				1754.3	20393	22.98	24	0				
				1710.7	19957	22.99	24	0				
	QPSK		0	1732.5	20175	22.93	24	0				
				1754.3	20393	23.03	24	0				
				1710.7	19957	23.02	24	0				
		3 RB	2	1732.5	20175	23.02	24	0				
				1754.3	20393	23.04	24	0				
				1710.7	19957	22.98	24	0				
			3	1732.5	20175	23.03	24	0				
				1754.3	20393	23.01	24	0				
				1710.7	19957	22.06	23	0-1				
		61	RB	1732.5	20175	22.09	23	0-1				
1.4				1754.3	20393	22.16	23	0-1				
				1710.7	19957	22.07	23	0-1				
			0	1732.5	20175	22.06	23	0-1				
				1754.3	20393	22.36	23	0-1				
				1710.7	19957	21.91	23	0-1				
		1 RB	2	1732.5	20175	22.30	23	0-1				
				1754.3	20393	22.43	23	0-1				
				1710.7	19957	22.06	23					
			5	1732.5	20175	21.67	23					
				1754.3	20393	22.44	23					
				1710.7	19957	21.87	23					
	16-QAM		0	1732.5	20175	21.74	23					
				1754.3	20393	22.11	23	0-1				
			_	1710.7	19957	21.90	23	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
		3 RB	2	1732.5	20175	21.80	23					
				1754.3	20393	22.12	23					
				1710.7	19957	21.79	23					
			3	1732.5	20175	21.79	23	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0				
				1754.3	20393	22.10	23					
				1710.7	19957	20.85	22					
		6RB		1732.5	20175	20.85	22					
				1754.3	20393	20.92	22	0-2				

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FDD Band 4 (Hotspot ON)									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)	
				1720	20050	22.62	23	0	
			0	1732.5	20175	22.57	23	0	
				1745	20300	22.70	23	0	
				1720	20050	22.98	23	0	
		1 RB	50	1732.5	20175	22.63	23	0	
				1745	20300	22.73	23	0	
				1720	20050	22.48	23	0	
			99	1732.5	20175	22.27	23	0	
				1745	20300	22.72	23	0	
				1720	20050	22.03	23	0	
	QPSK		0	1732.5	20175	21.77	23	0	
				1745	20300	21.98	23	0	
			25	1720	20050	21.88	23	0	
		50 RB		1732.5	20175	21.93	23	0	
				1745	20300	22.05	23	0	
			50	1720	20050	21.87	23	0	
				1732.5	20175	21.74	23	0	
				1745	20300	22.01	23	0	
				1720	20050	21.91	23	0	
		100	DRB	1732.5	20175	21.84	23	0	
20			•	1745	20300	22.10	23	0	
-		1 RB	0	1720	20050	22.01	23	0	
				1732.5	20175	22.39	23	0	
				1745	20300	22.20	23	0	
			50 99	1720	20050	21.46	23	0	
				1732.5	20175	21.46	23	0	
				1745	20300	22.61	23	0	
				1720	20050	21.82	23	0	
				1732.5	20175	21.81	23	0	
				1745	20300	22.91	23	0	
			0	1720	20050	21.04	22	0-1	
	16-QAM			1732.5	20175	20.98	22	0-1	
				1745	20300	21.04	22	0-1	
			05	1720	20050	21.02	22	0-1	
		50 RB	25	1732.5	20175	20.71	22	0-1	
				1745	20300	20.95	22	0-1	
			50	1720	20050	20.99	22	0-1	
			50	1732.5	20175	20.81	22	0-1	
				1745	20300	21.05	22	0-1	
		4.00	חחו	1720	20050	20.93	22	0-1	
		100)RB	1732.5	20175	20.80	22	0-1	
					1745	20300	21.16	22	0-1

LTE FDD Band 4 - conducted power table (Hotspot ON):

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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FDD Band 4 (Hotspot ON)										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1717.5	20025	22.71	23	0		
			0	1732.5	20175	22.80	23	0		
				1747.5	20325	22.76	23	0		
				1717.5	20025	22.39	23	0		
		1 RB	36	1732.5	20175	22.28	23	0		
				1747.5	20325	22.71	23	0		
				1717.5	20025	22.59	23	0		
			74	1732.5	20175	22.44	23	0		
				1747.5	20325	22.83	23	0		
				1717.5	20025	21.92	23	0		
	QPSK		0	1732.5	20175	22.04	23	0		
				1747.5	20325	22.11	23	0		
			18	1717.5	20025	21.93	23	0		
		36 RB		1732.5	20175	21.78	23	0		
				1747.5	20325	22.04	23	0		
			37	1717.5	20025	21.88	23	0		
				1732.5	20175	21.83	23	0		
				1747.5	20325	22.02	23	0		
		75RB		1717.5	20025	21.90	23	0		
				1732.5	20175	21.93	23	0		
15				1747.5	20325	22.12	23	0		
10		1 RB	0	1717.5	20025	22.29	23	0		
				1732.5	20175	21.95	23	0		
				1747.5	20325	22.41	23	0		
			36	1717.5	20025	21.53	23	0		
				1732.5	20175	21.98	23	0		
				1747.5	20325	22.01	23	0		
			74	1717.5	20025	21.65	23	0		
				1732.5	20175	21.43	23	0		
				1747.5	20325	22.28	23	0		
				1717.5	20025	21.01	22	0-1		
	16-QAM		0	1732.5	20175	20.93	22	0-1		
				1747.5	20325	21.15	22	0-1		
				1717.5	20025	20.95	22	0-1		
		36 RB	18	1732.5	20175	20.74	22	0-1		
				1747.5	20325	21.21	22	0-1		
			37	1717.5	20025	20.94	22	0-1		
				1732.5	20175	20.90	22	0-1		
				1747.5	20325	21.07	22	0-1		
				1717.5	20025	20.95	22	0-1		
		75	RB	1732.5	20175	20.81	22	0-1		
				1747.5	20325	21.08	22	0-1		

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FDD Band 4 (Hotspot ON)									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)	
				1715	20000	22.63	23	0	
			0	1732.5	20175	22.76	23	0	
				1750	20350	22.81	23	0	
				1715	20000	22.83	23	0	
		1 RB	25	1732.5	20175	22.63	23	0	
				1750	20350	22.95	23	0	
				1715	20000	22.58	23	0	
			49	1732.5	20175	22.49	23	0	
				1750	20350	22.92	23	0	
				1715	20000	21.85	23	0	
	QPSK		0	1732.5	20175	21.98	23	0	
				1750	20350	22.20	23	0	
			12	1715	20000	21.89	23	0	
		25 RB		1732.5	20175	21.93	23	0	
				1750	20350	22.11	23	0	
			25	1715	20000	21.87	23	0	
				1732.5	20175	21.83	23	0	
				1750	20350	22.08	23	0	
		50RB		1715	20000	21.98	23	0	
				1732.5	20175	21.97	23	0	
10				1750	20350	22.20	23	0	
10		1 RB	0	1715	20000	22.35	23	0	
				1732.5	20175	22.31	23	0	
				1750	20350	22.10	23	0	
			25 49	1715	20000	22.66	23	0	
				1732.5	20175	21.98	23	0	
				1750	20350	22.40	23	0	
				1715	20000	22.17	23	0	
				1732.5	20175	21.38	23	0	
				1750	20350	22.72	23	0	
				1715	20000	21.30	22	0-1	
	16-QAM		0	1732.5	20175	21.18	22	0-1	
				1750	20350	21.10	22	0-1	
				1715	20000	21.25	22	0-1	
		25 RB	12	1732.5	20175	20.97	22	0-1	
				1750	20350	21.08	22	0-1	
				1715	20000	21.32	22	0-1	
			25	1732.5	20175	20.74	22	0-1	
				1750	20350	20.91	22	0-1	
				1715	20000	21.16	22	0-1	
		50	RB	1732.5	20175	20.89	22	0-1	
				1750	20350	21.11	22	0-1	

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FDD Band 4 (Hotspot ON)									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)	
				1712.5	19975	22.39	23	0	
			0	1732.5	20175	22.77	23	0	
				1752.5	20375	22.76	23	0	
				1712.5	19975	22.39	23	0	
		1 RB	12	1732.5	20175	22.97	23	0	
				1752.5	20375	22.79	23	0	
				1712.5	19975	22.44	23	0	
			24	1732.5	20175	22.59	23	0	
				1752.5	20375	22.71	23	0	
				1712.5	19975	21.67	23	0	
	QPSK		0	1732.5	20175	21.93	23	0	
				1752.5	20375	22.05	23	0	
			6	1712.5	19975	21.81	23	0	
		12 RB		1732.5	20175	21.89	23	0	
				1752.5	20375	22.12	23	0	
			13	1712.5	19975	21.77	23	0	
				1732.5	20175	21.83	23	0	
				1752.5	20375	22.22	23	0	
		25RB		1712.5	19975	21.76	23	0	
				1732.5	20175	21.94	23	0	
5				1752.5	20375	22.06	23	0	
5		1 RB	0	1712.5	19975	21.96	23	0	
				1732.5	20175	22.78	23	0	
				1752.5	20375	22.58	23	0	
			12	1712.5	19975	21.76	23	0	
				1732.5	20175	22.41	23	0	
				1752.5	20375	22.36	23	0	
			24	1712.5	19975	21.48	23	0	
				1732.5	20175	22.36	23	0	
				1752.5	20375	22.19	23	0	
				1712.5	19975	20.70	22	0-1	
	16-QAM		0	1732.5	20175	20.94	22	0-1	
				1752.5	20375	20.95	22	0-1	
				1712.5	19975	20.77	22	0-1	
		12 RB	6	1732.5	20175	20.98	22	0-1	
				1752.5	20375	21.02	22	0-1	
			13	1712.5	19975	20.72	22	0-1	
				1732.5	20175	20.93	22	0-1	
				1752.5	20375	21.07	22	0-1	
				1712.5	19975	20.74	22	0-1	
		25	RB	1732.5	20175	20.98	22	0-1	
				1752.5	20375	21.08	22	0-1	

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FDD Band 4 (Hotspot ON)									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)	
				1711.5	19965	22.83	23	0	
			0	1732.5	20175	22.78	23	0	
				1753.5	20385	22.77	23	0	
				1711.5	19965	22.84	23	0	
		1 RB	7	1732.5	20175	22.96	23	0	
				1753.5	20385	22.81	23	0	
				1711.5	19965	22.80	23	0	
			14	1732.5	20175	22.55	23	0	
				1753.5	20385	22.85	23	0	
				1711.5	19965	21.89	23	0	
	QPSK		0	1732.5	20175	21.98	23	0	
				1753.5	20385	22.11	23	0	
			4	1711.5	19965	21.88	23	0	
		8 RB		1732.5	20175	21.94	23	0	
				1753.5	20385	22.21	23	0	
			7	1711.5	19965	21.83	23	0	
				1732.5	20175	21.90	23	0	
				1753.5	20385	22.14	23	0	
		15RB		1711.5	19965	21.78	23	0	
				1732.5	20175	21.94	23	0	
3				1753.5	20385	22.24	23	0	
5		1 RB	0	1711.5	19965	22.34	23	0	
				1732.5	20175	22.29	23	0	
				1753.5	20385	22.12	23	0	
			7	1711.5	19965	21.95	23	0	
				1732.5	20175	22.01	23	0	
				1753.5	20385	22.11	23	0	
				1711.5	19965	22.20	23	0	
			14	1732.5	20175	21.98	23	0	
				1753.5	20385	22.11	23	0	
				1711.5	19965	20.92	22	0-1	
	16-QAM		0	1732.5	20175	20.82	22	0-1	
				1753.5	20385	20.97	22	0-1	
				1711.5	19965	21.13	22	0-1	
		8 RB	4	1732.5	20175	20.71	22	0-1	
				1753.5	20385	21.02	22	0-1	
				1711.5	19965	21.13	22	0-1	
			7	1732.5	20175	20.83	22	0-1	
				1753.5	20385	21.03	22	0-1	
				1711.5	19965	20.98	22	0-1	
		15	RB	1732.5	20175	20.78	22	0-1	
				1753.5	20385	21.35	22	0-1	

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FDD Band 4 (Hotspot ON)									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)	
				1710.7	19957	22.58	23	0	
			0	1732.5	20175	22.68	23	0	
				1754.3	20393	22.70	23	0	
				1710.7	19957	22.66	23	0	
		1 RB	2	1732.5	20175	22.86	23	0	
				1754.3	20393	22.68	23	0	
				1710.7	19957	22.57	23	0	
			5	1732.5	20175	22.60	23	0	
				1754.3	20393	22.79	23	0	
				1710.7	19957	22.63	23	0	
	QPSK		0	1732.5	20175	22.63	23	0	
				1754.3	20393	22.87	23	0	
			2	1710.7	19957	22.51	23	0	
		3 RB		1732.5	20175	22.62	23	0	
				1754.3	20393	22.87	23	0	
			3	1710.7	19957	22.46	23	0	
				1732.5	20175	22.70	23	0	
				1754.3	20393	22.85	23	0	
				1710.7	19957	21.78	23	0	
		61	В	1732.5	20175	21.98	23	0	
1.4				1754.3	20393	22.19	23	0	
1.4		1 RB	0	1710.7	19957	22.01	23	0	
				1732.5	20175	22.35	23	0	
				1754.3	20393	21.99	23	0	
			2	1710.7	19957	22.15	23	0	
				1732.5	20175	22.36	23	0	
				1754.3	20393	22.33	23	0	
			5	1710.7	19957	22.14	23	0	
				1732.5	20175	22.36	23	0	
				1754.3	20393	21.97	23	0	
				1710.7	19957	22.07	23	0	
	16-QAM		0	1732.5	20175	22.10	23	0	
				1754.3	20393	22.03	23	0	
				1710.7	19957	21.99	23	0	
		3 RB	2	1732.5	20175	21.84	23	0	
				1754.3	20393	22.32	23	0	
				1710.7	19957	21.91	23	0	
			3	1732.5	20175	22.00	23	0	
				1754.3	20393	22.13	23	0	
				1710.7	19957	20.86	22	0-1	
		61	RB	1732.5	20175	20.97	22	0-1	
				1754.3	20393	20.99	22	0-1	

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FDD Band 5										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				829	20450	23.27	24	0		
			0	836.5	20525	23.33	24	0		
				844	20600	23.34	24	0		
				829	20450	23.55	24	0		
		1 RB	25	836.5	20525	23.07	24	0		
				844	20600	23.48	24	0		
				829	20450	22.98	24	0		
			49	836.5	20525	23.05	24	0		
				844	20600	23.17	24	0		
				829	20450	22.37	23	0-1		
	QPSK		0	836.5	20525	22.18	23	0-1		
				844	20600	22.24	23	0-1		
				829	20450	22.39	23	0-1		
		25 RB	12	836.5	20525	22.18	23	0-1		
				844	20600	22.42	23	0-1		
				829	20450	22.24	23	0-1		
			25	836.5	20525	22.22	23	0-1		
				844	20600	22.29	23	0-1		
				829	20450	22.38	23	0-1		
		50	RB	836.5	20525	22.17	23	0-1		
10				844	20600	22.31	23	0-1		
10			0	829	20450	22.47	23	0-1		
				836.5	20525	22.81	23	0-1		
				844	20600	22.73	23	0-1		
				829	20450	22.53	23	0-1		
		1 RB	25	836.5	20525	22.63	23	0-1		
				844	20600	22.89	23	0-1		
				829	20450	22.24	23	0-1		
			49	836.5	20525	22.14	23	0-1		
				844	20600	22.33	23	0-1		
				829	20450	21.36	22	0-2		
	16-QAM		0	836.5	20525	21.28	22	0-2		
				844	20600	21.40	22	0-2		
				829	20450	21.33	22	0-2		
		25 RB	12	836.5	20525	21.24	22	0-2		
				844	20600	21.55	22	0-2		
			a-	829	20450	21.13	22	0-2		
			25	836.5	20525	21.22	22	0-2		
				844	20600	21.48	22	0-2		
				829	20450	21.35	22	0-2		
		500R	JKB	836.5	20525	21.08	22	0-2		
				844	20600	21.16	22	0-2		

LTE FDD Band 5 - conducted power table:

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Report No. : E5/2017/90025 Page : 38 of 286

5 Image: content in the second s		FDD Band 5											
9 0 836.5 20525 23.18 24 0 1 RB 12 826.5 20425 23.10 24 0 826.5 20425 23.30 24 0 0 0 836.5 20625 23.30 24 0 0 0 836.5 20625 23.32 24 0 <	BW(Mhz)	Modulation	RB Size	RB Offset		Channel		Power + Max. Tolerance	Allowed per				
Participant Barry Ba					826.5	20425	23.05	24	0				
9 1 RB 12 826.5 20426 23.10 24 0 386.5 20525 23.30 24 0 846.5 20625 23.31 24 0 846.5 20625 23.32 24 0 836.5 20625 23.45 24 0 846.5 20625 23.45 24 0 846.5 20625 22.34 23 0.1 846.5 20625 22.34 23 0.1 846.5 20625 22.34 23 0.1 846.5 20625 22.34 23 0.1 826.5 20425 22.38 23 0.1 826.5 20425 22.34 23 0.1 826.5 20425 22.34 23 0.1 826.5 20425 22.34 23 0.1 826.5 20425 22.36 23 0.1 846.5 20625 22				0	836.5	20525	23.18	24	0				
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846.5 20625 21.23 22 0-2 13 826.5 20425 21.47 22 0-2 13 836.5 20525 21.16 22 0-2 846.5 20625 21.26 22 0-2 846.5 20625 21.26 22 0-2 846.5 20625 21.38 22 0-2 836.5 20525 21.25 22 0-2			12 00	e			1						
826.5 20425 21.47 22 0-2 13 836.5 20525 21.16 22 0-2 846.5 20625 21.26 22 0-2 846.5 20625 21.38 22 0-2 826.5 20425 21.38 22 0-2 836.5 20525 21.25 22 0-2				0									
13 836.5 20525 21.16 22 0-2 846.5 20625 21.26 22 0-2 826.5 20425 21.38 22 0-2 25RB 836.5 20525 21.25 22 0-2													
846.5 20625 21.26 22 0-2 826.5 20425 21.38 22 0-2 25RB 836.5 20525 21.25 22 0-2				13									
826.5 20425 21.38 22 0-2 25RB 836.5 20525 21.25 22 0-2				10									
25RB 836.5 20525 21.25 22 0-2													
			25	RB			1						
8466 20626 21.26 22 02 0.2			25RE		846.5	20525	21.25	22	0-2				

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Report No. : E5/2017/90025 Page : 39 of 286

FDD Band 5											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				825.5	20415	23.41	24	0			
			0	836.5	20525	23.18	24	0			
				847.5	20635	23.50	24	0			
				825.5	20415	23.35	24	0			
		1 RB	7	836.5	20525	23.27	24	0			
				847.5	20635	23.44	24	0			
				825.5	20415	23.38	24	0			
			14	836.5	20525	23.37	24	0			
				847.5	20635	23.50	24	0			
				825.5	20415	22.28	23	0-1			
	QPSK	QPSK 8 RB	0	836.5	20525	22.19	23	0-1			
				847.5	20635	22.41	23	0-1			
				825.5	20415	22.27	23	0-1			
			4	836.5	20525	22.16	23	0-1			
				847.5	20635	22.33	23	0-1			
				825.5	20415	22.16	23	0-1			
			7	836.5	20525	22.13	23	0-1			
				847.5	20635	22.36	23	0-1			
				825.5	20415	22.29	23	0-1			
		15	RB	836.5	20525	22.13	23	0-1			
3			1	847.5	20635	22.36	23	0-1			
			0	825.5	20415	22.48	23	0-1			
				836.5	20525	22.55	23	0-1			
				847.5	20635	22.77	23	0-1			
		(55	_	825.5	20415	22.53	23	0-1			
		1 RB	7	836.5	20525	22.17	23	0-1			
				847.5	20635	22.65	23	0-1			
				825.5	20415	22.51	23	0-1			
			14	836.5	20525	22.46	23	0-1			
				847.5	20635	22.45	23	0-1			
	40.0444		0	825.5	20415	21.03	22	0-2			
	16-QAM		0	836.5	20525	21.04	22	0-2			
				847.5	20635	21.49	22	0-2			
		0.00		825.5	20415	20.95	22	0-2			
		8 RB	4	836.5	20525	21.12	22	0-2			
				847.5	20635	21.26	22	0-2			
			-	825.5	20415	20.96	22	0-2			
			7	836.5	20525	21.08	22	0-2			
				847.5	20635	21.08	22	0-2			
		4 -	חח	825.5	20415	21.03	22	0-2			
		15RE	KD	836.5	20525	21.18	22	0-2			
				847.5	20635	21.21	22	0-2			

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Report No. : E5/2017/90025 Page : 40 of 286

	FDD Band 5											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				824.7	20407	23.12	24	0				
			0	836.5	20525	23.03	24	0				
				848.3	20643	23.30	24	0				
				824.7	20407	23.25	24	0				
		1 RB	2	836.5	20525	23.27	24	0				
				848.3	20643	23.29	24	0				
				824.7	20407	23.15	24	0				
			5	836.5	20525	23.22	24	0				
				848.3	20643	23.19	24	0				
				824.7	20407	22.80	23	0				
	QPSK	QPSK 3 RB	0	836.5	20525	22.88	23	0				
				848.3	20643	22.97	23	0				
				824.7	20407	22.81	23	0				
			2	836.5	20525	22.90	23	0				
				848.3	20643	22.83	23	0				
				824.7	20407	22.96	23	0				
			3	836.5	20525	22.85	23	0				
				848.3	20643	22.82	23	0				
				824.7	20407	22.27	23	0-1				
		61	RB	836.5	20525	22.17	23	0-1				
1.4			•	848.3	20643	22.14	23	0-1				
			0	824.7	20407	22.51	23	0-1				
				836.5	20525	21.89	23	0-1				
				848.3	20643	22.57	23	0-1				
				824.7	20407	22.62	23	0-1				
		1 RB	2	836.5	20525	22.46	23	0-1				
				848.3	20643	22.66	23	0-1				
				824.7	20407	22.12	23	0-1				
			5	836.5	20525	22.37	23	0-1				
				848.3	20643	22.77	23	0-1				
	10.0			824.7	20407	21.79	22	0-1				
	16-QAM		0	836.5	20525	21.98	22	0-1				
				848.3	20643	21.92	22	0-1				
			_	824.7	20407	21.82	22	0-1				
		3 RB	2	836.5	20525	21.97	22	0-1				
				848.3	20643	21.97	22	0-1				
				824.7	20407	21.87	22	0-1				
			3	836.5	20525	21.90	22	0-1				
				848.3	20643	21.92	22	0-1				
				824.7	20407	20.93	22	0-2				
	6RE	≺В	836.5	20525	20.86	22	0-2					
					848.3	20643	21.08	22	0-2			

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FDD Band 7 (Hotspot OFF)										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				2510	20850	22.41	23	0		
			0	2535	21100	22.88	23	0		
				2560	21350	22.80	23	0		
				2510	20850	22.81	23	0		
		1 RB	50	2535	21100	22.72	23	0		
				2560	21350	22.55	23	0		
				2510	20850	22.38	23	0		
			99	2535	21100	22.62	23	0		
				2560	21350	22.93	23	0		
				2510	20850	21.71	22	0-1		
	QPSK		0	2535	21100	21.80	22	0-1		
				2560	21350	21.86	22	0-1		
			2510	20850	21.64	22	0-1			
		50 RB	25	2535	21100	21.62	22	0-1		
				2560	21350	21.87	22	0-1		
				2510	20850	21.70	22	0-1		
			50	2535	21100	21.63	22	0-1		
				2560	21350	21.85	22	0-1		
				2510	20850	21.69	22	0-1		
		100	ORB	2535	21100	21.61	22	0-1		
20			r	2560	21350	21.98	22	0-1		
			0	2510	20850	21.80	22	0-1		
				2535	21100	21.67	22	0-1		
				2560	21350	21.52	22	0-1		
				2510	20850	21.96	22	0-1		
		1 RB	50	2535	21100	21.86	22	0-1		
				2560	21350	21.97	22	0-1		
				2510	20850	21.82	22	0-1		
			99	2535	21100	21.39	22	0-1		
				2560	21350	21.56	22	0-1		
				2510	20850	20.83	21	0-2		
	16-QAM		0	2535	21100	20.79	21	0-2		
				2560	21350	20.86	21	0-2		
			6-	2510	20850	20.72	21	0-2		
		50 RB	25	2535	21100	20.78	21	0-2		
				2560	21350	20.93	21	0-2		
			F 0	2510	20850	20.56	21	0-2		
			50	2535	21100	20.83	21	0-2		
				2560	21350	20.88	21	0-2		
				2510	20850	20.69	21	0-2		
		100	ORB	2535	21100	20.70	21	0-2		
				2560	21350	20.85	21	0-2		

LTE FDD Band 7 - conducted power table (Hotspot OFF):

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	FDD Band 7 (Hotspot OFF)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				2507.5	20825	22.47	23	0				
			0	2535	21100	22.44	23	0				
				2562.5	21375	22.42	23	0				
				2507.5	20825	22.33	23	0				
		1 RB	36	2535	21100	22.12	23	0				
				2562.5	21375	22.32	23	0				
				2507.5	20825	22.41	23	0				
			74	2535	21100	22.25	23	0				
				2562.5	21375	22.45	23	0				
		QPSK		2507.5	20825	21.35	22	0-1				
	QPSK		0	2535	21100	21.35	22	0-1				
				2562.5	21375	21.49	22	0-1				
		36 RB	18	2507.5	20825	21.26	22	0-1				
				2535	21100	21.31	22	0-1				
				2562.5	21375	21.50	22	0-1				
				2507.5	20825	21.37	22	0-1				
			37	2535	21100	21.31	22	0-1				
				2562.5	21375	21.50	22	0-1				
				2507.5	20825	21.33	22	0-1				
		75	RB	2535	21100	21.28	22	0-1				
15				2562.5	21375	21.46	22	0-1				
-			0	2507.5	20825	21.51	22	0-1				
			0	2535	21100	21.64	22	0-1				
				2562.5	21375	21.30	22	0-1				
				2507.5	20825	21.13	22	0-1				
		1 RB	36	2535	21100	20.90	22	0-1				
				2562.5	21375	21.84	22	0-1				
				2507.5	20825	21.63	22	0-1				
			74	2535	21100	20.94	22	0-1				
				2562.5	21375	21.38	22	0-1				
				2507.5	20825	20.41	21	0-2				
	16-QAM		0	2535	21100	20.31	21	0-2				
				2562.5	21375	20.43	21	0-2				
			40	2507.5	20825	20.32	21	0-2				
		36 RB	18	2535	21100	20.20	21	0-2				
				2562.5	21375	20.44	21	0-2				
			07	2507.5	20825	20.38	21	0-2				
			37	2535	21100	20.30	21	0-2				
	750			2562.5	21375	20.38	21	0-2				
		DD	2507.5	20825	20.25	21	0-2					
		/5	RB	2535 2562.5	21100	20.26	21	0-2				
					21375	20.51	21	0-2				

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FDD Band 7 (Hotspot OFF)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				2505	20800	22.52	23	0			
			0	2535	21100	22.33	23	0			
				2565	21400	22.35	23	0			
				2505	20800	22.61	23	0			
		1 RB	25	2535	21100	22.39	23	0			
				2565	21400	22.45	23	0			
				2505	20800	22.37	23	0			
			49	2535	21100	22.50	23	0			
				2565	21400	22.60	23	0			
				2505	20800	21.46	22	0-1			
	QPSK		0	2535	21100	21.40	22	0-1			
				2565	21400	21.60	22	0-1			
			12	2505	20800	21.36	22	0-1			
		25 RB		2535	21100	21.32	22	0-1			
				2565	21400	21.62	22	0-1			
				2505	20800	21.33	22	0-1			
			25	2535	21100	21.38	22	0-1			
				2565	21400	21.53	22	0-1			
				2505	20800	21.44	22	0-1			
		50	RB	2535	21100	21.31	22	0-1			
10			-	2565	21400	21.58	22	0-1			
10			0	2505	20800	21.71	22	0-1			
			0	2535	21100	21.80	22	0-1			
				2565	21400	21.93	22	0-1			
				2505	20800	21.89	22	0-1			
		1 RB	25	2535	21100	21.66	22	0-1			
				2565	21400	21.69	22	0-1			
				2505	20800	21.39	22	0-1			
			49	2535	21100	21.60	22	0-1			
				2565	21400	21.70	22	0-1			
				2505	20800	20.52	21	0-2			
	16-QAM		0	2535	21100	20.26	21	0-2			
				2565	21400	20.39	21	0-2			
				2505	20800	20.60	21	0-2			
		25 RB	12	2535	21100	20.28	21	0-2			
				2565	21400	20.50	21	0-2			
				2505	20800	20.51	21	0-2			
			25	2535	21100	20.18	21	0-2			
				2565	21400	20.40	21	0-2			
			2505	20800	20.30	21	0-2				
		50RB	RB	2535	21100	20.18	21	0-2			
			00112		2565	21400	20.49	21	0-2		

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	FDD Band 7 (Hotspot OFF)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)				
				2502.5	20775	22.50	23	0				
			0	2535	21100	22.38	23	0				
				2567.5	21425	22.59	23	0				
				2502.5	20775	22.74	23	0				
		1 RB	12	2535	21100	22.60	23	0				
				2567.5	21425	22.81	23	0				
				2502.5	20775	22.44	23	0				
			24	2535	21100	22.51	23	0				
				2567.5	21425	22.45	23	0				
				2502.5	20775	21.34	22	0-1				
	QPSK		0	2535	21100	21.36	22	0-1				
				2567.5	21425	21.59	22	0-1				
			6	2502.5	20775	21.46	22	0-1				
		12 RB		2535	21100	21.27	22	0-1				
				2567.5	21425	21.60	22	0-1				
				2502.5	20775	21.39	22	0-1				
			13	2535	21100	21.34	22	0-1				
				2567.5	21425	21.51	22	0-1				
				2502.5	20775	21.37	22	0-1				
		25	RB	2535	21100	21.31	22	0-1				
5				2567.5	21425	21.53	22	0-1				
				2502.5	20775	21.38	22	0-1				
			0	2535	21100	21.54	22	0-1				
				2567.5	21425	21.92	22	0-1				
		(55	10	2502.5	20775	21.10	22	0-1				
		1 RB	12	2535	21100	21.39	22	0-1				
				2567.5	21425	21.55	22	0-1				
				2502.5	20775	21.73	22	0-1				
			24	2535	21100	21.48	22	0-1				
				2567.5	21425	21.83	22	0-1				
	10.0414		0	2502.5	20775	20.40	21	0-2				
	16-QAM		0	2535	21100	20.32	21	0-2				
				2567.5	21425	20.87	21	0-2				
		10 00	6	2502.5	20775	20.32	21	0-2				
		12 RB	6	2535	21100	20.33	21	0-2				
				2567.5	21425	20.52	21	0-2				
	2500		10	2502.5	20775	20.32	21	0-2				
			13	2535	21100	20.20	21	0-2				
				2567.5	21425	20.30	21	0-2				
		PB	2502.5	20775	20.33	21	0-2					
		25RB		2535	21100	20.28	21	0-2				
				2567.5	21425	20.46	21	0-2				

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FDD Band 7 (Hotspot ON)										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				2510	20850	22.24	22.5	0		
			0	2535	21100	22.25	22.5	0		
				2560	21350	22.35	22.5	0		
				2510	20850	22.10	22.5	0		
		1 RB	50	2535	21100	22.19	22.5	0		
				2560	21350	22.32	22.5	0		
				2510	20850	22.20	22.5	0		
			99	2535	21100	22.21	22.5	0		
				2560	21350	22.02	22.5	0		
				2510	20850	21.66	22	0		
QPSK		0	2535	21100	21.77	22	0			
			2560	21350	21.79	22	0			
			2510	20850	21.54	22	0			
		50 RB	25	2535	21100	21.71	22	0		
				2560	21350	21.78	22	0		
				2510	20850	21.57	22	0		
			50	2535	21100	21.65	22	0		
				2560	21350	21.64	22	0		
				2510	20850	21.70	22	0		
		100)RB	2535	21100	21.82	22	0		
20				2560	21350	21.81	22	0		
			0	2510	20850	21.83	22	0		
				2535	21100	22.00	22	0		
				2560	21350	21.75	22	0		
				2510	20850	21.81	22	0		
		1 RB	50	2535	21100	21.79	22	0		
				2560	21350	22.00	22	0		
				2510	20850	21.31	22	0		
			99	2535	21100	21.72	22	0		
				2560	21350	21.75	22	0		
				2510	20850	20.61	21	0-1		
	16-QAM		0	2535	21100	20.77	21	0-1		
				2560	21350	20.74	21	0-1		
			05	2510	20850	20.59	21	0-1		
		50 RB	25	2535	21100	20.68	21	0-1		
				2560	21350	20.75	21	0-1		
			50	2510	20850	20.60	21	0-1		
			50	2535	21100	20.67	21	0-1		
				2560	21350	20.60	21	0-1		
	100R	4.00	חחו	2510	20850	20.66	21	0-1		
		JND	2535	21100	20.81	21	0-1			
				2560	21350	20.74	21	0-1		

LTE FDD Band 7 - conducted power table (Hotspot ON):

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FDD Band 7 (Hotspot ON)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				2507.5	20825	22.12	22.5	0			
			0	2535	21100	22.34	22.5	0			
				2562.5	21375	22.20	22.5	0			
				2507.5	20825	22.01	22.5	0			
		1 RB	36	2535	21100	22.08	22.5	0			
				2562.5	21375	21.92	22.5	0			
				2507.5	20825	22.12	22.5	0			
			74	2535	21100	22.22	22.5	0			
				2562.5	21375	22.20	22.5	0			
		QPSK 36 RB	0	2507.5	20825	21.53	22	0			
	QPSK			2535	21100	21.81	22	0			
				2562.5	21375	21.84	22	0			
			18	2507.5	20825	21.54	22	0			
				2535	21100	21.66	22	0			
				2562.5	21375	21.74	22	0			
				2507.5	20825	21.52	22	0			
			37	2535	21100	21.77	22	0			
				2562.5	21375	21.70	22	0			
				2507.5	20825	21.58	22	0			
		75	RB	2535	21100	21.84	22	0			
15				2562.5	21375	21.75	22	0			
10			0	2507.5	20825	21.15	22	0			
				2535	21100	21.19	22	0			
				2562.5	21375	21.21	22	0			
				2507.5	20825	21.37	22	0			
		1 RB	36	2535	21100	21.68	22	0			
				2562.5	21375	21.58	22	0			
				2507.5	20825	21.75	22	0			
			74	2535	21100	21.05	22	0			
				2562.5	21375	21.37	22	0			
				2507.5	20825	20.64	21	0-1			
	16-QAM		0	2535	21100	20.72	21	0-1			
				2562.5	21375	20.79	21	0-1			
				2507.5	20825	20.74	21	0-1			
		36 RB	18	2535	21100	20.60	21	0-1			
				2562.5	21375	20.77	21	0-1			
			o .	2507.5	20825	20.66	21	0-1			
			37	2535	21100	20.58	21	0-1			
				2562.5	21375	20.60	21	0-1			
			DD	2507.5	20825	20.76	21	0-1			
		75RB		2535 2562.5	21100	20.75	21	0-1			
					21375	20.72	21	0-1			

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FDD Band 7 (Hotspot ON)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				2505	20800	22.08	22.5	0			
			0	2535	21100	22.26	22.5	0			
				2565	21400	22.17	22.5	0			
				2505	20800	22.19	22.5	0			
		1 RB	25	2535	21100	22.40	22.5	0			
				2565	21400	22.21	22.5	0			
				2505	20800	21.82	22.5	0			
			49	2535	21100	22.17	22.5	0			
				2565	21400	22.20	22.5	0			
		QPSK 25 RB		2505	20800	21.56	22	0			
	QPSK		0	2535	21100	21.77	22	0			
				2565	21400	21.68	22	0			
			12	2505	20800	21.59	22	0			
				2535	21100	21.74	22	0			
				2565	21400	21.63	22	0			
				2505	20800	21.48	22	0			
			25	2535	21100	21.70	22	0			
				2565	21400	21.68	22	0			
				2505	20800	21.62	22	0			
		50	RB	2535	21100	21.75	22	0			
10			_	2565	21400	21.72	22	0			
10			0	2505	20800	21.82	22	0			
				2535	21100	21.81	22	0			
				2565	21400	21.28	22	0			
				2505	20800	21.60	22	0			
		1 RB	25	2535	21100	21.37	22	0			
				2565	21400	21.47	22	0			
				2505	20800	21.86	22	0			
			49	2535	21100	21.14	22	0			
				2565	21400	21.79	22	0			
				2505	20800	20.45	21	0-1			
	16-QAM		0	2535	21100	20.76	21	0-1			
				2565	21400	20.69	21	0-1			
				2505	20800	20.64	21	0-1			
		25 RB	12	2535	21100	20.67	21	0-1			
				2565	21400	20.50	21	0-1			
				2505	20800	20.55	21	0-1			
			25	2535	21100	20.89	21	0-1			
				2565	21400	20.42	21	0-1			
				2505	20800	20.55	21	0-1			
		50RB		2535	21100	20.56	21	0-1			
				2565	21400	20.63	21	0-1			

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FDD Band 7 (Hotspot ON)											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				2502.5	20775	21.95	22.5	0			
			0	2535	21100	22.30	22.5	0			
				2567.5	21425	22.23	22.5	0			
				2502.5	20775	22.25	22.5	0			
		1 RB	12	2535	21100	22.18	22.5	0			
				2567.5	21425	22.36	22.5	0			
				2502.5	20775	22.13	22.5	0			
			24	2535	21100	22.09	22.5	0			
				2567.5	21425	22.26	22.5	0			
				2502.5	20775	21.51	22	0			
	QPSK	QPSK	0	2535	21100	21.79	22	0			
				2567.5	21425	21.76	22	0			
		12 RB		2502.5	20775	21.47	22	0			
			6	2535	21100	21.63	22	0			
				2567.5	21425	21.66	22	0			
				2502.5	20775	21.45	22	0			
			13	2535	21100	21.81	22	0			
				2567.5	21425	21.67	22	0			
				2502.5	20775	21.43	22	0			
		25	RB	2535	21100	21.68	22	0			
5				2567.5	21425	21.69	22	0			
Ũ			0	2502.5	20775	21.57	22	0			
				2535	21100	21.94	22	0			
				2567.5	21425	21.24	22	0			
				2502.5	20775	21.46	22	0			
		1 RB	12	2535	21100	21.44	22	0			
				2567.5	21425	21.68	22	0			
				2502.5	20775	21.78	22	0			
			24	2535	21100	21.62	22	0			
				2567.5	21425	21.66	22	0			
				2502.5	20775	20.51	21	0-1			
	16-QAM		0	2535	21100	20.64	21	0-1			
				2567.5	21425	20.67	21	0-1			
				2502.5	20775	20.47	21	0-1			
		12 RB	6	2535	21100	20.66	21	0-1			
				2567.5	21425	20.52	21	0-1			
				2502.5	20775	20.38	21	0-1			
			13	2535	21100	20.66	21	0-1			
				2567.5	21425	20.49	21	0-1			
			2502.5	20775	20.47	21	0-1				
		25RB		2535	21100	20.99	21	0-1			
				2567.5	21425	20.55	21	0-1			

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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				704	23060	23.37	24	0
			0	707.5	23095	23.25	24	0
				711	23130	23.73	24	0
				704	23060	23.58	24	0
		1 RB	25	707.5	23095	23.39	24	0
				711	23130	23.74	24	0
				704	23060	23.51	24	0
			49	707.5	23095	23.36	24	0
				711	23130	23.99	24	0
				704	23060	22.54	23	0-1
	QPSK		0	707.5	23095	22.48	23	0-1
				711	23130	22.73	23	0-1
		25 RB		704	23060	22.50	23	0-1
			12	707.5	23095	22.52	23	0-1
				711	23130	22.77	23	0-1
				704	23060	22.67	23	0-1
			25	707.5	23095	22.51	23	0-1
				711	23130	22.83	23	0-1
				704	23060	22.53	23	0-1
		50	RB	707.5	23095	22.52	23	0-1
10				711	23130	22.71	23	0-1
		1 RB	0	704	23060	22.08	23	0-1
				707.5	23095	22.85	23	0-1
				711	23130	22.40	23	0-1
			25	704	23060	22.42	23	0-1
				707.5	23095	22.78	23	0-1
				711	23130	22.69	23	0-1
				704	23060	22.25	23	0-1
			49	707.5	23095	22.57	23	0-1
				711	23130	22.97	23	0-1
	40.0414		<u> </u>	704	23060	21.48	22	0-2
	16-QAM		0	707.5	23095	21.55	22	0-2
				711	23130	21.86	22	0-2
			10	704	23060	21.50	22	0-2
		25 RB	12	707.5	23095	21.47	22	0-2
				711	23130	21.98	22	0-2
			25	704	23060	21.43	22	0-2
			20	707.5	23095	21.57	22	0-2
				711	23130	21.99	22	0-2
		FO	RB	704	23060	21.50	22	0-2
		50	טא	707.5	23095	21.57	22	0-2
				711	23130	21.87	22	0-2

LTE FDD Band 12 - conducted power table:

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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				701.5	23035	23.15	24	0
			0	707.5	23095	23.52	24	0
				713.5	23155	23.63	24	0
				701.5	23035	23.72	24	0
		1 RB	12	707.5	23095	23.71	24	0
				713.5	23155	23.45	24	0
				701.5	23035	23.67	24	0
			24	707.5	23095	23.66	24	0
				713.5	23155	23.75	24	0
				701.5	23035	22.35	23	0-1
	QPSK		0	707.5	23095	22.64	23	0-1
				713.5	23155	22.61	23	0-1
		12 RB		701.5	23035	22.56	23	0-1
			6	707.5	23095	22.51	23	0-1
				713.5	23155	22.69	23	0-1
				701.5	23035	22.64	23	0-1
			13	707.5	23095	22.52	23	0-1
				713.5	23155	22.79	23	0-1
				701.5	23035	22.52	23	0-1
		25	RB	707.5	23095	22.54	23	0-1
5			•	713.5	23155	22.76	23	0-1
		1 RB	0	701.5	23035	22.61	23	0-1
				707.5	23095	22.92	23	0-1
				713.5	23155	22.86	23	0-1
				701.5	23035	22.28	23	0-1
			12	707.5	23095	22.78	23	0-1
				713.5	23155	22.70	23	0-1
				701.5	23035	22.93	23	0-1
			24	707.5	23095	22.71	23	0-1
				713.5	23155	22.93	23	0-1
	16 0 4 14		0	701.5	23035	21.15	22	0-2
	16-QAM		0	707.5	23095	21.67	22	0-2
				713.5	23155	21.92	22	0-2
		10 00	e	701.5	23035	21.17	22	0-2
		12 RB	6	707.5	23095	21.54	22	0-2
				713.5	23155	21.92	22	0-2
			10	701.5	23035	21.44	22	0-2
			13	707.5	23095	21.50	22	0-2
				713.5	23155	21.93	22	0-2
		05	DD	701.5	23035	21.40	22	0-2
		20	RB	707.5	23095	21.52	22	0-2
				713.5	23155	21.76	22	0-2

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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				700.5	23025	23.44	24	0
			0	707.5	23095	23.65	24	0
				714.5	23165	23.92	24	0
				700.5	23025	23.38	24	0
		1 RB	7	707.5	23095	23.59	24	0
				714.5	23165	23.93	24	0
				700.5	23025	23.42	24	0
			14	707.5	23095	23.47	24	0
				714.5	23165	23.95	24	0
				700.5	23025	22.37	23	0-1
	QPSK		0	707.5	23095	22.60	23	0-1
				714.5	23165	22.71	23	0-1
		8 RB		700.5	23025	22.40	23	0-1
			4	707.5	23095	22.52	23	0-1
				714.5	23165	22.85	23	0-1
				700.5	23025	22.40	23	0-1
			7	707.5	23095	22.60	23	0-1
				714.5	23165	22.83	23	0-1
				700.5	23025	22.30	23	0-1
		15	RB	707.5	23095	22.59	23	0-1
3			-	714.5	23165	22.68	23	0-1
U		1 RB	0	700.5	23025	22.40	23	0-1
				707.5	23095	22.74	23	0-1
				714.5	23165	22.92	23	0-1
			7	700.5	23025	22.18	23	0-1
				707.5	23095	22.65	23	0-1
				714.5	23165	22.93	23	0-1
				700.5	23025	22.71	23	0-1
			14	707.5	23095	22.60	23	0-1
				714.5	23165	22.91	23	0-1
				700.5	23025	21.30	22	0-2
	16-QAM		0	707.5	23095	21.74	22	0-2
				714.5	23165	21.64	22	0-2
				700.5	23025	21.11	22	0-2
		8 RB	4	707.5	23095	21.56	22	0-2
				714.5	23165	21.67	22	0-2
				700.5	23025	21.28	22	0-2
			7	707.5	23095	21.44	22	0-2
				714.5	23165	21.81	22	0-2
				700.5	23025	21.60	22	0-2
1		15	RB	707.5	23095	21.64	22	0-2
				714.5	23165	21.66	22	0-2

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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				699.7	23017	23.50	24	0
			0	707.5	23095	23.49	24	0
				715.3	23173	23.88	24	0
				699.7	23017	23.56	24	0
		1 RB	2	707.5	23095	23.48	24	0
				715.3	23173	23.77	24	0
				699.7	23017	23.51	24	0
			5	707.5	23095	23.36	24	0
				715.3	23173	23.83	24	0
				699.7	23017	23.36	24	0
	QPSK		0	707.5	23095	23.41	24	0
				715.3	23173	23.73	24	0
				699.7	23017	23.47	24	0
		3 RB	2	707.5	23095	23.35	24	0
				715.3	23173	23.87	24	0
				699.7	23017	23.46	24	0
			3	707.5	23095	23.41	24	0
				715.3	23173	23.96	24	0
				699.7	23017	22.43	23	0-1
		6F	RB	707.5	23095	22.54	23	0-1
1.4				715.3	23173	22.76	23	0-1
1.4		1 RB	0	699.7	23017	22.08	23	0-1
				707.5	23095	22.78	23	0-1
				715.3	23173	22.91	23	0-1
				699.7	23017	22.65	23	0-1
			2	707.5	23095	22.60	23	0-1
				715.3	23173	22.91	23	0-1
				699.7	23017	22.39	23	0-1
			5	707.5	23095	22.84	23	0-1
				715.3	23173	22.97	23	0-1
				699.7	23017	22.19	23	0-1
	16-QAM		0	707.5	23095	22.59	23	0-1
				715.3	23173	22.84	23	0-1
				699.7	23017	22.20	23	0-1
		3 RB	2	707.5	23095	22.45	23	0-1
				715.3	23173	22.98	23	0-1
				699.7	23017	22.23	23	0-1
			3	707.5	23095	22.54	23	0-1
				715.3 699.7	23173	22.91	23	0-1
			•		23017	21.07	22	0-2
		61	RB	707.5	23095	21.40	22	0-2
				715.3	23173	21.49	22	0-2

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LTE FDD Band 17 - conducted power table	e:
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				FDD Band 17				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				709	23780	23.64	24	0
			0	710	23790	23.68	24	0
				711	23800	23.75	24	0
				709	23780	23.82	24	0
		1 RB	25	710	23790	23.74	24	0
				711	23800	23.93	24	0
				709	23780	23.98	24	0
			49	710	23790	23.94	24	0
				711	23800	23.95	24	0
				709	23780	22.83	23	0-1
	QPSK		0	710	23790	22.74	23	0-1
				711	23800	22.86	23	0-1
				709	23780	22.79	23	0-1
		25 RB	12	710	23790	22.70	23	0-1
				711	23800	22.80	23	0-1
				709	23780	22.84	23	0-1
			25	710	23790	22.96	23	0-1
				711	23800	22.98	23	0-1
				709	23780	22.73	23	0-1
		50	RB	710	23790	22.85	23	0-1
10				711	23800	22.86	23	0-1
		1 RB	0	709	23780	22.83	23	0-1
				710	23790	22.42	23	0-1
				711	23800	22.94	23	0-1
			25	709	23780	22.95	23	0-1
				710	23790	22.75	23	0-1
				711	23800	22.92	23	0-1
				709	23780	22.92	23	0-1
			49	710	23790	22.93	23	0-1
				711	23800	22.95	23	0-1
	10.0			709	23780	21.52	22	0-2
	16-QAM		0	710	23790	21.92	22	0-2
				711	23800	21.68	22	0-2
				709	23780	21.66	22	0-2
		25 RB	12	710	23790	21.93	22	0-2
				711	23800	21.74	22	0-2
			05	709	23780	21.87	22	0-2
			25	710	23790	21.97	22	0-2
				711 709	23800	21.88	22	0-2
					23780	21.80	22	0-2
		50RB		710	23790	21.70	22	0-2
				711	23800	21.74	22	0-2

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				FDD Band 17				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				706.5	23755	23.67	24	0
			0	710	23790	23.65	24	0
				713.5	23825	23.96	24	0
				706.5	23755	23.60	24	0
		1 RB	12	710	23790	23.70	24	0
				713.5	23825	23.92	24	0
				706.5	23755	23.79	24	0
			24	710	23790	23.81	24	0
				713.5	23825	23.95	24	0
				706.5	23755	22.71	23	0-1
	QPSK		0	710	23790	22.80	23	0-1
				713.5	23825	22.86	23	0-1
		12 RB		706.5	23755	22.74	23	0-1
			6	710	23790	22.70	23	0-1
				713.5	23825	22.91	23	0-1
				706.5	23755	22.78	23	0-1
			13	710	23790	22.79	23	0-1
				713.5	23825	22.92	23	0-1
				706.5	23755	22.81	23	0-1
		25	RB	710	23790	22.80	23	0-1
5			1	713.5	23825	22.88	23	0-1
_		1 RB	0	706.5	23755	22.41	23	0-1
				710	23790	22.94	23	0-1
				713.5	23825	22.91	23	0-1
				706.5	23755	22.90	23	0-1
			12	710	23790	22.90	23	0-1
				713.5	23825	22.94	23	0-1
				706.5	23755	22.85	23	0-1
			24	710	23790	22.92	23	0-1
				713.5	23825	22.63	23	0-1
	40.0444		0	706.5	23755	21.70	22	0-2
	16-QAM		0	710	23790	21.59	22	0-2
				713.5	23825	21.91	22	0-2
		10 00	e	706.5	23755	21.54	22	0-2
		12 RB	6	710	23790	21.64	22	0-2
				713.5	23825	21.85	22	0-2
			10	706.5	23755	21.47	22	0-2
			13	710	23790	21.72	22	0-2
				713.5	23825	21.87	22	0-2
		9E	PB	706.5	23755	21.65	22	0-2
		20	RB	710	23790	21.85	22	0-2
				713.5	23825	21.84	22	0-2

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				TDD Band 38				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2580	37850	23.46	24	0
			0	2595	38000	23.85	24	0
				2610	38150	23.70	24	0
				2580	37850	23.53	24	0
		1 RB	50	2595	38000	23.50	24	0
				2610	38150	23.37	24	0
				2580	37850	23.47	24	0
			99	2595	38000	23.39	24	0
				2610	38150	23.26	24	0
				2580	37850	22.73	23	0-1
	QPSK		0	2595	38000	22.77	23	0-1
		50 RB		2610	38150	22.80	23	0-1
				2580	37850	22.76	23	0-1
			25	2595	38000	22.90	23	0-1
				2610	38150	22.71	23	0-1
				2580	37850	22.74	23	0-1
			50	2595	38000	22.75	23	0-1
				2610	38150	22.51	23	0-1
				2580	37850	22.83	23	0-1
		100	ORB	2595	38000	22.74	23	0-1
20			-	2610	38150	22.66	23	0-1
-		1 RB	_	2580	37850	22.85	23	0-1
			0	2595	38000	22.96	23	0-1
				2610	38150	22.92	23	0-1
			50	2580	37850	22.91	23	0-1
				2595	38000	22.94	23	0-1
				2610	38150	22.96	23	0-1
				2580	37850	22.70	23	0-1
			99	2595	38000	22.76	23	0-1
				2610	38150	22.34	23	0-1
	40.0414			2580	37850	21.76	22	0-2
	16-QAM		0	2595	38000	21.66	22	0-2
				2610	38150	21.76	22	0-2
			05	2580	37850	21.87	22	0-2
		50 RB	25	2595	38000	21.83	22	0-2
				2610	38150	21.68	22	0-2
			50	2580	37850	21.77	22	0-2
			50	2595	38000	21.75	22	0-2
				2610	38150	21.41	22	0-2
			חחי	2580	37850	21.73	22	0-2
		100	ORB	2595	38000	21.76	22	0-2
				2610	38150	21.61	22	0-2

LTE TDD Band 38 - conducted power table:

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				TDD Band 38				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2577.5	37825	23.46	24	0
			0	2595	38000	23.84	24	0
				2612.5	38175	23.71	24	0
				2577.5	37825	23.51	24	0
		1 RB	36	2595	38000	23.68	24	0
				2612.5	38175	23.55	24	0
				2577.5	37825	23.65	24	0
			74	2595	38000	23.84	24	0
				2612.5	38175	23.41	24	0
				2577.5	37825	22.65	23	0-1
	QPSK		0	2595	38000	22.97	23	0-1
		36 RB		2612.5	38175	22.69	23	0-1
				2577.5	37825	22.66	23	0-1
			18	2595	38000	22.86	23	0-1
				2612.5	38175	22.59	23	0-1
				2577.5	37825	22.65	23	0-1
			37	2595	38000	22.90	23	0-1
				2612.5	38175	22.49	23	0-1
				2577.5	37825	22.73	23	0-1
		75	RB	2595	38000	22.75	23	0-1
15				2612.5	38175	22.67	23	0-1
10		1 RB	0	2577.5	37825	22.60	23	0-1
				2595	38000	22.93	23	0-1
				2612.5	38175	22.94	23	0-1
			36	2577.5	37825	22.71	23	0-1
				2595	38000	22.74	23	0-1
				2612.5	38175	22.60	23	0-1
				2577.5	37825	22.82	23	0-1
			74	2595	38000	22.84	23	0-1
				2612.5	38175	22.34	23	0-1
				2577.5	37825	21.73	22	0-2
	16-QAM		0	2595	38000	21.81	22	0-2
				2612.5	38175	21.73	22	0-2
				2577.5	37825	21.72	22	0-2
		36 RB	18	2595	38000	21.81	22	0-2
				2612.5	38175	21.72	22	0-2
				2577.5	37825	21.71	22	0-2
			37	2595	38000	21.75	22	0-2
				2612.5	38175	21.54	22	0-2
				2577.5	37825	21.54	22	0-2
		75	RB	2595	38000	21.61	22	0-2
				2612.5	38175	21.53	22	0-2

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				TDD Band 38				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2575	37800	23.39	24	0
			0	2595	38000	23.71	24	0
				2615	38200	23.45	24	0
				2575	37800	23.36	24	0
		1 RB	25	2595	38000	23.51	24	0
				2615	38200	23.31	24	0
				2575	37800	23.43	24	0
			49	2595	38000	23.48	24	0
				2615	38200	23.37	24	0
				2575	37800	22.54	23	0-1
	QPSK		0	2595	38000	22.78	23	0-1
		25 RB		2615	38200	22.68	23	0-1
				2575	37800	22.78	23	0-1
			12	2595	38000	22.81	23	0-1
				2615	38200	22.49	23	0-1
				2575	37800	22.63	23	0-1
			25	2595	38000	22.79	23	0-1
				2615	38200	22.37	23	0-1
				2575	37800	22.51	23	0-1
		50	RB	2595	38000	22.89	23	0-1
10				2615	38200	22.46	23	0-1
10		1 RB		2575	37800	22.81	23	0-1
			0	2595	38000	22.63	23	0-1
				2615	38200	22.60	23	0-1
			25	2575	37800	22.89	23	0-1
				2595	38000	22.98	23	0-1
				2615	38200	22.65	23	0-1
				2575	37800	22.45	23	0-1
			49	2595	38000	22.81	23	0-1
				2615	38200	22.41	23	0-1
				2575	37800	21.53	22	0-2
	16-QAM		0	2595	38000	21.79	22	0-2
				2615	38200	21.86	22	0-2
				2575	37800	21.66	22	0-2
		25 RB	12	2595	38000	21.86	22	0-2
				2615	38200	21.68	22	0-2
				2575	37800	21.57	22	0-2
			25	2595	38000	21.61	22	0-2
				2615 2575	38200	21.47	22	0-2
					37800	21.64	22	0-2
		50	RB	2595	38000	21.79	22	0-2
				2615	38200	21.68	22	0-2

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		Mair	n Antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max.	Average power (dBm)
		1	2412		17.50	17.34
	802.11b	6	2437	1Mbps	17.50	17.26
		11	2462		17.50	17.22
		1	2412		13.00	12.92
2450 MHz	802.11g	6	2437	6Mbps	13.00	12.96
		11	2462		13.00	12.70
		1	2412		11.00	10.92
	802.11n-HT20	6	2437	MCS0	11.00	10.99
		11	2462		11.00	10.89

Bluetooth conducted power table:

Mada	Channel	Frequency	Average	Max. Rated Avg.		
Mode	Channel	(MHz) 1Mbps 2Mbps		3Mbps	Power + Max. Tolerance	
	CH 00	2402	8.02	6.45	6.44	
BR/EDR	CH 39	2441	9.91	8.52	8.45	12
	CH 78	2480	7.38	5.94	5.96	

Mode	Channel	Channel Frequency Average Output Power (dBm)		Max. Rated Avg.
	Channel	(MHz)	GFSK	Power + Max. Tolerance
	CH 00	2402	-1.48	
LE	CH 19 2440		0.14	2
	CH 39	CH 39 2480	-2.17	

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1.4 Test Environment

Ambient Temperature: 22±2° C Tissue Simulating Liquid: 22±2° C

1.5 Operation Description

- The EUT is controlled by using a Radio Communication Tester (Anritsu 1. MT8820C), and the communication between the EUT and the tester is established by air link.
- 2. Measurements are performed respectively on the lowest, middle and highest channels of the operating band(s). The EUT is set to maximum power level during all tests, and at the beginning of each test the battery is fully charged.
- During the SAR testing, the DASY 5 system checks power drift by comparing 3. the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.
- SAR test reduction for GPRS and EDGE modes is determined by the 4. source-based time-averaged output power. The data mode with highest specified time-averaged output power should be tested for SAR compliance. The GMSK EDGE configurations are grouped with GPRS and considered with respect to time-averaged maximum output power to determine compliance. The 3G SAR test reduction procedure is applied to 8-PSK EDGE with GMSK GPRS/EDGE as the primary mode. Since the maximum output power in a secondary mode (8-PSK EDGE) is $\leq \frac{1}{4}$ dB higher than the primary mode (GMSK GPRS/EDGE), SAR measurement is not required for the secondary mode (8-PSK EDGE).
- The 3G SAR test reduction procedure is applied to HSDPA with 12.2 kbps 5. RMC as the primary mode. Since the maximum output power in a secondary mode (HSDPA) is $\leq \frac{1}{4}$ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSDPA).
- The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA 6. with RMC) with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSPA) is $\leq \frac{1}{4}$ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSPA).

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7. SAR test exclusion for DC-HSDPA

The 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable. Since the maximum output power in a secondary mode (DC-HSDPA) is $\leq \frac{1}{4}$ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (DC-HSDPA).

Parameter	Unit	Value	1
Nominal Avg. Inf. Bit Rate	kbps	60	
Inter-TTI Distance	TTI's	1	
Number of HARQ Processes	Proces ses	6	
Information Bit Payload ($N_{I\!N\!F}$)	Bits	120	
Number Code Blocks	Blocks	1	
Binary Channel Bits Per TTI	Bits	960	
Total Available SML's in UE	SML's	19200	
Number of SML's per HARQ Proc.	SML's	3200	
Coding Rate		0.15	
Number of Physical Channel Codes	Codes	1	
Modulation		QPSK	
retransmission is not allowe constellation version 0 shall		icy and	
Inf. Bit Payload 120]		
CRC Addition 120	24 CRC		
Code Block Segmentation 144			
Turbo-Encoding (R=1/3)	432	2	12 Tail
1st Rate Matching	43	32	
RV Selection	960		
Physical Channel Segmentation 960			

Table C.8.1.12: Fixed Reference Channel H-Set 12

Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121. A summary of subtest settings are illustrated below:

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Sub-set	βα	βσ	β _d (SF)	β./βα	β _{ns} (note 1, note 2)	CM(dB) (note 3)	MPR(dB)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (note 4)	15/15 (note 4)	64	12/15 (note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5
Note2: CM Note3: Fo	f =1 for β_0/β_0 =1 r subtest 2 the		1/15. 1/15 for the	TFC during th	5*βe e measurement per (TFC1,TF1) to βe=1	1. C.	

8. SAR test exclusion for HSPA+

The 3G SAR test reduction procedure is applied to (uplink) HSPA+ with 12.2 kbps RMC as the primary mode. Power is measured for HSPA+ that supports uplink 16 QAM according to configurations in Table C.11.1.4 of 3GPP TS 34.121-1 to determine SAR test reduction. Since the maximum output power in a secondary mode (HSPA+) is $\leq \frac{1}{4}$ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSPA+).

Table C.11.1.4: β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM

Sub- test	β _c (Note3)	βd	β _{нs} (Note1)	β_{ec}	β _{ed} (2xSF2) (Note 4)	β _{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β _{ed} 1: 30/15 β _{ed} 2: 30/15	β _{ed} 3: 24/15 β _{ed} 4: 24/15	3.5	2.5	14	105	105
Note 1	Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.										
Note 2	Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).										
Note 3	Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.										
Note 4	Note 4: β _{ed} can not be set directly; it is set by Absolute Grant Value.										
Note 5	Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-										
	DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH										
	configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.							on algoriti			

9. LTE modes test according to KDB 941225D05v02r05.

a. Per Section 5.2.1, the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation.

• Using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.

• When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required for 1 RB allocation; otherwise, SAR is required for the remaining required test channels and only for the RB offset configuration with the highest output power for that channel.

• When the reported SAR of a required test channel is > 1.45 W/kg, SAR is required for all three RB offset configurations for that required test channel.

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b. Per Section 5.2.2, the largest channel bandwidth and measure SAR for QPSK with 50% RB allocation

• The procedures required for 1 RB allocation in 5.2.1 are applied to measure the SAR for QPSK with 50% RB allocation.

c. Per Section 5.2.3, the largest channel bandwidth and measure SAR for QPSK with 100% RB allocation

• For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are \leq 0.8 W/kg.

• Otherwise, SAR is measured for the highest output power channel and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.

d. Per Section 5.2.4, Higher order modulations

• For each modulation besides QPSK; e.g., 16-QAM, 64-QAM, apply the QPSK procedures in sections 5.2.1, 5.2.2 and 5.2.3 to determine the QAM configurations that may need SAR measurement. For each configuration identified as required for testing, SAR is required only when the highest maximum output power for the configuration in the higher order modulation is > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.

e. Per Section 5.3, other channel bandwidth standalone SAR test requirements

• For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 5.2 to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg. The equivalent channel configuration for the smaller channel configuration for the smaller channel configuration for the largest channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.

• TDD LTE was tested at highest duty factor using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.

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WLAN802.11b DSSS SAR Test Requirements:

- 10. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 11. When the reported SAR is > 0.8 W/kg, SAR is required for that exposure configuration using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel; i.e., all channels require testing.

802.11g/n OFDM SAR Test Exclusion Requirements:

12. SAR is not required for 802.11g/n since the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

Other

- 13. BT and WLAN 2.4GHz use the same antenna path and Bluetooth can't transmit simultaneously with WLAN 2.4GHz.
- 14. According to KDB447498D01v06, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is ≤ 0.8 W/kg, when the transmission band is \leq 100MHz.
- 15. According to KDB865664D01v01r04, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is \geq 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is \geq 1.45 W/kg (~ 10% from the 1-g SAR limit)
- 16. According to KDB447498D01v06 The 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by: [(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] $\cdot \left[\sqrt{f(GHz)}\right] \le 3.0$ for 1-g SAR, SAR evaluation is not required.

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			front/back sides			
Mode	Maximum power (dBm)	Maximum power(mW)	test separation distance (mm)	Exclusion threshold	Require SAR testing?	
BT	12	15.849	15	1.664	NO	

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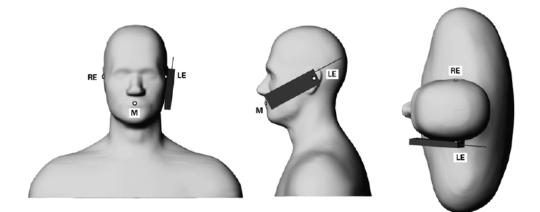
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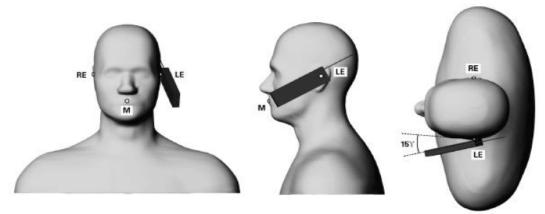
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1.6 Positioning Procedure

Head SAR measurement statement



Phone position 1, "cheek" or "touch" position. The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.



Phone position 2, "tilted position." The reference points for the right ear (RE), left ear (LE) and mouth (M), which define the reference plane for phone positioning.

Cheek/Touch Position:

The handset was brought toward the mouth of the head phantom by pivoting against the ear reference point until any point of the mouthpiece or keypad touched the phantom.

Ear/Tilt Position:

With the phone aligned in the Cheek/Touch position, the handset was tilted away from the mouth with respect to the test device reference point by 15 degrees.

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Body SAR measurement statement

1. Body-worn exposure: 15mm

Body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in KDB Publication 447498 D01 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. When the same wireless transmission configuration is used for testing body-worn accessory and hotspot mode SAR, respectively, in voice and data mode, SAR results for the most conservative test separation distance configuration may be used to support both SAR conditions. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.

2. Hotspot exposure: 10mm

A test separation distance of 10 mm is required between the phantom and all surfaces and edges with a transmitting antenna located within 25 mm from that surface or edge when the form factor of a handset is larger than 9 cm \times 5 cm, Test configurations of WWAN

- (1) Front side
- (2) Back side
- (3) Bottom side.
- (4) Right side
- (5) Left side.

Test configurations of WLAN

- (1) Front side
- (2) Back side
- (3) Top side.
- (4) Left side
- 3. Phablet SAR test consideration

Since the device is not a phablet (overall diagonal dimension > 16.0 cm), phablet SAR procedure is not required for this device.

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1.7 Power reduction information

This device uses a single fixed level of power reduction through static table look-up for SAR compliance.

Hotspot ON

A fixed level power reduction is applied for WCDMA B4 / LTE B4 / LTE B7 when hotspot mode becomes active. When the hotspot is disabled, the power value will be recovered. The standalone SAR compliance still uses the standalone SAR results tested at the maximum output power level without any power reduction.

Table1 summarize the key power reduction information.

Table1: Power Reduction	frequency bands
-------------------------	-----------------

Operation Frequency Band	Mode	Reduction of maximum output power (dB)
WCDMA Band IV	All	1.5
LTE Band 4	All	1
LTE Band 7	All	0.5

Note:

The power reduction level in the above table is only for reference. The final detailed full power and reduced tune-up specifications and conducted power measurement results will be confirmed and provided in the final SAR report.

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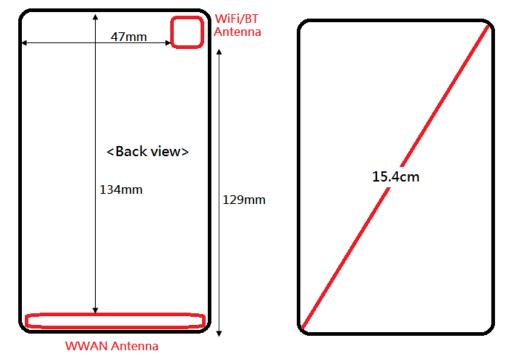
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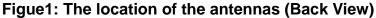
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1.7.1 Antennas placement details



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1.8 Evaluation Procedures

The entire evaluation of the spatial peak values is performed within the Post-processing engine (SEMCAD). The system always gives the maximum values for the 1 g and 10 g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- 1. The extraction of the measured data (grid and values) from the Zoom Scan.
- 2. The calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters).
- 3. The generation of a high-resolution mesh within the measured volume.
- 4. The interpolation of all measured values from the measurement grid to the high-resolution grid.
- 5. The extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface.
- 6. The calculation of the averaged SAR within masses of 1g and 10g.

The probe is calibrated at the center of the dipole sensors that is located 1 to 2.7mm away from the probe tip. During measurements, the probe stops shortly above the phantom surface, depending on the probe and the surface detecting system. Both distances are included as parameters in the probe configuration file. The software always knows exactly how far away the measured point is from the surface. As the probe cannot directly measure at the surface, the values between the deepest measured point and the surface must be extrapolated. The angle between the probe axis and the surface normal line is less than 30 degree.

In the Area Scan, the gradient of the interpolation function is evaluated to find all the extreme of the SAR distribution. The uncertainty on the locations of the extreme is less than 1/20 of the grid size. Only local maximum within –2 dB of the global maximum are searched and passed for the Cube Scan measurement. In the Cube Scan, the interpolation function is used to extrapolate the Peak SAR from the lowest measurement points to the inner phantom surface (the extrapolation distance). The uncertainty increases with the extrapolation distance. To keep the uncertainty within 1% for the 1 g and 10 g cubes, the extrapolation distance should not be larger than 5mm.

The maximum search is automatically performed after each area scan measurement. It is based on splines in two or three dimensions. The procedure can find the maximum for most SAR distributions even with relatively large grid spacing. After the area scanning measurement, the probe is automatically moved to a position at the interpolated maximum. The following scan can directly use this position for reference, e.g., for a finer resolution grid or the cube evaluations. The 1g and 10g peak evaluations are only available for the predefined cube 7x7x7 scans.

The routines are verified and optimized for the grid dimensions used in these cube measurements. The measured volume of 30x30x30mm contains about 30g of tissue. The first procedure is an extrapolation (incl. Boundary correction) to get the

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points between the lowest measured plane and the surface. The next step uses 3D interpolation to get all points within the measured volume. In the last step, a 1g cube is placed numerically into the volume and its averaged SAR is calculated. This cube is the moved around until the highest averaged SAR is found.

If the highest SAR is found at the edge of the measured volume, the system will issue a warning: higher SAR values might be found outside of the measured volume. In that case the cube measurement can be repeated, using the new interpolated maximum as the center.

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1.9 Probe Calibration Procedures

For the calibration of E-field probes in lossy liquids, an electric field with an accurately known field strength must be produced within the measured liquid. For standardization purposes it would be desirable if all measurements which are necessary to assess the correct field strength would be traceable to standardized measurement procedures. In the following two different calibration techniques are summarized:

1.9.1 Transfer Calibration with Temperature Probes

In lossy liquids the specific absorption rate (SAR) is related both to the electric field (*E*) and the temperature gradient ($\delta T / \delta t$) in the liquid.

$$SAR = C \frac{\delta T}{\delta t}$$

Whereby σ is the conductivity, ρ the density and c the heat capacity of the liquid.

Hence, the electric field in lossy liquid can be measured indirectly by measuring the temperature gradient in the liquid. Non-disturbing temperature probes (optical probes or thermistor probes with resistive lines) with high spatial resolution (<1-2 mm) and fast reaction time (<1 s) are available and can be easily calibrated with high precision [1]. The setup and the exciting source have no influence on the calibration; only the relative positioning uncertainties of the standard temperature probe and the E-field probe to be calibrated must be considered. However, several problems limit the available accuracy of probe calibrations with temperature probes:

- 1. The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the thermal equilibrium in the liquid. With a careful setup these errors can be kept small.
- 2. The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.
- 3. The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and

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heat capacity can be measured accurately with standardized procedures (~ 2% for c; much better for ρ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed $\pm 5\%$.

4. Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

Considering these problems, the possible accuracy of the calibration of E-field probes with temperature gradient measurements in a carefully designed setup is about ±10% (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is $\pm 5\%$ (RSS) when the same liquid is used for the calibration and for actual measurements and ±7-9% (RSS) when not, which is in good agreement with the estimates given in [2].

1.9.2 Calibration with Analytical Fields

In this method a technical setup is used in which the field can be calculated analytically from measurements of other physical magnitudes (e.g., input power). This corresponds to the standard field method for probe calibration in air; however, there is no standard defined for fields in lossy liquids.

When using calculated fields in lossy liquids for probe calibration, several points must be considered in the assessment of the uncertainty:

- 1. The setup must enable accurate determination of the incident power.
- 2. The accuracy of the calculated field strength will depend on the assessment of the dielectric parameters of the liquid.
- 3. Due to the small wavelength in liquids with high permittivity, even small setups might be above the resonant cutoff frequencies. The field distribution in the setup must be carefully checked for conformity with the theoretical field distribution.

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1.10 The SAR Measurement System

A block diagram of the SAR measurement system is given in Fig. a. This SAR measurement system uses a Computer-controlled 3-D stepper motor system (SPEAG DASY 5 professional system). Model EX3DV4 field probes are used to determine the internal electric fields. The SAR can be obtained from the equation SAR= σ (|Ei|2)/ ρ where σ and ρ are the conductivity and mass density of the tissue-simulant.

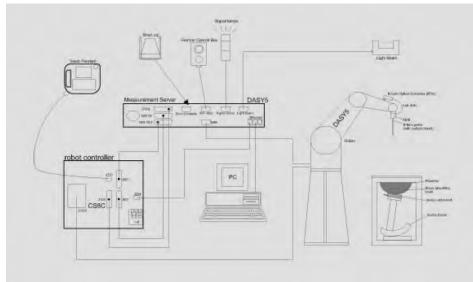
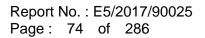


Fig. a A block diagram of the SAR measurement system

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The DASY 5 system for performing compliance tests consists of the following items:

- 1. A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
- 2. A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage in tissue simulating liquid. The probe is equipped with an optical surface detector system.
- 3. Data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- 4. The Electro-optical converter (EOC) performs the conversion between optical and electrical of the signals for the digital communication to the DAE and for the analog signal from the optical surface detection. The EOC is connected to the measurement server.
- 5. The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- 6. A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- 7. A computer operating Windows7
- 8. DASY 5 software.
- 9. Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- 10. The SAM twin phantom enabling testing left-hand and right-hand usage.
- 11. The device holder for handheld mobile phones.
- 12. Tissue simulating liquid mixed according to the given recipes.
- 13. Validation dipole kits allowing to validate the proper functioning of the system.

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1.11 System Components

EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core					
	Built-in shielding against static charges					
	PEEK enclosure material (resistant to					
	organic solvents, e.g., DGBE)					
Calibration	Basic Broad Band Calibration in air					
	Conversion Factors (CF) for HSL					
	750/835/1750/1900/2450/2600 MHz					
	Additional CF for other liquids and					
	frequencies upon request					
Frequency	10 MHz to > 6 GHz, Linearity: ± 0.6 dB					
Directivity	± 0.3 dB in HSL (rotation around probe axis)					
	± 0.5 dB in tissue material (rotation normal to probe axis)					
Dynamic	10 μW/g to > 100 mW/g					
Range	Linearity: \pm 0.2 dB (noise: typically < 1 μ W/g)					
Dimensions	Tip diameter: 2.5 mm					
Application	High precision dosimetric measurements in any exposure scenario					
	(e.g., very strong gradient fields). Only probe which enables					
	compliance testing for frequencies up to 6 GHz with precision of					
	better 30%.					

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Phantom

Model	Twin SAM	
Construction	Anthropomorphic Mannequin (S 1528 and IEC 62209. It enables the dosimetric evalua usage as well as body mounted u cover prevents evaporation of the the phantom allow the complete	e specifications of the Specific SAM) phantom defined in IEEE ation of left and right hand phone usage at the flat phantom region. A he liquid. Reference markings on e setup of all predefined phantom rids by manually teaching three
Shell Thickness	2 ± 0.2 mm	
Filling Volume	Approx. 25 liters	*
Dimensions	Height: 850 mm; Length: 1000 mm; Width: 500 mm	

DEVICE HOLDER

Construction	In combination with the Twin SAM	1- 1
	Phantom V4.0/V4.0C or Twin SAM, the	A DESCRIPTION OF
	Mounting Device (made from POM)	
	enables the rotation of the mounted	
	transmitter in spherical coordinates,	
	whereby the rotation point is the ear	
	opening. The devices can be easily and	
	accurately positioned according to IEC,	
	IEEE, CENELEC, FCC or other	
	specifications. The device holder can be	Device Holder
	locked at different phantom locations (left	
	head, right head, flat phantom).	

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1.12 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% (according to KDB865664D01v01r04) from the target SAR values. These tests were done at 750/835/1750/1900/2450/2600 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. During the tests, the liquid depth above the ear reference points was above 15 cm (\leq 3G) or 10 cm (>3G) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

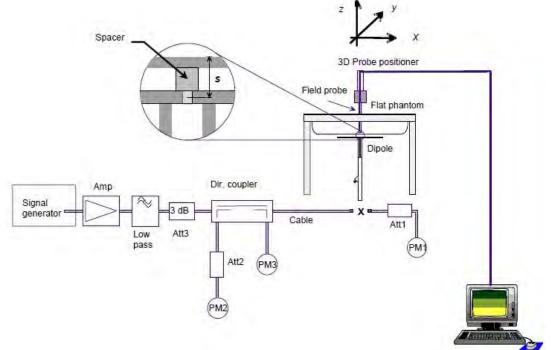


Fig. b The block diagram of system verification

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Validation Kit	S/N	Frequ (Mł	-	1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V3	1015	750	Head	8.32	2.10	8.40	0.96%	Jun. 28, 2017
D750V3	1015	750	Body	8.77	2.26	9.04	3.08%	Jul. 02, 2017
D835V2	4d063	835	Head	9.4	2.41	9.64	2.55%	Jun. 29, 2017
D035V2	40003	000	Body	9.57	2.44	9.76	1.99%	Jul. 03, 2017
D835V2	4d120	835	Head	9.5	2.42	9.68	1.89%	Aug. 24, 2017
D033V2		000	Body	9.68	2.45	9.80	1.24%	Aug. 25, 2017
D1750V2	1008	1750	Head	37.2	9.13	36.52	-1.83%	Jul. 07, 2017
D1730V2	1000	1750	Body	37.3	8.95	35.80	-4.02%	Jul. 13, 2017
D1900V2	5d173	1900	Head	40.7	9.92	39.68	-2.51%	Jul. 08, 2017
D1900V2	50175	1900	Body	40.2	9.88	39.52	-1.69%	Jul. 14, 2017
D2450V2	727	2450	Head	52.2	13.40	53.60	2.68%	Jul. 04, 2017
D2450V2	727 2450		Body	50.6	13.00	52.00	2.77%	Jul. 05, 2017
D2600V2	1005	2600	Head	55.5	13.90	55.60	0.18%	Jul. 12, 2017
0200012	1005	2000	Body	55.1	13.60	54.40	-1.27%	Jul. 05, 2017

Validation Kit	S/N	Frequ (Mł	,	1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V3	1015	750	Head	8.25	2.11	8.44	2.30%	Oct. 01, 2017
D730V3	1015	750	Body	8.76	2.27	9.08	3.65%	Oct. 03, 2017
D835V2	4d120	835	Head	9.5	2.47	9.88	4.00%	Oct. 01, 2017
D035V2	40120	+0120 035	Body	9.68	2.44	9.76	0.83%	Oct. 03, 2017
D1750V2	1008	1750	Head	36	8.91	35.64	-1.00%	Oct. 01, 2017
D1750V2	1008	008 1750	Body	36.7	9.19	36.76	0.16%	Oct. 03, 2017
D1900V2	5d173	1900	Head	40.7	9.85	39.40	-3.19%	Oct. 01, 2017
D1900V2	50175	1900	Body	40.2	9.98	39.92	-0.70%	Oct. 03, 2017
D2450V2	727	2450	Head	52.2	13.00	52.00	-0.38%	Oct. 01, 2017
DZ400VZ	J2450V2 121		Body	50.6	13.40	53.60	5.93%	Oct. 03, 2017
D2600V2	1005	2600	Head	55.5	14.40	57.60	3.78%	Oct. 01, 2017
D2000V2	1005	1005 2600		55.1	13.70	54.80	-0.54%	Oct. 03, 2017

Table 1. Results of system validation

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1.13 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this Head-simulant fluid were measured by using the Agilent Model 85070E Dielectric Probe (rates frequency band 200 MHz to 20 GHz) in conjunction with Network Analyzer.

All dielectric parameters of tissue simulates were measured within 24 hours of SAR measurements. The depth of the tissue simulant in the flat section of the phantom was at least 15 cm (\leq 3G) or 10 cm (>3G) during all tests. (Appendix Fig. 2)

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, ɛr	Measured Conductivity, σ (S/m)	% dev ɛr	% dev σ
		704	42.181	0.890	41.964	0.852	0.51%	4.25%
		707.5	42.162	0.890	41.941	0.854	0.52%	4.05%
	Jun. 28, 2017	709	42.155	0.890	41.933	0.854	0.53%	4.06%
	Jun. 20, 2017	710	42.149	0.890	41.927	0.855	0.53%	3.96%
		711	42.144	0.890	41.919	0.855	0.53%	3.97%
		750	41.942	0.893	41.695	0.861	0.59%	3.62%
		824.2	41.556	0.899	42.087	0.867	-1.28%	3.58%
		826.4	41.545	0.899	42.071	0.868	-1.27%	3.48%
		829	41.531	0.900	42.056	0.869	-1.26%	3.39%
		835	41.500	0.900	42.025	0.870	-1.27%	3.33%
	Jun. 29, 2017	836.5	41.500	0.902	42.019	0.872	-1.25%	3.28%
	Jun. 29, 2017	836.6	41.500	0.902	42.019	0.872	-1.25%	3.30%
		842	41.500	0.908	42.013	0.879	-1.24%	3.14%
		844	41.500	0.910	42.011	0.882	-1.23%	3.04%
Head		846.6	41.500	0.912	42.009	0.884	-1.23%	3.12%
neau		848.8	41.500	0.915	42.006	0.887	-1.22%	3.05%
		1712.4	40.138	1.349	39.933	1.309	0.51%	2.99%
		1720	40.126	1.354	39.917	1.314	0.52%	2.93%
		1732	40.107	1.361	39.898	1.322	0.52%	2.86%
	Jul. 07, 2017	1732.4	40.107	1.361	39.898	1.322	0.52%	2.86%
		1745	40.087	1.368	39.874	1.329	0.53%	2.86%
		1750	40.079	1.371	39.861	1.332	0.54%	2.85%
		1752.6	40.075	1.373	39.854	1.334	0.55%	2.81%
		1850.2	40.000	1.400	40.209	1.342	-0.52%	4.14%
		1852.4	40.000	1.400	40.206	1.344	-0.52%	4.00%
		1860	40.000	1.400	40.150	1.353	-0.37%	3.36%
	Jul. 08, 2017	1880	40.000	1.400	40.129	1.375	-0.32%	1.79%
		1900	40.000	1.400	40.107	1.396	-0.27%	0.29%
		1907.6	40.000	1.400	39.999	1.405	0.00%	-0.36%
		1909.8	40.000	1.400	39.997	1.407	0.01%	-0.50%

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Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev ɛr	% dev σ
		2412	39.268	1.766	38.208	1.787	2.70%	-1.18%
	Jul. 04, 2017	2437	39.223	1.788	38.159	1.820	2.71%	-1.76%
	Jul. 04, 2017	2450	39.200	1.800	38.135	1.832	2.72%	-1.78%
		2462	39.185	1.813	38.114	1.847	2.73%	-1.87%
		2510	39.124	1.865	39.202	1.875	-0.20%	-0.51%
Head		2535	39.092	1.893	39.173	1.904	-0.21%	-0.60%
		2560	39.060	1.920	39.144	1.934	-0.22%	-0.73%
	Jul. 12, 2017	2580	39.035	1.942	39.121	1.957	-0.22%	-0.78%
		2595	39.015	1.958	39.104	1.974	-0.23%	-0.81%
		2600	39.009	1.964	39.098	1.981	-0.23%	-0.88%
		2610	38.996	1.975	39.086	1.992	-0.23%	-0.86%
		704	55.710	0.960	54.772	0.932	1.68%	2.90%
		707.5	55.697	0.960	54.753	0.933	1.69%	2.82%
	1 1 00 0017	709	55.691	0.960	54.742	0.934	1.70%	2.73%
	Jul. 02, 2017	710	55.687	0.960	54.728	0.934	1.72%	2.73%
		711	55.683	0.960	54.717	0.934	1.74%	2.74%
		750	55.531	0.963	54.561	0.939	1.75%	2.53%
		824.2	55.242	0.969	53.362	1.000	3.40%	-3.18%
		826.4	55.234	0.969	53.349	1.001	3.41%	-3.27%
		829	55.223	0.970	53.333	1.003	3.42%	-3.45%
		835	55.200	0.970	53.305	1.005	3.43%	-3.61%
	Jul. 03, 2017	836.5	55.195	0.972	53.299	1.007	3.44%	-3.62%
		836.6	55.195	0.972	53.299	1.007	3.44%	-3.60%
		844	55.172	0.981	53.200	1.016	3.57%	-3.56%
<u>.</u>		846.6	55.164	0.984	53.192	1.019	3.58%	-3.53%
Body		848.8	55.158	0.987	53.179	1.021	3.59%	-3.45%
		1712.4	53.531	1.465	53.900	1.406	-0.69%	4.01%
		1720	53.511	1.469	53.884	1.411	-0.70%	3.98%
		1732.4	53.478	1.477	53.851	1.419	-0.70%	3.95%
	Jul. 13, 2017	1732.5	53.478	1.477	53.851	1.419	-0.70%	3.95%
		1745	53.445	1.485	53.822	1.427	-0.71%	3.92%
		1750	53.432	1.488	53.814	1.431	-0.72%	3.86%
		1752.6	53.425	1.490	53.807	1.434	-0.72%	3.76%
1		1850.2	53.300	1.520	52.927	1.474	0.70%	3.03%
		1852.4	53.300	1.520	52.919	1.476	0.71%	2.89%
		1880	53.300	1.520	52.762	1.504	1.01%	1.05%
	Jul. 14, 2017	1900	53.300	1.520	52.750	1.524	1.03%	-0.26%
		1907.6	53.300	1.520	52.739	1.531	1.05%	-0.72%
		1909.8	53.300	1.520	52.736	1.534	1.06%	-0.92%

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Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev ɛr	% dev σ
		2412	52.751	1.914	52.415	1.907	0.64%	0.35%
	Jul. 05, 2017	2437	52.717	1.938	52.373	1.931	0.65%	0.34%
	Jul. 03, 2017	2450	52.700	1.950	52.351	1.944	0.66%	0.31%
		2462	52.685	1.967	52.331	1.962	0.67%	0.26%
		2510	52.624	2.035	51.594	2.082	1.96%	-2.31%
Body		2535	52.592	2.071	51.555	2.118	1.97%	-2.29%
		2560	52.560	2.106	51.521	2.153	1.98%	-2.23%
	Jul. 05, 2017	2580	52.535	2.134	51.486	2.181	2.00%	-2.19%
		2595	52.515	2.156	51.462	2.202	2.01%	-2.15%
		2600	52.509	2.163	51.450	2.209	2.02%	-2.14%
		2610	52.496	2.177	51.429	2.223	2.03%	-2.11%

Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev ɛr	% dev σ
		829	41.531	0.900	41.757	0.911	-0.54%	-1.27%
Head	Aug, 24. 2017	835	41.500	0.900	41.721	0.918	-0.53%	-2.00%
		844	41.500	0.910	41.712	0.930	-0.51%	-2.23%
		829	55.223	0.970	54.591	1.000	1.15%	-3.14%
Body	Aug, 25. 2017	835	55.200	0.970	54.562	1.006	1.16%	-3.71%
		844	55.172	0.981	54.529	1.011	1.17%	-3.05%

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Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivit y, σ (S/m)	% dev εr	% dev σ
		709	42.155	0.890	41.942	0.862	0.50%	3.17%
	Oct. 01, 2017	711	42.144	0.890	41.928	0.863	0.51%	3.07%
		750	41.942	0.893	41.704	0.869	0.57%	2.73%
		829	41.531	0.900	42.065	0.870	-1.29%	3.28%
	0 / 0/ 00/=	835	41.500	0.900	42.034	0.878	-1.29%	2.44%
	Oct. 01, 2017	836.6	41.500	0.902	42.028	0.880	-1.27%	2.41%
		846.6	41.500	0.912	42.018	0.892	-1.25%	2.25%
		1720	40.126	1.354	39.926	1.322	0.50%	2.34%
	Oct. 01, 2017	1732.4	40.107	1.361	39.907	1.330	0.50%	2.27%
Head		1750	40.079	1.371	40.494	1.417	-1.04%	-3.35%
		1852.4	40.000	1.400	40.215	1.352	-0.54%	3.43%
	0 -+ 01 0017	1860	40.000	1.400	40.159	1.361	-0.40%	2.79%
	Oct. 01, 2017	1900	40.000	1.400	40.116	1.404	-0.29%	-0.29%
		1909.8	40.000	1.400	40.006	1.415	-0.02%	-1.07%
	Oct. 01, 2017	2412	39.268	1.766	38.478	1.835	2.01%	-3.89%
		2450	39.200	1.800	38.408	1.869	2.02%	-3.83%
		2560	39.060	1.920	40.602	1.997	-3.95%	-4.01%
	Oct. 01, 2017	2595	39.015	1.958	40.562	2.037	-3.97%	-4.03%
		2600	39.009	1.964	40.556	2.044	-3.97%	-4.09%
		709	55.691	0.960	54.751	0.942	1.69%	1.89%
	Oct. 03, 2017	711	55.683	0.960	54.726	0.942	1.72%	1.91%
		750	55.531	0.963	54.570	0.947	1.73%	1.70%
		829	55.223	0.970	53.339	1.000	3.41%	-3.14%
	Oct 02 2017	835	55.200	0.970	53.314	1.003	3.42%	-3.40%
	Oct. 03, 2017	836.6	55.195	0.972	53.308	1.005	3.42%	-3.40%
		846.6	55.164	0.984	53.201	1.017	3.56%	-3.32%
		1712.4	53.531	1.465	53.909	1.414	-0.71%	3.46%
		1720	53.511	1.469	53.893	1.419	-0.71%	3.43%
	Oct. 03, 2017	1732.4	53.478	1.477	53.860	1.427	-0.71%	3.41%
Body		1732.5	53.478	1.477	53.860	1.427	-0.72%	3.41%
		1750	53.432	1.488	53.823	1.439	-0.73%	3.32%
		1850.2	53.300	1.520	52.936	1.482	0.68%	2.50%
	Oct. 03, 2017	1880	53.300	1.520	52.771	1.512	0.99%	0.53%
	001.03,2017	1900	53.300	1.520	52.759	1.532	1.02%	-0.79%
		1909.8	53.300	1.520	52.745	1.542	1.04%	-1.45%
	Oct. 03, 2017	2412	52.751	1.914	52.424	1.915	0.62%	-0.07%
	001.03,2017	2450	52.700	1.950	52.360	1.952	0.65%	-0.10%
		2560	52.560	2.106	51.530	2.161	1.96%	-2.61%
	Oct. 03, 2017	2595	52.515	2.156	51.471	2.210	1.99%	-2.52%
		2600	52.509	2.163	51.459	2.217	2.00%	-2.51%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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Fraguanay				Ingre	dient			Total
Frequency (MHz)	Mode	DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	Total amount
750	Head	_	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)
750	Body	_	631.68 g	11.72 g	1.2 g	—	600 g	1.0L(Kg)
050	Head	_	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)
850	Body	_	631.68 g	11.72 g	1.2 g	—	600 g	1.0L(Kg)
4750	Head	444.52 g	552.42 g	3.06 g		_	—	1.0L(Kg)
1750	Body	300.67 g	716.56 g	4.0 g	1	_	_	1.0L(Kg)
4000	Head	444.52 g	552.42 g	3.06 g		_	—	1.0L(Kg)
1900	Body	300.67 g	716.56 g	4.0 g		_	—	1.0L(Kg)
0450	Head	550ml	450ml	_	1	_	_	1.0L(Kg)
2450	Body	301.7ml	698.3ml	_	-	_	_	1.0L(Kg)
2000	Head	550ml	450ml	_	_			1.0L(Kg)
2600	Body	301.7ml	698.3ml	—	_	_	_	1.0L(Kg)

The composition of the tissue simulating liquid:

Table 3. Recipes for tissue simulating liquid

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1.14 Test Standards and Limits

According to FCC 47CFR §2.1093(d) The limits to be used for evaluation are based generally on criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate ("SAR") in Section 4.2 of "IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz," ANSI/IEEE C95.1, By the Institute of Electrical and Electronics Engineers, Inc., New York, New York 10017.

These criteria for SAR evaluation are similar to those recommended by the National Council on Radiation Protection and Measurements (NCRP) in "Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86, Section 17.4.5. Copyright NCRP, 1986, Bethesda, Maryland 20814. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards. The criteria to be used are specified in paragraphs (d)(1) and (d)(2) of this section and shall apply for portable devices transmitting in the frequency range from 100 kHz to 6 GHz. Portable devices that transmit at frequencies above 6 GHz are to be evaluated in terms of the MPE limits specified in § 1.1310 of this chapter.

Measurements and calculations to demonstrate compliance with MPE field strength or power density limits for devices operating above 6 GHz should be made at a minimum distance of 5 cm from the radiating source.

1. Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 8 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube). Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 20 W/kg, as averaged over a 10 grams of tissue (defined as a tissue volume in the shape of a cube).

Occupational/Controlled limits apply when persons are exposed as а consequence of their employment provided these persons are fully aware of and exercise control over their exposure. Awareness of exposure can be accomplished by use of warning labels or by specific training or education through appropriate means, such as an RF safety program in a work environment.

2. Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over the whole-body and spatial peak SAR not exceeding 1.6 W/kg as averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube).

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Exceptions are the hands, wrists, feet and ankles where the spatial peak SAR shall not exceed 4 W/kg, as averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube).

General Population/Uncontrolled limits apply when the general public may be exposed, or when persons that are exposed as a consequence of their employment may not be fully aware of the potential for exposure or do not exercise control over their exposure.

Warning labels placed on consumer devices such as cellular telephones will not be sufficient reason to allow these devices to be evaluated subject to limits for occupational/controlled exposure in paragraph (d)(1) of this section.(Table .6)

Human Exposure	Uncontrolled Environment General Population	Controlled Environment Occupational
Spatial Peak SAR (Brain)	1.60 W/kg	8.00 W/kg
Spatial Average SAR (Whole Body)	0.08 W/kg	0.40 W/kg
Spatial Peak SAR (Hands/Feet/Ankle/Wrist)	4.00 W/kg	20.00 W/kg

Table 4. RF exposure limits

Notes:

- 1. Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
- 2. Controlled environments are defined as locations where there is potential exposure of individuals who have knowledge of their potential exposure and can exercise control over their exposure.

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2. Summary of Results

GSM 850

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g /kg)	Plot page
		(1111)				(dBm)		Measured	Reported	
	Re Cheek	-	190	836.6	34.50	33.67	21.06%	0.245	0.297	-
Head	Re Tilt	-	190	836.6	34.50	33.67	21.06%	0.113	0.137	-
(GSM)	Le Cheek	-	190	836.6	34.50	33.67	21.06%	0.263	0.318	114
	Le Tilt	-	190	836.6	34.50	33.67	21.06%	0.094	0.114	-
Body-worn	Front side	15	190	836.6	34.50	33.67	21.06%	0.260	0.315	115
(GSM)	Back side	15	190	836.6	34.50	33.67	21.06%	0.259	0.314	-
	Front side	10	190	836.6	34.50	33.67	21.06%	0.449	0.544	116
Hotspot	Back side	10	190	836.6	34.50	33.67	21.06%	0.414	0.501	-
(GPRS)	Bottom side	10	190	836.6	34.50	33.67	21.06%	0.206	0.249	-
<1Dn1Up>	Right side	10	190	836.6	34.50	33.67	21.06%	0.224	0.271	-
	Left side	10	190	836.6	34.50	33.67	21.06%	0.269	0.326	-

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g /kg)	Plot page
		(1111)				(dBm)		Measured	Reported	
Head (GSM)	Le Cheek	-	190	836.6	34.50	33.67	21.06%	0.248	0.300	-
Body-worn (GSM)	Front side	15	190	836.6	34.50	33.67	21.06%	0.241	0.292	-
Hotspot (GPRS) <1Dn1Up>	Front side	10	190	836.6	34.50	33.67	21.06%	0.421	0.510	-

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2nd spot check

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1 (W/	SAR over g /kg)	Plot page
						(dBm)		Measured	Reported	
Head (GSM)	Le Cheek	-	190	836.6	34.50	33.61	22.74%	0.258	0.317	-
Body-worn (GSM)	Front side	15	190	836.6	34.50	33.61	22.74%	0.257	0.315	-
Hotspot (GPRS) <1Dn1Up>	Front side	10	190	836.6	34.50	33.61	22.74%	0.431	0.529	-

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GSM 1900

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g /kg)	Plot page
		()				(dBm)		Measured	Reported	
	Re Cheek	-	810	1909.8	31.50	30.82	16.95%	0.141	0.165	117
Head	Re Tilt	-	810	1909.8	31.50	30.82	16.95%	0.039	0.046	-
(GSM)	Le Cheek	-	810	1909.8	31.50	30.82	16.95%	0.094	0.110	-
	Le Tilt	-	810	1909.8	31.50	30.82	16.95%	0.053	0.062	-
Body-worn	Front side	15	810	1909.8	31.50	30.82	16.95%	0.209	0.244	118
(GSM)	Back side	15	810	1909.8	31.50	30.82	16.95%	0.144	0.168	-
	Front side	10	512	1850.2	26.50	25.61	22.74%	0.396	0.486	-
	Back side	10	512	1850.2	26.50	25.61	22.74%	0.255	0.313	-
Hotspot	Bottom side	10	512	1850.2	26.50	25.61	22.74%	0.717	0.880	119
(GPRS)	Bottom side	10	661	1880	26.50	25.46	27.06%	0.643	0.817	-
<1Dn4Up>	Bottom side	10	810	1909.8	26.50	25.54	24.74%	0.656	0.818	-
	Right side	10	512	1850.2	26.50	25.61	22.74%	0.072	0.088	-
	Left side	10	512	1850.2	26.50	25.61	22.74%	0.058	0.071	-

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1 (W/	SAR over g /kg) Reported	Plot page
Head						(abiii)		Measured	Reported	
(GSM)	Re Cheek	-	810	1909.8	31.50	30.82	16.95%	0.107	0.125	-
Body-worn (GSM)	Front side	15	810	1909.8	31.50	30.82	16.95%	0.190	0.222	-
Hotspot (GPRS) <1Dn4Up>	Bottom side	10	512	1850.2	26.50	25.61	22.74%	0.611	0.750	-

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2nd spot check

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1 (W/		Plot page
		()				(dBm)		Measured	Reported	
Head (GSM)	Re Cheek	-	810	1909.8	31.50	30.87	15.61%	0.129	0.149	-
Body-worn (GSM)	Front side	15	810	1909.8	31.50	30.87	15.61%	0.123	0.142	-
Hotspot (GPRS) <1Dn4Up>	Bottom side	10	512	1850.2	26.50	25.53	25.03%	0.596	0.745	-

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WCDMA Band II – RMC 12.2Kbps

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1 (W/		Plot page
		· · /			, , , , , , , , , , , , , , , , , , ,	(aBm)		Measured		
	RE Cheek	-	9262	1852.4	23.5	23.43	1.62%	0.158	0.161	120
Head	RE Tilt	-	9262	1852.4	23.5	23.43	1.62%	0.038	0.039	-
Tieau	LE Cheek	-	9262	1852.4	23.5	23.43	1.62%	0.109	0.111	-
	LE Tilt	-	9262	1852.4	23.5	23.43	1.62%	0.067	0.068	-
	Front side	10	9262	1852.4	23.5	23.43	1.62%	0.644	0.654	-
	Back side	10	9262	1852.4	23.5	23.43	1.62%	0.450	0.457	-
	Bottom side	10	9262	1852.4	23.5	23.43	1.62%	1.050	1.067	-
Hotspot	Bottom side	10	9400	1880	23.5	23.05	10.92%	1.110	1.231	121
Ποιδροι	Bottom side*	10	9400	1880	23.5	23.05	10.92%	1.100	1.220	-
	Bottom side	10	9538	1907.6	23.5	22.91	14.55%	1.070	1.226	-
	Right side	10	9262	1852.4	23.5	23.43	1.62%	0.119	0.121	-
	Left side	10	9262	1852.4	23.5	23.43	1.62%	0.097	0.099	-

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

* - repeated at the highest SAR measurement according to the KDB 865664 D01

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1	SAR over g /kg)	Plot page
Head	RE Cheek	-	9262	1852.4	23.5	23.43	1.62%	0.134	0.136	-
Hotspot	Bottom side	10	9400	1880	23.5	23.05	10.92%	0.968	1.074	-

2nd spot check

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Avg. Power	Scaling	1 (W)	SAR over g /kg) Reported	Plot page
Head	RE Cheek	-	9262	1852.4	23.5	23.41	2.09%	0.136	0.139	-
Hotspot	Bottom side	10	9400	1880	23.5	22.99	12.46%	1.010	1.136	-

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WCDMA Band IV – RMC 12.2Kbps

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	<u> </u>	0	Plot page
		()				(dBm)		Measured	Reported	
	RE Cheek	-	1412	1732.4	24.5	24.32	4.23%	0.250	0.261	122
Head	RE Tilt	-	1412	1732.4	24.5	24.32	4.23%	0.083	0.087	-
Tieau	LE Cheek	-	1412	1732.4	24.5	24.32	4.23%	0.177	0.184	-
	LE Tilt	-	1412	1732.4	24.5	24.32	4.23%	0.069	0.072	-
Body worn	Front side	15	1412	1732.4	24.5	24.32	4.23%	0.470	0.490	123
Body-worn	Back side	15	1412	1732.4	24.5	24.32	4.23%	0.327	0.341	-
	Front side	10	1513	1752.6	23	22.93	1.62%	0.610	0.620	-
	Back side	10	1513	1752.6	23	22.93	1.62%	0.439	0.446	-
	Bottom side	10	1312	1712.4	23	22.76	5.68%	1.210	1.279	124
Hotopot	Bottom side*	10	1312	1712.4	23	22.76	5.68%	1.200	1.268	-
Hotspot	Bottom side	10	1412	1732.4	23	22.80	4.71%	1.200	1.257	-
	Bottom side	10	1513	1752.6	23	22.93	1.62%	1.180	1.199	-
	Right side	10	1513	1752.6	23	22.93	1.62%	0.169	0.172	-
	Left side	10	1513	1752.6	23	22.93	1.62%	0.075	0.076	-

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

* - repeated at the highest SAR measurement according to the KDB 865664 D01

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g /kg)	Plot page
		(11111)				(dBm)		Measured	Reported	
Head	RE Cheek	-	1412	1732.4	24.5	24.32	4.23%	0.200	0.208	-
Body-worn	Front side	15	1412	1732.4	24.5	24.32	4.23%	0.397	0.414	-
Hotspot	Bottom side	10	1312	1712.4	23	22.76	5.68%	0.919	0.971	-

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2nd spot check

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1 (W/	SAR over g /kg) Reported	Plot page
Head	RE Cheek	-	1412	1732.4	24.5	24.30	4.71%	0.186	0.195	-
Body-worn	Front side	15	1412	1732.4	24.5	24.30	4.71%	0.405	0.424	-
Hotspot	Bottom side	10	1312	1712.4	23	22.69	7.40%	1.010	1.085	-

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WCDMA Band V – RMC 12.2Kbps

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1 (W/		Plot page
						(dBm)		Measured		
	RE Cheek	-	4233	846.6	25	24.63	8.89%	0.287	0.313	-
Head	RE Tilt	-	4233	846.6	25	24.63	8.89%	0.134	0.146	-
Tieau	LE Cheek	-	4233	846.6	25	24.63	8.89%	0.309	0.336	125
	LE Tilt	-	4233	846.6	25	24.63	8.89%	0.109	0.119	-
	Front side	10	4233	846.6	25	24.63	8.89%	0.531	0.578	126
	Back side	10	4233	846.6	25	24.63	8.89%	0.417	0.454	-
Hotspot	Bottom side	10	4233	846.6	25	24.63	8.89%	0.260	0.283	-
	Right side	10	4233	846.6	25	24.63	8.89%	0.250	0.272	-
	Left side	10	4233	846.6	25	24.63	8.89%	0.262	0.285	-

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1 (W/	SAR over g /kg) Reported	Plot page
Head	LE Cheek	-	4233	846.6	25	24.63	8.89%	0.308	0.335	-
Hotspot	Front side	10	4233	846.6	25	24.63	8.89%	0.525	0.572	-

2nd spot check

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1 (W)	SAR over g /kg) Reported	Plot page
Head	LE Cheek	-	4233	846.6	25	24.61	9.40%	0.270	0.295	-
Hotspot	Front side	10	4233	846.6	25	24.61	9.40%	0.527	0.577	-

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LTE FDD Band 2

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Bandwidth (MHz)	Modulatior	RB Size	RB start	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Toleranc	Measure d Avg. Power (dBm)	Scaling		SAR over V/kg) Reported	Plot page
									e (dBm)	· · /				
					RE Cheek	-	18700	1860	23.5	23.41	2.09%	0.156	0.159	127
			1 RB	0	RE Tilt	-	18700	1860	23.5	23.41	2.09%	0.052	0.053	-
			IKD	0	LE Cheek	-	18700	1860	23.5	23.41	2.09%	0.104	0.106	-
					LE Tilt	-	18700	1860	23.5	23.41	2.09%	0.048	0.049	-
					RE Cheek	-	18700	1860	22.5	22.30	4.71%	0.124	0.130	-
Head	20MHz	QPSK	50 RB	0	RE Tilt	-	18700	1860	22.5	22.30	4.71%	0.042	0.044	-
Heau	ZUIVINZ	QFSK	30 KB	0	LE Cheek	-	18700	1860	22.5	22.30	4.71%	0.080	0.084	-
					LE Tilt	-	18700	1860	22.5	22.30	4.71%	0.039	0.041	-
					RE Cheek	-	18700	1860	22.5	22.05	10.92%	0.118	0.131	-
			100	RB	RE Tilt	-	18700	1860	22.5	22.05	10.92%	0.037	0.041	-
			100	КD	LE Cheek	-	18700	1860	22.5	22.05	10.92%	0.075	0.083	-
					LE Tilt	-	18700	1860	22.5	22.05	10.92%	0.035	0.039	-
				0	Bottom side	10	19100	1900	23.5	22.87	15.61%	1.090	1.260	-
					Front side	10	18700	1860	23.5	23.48	0.46%	0.619	0.622	-
					Back side	10	18700	1860	23.5	23.48	0.46%	0.433	0.435	-
			1 RB	50	Bottom side	10	18900	1880	23.5	23.03	11.43%	1.130	1.259	128
				50	Bottom side*	10	18900	1880	23.5	23.03	11.43%	1.100	1.226	-
					Right side	10	18700	1860	23.5	23.48	0.46%	0.109	0.110	-
					Left side	10	18700	1860	23.5	23.48	0.46%	0.102	0.102	-
					Front side	10	18700	1860	22.5	22.30	4.71%	0.466	0.488	-
					Back side	10	18700	1860	22.5	22.30	4.71%	0.321	0.336	-
				0	Bottom side	10	18700	1860	22.5	22.30	4.71%	0.815	0.853	-
Hotspot	20MHz	QPSK	50 RB	0	Bottom side	10	19100	1900	22.5	21.72	19.67%	0.827	0.990	-
					Right side	10	18700	1860	22.5	22.30	4.71%	0.080	0.084	-
					Left side	10	18700	1860	22.5	22.30	4.71%	0.075	0.079	-
				50	Bottom side	10	18900	1880	22.5	21.88	15.35%	0.852	0.983	-
					Front side	10	18700	1860	22.5	22.05	10.92%	0.451	0.500	-
					Back side	10	18700	1860	22.5	22.05	10.92%	0.312	0.346	-
					Bottom side	10	18700	1860	22.5	22.05	10.92%	0.805	0.893	-
			100	RB	Bottom side	10	18900	1880	22.5	21.78	18.03%	0.842	0.994	-
					Bottom side	10	19100	1900	22.5	21.74	19.12%	0.817	0.973	-
					Right side	10	18700	1860	22.5	22.05	10.92%	0.078	0.087	-
					Left side	10	18700	1860	22.5	22.05	10.92%	0.069	0.077	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Bandwidth (MHz)	Modulation	PR Sizo	PP start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	viodulation	KD SIZE	RD Start	Position	(mm)	Сп	(MHz)	Max. Toleranc e (dBm)	Avg. Power (dBm)	, i i i i i i i i i i i i i i i i i i i	Measured	Reported	page
Head	20MHz	QPSK	1 RB	0	RE Cheek	-	18700	1860	23.5	23.41	2.09%	0.134	0.137	-
Hotspot	20MHz	QPSK	1 RB	50	Bottom side	10	18900	1880	23.5	23.03	11.43%	1.060	1.181	-

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2nd spot check

	Mode	Bandwidth	Modulatior	PP Sizo	PP start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
	Mode	(MHz)	viodulatioi	KB SIZE	ND SIAIT	Position	(mm)	Сп	(MHz)	Max. Toleranc e (dBm)	Avg. Power (dBm)	, i i i i i i i i i i i i i i i i i i i	Measured	Reported	page
ſ	Head	20MHz	QPSK	1 RB	0	RE Cheek	-	18700	1860	23.5	23.39	2.57%	0.101	0.104	-
	Hotspot	20MHz	QPSK	1 RB	50	Bottom side	10	18900	1880	23.5	22.79	17.76%	1.040	1.225	-

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LTE FDD Band 4

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Bandwidth (MHz)	Modulatior	RB Size	RB start	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Toleranc e (dBm)	Measure d Avg. Power (dBm)	Scaling		SAR over V/kg) Reported	Plot page
					RE Cheek	-	20050	1720	24	23.35	16.14%	0.231	0.268	129
					RE Tilt	-	20050	1720	24	23.35	16.14%	0.041	0.048	-
			1 RB	50	LE Cheek	-	20050	1720	24	23.35	16.14%	0.136	0.158	-
					LE Tilt	-	20050	1720	24	23.35	16.14%	0.062	0.072	-
					RE Cheek	-	20050	1720	23	22.33	16.68%	0.179	0.209	-
		0.001/			RE Tilt	-	20050	1720	23	22.33	16.68%	0.032	0.037	-
Head	20MHz	QPSK	50 RB	0	LE Cheek	-	20050	1720	23	22.33	16.68%	0.110	0.128	-
					LE Tilt	-	20050	1720	23	22.33	16.68%	0.050	0.058	-
					RE Cheek	-	20050	1720	23	22.08	23.59%	0.171	0.211	-
			100	DD	RE Tilt	-	20050	1720	23	22.08	23.59%	0.030	0.037	-
			100	КB	LE Cheek	-	20050	1720	23	22.08	23.59%	0.105	0.130	-
					LE Tilt	-	20050	1720	23	22.08	23.59%	0.047	0.058	-
			1 RB	50	Front side	15	20050	1720	24	23.35	16.14%	0.392	0.455	130
			IKD	50	Back side	15	20050	1720	24	23.35	16.14%	0.278	0.323	-
Body-worn	20MHz	QPSK	50 RB	0	Front side	15	20050	1720	23	22.33	16.68%	0.302	0.352	-
Body-worn	2011112	QF OK	30 10	0	Back side	15	20050	1720	23	22.33	16.68%	0.215	0.251	-
			100	DB	Front side	15	20050	1720	23	22.08	23.59%	0.294	0.363	-
			100	ND	Back side	15	20050	1720	23	22.08	23.59%	0.199	0.246	-
					Front side	10	20050	1720	23	22.98	0.46%	0.653	0.656	-
					Back side	10	20050	1720	23	22.98	0.46%	0.430	0.432	-
					Bottom side	10	20050	1720	23	22.98	0.46%	1.190	1.195	131
			1 RB	50	Bottom side*	10	20050	1720	23	22.98	0.46%	1.170	1.175	-
			TRE	00	Bottom side	10	20175	1732.5	23	22.63	8.89%	1.150	1.252	-
					Bottom side	10	20300	1745	23	22.73	6.41%	1.140	1.213	-
					Right side	10	20050	1720	23	22.98	0.46%	0.163	0.164	-
					Left side	10	20050	1720	23	22.98	0.46%	0.090	0.090	-
				0	Bottom side	10	20050	1720	23	22.03	25.03%	0.951	1.189	-
					Front side	10	20300	1745	23	22.05	24.45%	0.511	0.636	-
Hotspot	20MHz	QPSK			Back side	10	20300	1745	23	22.05	24.45%	0.335	0.417	-
			50 RB	25	Bottom side	10	20175	1732,5	23	21.93	27.94%	0.931	1.191	-
				-	Bottom side	10	20300	1745	23	22.05	24.45%	0.939	1.169	-
					Right side	10	20300	1745	23	22.05	24.45%	0.127	0.158	-
					Left side	10	20300	1745	23	22.05	24.45%	0.070	0.087	-
					Front side	10	20300	1745	23	22.10	23.03%	0.510	0.627	-
					Back side	10	20300	1745	23	22.10	23.03%	0.332	0.408	-
			l .		Bottom side	10	20050	1720	23	21.91	28.53%	0.924	1.188	-
			100	RB	Bottom side	10	20175	1732,5	23	21.84	30.62%	0.906	1.183	-
					Bottom side	10	20300	1745	23	22.10	23.03%	0.938	1.154	-
					Right side	10	20300	1745	23	22.10	23.03%	0.127	0.156	-
					Left side	10	20300	1745	23	22.10	23.03%	0.071	0.087	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Bandwidth	Modulatior	PR Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V		Plot
Widde	(MHz)	viodulation	ND SIZE	ND Start	Position	(mm)	5	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	· ·	Measured	Reported	page
Head	20MHz	QPSK	1 RB	50	RE Cheek	-	20050	1720	24	23.35	16.14%	0.164	0.190	-
Body-worn	20MHz	QPSK	1 RB	50	Front side	15	20050	1720	24	23.35	16.14%	0.373	0.433	-
Hotspot	20MHz	QPSK	1 RB	50	Bottom side	10	20050	1720	23	22.98	0.46%	1.090	1.095	-

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2nd spot check

Mode	Bandwidth	Modulatior	PR Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	viodulatioi	ND SIZE	ND Start	POSIGON	(mm)	СП	(MHz)	Max. Toleranc e (dBm)	Power	, i i i i i i i i i i i i i i i i i i i	Measured	Reported	page
Head	20MHz	QPSK	1 RB	50	RE Cheek	-	20050	1720	24	23.31	17.22%	0.155	0.182	-
Body-worn	20MHz	QPSK	1 RB	50	Front side	15	20050	1720	24	23.31	17.22%	0.380	0.445	-
Hotspot	20MHz	QPSK	1 RB	50	Bottom side	10	20050	1720	23	22.59	9.90%	1.110	1.220	-

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LTE FDD Band 5

Mode	Bandwidth	Modulatior	PB Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	vioudiation	110 0120	ND Start	1 0311011	(mm)	011	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	ocamig	Measured	Reported	page
					RE Cheek	-	20450	829	24	23.55	10.92%	0.227	0.252	-
			1 RB	25	RE Tilt	-	20450	829	24	23.55	10.92%	0.128	0.142	-
			TRO	25	LE Cheek	-	20450	829	24	23.55	10.92%	0.270	0.299	132
					LE Tilt	-	20450	829	24	23.55	10.92%	0.138	0.153	-
					RE Cheek	-	20600	844	23	22.42	14.29%	0.224	0.256	-
Head	10MHz	QPSK	25 RB	12	RE Tilt	-	20600	844	23	22.42	14.29%	0.110	0.126	-
ricad	1010112	GI OIX	25 110	12	LE Cheek	-	20600	844	23	22.42	14.29%	0.261	0.298	-
					LE Tilt	-	20600	844	23	22.42	14.29%	0.134	0.153	-
					RE Cheek	-	20450	829	23	22.38	15.35%	0.185	0.213	-
			50	RB	RE Tilt	-	20450	829	23	22.38	15.35%	0.107	0.123	-
					LE Cheek	-	20450	829	23	22.38	15.35%	0.226	0.261	-
					LE Tilt	-	20450	829	23	22.38	15.35%	0.114	0.131	-
					Front side	10	20450	829	24	23.55	10.92%	0.322	0.357	-
					Back side	10	20450	829	24	23.55	10.92%	0.320	0.355	-
			1 RB	25	Bottom side	10	20450	829	24	23.55	10.92%	0.190	0.211	-
					Right side	10	20450	829	24	23.55	10.92%	0.170	0.189	-
					Left side	10	20450	829	24	23.55	10.92%	0.364	0.404	133
					Front side	10	20600	844	23	22.42	14.29%	0.293	0.335	-
		0.001/			Back side	10	20600	844	23	22.42	14.29%	0.316	0.361	-
Hotspot	10MHz	QPSK	25 RB	12	Bottom side	10	20600	844	23	22.42	14.29%	0.142	0.162	-
					Right side	10	20600	844	23	22.42	14.29%	0.126	0.144	-
					Left side	10	20600	844	23	22.42	14.29%	0.333	0.381	-
					Front side	10	20450	829	23	22.38	15.35%	0.282	0.325	-
			50		Back side	10	20450	829	23	22.38	15.35%	0.270	0.311	-
			50	кв	Bottom side	10	20450	829	23	22.38	15.35%	0.140	0.161	-
					Right side	10	20450	829	23	22.38	15.35%	0.122	0.141	-
					Left side	10	20450	829	23	22.38	15.35%	0.305	0.352	-

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (\	SAR over V/kg)	Plot
Widde	(MHz)	viodulation	ND SIZE	ND Start	FOSIGOT	(mm)	GIT	(MHz)	Max. Toleranc e (dBm)	Power	, in the second s	Measured	Reported	page
Head	10MHz	QPSK	1 RB	25	LE Cheek	-	20450	829	24	23.55	10.92%	0.268	0.297	-
Hotspot	10MHz	QPSK	1 RB	25	Left side	10	20450	829	24	23.55	10.92%	0.361	0.400	-

2nd spot check

Mode	Bandwidth (MHz)	Vodulatior	RB Size	RB start	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measure d Avg. Power	Scaling		V/kg)	Plot page
									Toleranc e (dBm)	(dBm)		Measured	Reported	
Head	10MHz	QPSK	1 RB	25	LE Cheek	-	20450	829	24	23.53	11.43%	0.241	0.269	-
Hotspot	10MHz	QPSK	1 RB	25	Left side	10	20450	829	24	23.53	11.43%	0.337	0.376	-

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LTE FDD Band 7

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Bandwidth (MHz)	Modulatior	RB Size	RB start	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Toleranc e (dBm)	Measure d Avg. Power (dBm)	Scaling	1g (\	SAR over W/kg) Reported	Plot page
							04050	0500	. ,	00.00	4.000/	0.040	0.050	
					RE Cheek RE Tilt	-	21350 21350	2560 2560	23 23	22.93 22.93	1.62%	0.049	0.050	-
			1 RB	99	LE Cheek	-	21350	2560	23	22.93	1.62%	0.016	0.016	- 134
					LE Cheek LE Tilt	-	21350	2560	23	22.93	1.62%	0.099	0.041	-
					RE Cheek	-	21350	2560	23	21.87	3.04%	0.040	0.041	-
					RE Tilt	-	21350	2560	22	21.87	3.04%	0.040	0.041	-
Head	20MHz	QPSK	50 RB	25	LE Cheek		21350	2560	22	21.87	3.04%	0.080	0.082	-
					LE Tilt	-	21350	2560	22	21.87	3.04%	0.033	0.034	-
					RE Cheek	-	21350	2560	22	21.98	0.46%	0.041	0.041	-
					RE Tilt	-	21350	2560	22	21.98	0.46%	0.015	0.015	-
			100	RB	LE Cheek	-	21350	2560	22	21.98	0.46%	0.085	0.085	-
					LE Tilt	-	21350	2560	22	21.98	0.46%	0.036	0.036	-
					Front side	15	21350	2560	23	22.93	1.62%	0.360	0.366	135
			1 RB	99	Back side	15	21350	2560	23	22.93	1.62%	0.253	0.257	-
Dealerman	001411-	ODOK		05	Front side	15	21350	2560	22	21.87	3.04%	0.279	0.287	-
Body-worn	20MHz	QPSK	50 RB	25	Back side	15	21350	2560	22	21.87	3.04%	0.195	0.201	-
					Front side	15	21350	2560	22	21.98	0.46%	0.283	0.284	-
			100	RB	Back side	15	21350	2560	22	21.98	0.46%	0.201	0.202	-
					Front side	10	21350	2560	22.5	22.35	3.51%	0.731	0.757	-
					Back side	10	21350	2560	22.5	22.35	3.51%	0.518	0.536	-
					Bottom side	10	20850	2510	22.5	22.24	6.17%	1.070	1.136	-
			1 RB	0	Bottom side	10	21100	2535	22.5	22.25	5.93%	1.100	1.165	-
			IND	0	Bottom side	10	21350	2560	22.5	22.35	3.51%	1.170	1.211	136
					Bottom side*	10	21350	2560	22.5	22.35	3.51%	1.060	1.097	-
					Right side	10	21350	2560	22.5	22.35	3.51%	0.254	0.263	-
					Left side	10	21350	2560	22.5	22.35	3.51%	0.113	0.117	-
					Front side	10	21350	2560	22	21.79	4.95%	0.638	0.670	-
					Back side	10	21350	2560	22	21.79	4.95%	0.449	0.471	-
Hotspot	20MHz	QPSK			Bottom side	10	20850	2510	22	21.66	8.14%	0.941	1.018	-
notopot	20101112	GI OIX	50 RB	0	Bottom side	10	21100	2535	22	21.77	5.44%	0.989	1.043	-
					Bottom side	10	21350	2560	22	21.79	4.95%	1.010	1.060	-
					Right side	10	21350	2560	22	21.79	4.95%	0.220	0.231	-
					Left side	10	21350	2560	22	21.79	4.95%	0.097	0.102	-
					Front side	10	21100	2535	22	21.82	4.23%	0.602	0.627	-
					Back side	10	21100	2535	22	21.82	4.23%	0.428	0.446	-
					Bottom side	10	20850	2510	22	21.70	7.15%	0.945	1.013	-
			100	RB	Bottom side	10	21100	2535	22	21.82	4.23%	0.972	1.013	-
					Bottom side	10	21350	2560	22	21.81	4.47%	1.000	1.045	-
					Right side	10	21100	2535	22	21.82	4.23%	0.210	0.219	-
					Left side	10	21100	2535	22	21.82	4.23%	0.089	0.093	-

* - repeated at the highest SAR measurement according to the KDB 865664 D01

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Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	viodulation	ND SIZE	ND Start	rosition	(mm)	GIT	(MHz)	Max. Toleranc e (dBm)	Power	, in the second s	Measured	Reported	page
Head	20MHz	QPSK	1 RB	99	LE Cheek	-	21350	2560	23	22.93	1.62%	0.084	0.085	-
Body-worn	20MHz	QPSK	1 RB	99	Front side	15	21350	2560	23	22.93	1.62%	0.358	0.364	-
Hotspot	20MHz	QPSK	1 RB	0	Bottom side	10	21350	2560	22.5	22.35	3.51%	1.160	1.201	-

2nd spot check

Mode	Bandwidth	Modulatior	PB Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	viodulatioi	KD SIZE	ND SIdit	FOSILION	(mm)	СП	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	· ·	Measured	Reported	page
Head	20MHz	QPSK	1 RB	99	LE Cheek	-	21350	2560	23	22.97	0.69%	0.091	0.092	-
Body-worn	20MHz	QPSK	1 RB	99	Front side	15	21350	2560	23	22.97	0.69%	0.350	0.352	-
Hotspot	20MHz	QPSK	1 RB	0	Bottom side	10	21350	2560	22.5	22.22	6.66%	1.080	1.152	-

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LTE FDD Band 12

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Bandwidth	Modulatior	PR Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Wode	(MHz)	vioudiation	10 0120	ND Start	rosition	(mm)	011	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	ocanny	Measured	Reported	page
					RE Cheek	-	23130	711	24	23.99	0.23%	0.208	0.208	137
			1 RB	49	RE Tilt	-	23130	711	24	23.99	0.23%	0.103	0.103	-
			TRD	-10	LE Cheek	-	23130	711	24	23.99	0.23%	0.193	0.193	-
					LE Tilt	-	23130	711	24	23.99	0.23%	0.094	0.094	-
					RE Cheek	-	23130	711	23	22.83	3.99%	0.157	0.163	-
Head	Head 10MHz QPSK	OPSK	25 RB	49	RE Tilt	-	23130	711	23	22.83	3.99%	0.081	0.084	-
Ticau	1011112	GIOR	25 110	-10	LE Cheek	-	23130	711	23	22.83	3.99%	0.144	0.150	-
					LE Tilt	-	23130	711	23	22.83	3.99%	0.070	0.073	-
					RE Cheek	-	23130	711	23	22.71	6.91%	0.155	0.166	-
			50	PB	RE Tilt	-	23130	711	23	22.71	6.91%	0.078	0.083	-
			50	ND	LE Cheek	-	23130	711	23	22.71	6.91%	0.141	0.151	-
					LE Tilt	-	23130	711	23	22.71	6.91%	0.068	0.073	-
					Front side	10	23130	711	24	23.99	0.23%	0.443	0.444	138
					Back side	10	23130	711	24	23.99	0.23%	0.433	0.434	-
			1 RB	49	Bottom side	10	23130	711	24	23.99	0.23%	0.116	0.116	-
					Right side	10	23130	711	24	23.99	0.23%	0.247	0.248	-
					Left side	10	23130	711	24	23.99	0.23%	0.200	0.200	-
					Front side	10	23130	711	23	22.83	3.99%	0.331	0.344	-
					Back side	10	23130	711	23	22.83	3.99%	0.326	0.339	-
Hotspot	10MHz	QPSK	25 RB	49	Bottom side	10	23130	711	23	22.83	3.99%	0.086	0.089	-
					Right side	10	23130	711	23	22.83	3.99%	0.187	0.194	-
					Left side	10	23130	711	23	22.83	3.99%	0.151	0.157	-
1					Front side	10	23130	711	23	22.71	6.91%	0.325	0.347	-
1					Back side	10	23130	711	23	22.71	6.91%	0.317	0.339	-
			50	RB	Bottom side	10	23130	711	23	22.71	6.91%	0.084	0.090	-
1					Right side	10	23130	711	23	22.71	6.91%	0.182	0.195	-
					Left side	10	23130	711	23	22.71	6.91%	0.147	0.157	-

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	viodulation	10 3126	ND Start	Position	(mm)	6	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	, in the second s	Measured	Reported	page
Head	10MHz	QPSK	1 RB	49	RE Cheek	-	23130	711	24	23.99	0.23%	0.205	0.205	-
Hotspot	10MHz	QPSK	1 RB	49	Front side	10	23130	711	24	23.99	0.23%	0.433	0.434	-

2nd spot check

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot page
	(11112)					(11111)		(11112)	Max. Toleranc e (dBm)	Power (dBm)		Measured	Reported	
Head	10MHz	QPSK	1 RB	49	RE Cheek	-	23130	711	24	23.98	0.46%	0.205	0.206	-
Hotspot	10MHz	QPSK	1 RB	49	Front side	10	23130	711	24	23.98	0.46%	0.407	0.409	-

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LTE FDD Band 17

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Bandwidth	Modulatior	PR Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot
Wode	(MHz)	viodulation	ND SIZE	ND Start	rosilion	(mm)	GI	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	· ·	Measured	Reported	page
					RE Cheek	-	23780	709	24	23.98	0.46%	0.207	0.208	139
			1 RB	49	RE Tilt	-	23780	709	24	23.98	0.46%	0.099	0.099	-
			TIXD	43	LE Cheek	-	23780	709	24	23.98	0.46%	0.195	0.196	-
					LE Tilt	-	23780	709	24	23.98	0.46%	0.100	0.100	-
					RE Cheek	-	23800	711	23	22.98	0.46%	0.169	0.170	-
Head	Head 10MHz QPSK	OPSK	25 RB	25	RE Tilt	-	23800	711	23	22.98	0.46%	0.084	0.084	-
nead		GI OIX	25110	25	LE Cheek	-	23800	711	23	22.98	0.46%	0.159	0.160	-
					LE Tilt	-	23800	711	23	22.98	0.46%	0.082	0.082	-
					RE Cheek	-	23800	711	23	22.86	3.28%	0.161	0.166	-
			50	RB	RE Tilt	-	23800	711	23	22.86	3.28%	0.080	0.083	-
			50	ΝD	LE Cheek	-	23800	711	23	22.86	3.28%	0.154	0.159	-
					LE Tilt	-	23800	711	23	22.86	3.28%	0.075	0.077	-
					Front side	10	23780	709	24	23.98	0.46%	0.444	0.446	140
					Back side	10	23780	709	24	23.98	0.46%	0.419	0.421	-
			1 RB	49	Bottom side	10	23780	709	24	23.98	0.46%	0.115	0.116	-
					Right side	10	23780	709	24	23.98	0.46%	0.245	0.246	-
					Left side	10	23780	709	24	23.98	0.46%	0.200	0.201	-
					Front side	10	23800	711	23	22.98	0.46%	0.335	0.337	-
					Back side	10	23800	711	23	22.98	0.46%	0.329	0.331	-
Hotspot	10MHz	QPSK	25 RB	25	Bottom side	10	23800	711	23	22.98	0.46%	0.082	0.082	-
					Right side	10	23800	711	23	22.98	0.46%	0.185	0.186	-
					Left side	10	23800	711	23	22.98	0.46%	0.151	0.152	-
					Front side	10	23800	711	23	22.86	3.28%	0.331	0.342	-
					Back side	10	23800	711	23	22.86	3.28%	0.326	0.337	-
			50	RB	Bottom side	10	23800	711	23	22.86	3.28%	0.080	0.083	-
1					Right side	10	23800	711	23	22.86	3.28%	0.182	0.188	-
					Left side	10	23800	711	23	22.86	3.28%	0.149	0.154	-

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Bandwidth	Modulatior	BB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Wode	(MHz)	violation	110 0120	ND Start	1 USHOT	(mm)	011	(MHz)	Max. Toleranc e (dBm)	Power	, in the second s	Measured	Reported	page
Head	10MHz	QPSK	1 RB	49	RE Cheek	-	23780	709	24	23.98	0.46%	0.205	0.206	-
Hotspot	10MHz	QPSK	1 RB	49	Front side	10	23780	709	24	23.98	0.46%	0.410	0.412	-

2nd spot check

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot
	(MHz)					(mm)		(MHz)	Max. Toleranc e (dBm)	Power (dBm)	, in the second s	Measured	Reported	page
Head	10MHz	QPSK	1 RB	49	RE Cheek	-	23780	709	24	23.98	0.46%	0.206	0.207	-
Hotspot	10MHz	QPSK	1 RB	49	Front side	10	23780	709	24	23.98	0.46%	0.398	0.400	-

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LTE TDD Band 38

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Bandwidth	Modulatior	PR Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot
Mode	(MHz)	viodulation	110 0120	ND Start	1 USILION	(mm)	011	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	ocanny	Measured	Reported	page
					RE Cheek	-	38000	2595	24	23.85	3.51%	0.031	0.032	-
			1 RB	0	RE Tilt	-	38000	2595	24	23.85	3.51%	0.012	0.012	-
			TRD	Ŭ	LE Cheek	-	38000	2595	24	23.85	3.51%	0.060	0.062	141
					LE Tilt	-	38000	2595	24	23.85	3.51%	0.022	0.023	-
					RE Cheek	-	38000	2595	23	22.90	2.33%	0.027	0.028	-
Head	20MHz	QPSK	50 RB	25	RE Tilt	-	38000	2595	23	22.90	2.33%	0.012	0.012	-
nead	2011112	GIOR	30 110	25	LE Cheek	-	38000	2595	23	22.90	2.33%	0.051	0.052	-
					LE Tilt	-	38000	2595	23	22.90	2.33%	0.020	0.020	-
					RE Cheek	-	37850	2580	23	22.83	3.99%	0.026	0.027	-
			100	PB	RE Tilt	-	37850	2580	23	22.83	3.99%	0.012	0.012	-
			100	ND	LE Cheek	-	37850	2580	23	22.83	3.99%	0.050	0.052	-
					LE Tilt	-	37850	2580	23	22.83	3.99%	0.020	0.021	-
					Front side	10	38000	2595	24	23.85	3.51%	0.374	0.387	-
					Back side	10	38000	2595	24	23.85	3.51%	0.247	0.256	-
			1 RB	0	Bottom side	10	38000	2595	24	23.85	3.51%	0.694	0.718	142
					Right side	10	38000	2595	24	23.85	3.51%	0.139	0.144	-
					Left side	10	38000	2595	24	23.85	3.51%	0.068	0.070	-
					Front side	10	38000	2595	23	22.90	2.33%	0.299	0.306	-
					Back side	10	38000	2595	23	22.90	2.33%	0.196	0.201	-
Hotspot	20MHz	QPSK	50 RB	25	Bottom side	10	38000	2595	23	22.90	2.33%	0.552	0.565	-
					Right side	10	38000	2595	23	22.90	2.33%	0.110	0.113	-
					Left side	10	38000	2595	23	22.90	2.33%	0.052	0.053	-
					Front side	10	37850	2580	23	22.83	3.99%	0.281	0.292	-
1					Back side	10	37850	2580	23	22.83	3.99%	0.191	0.199	-
			100	RB	Bottom side	10	37850	2580	23	22.83	3.99%	0.539	0.561	-
1					Right side	10	37850	2580	23	22.83	3.99%	0.102	0.106	-
					Left side	10	37850	2580	23	22.83	3.99%	0.045	0.047	-

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Wood	(MHz)	violation	110 0120	ND Start	1 USHOT	(mm)	011	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	· ·	Measured	Reported	page
Head	20MHz	QPSK	1 RB	0	LE Cheek	-	38000	2595	24	23.85	3.51%	0.053	0.055	-
Hotspot	20MHz	QPSK	1 RB	0	Bottom side	10	38000	2595	24	23.85	3.51%	0.628	0.650	-

2nd spot check

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over N/kg)	Plot
	(MHz)					(mm)		(MHz)	Max. Toleranc e (dBm)	Power (dBm)	, in the second s	Measured	Reported	page
Head	20MHz	QPSK	1 RB	0	LE Cheek	-	38000	2595	24	23.81	4.47%	0.054	0.056	-
Hotspot	20MHz	QPSK	1 RB	0	Bottom side	10	38000	2595	24	23.81	4.47%	0.681	0.711	-

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WiFi 2.4GHz – WLAN802.11b

The data of TA-1035 from the FCC ID: 2AJOTTA-1035.

Mode	Position	Position Distance (mm)		Freq. (MHz)	Max. Rated Avg. Power + Max. Power	Scaling	Averaged SAR over 1g (W/kg)		Plot page	
		× ,		· · ·	Tolerance (dBm)	(dBm)		Measured	Reported	
	RE Cheek	-	1	2412	17.5	17.34	3.75%	0.464	0.481	143
Head	RE Tilt	-	1	2412	17.5	17.34	3.75%	0.357	0.370	-
neau	LE Cheek	-	1	2412	17.5	17.34	3.75%	0.215	0.223	-
	LE Tilt	-	1	2412	17.5	17.34	3.75%	0.182	0.189	-
	Front side	10	1	2412	17.5	17.34	3.75%	0.053	0.055	-
Hotspot	Back side	10	1	2412	17.5	17.34	3.75%	0.210	0.218	144
Hotspot	Top side	10	1	2412	17.5	17.34	3.75%	0.044	0.046	-
	Left side	10	1	2412	17.5	17.34	3.75%	0.058	0.060	-

Tested TA-1023 SAR at the worst case position of TA-1035.

Mode	Position	Distance (mm)	СН	Freq. (MHz)	(Wing) Power + Max. Power Scaling		Avg. Scaling		′kg)	Plot page
				. ,	Tolerance (dBm)	(dBm)		Measured	Reported	
Head	RE Cheek	-	1	2412	17.5	17.34	3.75%	0.443	0.460	-
Hotspot	Back side	10	1	2412	17.5	17.34	3.75%	0.201	0.209	-

2nd spot check

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged SAR over 1g (W/kg)		Plot page
				, , ,	Tolerance (dBm)	(dBm)		Measured	Reported	
Head	RE Cheek	-	1	2412	17.5	17.3	4.71%	0.432	0.452	-
Hotspot	Back side	10	1	2412	17.5	17.3	4.71%	0.201	0.210	-

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3. Simultaneous Transmission Analysis

Simultaneous Transmit Configurations	Head	Body-Worn	Hotspot
GSM + 2.4GHz Wi-Fi	Yes	Yes	No
GPRS + 2.4GHz Wi-Fi	No	No	Yes
WCDMA + 2.4GHz Wi-Fi	Yes	Yes	Yes
LTE + 2.4GHz Wi-Fi	Yes	Yes	Yes
GSM + BT	No	Yes	No
GPRS + BT	No	No	No
WCDMA + BT	No	Yes	No
LTE + BT	No	Yes	No

Simultaneous Transmission Scenarios:

1. WiFi 2.4G and BT can't transmit simultaneously.

2. The device does not support VoLTE.

3. The device does not support DTM function. Body-worn accessory testing is typically associated with voice operations. Therefore, GSM voice was evaluated for body-worn SAR.

4.Based on KDB447498D01 note 36, when SAR test exclusion is allowed by other published RF exposure KDB procedures, such as the 2.5 cm hotspot mode SAR test exclusion for an edge or surface, then estimated SAR is not required to determine simultaneous SAR test exclusion.

5. Held to ear configurations are not applicable to Bluetooth and therefore were not considered for simultaneous transmission.

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3.1 Estimated SAR calculation

According to KDB447498 D01v06 – When standalone SAR test exclusion applies to an antenna that transmits simultaneously with other antennas, the standalone SAR must be estimated according to following to determine simultaneous transmission SAR test exclusion:

Estimated SAR =	Max.tune up power(mW)	$\sqrt{f(GHz)}$
	Min. test separation distance(mm)	7.5

If the minimum test separation distance is < 5mm, a distance of 5mm is used for estimated SAR calculation. When the test separation distance is >50mm, the 0.4W/kg is used for SAR-1g.

mode	position	max. power (dB)	max. power (mW)	f(GHz)	distance (mm)	х	Estimated SAR
BT	body-worn	12	15.849	2.48	15	7.5	0.222 (1g)

3.2 SPLSR evaluation and analysis

Per KDB447498D01, when the sum of SAR is larger than the limit, SAR test exclusion is determined by the SAR sum to peak location separation ratio(SPLSR).

The simultaneous transmitting antennas in each operating mode and exposure condition combination must be considered one pair at a time to determine the SAR to peak location separation ratio to qualify for test exclusion.

The ratio is determined by $(SAR1 + SAR2)^{1.5/Ri}$, rounded to two decimal digits, and must be ≤ 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

SAR1 and SAR2 are the highest reported or estimated SAR for each antenna in the pair, and Ri is the separation distance between the peak SAR locations for the antenna pair in mm.

When standalone test exclusion applies, SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

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Simultaneous	Transmission	Combination
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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation								
Frequency		10	reported S	SAR / W/kg	ΣSAR			
band	P	osition	WWAN	WLAN	<1.6W/kg			
0014.050		Right cheek	0.297	0.481	0.78			
	Head	Right tilt	0.137	0.370	0.51			
GSM 850	пеац	Left cheek	0.318	0.223	0.54			
		Left tilt	0.114	0.189	0.30			
		Front	0.544	0.055	0.60			
		Back	0.501	0.218	0.72			
GPRS 850	Hotspot	Тор	-	0.046	0.05			
(1Dn1UP)	Ποισροι	Bottom	0.249	-	0.25			
		Right	0.271	-	0.27			
		Left	0.326	0.060	0.39			
	Head	Right cheek	0.165	0.481	0.65			
GSM 1900		Right tilt	0.046	0.370	0.42			
00101 1300		Left cheek	0.110	0.223	0.33			
		Left tilt	0.062	0.189	0.25			
	Hotspot	Front side	0.486	0.055	0.54			
		Back side	0.313	0.218	0.53			
GPRS 1900		Top side	-	0.046	0.05			
(1Dn4UP)	Ποτοροτ	Bottom side	0.880	-	0.88			
		Right side	0.088	-	0.09			
		Left side	0.071	0.060	0.13			
		Right cheek	0.161	0.481	0.64			
	Head	Right tilt	0.039	0.370	0.41			
	Heau	Left cheek	0.111	0.223	0.33			
		Left tilt	0.068	0.189	0.26			
WCDMA		Front side	0.654	0.055	0.71			
Band II		Back side	0.457	0.218	0.68			
	l laterat	Top side	-	0.046	0.05			
	Hotspot	Bottom side	1.231	-	1.23			
		Right side	0.121	-	0.12			
		Left side	0.099	0.060	0.16			

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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation								
Frequency			reported S	SAR / W/kg	ΣSAR			
band		osition	WWAN	WLAN	<1.6W/kg			
		Right cheek	0.261	0.481	0.74			
	Head	Right tilt	0.087	0.370	0.46			
	Tieau	Left cheek	0.184	0.223	0.41			
		Left tilt	0.072	0.189	0.26			
WCDMA		Front side	0.620	0.055	0.68			
Band IV		Back side	0.446	0.218	0.66			
	Hotspot	Top side	-	0.046	0.05			
	Потэрог	Bottom side	1.279	-	1.28			
		Right side	0.172	-	0.17			
		Left side	0.076	0.060	0.14			
	Head	Right cheek	0.313	0.481	0.79			
		Right tilt	0.146	0.370	0.52			
		Left cheek	0.336	0.223	0.56			
		Left tilt	0.119	0.189	0.31			
WCDMA	Hotspot	Front side	0.578	0.055	0.63			
Band V		Back side	0.454	0.218	0.67			
		Top side	-	0.046	0.05			
		Bottom side	0.283	-	0.28			
		Right side	0.272	-	0.27			
		Left side	0.285	0.060	0.35			
		Right cheek	0.159	0.481	0.64			
	Head	Right tilt	0.053	0.370	0.42			
	Tieau	Left cheek	0.106	0.223	0.33			
		Left tilt	0.049	0.189	0.24			
LTE FDD		Front side	0.622	0.055	0.68			
Band 2		Back side	0.435	0.218	0.65			
		Top side	-	0.046	0.05			
	Hotspot	Bottom side	1.260	-	1.26			
		Right side	0.110	-	0.11			
		Left side	0.102	0.060	0.16			

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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation						
Frequency		10	reported S	ΣSAR		
band	Position		WWAN	WLAN	<1.6W/kg	
		Right cheek	0.268	0.481	0.75	
	Head	Right tilt	0.048	0.370	0.42	
		Left cheek	0.158	0.223	0.38	
		Left tilt	0.072	0.189	0.26	
LTE FDD		Front side	0.656	0.055	0.71	
Band 4		Back side	0.432	0.218	0.65	
	Hotspot	Top side	-	0.046	0.05	
	Ποιδροι	Bottom side	1.252	-	1.25	
		Right side	0.164	-	0.16	
		Left side	0.090	0.060	0.15	
	Head	Right cheek	0.256	0.481	0.74	
		Right tilt	0.142	0.370	0.51	
	Tieau	Left cheek	0.299	0.223	0.52	
		Left tilt	0.153	0.189	0.34	
LTE FDD	Hotspot	Front side	0.357	0.055	0.41	
Band 5		Back side	0.361	0.218	0.58	
		Top side	-	0.046	0.05	
		Bottom side	0.211	-	1.21	
		Right side	0.189	-	0.26	
		Left side	0.404	0.060	0.46	
LTE FDD Band 7		Right cheek	0.050	0.481	0.53	
	Head	Right tilt	tilt 0.016	0.370	0.39	
	Tieau	Left cheek	0.101	0.223	0.32	
		Left tilt	0.041	0.189	0.23	
		Front side	0.757	0.055	0.81	
		Back side	Back side 0.536 0.218	0.218	0.75	
		Top side	-	0.046	0.05	
	Hotspot	Bottom side	1.211	-	1.21	
		Right side	0.263	-	0.26	
		Left side	0.117	0.060	0.18	

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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation						
Frequency			reported S	ΣSAR		
band	Position		WWAN	WLAN	<1.6W/kg	
		Right cheek	0.208	0.481	0.69	
	Head	Right tilt	0.103	0.370	0.47	
		Left cheek	0.193	0.223	0.42	
		Left tilt	0.094	0.189	0.28	
LTE FDD		Front side	0.444	0.055	0.50	
Band 12		Back side	0.434	0.218	0.65	
	Llatanat	Top side	-	0.046	0.05	
	Hotspot	Bottom side	0.116	-	0.12	
		Right side	0.248	-	0.25	
		Left side	0.200	0.060	0.26	
		Right cheek	0.208	0.481	0.69	
		Right tilt	0.099	0.370	0.47	
	Head	Left cheek	0.196	0.223	0.42	
		Left tilt	0.100	0.189	0.29	
LTE FDD	Hotspot	Front side	0.446	0.055	0.50	
Band 17		Back side	0.421	0.218	0.64	
		Top side	-	0.046	0.05	
		Bottom side	0.116	-	0.12	
		Right side	0.246	-	0.25	
		Left side	0.201	0.060	0.26	
LTE TDD Band 38	Head	Right cheek	0.032	0.481	0.51	
		Right tilt	0.012	0.370	0.38	
	Tieau	Left cheek	0.062	0.223	0.29	
		Left tilt	0.023	0.189	0.21	
		Front side	0.387	0.055	0.44	
		Back side	0.256	0.218	0.47	
	Hotspot	Top side	-	0.046	0.05	
	Boti	Bottom side	0.718	-	0.72	
		Right side	0.144	-	0.14	
		Left side	0.070	0.060	0.13	

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reported SAR WWAN and Bluetooth, ΣSAR evaluation						
Frequency			reported SAR / W/kg		ΣSAR	
band	Pos	ition	WWAN	Bluetooth	<1.6W/kg	
GSM 850	Body-worn	Front	0.315	0.222	0.54	
	Douy-worn	Back	0.314	0.222	0.54	
GSM 1900	Body-worn	Front	0.244	0.222	0.47	
0310 1900	Douy-worn	Back	0.168	0.222	0.39	
WCDMA	Body-worn	Front	0.654	0.222	0.88	
Band II	bouy-worn	Back	0.457	0.222	0.68	
WCDMA	Body-worn	Front	0.490	0.222	0.71	
Band IV	bouy-worn	Back	0.341	0.222	0.56	
WCDMA	Body-worn	Front	0.578	0.222	0.80	
Band V		Back	0.454	0.222	0.68	
LTE FDD Band 2	Body-worn	Front	0.622	0.222	ΣSAR <1.6W/kg 0.54 0.54 0.39 0.88 0.68 0.71 0.56 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.68 0.55 0.58 0.58 0.58 0.59 0.48 0.67 0.66 0.67 0.64 0.61	
	bouy-worn	Back	0.435	0.222	0.66	
LTE FDD Band 4	Body-worn	Front	0.455	0.222	0.68	
	bouy-worn	Back	0.323	0.222	0.55	
LTE FDD Band 5	Body-worn	Front	0.357	0.222	0.58	
LILI DD Danu S	Douy-worn	Back	0.361	0.222	0.58	
LTE FDD Band 7	Body-worn	Front	0.366	0.222	0.59	
	Douy-worn	Back	0.257	0.222	ΣSAR <1.6W/kg	
LTE FDD Band 12	Body worn	Front	0.444	0.222	0.68 0.71 0.56 0.80 0.68 0.84 0.66 0.68 0.55 0.58 0.58 0.58 0.59 0.48 0.67 0.66 0.67 0.64 0.61	
	Douy-worn	Back	0.434	0.222	0.66	
LTE FDD Band 17	Body-worn	Front	0.446	0.222	0.54 0.54 0.47 0.39 0.88 0.68 0.71 0.56 0.80 0.68 0.68 0.68 0.68 0.68 0.68 0.55 0.58 0.55 0.58 0.58 0.58 0.59 0.48 0.67 0.66 0.67 0.66 0.67	
	Douy-wom	Back	0.421	0.222	0.64	
LTE TDD Band 38	Body-worn	Front	0.387	0.222	0.61	
	Douy-worn	Back	0.256	0.222	0.48	

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4. Instruments List

Manufacturer	Device	Туре	Serial number	Date of last calibration	Date of next calibration
SPEAG	Dosimetric E-Field Probe	EX3DV4	3923	Sep.02,2016	Sep.01,2017
			7466	Jul.04,2017	Jul.03,2018
			3831	Jan .23,2017	Jan .22,2018
		D750V3	1015	Aug.30,2016	Aug.29,2017
				Aug.21,2017	Aug.20,2018
			4d063	Aug.25,2016	Aug.24,2017
		D835V2	4d120	Jul.03,2017	Jul.02,2018
SPEAG	System Validation Dipole	D1750V2	4000	Aug.31,2016	Aug.30,2017
	Брою		1008	Aug.21,2017	Aug.20,2018
		D1900V2	5d173	May.31,2017	May.30,2018
		D2450V2	727	Apr.21,2017	Apr.20,2018
		D2600V2	1005	Jan.25,2017	Jan.24,2018
SPEAG	Data acquisition	DAE4	547	Mar.22,2017	Mar.21,2018
	Electronics	DAE4	1336	Nov.22,2016	Nov.21,2017
SPEAG	Software	DASY 52 V52.8.8	N/A	Calibration not required	Calibration not required
SPEAG	Phantom	SAM	N/A	Calibration not required	Calibration not required
Agilent	Network Analyzer	E5071C	MY46107530	Jan.20,2017	Jan.19,2018
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional	772D	MY52180142	Apr.13,2017	Apr.12,2018
	coupler	778D	MY52180302	Apr.13,2017	Apr.12,2018
Agilent	RF Signal Generator	N5181A	MY50144143	Mar.01,2017	Feb.28,2018
Agilent	Power Meter	E4417A	MY52240003	Oct.17,2016	Oct.16,2017

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Manufacturer	Device	Туре	Serial number	Date of last calibration	Date of next calibration
Anritsu	Radio Communication Test	MT8820C	6201061049	Apr.08,2017	Apr.07,2018
TECPEL	Digital thermometer	DTM-303A	TP130077	Mar.17,2017	Mar.16,2018
Agilent	Power Sensor	E9301H	MY52200003	Oct.17,2016	Oct.16,2017
	Fower Sensor	E9301H	MY52200004	Oct.17,2016	Oct.16,2017

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5. Measurements

Date: 2017/6/29

GSM 850_Head_Le Cheek_CH 190

Communication System: GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3 Medium parameters used: f = 837 MHz; σ = 0.872 S/m; ϵ_r = 42.019; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 23.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

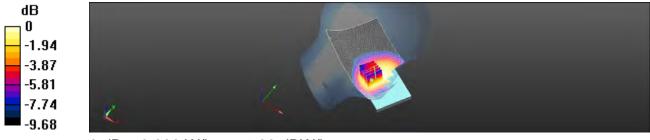
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.291 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 3.337 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 0.314 W/kg SAR(1 g) = 0.263 W/kg; SAR(10 g) = 0.206 W/kg Maximum value of SAR (measured) = 0.289 W/kg



0 dB = 0.289 W/kg = -5.39 dBW/kg

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Date: 2017/7/3

GSM 850_Body-worn_Front side_CH 190_15mm

Communication System: GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.3 Medium parameters used: f = 837 MHz; σ = 1.007 S/m; ϵ _r = 53.299; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.9°C

DASY5 Configuration:

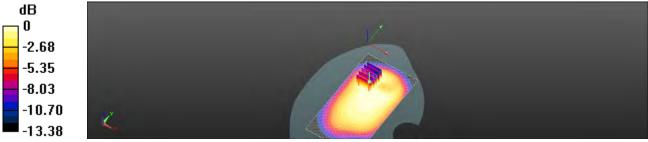
- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.324 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 16.74 V/m; Power Drift = -0.15 dB Peak SAR (extrapolated) = 0.371 W/kg SAR(1 g) = 0.260 W/kg; SAR(10 g) = 0.177 W/kg Maximum value of SAR (measured) = 0.316 W/kg



0 dB = 0.316 W/kg = -5.00 dBW/kg

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Date: 2017/7/3

GPRS 850_Hotspot_Front side_CH 190_10mm

Communication System: GPRS (1Dn1Up); Frequency: 836.6 MHz; Duty Cycle: 1:8.3 Medium parameters used: f = 837 MHz; σ = 1.007 S/m; ϵ_r = 53.299; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.9°C

DASY5 Configuration:

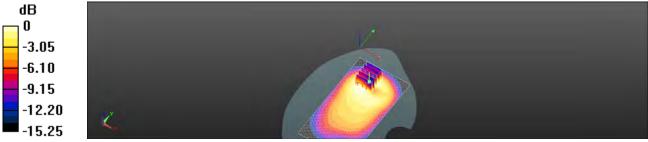
- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.597 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 17.16 V/m; Power Drift = -0.12 dB Peak SAR (extrapolated) = 0.720 W/kg SAR(1 g) = 0.449 W/kg; SAR(10 g) = 0.281 W/kg Maximum value of SAR (measured) = 0.579 W/kg



0 dB = 0.579 W/kg = -2.38 dBW/kg

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Date: 2017/7/8

GSM 1900_Head_Re Cheek_CH 810

Communication System: GSM; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3 Medium parameters used: f = 1910 MHz; σ = 1.407 S/m; ϵ_r = 39.997; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 23.2°C; Liquid temperature: 22.4°C

DASY5 Configuration:

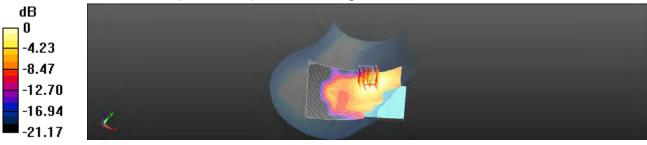
- Probe: EX3DV4 SN3923; ConvF(8.9, 8.9, 8.9); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.195 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 5.181 V/m; Power Drift = -0.13 dB Peak SAR (extrapolated) = 0.206 W/kg SAR(1 g) = 0.141 W/kg; SAR(10 g) = 0.093 W/kg Maximum value of SAR (measured) = 0.174 W/kg



0 dB = 0.174 W/kg = -7.58 dBW/kg

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Date: 2017/7/14

GSM 1900_Body-worn_Front side_CH 810_15mm

Communication System: GSM; Frequency: 1909.8 MHz; Duty Cycle: 1:8.3 Medium parameters used: f = 1910 MHz; σ = 1.534 S/m; ϵ_r = 52.736; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.0°C; Liquid temperature: 21.8°C

DASY5 Configuration:

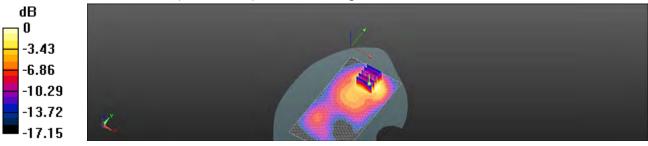
- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.278 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 4.686 V/m; Power Drift = 0.11 dB Peak SAR (extrapolated) = 0.341 W/kg SAR(1 g) = 0.209 W/kg; SAR(10 g) = 0.120 W/kg Maximum value of SAR (measured) = 0.282 W/kg



0 dB = 0.282 W/kg = -5.50 dBW/kg

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Date: 2017/7/14

GPRS 1900_Hotspot_Bottom side_CH 512_10mm

Communication System: GPRS (1Dn4Up); Frequency: 1850.2 MHz; Duty Cycle: 1:2 Medium parameters used: f = 1850.2 MHz; σ = 1.474 S/m; ϵ _r = 52.927; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.0°C; Liquid temperature: 21.8°C

DASY5 Configuration:

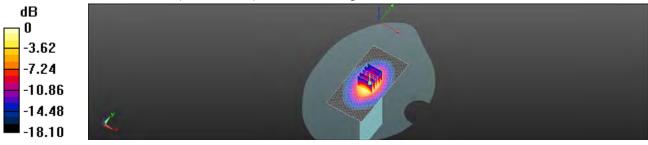
- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.996 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 25.15 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 1.21 W/kg SAR(1 g) = 0.717 W/kg; SAR(10 g) = 0.386 W/kg Maximum value of SAR (measured) = 0.986 W/kg



0 dB = 0.986 W/kg = -0.06 dBW/kg

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Date: 2017/7/8

WCDMA Band II_Head_Re Cheek_CH 9262

Communication System: WCDMA; Frequency: 1852.4 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1852.4 MHz; σ = 1.344 S/m; ϵ_r = 40.206; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 23.2°C; Liquid temperature: 22.4°C

DASY5 Configuration:

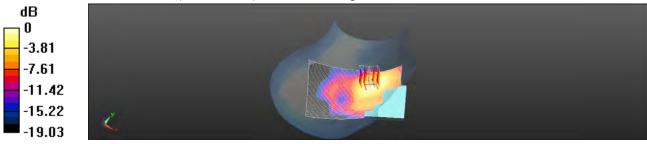
- Probe: EX3DV4 SN3923; ConvF(8.9, 8.9, 8.9); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.209 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 4.761 V/m; Power Drift = -0.15 dB Peak SAR (extrapolated) = 0.234 W/kg SAR(1 g) = 0.158 W/kg; SAR(10 g) = 0.101 W/kg Maximum value of SAR (measured) = 0.198 W/kg



0 dB = 0.198 W/kg = -7.04 dBW/kg

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Date: 2017/7/14

WCDMA Band II_Hotspot_Bottom side_CH 9400_10mm

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1880 MHz; σ = 1.504 S/m; ϵ_r = 52.762; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.0°C; Liquid temperature: 21.8°C

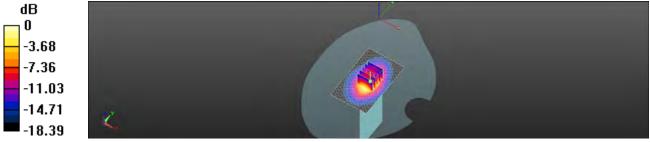
DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (51x81x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 1.62 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 31.42 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 1.95 W/kg SAR(1 g) = 1.11 W/kg; SAR(10 g) = 0.637 W/kg Maximum value of SAR (measured) = 1.61 W/kg



0 dB = 1.61 W/kg = 2.06 dBW/kg

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Date: 2017/7/7

WCDMA Band IV_Head_Re Cheek_CH 1412

Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1732.4 MHz; σ = 1.322 S/m; ϵ_r = 39.898; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.7°C; Liquid temperature: 22.5°C

DASY5 Configuration:

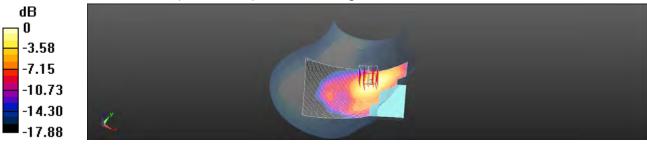
- Probe: EX3DV4 SN3923; ConvF(9.27, 9.27, 9.27); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.322 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 6.592 V/m; Power Drift = 0.13 dB Peak SAR (extrapolated) = 0.383 W/kg SAR(1 g) = 0.250 W/kg; SAR(10 g) = 0.156 W/kg Maximum value of SAR (measured) = 0.319 W/kg



0 dB = 0.319 W/kg = -4.96 dBW/kg

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Date: 2017/7/13

WCDMA Band IV_Body-worn_Front side_CH 1412_15mm

Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1732.4 MHz; σ = 1.419 S/m; ϵ_r = 53.851; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.2°C

DASY5 Configuration:

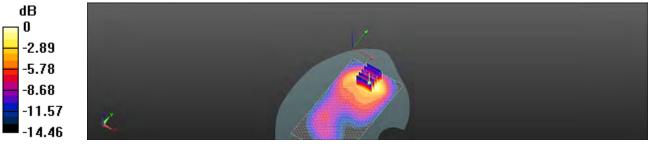
- Probe: EX3DV4 SN3923; ConvF(8.78, 8.78, 8.78); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.604 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 6.487 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 0.721 W/kg SAR(1 g) = 0.470 W/kg; SAR(10 g) = 0.286 W/kg Maximum value of SAR (measured) = 0.608 W/kg



0 dB = 0.608 W/kg = -2.16 dBW/kg

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Date: 2017/7/13

WCDMA Band IV_Hotspot_Bottom side_CH 1312_10mm

Communication System: WCDMA; Frequency: 1712.4 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1712.4 MHz; σ = 1.406 S/m; ϵ _r = 53.9; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.2°C

DASY5 Configuration:

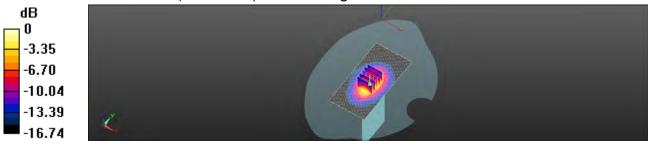
- Probe: EX3DV4 SN3923; ConvF(8.78, 8.78, 8.78); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.67 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 33.36 V/m; Power Drift = 0.11 dB Peak SAR (extrapolated) = 1.96 W/kg SAR(1 g) = 1.21 W/kg; SAR(10 g) = 0.680 W/kg Maximum value of SAR (measured) = 1.61 W/kg



0 dB = 1.61 W/kg = 2.06 dBW/kg

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Date: 2017/6/29

WCDMA Band V_Head_Le Cheek_CH 4233

Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1 Medium parameters used: f = 847 MHz; σ = 0.884 S/m; ϵ_r = 42.009; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 23.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

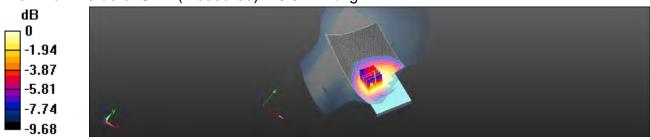
Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.352 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 3.370 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 0.372 W/kg SAR(1 g) = 0.309 W/kg; SAR(10 g) = 0.242 W/kg Maximum value of SAR (measured) = 0.342 W/kg



0 dB = 0.342 W/kg = -4.66 dBW/kg

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Date: 2017/7/3

WCDMA Band V_Hotspot_Front side_CH 4233_10mm

Communication System: WCDMA; Frequency: 846.6 MHz; Duty Cycle: 1:1 Medium parameters used: f = 847 MHz; σ = 1.019 S/m; ϵ_r = 53.192; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.715 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 18.76 V/m; Power Drift = -0.18 dB

Peak SAR (extrapolated) = 0.839 W/kg

SAR(1 g) = 0.531 W/kg; SAR(10 g) = 0.344 W/kg

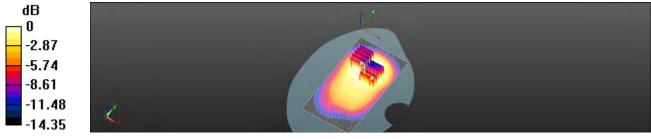
Configuration/Body/Zoom Scan (5x5x7)/Cube 1: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 18.76 V/m; Power Drift = -0.18 dB Peak SAR (extrapolated) = 0.651 W/kg

SAR(1 g) = 0.440 W/kg; SAR(10 g) = 0.311 W/kg

Maximum value of SAR (measured) = 0.543 W/kg



0 dB = 0.543 W/kg = -2.65 dBW/kg

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Report No. : E5/2017/90025 Page : 127 of 286

Date: 2017/7/8

LTE Band 2 (20MHz)_Head_Re Cheek_CH 18700_QPSK_1-0

Communication System: LTE; Frequency: 1860 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1860 MHz; σ = 1.353 S/m; ϵ_r = 40.15; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 23.2°C; Liquid temperature: 22.4°C

DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(8.9, 8.9, 8.9); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

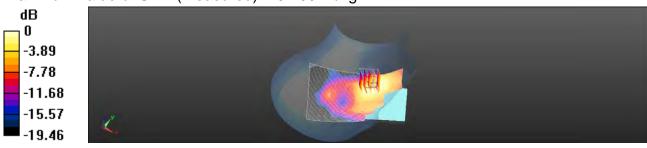
Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.224 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 4.896 V/m; Power Drift = 0.15 dB Peak SAR (extrapolated) = 0.234 W/kg SAR(1 g) = 0.156 W/kg; SAR(10 g) = 0.098 W/kg Maximum value of SAR (measured) = 0.200 W/kg



0 dB = 0.200 W/kg = -7.00 dBW/kg

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Date: 2017/7/14

LTE Band 2 (20MHz)_Hotspot_Bottom side_CH 18900_QPSK_1-50_10mm

Communication System: LTE; Frequency: 1880 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1880 MHz; σ = 1.504 S/m; ϵ_r = 52.762; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.0°C; Liquid temperature: 21.8°C

DASY5 Configuration:

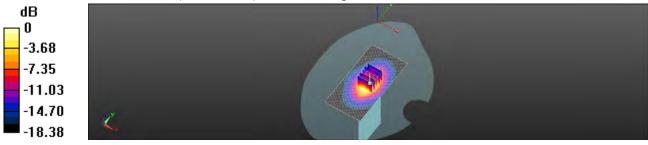
- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.56 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 32.46 V/m; Power Drift = -0.08 dB Peak SAR (extrapolated) = 1.88 W/kg SAR(1 g) = 1.13 W/kg; SAR(10 g) = 0.574 W/kg Maximum value of SAR (measured) = 1.51 W/kg



0 dB = 1.51 W/kg = 1.79 dBW/kg

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Date: 2017/7/7

LTE Band 4 (20MHz)_Head_Re Cheek_CH 20050_QPSK_1-50_1

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1720 MHz; σ = 1.314 S/m; ϵ_r = 39.917; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.7°C; Liquid temperature: 22.5°C

DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(9.27, 9.27, 9.27); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

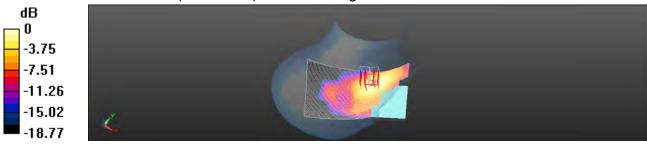
Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.301 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 5.934 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 0.354 W/kg SAR(1 g) = 0.231 W/kg; SAR(10 g) = 0.146 W/kg Maximum value of SAR (measured) = 0.292 W/kg



0 dB = 0.292 W/kg = -5.34 dBW/kg

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Date: 2017/7/13

LTE Band 4 (20MHz)_Body-worn_Front side_CH 20050_QPSK_1-50_15mm

Communication System: WCDMA; Frequency: 1720 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1720 MHz; σ = 1.411 S/m; ϵ_r = 53.884; ρ = 1000 kg/m³ Phantom section: Flat Section

DASY5 Configuration:

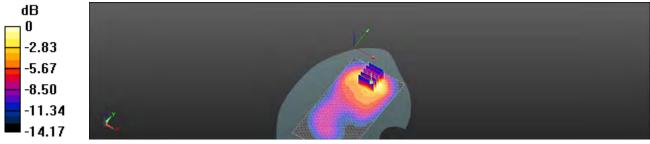
- Probe: EX3DV4 SN3923; ConvF(8.78, 8.78, 8.78); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.524 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 5.975 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 0.600 W/kg SAR(1 g) = 0.392 W/kg; SAR(10 g) = 0.240 W/kg Maximum value of SAR (measured) = 0.508 W/kg



0 dB = 0.508 W/kg = -2.94 dBW/kg

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Report No. : E5/2017/90025 Page : 131 of 286

Date: 2017/7/13

LTE Band 4 (20MHz)_Hotspot_Bottom side_CH 20050_QPSK_1-50_10mm

Communication System: LTE; Frequency: 1720 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1720 MHz; σ = 1.411 S/m; ϵ_r = 53.884; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.2°C

DASY5 Configuration:

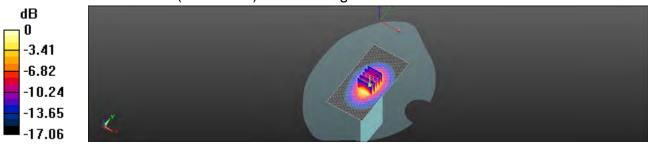
- Probe: EX3DV4 SN3923; ConvF(8.78, 8.78, 8.78); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.59 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 33.00 V/m; Power Drift = 0.09 dB Peak SAR (extrapolated) = 1.89 W/kg SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.639 W/kg Maximum value of SAR (measured) = 1.56 W/kg



0 dB = 1.56 W/kg = 1.92 dBW/kg

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Date: 2017/8/24

LTE Band 5 (10MHz)_Head_Le Cheek_CH 20450_QPSK_1-25

Communication System: LTE; Frequency: 829 MHz; Duty Cycle: 1:1 Medium parameters used: f = 829 MHz; σ = 0.911 S/m; ϵ_r = 41.757; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

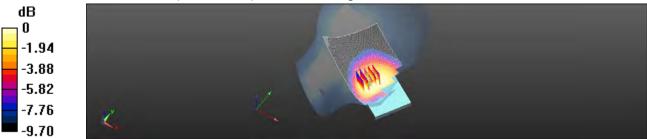
- Probe: EX3DV4 SN7466; ConvF(10.2, 10.2, 10.2); Calibrated: 2017/7/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2016/11/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.310 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 6.767 V/m; Power Drift = 0.09 dB Peak SAR (extrapolated) = 0.323 W/kg SAR(1 g) = 0.270 W/kg; SAR(10 g) = 0.212 W/kg Maximum value of SAR (measured) = 0.300 W/kg



0 dB = 0.300 W/kg = -5.22 dBW/kg

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Report No. : E5/2017/90025 Page : 133 of 286

Date: 2017/8/25

LTE Band 5 (10MHz)_Hotspot_Left side_CH 20450_QPSK_1-25_10mm

Communication System: LTE; Frequency: 829 MHz; Duty Cycle: 1:1 Medium parameters used: f = 829 MHz; σ = 1 S/m; ϵ_r = 54.591; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

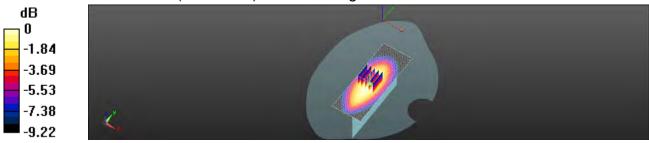
- Probe: EX3DV4 SN7466; ConvF(10.24, 10.24, 10.24); Calibrated: 2017/7/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2016/11/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (41x111x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.513 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 24.31 V/m; Power Drift = -0.13 dB Peak SAR (extrapolated) = 0.584 W/kg SAR(1 g) = 0.364 W/kg; SAR(10 g) = 0.219 W/kg Maximum value of SAR (measured) = 0.509 W/kg



0 dB = 0.509 W/kg = -2.93 dBW/kg

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Report No. : E5/2017/90025 Page : 134 of 286

Date: 2017/7/12

LTE Band 7 (20MHz)_Head_Le Cheek_CH 21350_QPSK_1-99

Communication System: LTE; Frequency: 2560 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2560 MHz; σ = 1.934 S/m; ϵ_r = 39.144; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.5°C; Liquid temperature: 22.0°C

DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(7.77, 7.77, 7.77); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

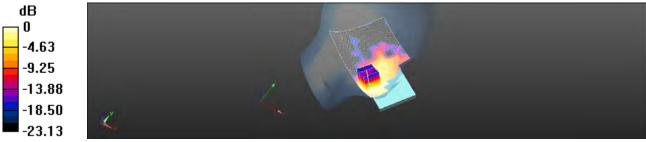
Configuration/Head/Area Scan (91x141x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.130 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm Reference Value = 1.400 V/m; Power Drift = -0.19 dB Peak SAR (extrapolated) = 0.190 W/kg SAR(1 g) = 0.099 W/kg; SAR(10 g) = 0.053 W/kg

Maximum value of SAR (measured) = 0.140 W/kg



0 dB = 0.140 W/kg = -8.55 dBW/kg

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Report No. : E5/2017/90025 Page : 135 of 286

Date: 2017/7/5

LTE Band 7 (20MHz)_Body-worn_Front side_CH 21350_QPSK_1-99_15mm

Communication System: LTE; Frequency: 2560 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2560 MHz; σ = 2.153 S/m; ϵ_r = 51.521; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 22.0°C

DASY5 Configuration:

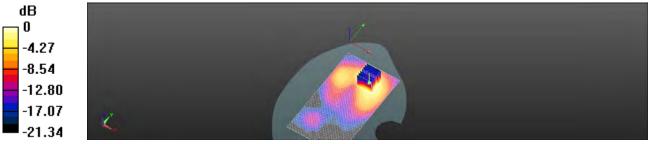
- Probe: EX3DV4 SN3923; ConvF(8.06, 8.06, 8.06); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (91x161x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.514 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm Reference Value = 3.143 V/m; Power Drift = 0.14 dB Peak SAR (extrapolated) = 0.732 W/kg SAR(1 g) = 0.360 W/kg; SAR(10 g) = 0.183 W/kg Maximum value of SAR (measured) = 0.533 W/kg



0 dB = 0.533 W/kg = -2.74 dBW/kg

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Report No. : E5/2017/90025 Page : 136 of 286

Date: 2017/7/5

LTE Band 7 (20MHz)_Hotspot_Bottom side_CH 21350_QPSK_1-0_10mm

Communication System: LTE; Frequency: 2560 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2560 MHz; σ = 2.153 S/m; ϵ_r = 51.521; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 22.0°C

DASY5 Configuration:

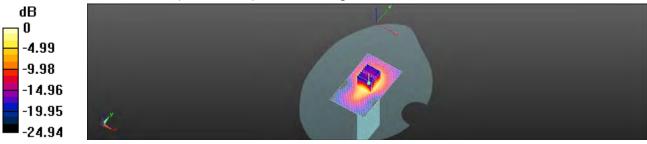
- Probe: EX3DV4 SN3923; ConvF(8.06, 8.06, 8.06); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.81 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm Reference Value = 24.94 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 2.39 W/kg SAR(1 g) = 1.17 W/kg; SAR(10 g) = 0.558 W/kg Maximum value of SAR (measured) = 1.76 W/kg



0 dB = 1.76 W/kg = 2.45 dBW/kg

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Report No. : E5/2017/90025 Page : 137 of 286

Date: 2017/6/28

LTE Band 12 (10MHz)_Head_Re Cheek_CH 23130_QPSK 1-49

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1 Medium parameters used: f = 711 MHz; σ = 0.855 S/m; ϵ_r = 41.919; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 23.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(11.01, 11.01, 11.01); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

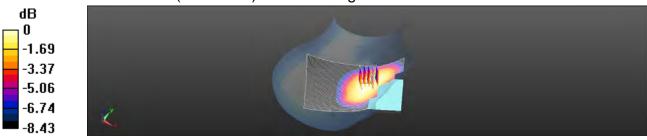
Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.243 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm

Reference Value = 4.931 V/m; Power Drift = 0.15 dB Peak SAR (extrapolated) = 0.267 W/kg SAR(1 g) = 0.208 W/kg; SAR(10 g) = 0.161 W/kg Maximum value of SAR (measured) = 0.236 W/kg



0 dB = 0.236 W/kg = -6.27 dBW/kg

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Report No. : E5/2017/90025 Page : 138 of 286

Date: 2017/7/2

LTE Band 12 (10MHz)_Hotspot_Front side_CH 23130_QPSK_1-49_10mm

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1 Medium parameters used: f = 711 MHz; σ = 0.934 S/m; ϵ_r = 54.717; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.8°C; Liquid temperature: 22.3°C

DASY5 Configuration:

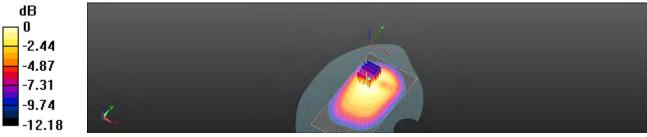
- Probe: EX3DV4 SN3923; ConvF(10.83, 10.83, 10.83); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.540 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 18.59 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 0.603 W/kg SAR(1 g) = 0.443 W/kg; SAR(10 g) = 0.301 W/kg Maximum value of SAR (measured) = 0.529 W/kg



0 dB = 0.529 W/kg = -2.77 dBW/kg

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Report No. : E5/2017/90025 Page : 139 of 286

Date: 2017/6/28

LTE Band 17 (10MHz)_Head_Re Cheek_CH 23780_QPSK 1-49

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1 Medium parameters used: f = 709 MHz; σ = 0.854 S/m; ϵ_r = 41.933; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 23.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

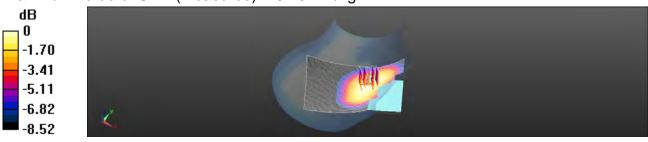
- Probe: EX3DV4 SN3923; ConvF(11.01, 11.01, 11.01); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.242 W/kg

Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 4.746 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 0.260 W/kg SAR(1 g) = 0.207 W/kg; SAR(10 g) = 0.160 W/kg Maximum value of SAR (measured) = 0.237 W/kg



0 dB = 0.237 W/kg = -6.25 dBW/kg

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Date: 2017/7/2

LTE Band 17 (10MHz)_Hotspot_Front side_CH 23780_QPSK_1-49_10mm

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1 Medium parameters used: f = 709 MHz; σ = 0.934 S/m; ϵ_r = 54.742; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.8°C; Liquid temperature: 22.3°C

DASY5 Configuration:

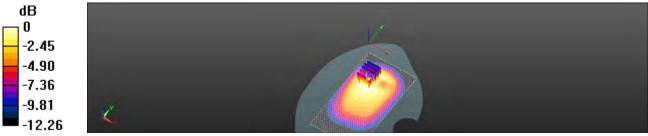
- Probe: EX3DV4 SN3923; ConvF(10.83, 10.83, 10.83); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (71x131x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.550 W/kg

Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

dy=8mm, dz=5mm Reference Value = 18.42 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.640 W/kg SAR(1 g) = 0.444 W/kg; SAR(10 g) = 0.298 W/kg Maximum value of SAR (measured) = 0.545 W/kg



0 dB = 0.545 W/kg = -2.64 dBW/kg

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Date: 2017/7/12

LTE Band 38 (20MHz)_Head_Le Cheek_CH 38000_QPSK_1-0

Communication System: LTE; Frequency: 2595 MHz; Duty Cycle: 1:0.633 Medium parameters used: f = 2595 MHz; σ = 1.974 S/m; ϵ_r = 39.104; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.5°C; Liquid temperature: 22.0°C

DASY5 Configuration:

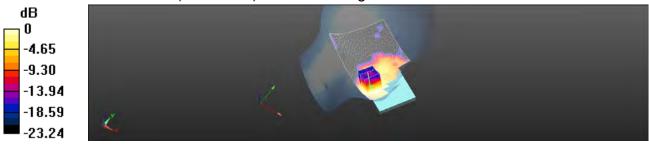
- Probe: EX3DV4 SN3923; ConvF(7.77, 7.77, 7.77); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (91x141x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0855 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm Reference Value = 0.3130 V/m; Power Drift = 0.17 dB Peak SAR (extrapolated) = 0.117 W/kg SAR(1 g) = 0.060 W/kg; SAR(10 g) = 0.032 W/kg Maximum value of SAR (measured) = 0.0853 W/kg



0 dB = 0.0853 W/kg = -10.69 dBW/kg

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Date: 2017/7/5

LTE Band 38 (20MHz)_Hotspot_Bottom side_CH 38000_QPSK_1-0_10mm

Communication System: LTE; Frequency: 2595 MHz; Duty Cycle: 1:0.633 Medium parameters used: f = 2595 MHz; σ = 2.202 S/m; ϵ_r = 51.462; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 22.0°C

DASY5 Configuration:

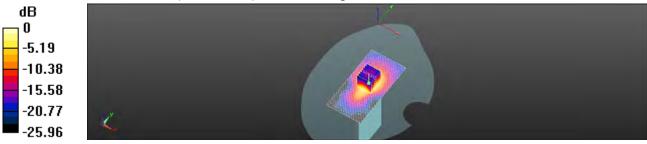
- Probe: EX3DV4 SN3923; ConvF(7.84, 7.84, 7.84); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Body/Area Scan (61x121x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.07 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm Reference Value = 18.22 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 1.46 W/kg SAR(1 g) = 0.694 W/kg; SAR(10 g) = 0.321 W/kg Maximum value of SAR (measured) = 1.06 W/kg



0 dB = 1.06 W/kg = 0.25 dBW/kg

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Report No. : E5/2017/90025 Page : 143 of 286

Date: 2017/7/4

WLAN 802.11b_Head_Re Cheek_CH 1

Communication System: WLAN(2.4G); Frequency: 2412 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2412 MHz; σ = 1.787 S/m; ϵ_r = 38.208; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.3°C; Liquid temperature: 22.1°C

DASY5 Configuration:

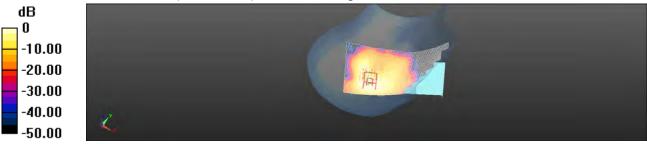
- Probe: EX3DV4 SN3923; ConvF(7.95, 7.95, 7.95); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (81x151x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.696 W/kg

Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm Reference Value = 6.781 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 0.934 W/kg SAR(1 g) = 0.464 W/kg; SAR(10 g) = 0.216 W/kg Maximum value of SAR (measured) = 0.673 W/kg



0 dB = 0.673 W/kg = -1.72 dBW/kg

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Date: 2017/7/5

WLAN 802.11b_Hotspot_Back side_CH 1_10mm

Communication System: WLAN 2.4G; Frequency: 2412 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2412 MHz; σ = 1.907 S/m; ϵ_r = 52.415; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN3923; ConvF(8.06, 8.06, 8.06); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

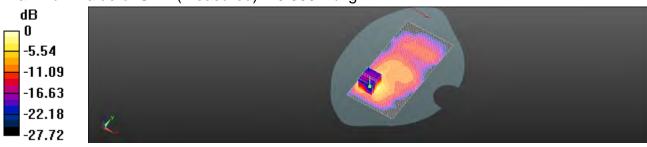
Configuration/Body/Area Scan (81x161x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.353 W/kg

Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

dy=5mm, dz=5mm

Reference Value = 4.896 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 0.498 W/kg SAR(1 g) = 0.210 W/kg; SAR(10 g) = 0.085 W/kg Maximum value of SAR (measured) = 0.353 W/kg



0 dB = 0.353 W/kg = -4.52 dBW/kg

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6. SAR System Performance Verification

Date: 2017/6/28

Dipole 750 MHz_SN:1015_Head

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 750 MHz; σ = 0.861 S/m; ϵ_r = 41.695; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 23.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

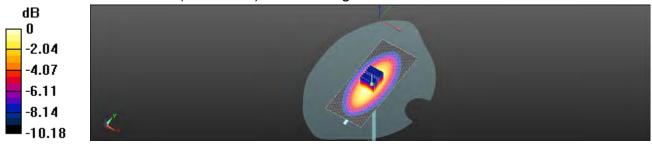
- Probe: EX3DV4 SN3923; ConvF(11.01, 11.01, 11.01); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.56 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 55.89 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 3.07 W/kg SAR(1 g) = 2.1 W/kg; SAR(10 g) = 1.39 W/kg Maximum value of SAR (measured) = 2.64 W/kg



0 dB = 2.64 W/kg = 4.22 dBW/kg

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Date: 2017/7/2

Dipole 750 MHz_SN:1015_Body

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 750 MHz; σ = 0.939 S/m; ϵ_r = 54.561; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.8°C; Liquid temperature: 22.3°C

DASY5 Configuration:

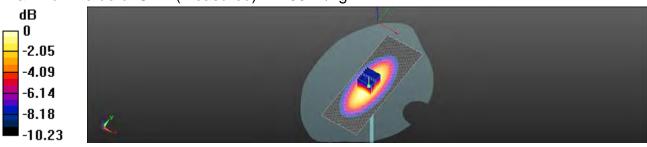
- Probe: EX3DV4 SN3923; ConvF(10.83, 10.83, 10.83); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.82 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 55.60 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 3.35 W/kg SAR(1 g) = 2.26 W/kg; SAR(10 g) = 1.49 W/kg Maximum value of SAR (measured) = 2.85 W/kg



0 dB = 2.85 W/kg = 4.56 dBW/kg

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Date: 2017/6/29

Dipole 835 MHz_SN:4d063_Head

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.87 S/m; ϵ_r = 42.025; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 23.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

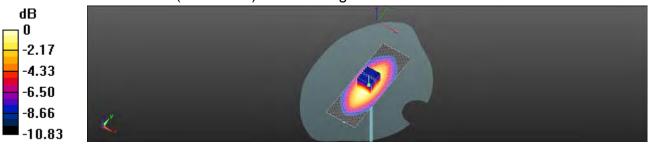
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.04 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 60.65 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 3.58 W/kg SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.57 W/kg Maximum value of SAR (measured) = 3.06 W/kg



0 dB = 3.06 W/kg = 4.85 dBW/kg

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Date: 2017/7/3

Dipole 835 MHz_SN:4d063_Body

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 1.005 S/m; ϵ r = 53.305; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.9°C

DASY5 Configuration:

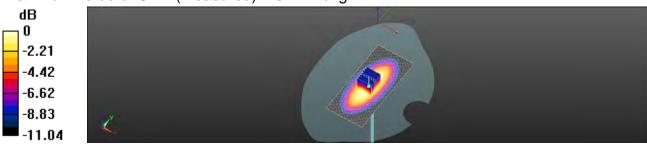
- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x111x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.05 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 56.89 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 3.67 W/kg SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.58 W/kg Maximum value of SAR (measured) = 3.11 W/kg



0 dB = 3.11 W/kg = 4.93 dBW/kg

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Date: 2017/8/24

Dipole 835 MHz_SN:4d120_Head

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.918 S/m; ϵ_r = 41.721; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

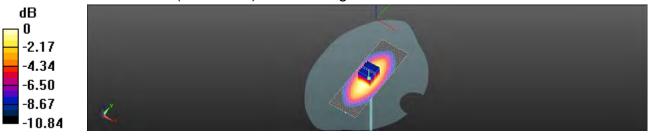
- Probe: EX3DV4 SN7466; ConvF(10.2, 10.2, 10.2); Calibrated: 2017/7/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2016/11/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.06 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 61.29 V/m; Power Drift = -0.12 dB Peak SAR (extrapolated) = 3.59 W/kg SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.58 W/kg Maximum value of SAR (measured) = 3.07 W/kg



0 dB = 3.07 W/kg = 4.87 dBW/kg

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Date: 2017/8/25

Dipole 835 MHz_SN:4d120_Body

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 1.006 S/m; ϵ_r = 54.562; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

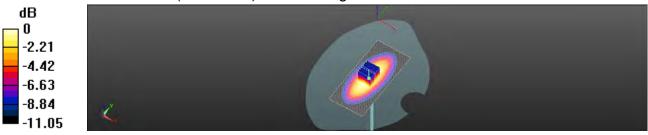
- Probe: EX3DV4 SN7466; ConvF(10.24, 10.24, 10.24); Calibrated: 2017/7/5;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2016/11/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x111x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.07 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 57.13 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 3.69 W/kg SAR(1 g) = 2.45 W/kg; SAR(10 g) = 1.59 W/kg Maximum value of SAR (measured) = 3.13 W/kg



0 dB = 3.13 W/kg = 4.95 dBW/kg

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Date: 2017/7/7

Dipole 1750 MHz_SN:1008_Head

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1750 MHz; σ = 1.332 S/m; ϵ _r = 39.861; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.7°C; Liquid temperature: 22.5°C

DASY5 Configuration:

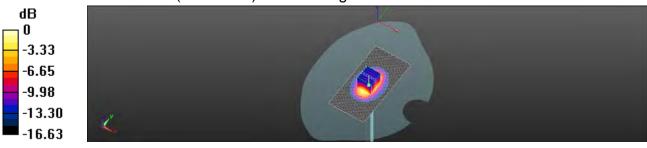
- Probe: EX3DV4 SN3923; ConvF(9.27, 9.27, 9.27); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 13.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 96.56 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 16.5 W/kg SAR(1 g) = 9.13 W/kg; SAR(10 g) = 4.88 W/kg Maximum value of SAR (measured) = 13.0 W/kg



0 dB = 13.0 W/kg = 11.12 dBW/kg

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Date: 2017/7/13

Dipole 1750 MHz_SN:1023_Body

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1750 MHz; σ = 1.431 S/m; ϵ_r = 53.814; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.2°C

DASY5 Configuration:

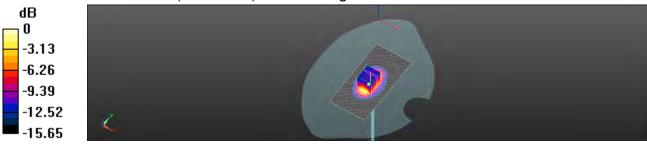
- Probe: EX3DV4 SN3923; ConvF(8.78, 8.78, 8.78); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 14.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 96.24 V/m; Power Drift = -0.09 dB Peak SAR (extrapolated) = 15.2 W/kg SAR(1 g) = 8.95 W/kg; SAR(10 g) = 4.78 W/kg Maximum value of SAR (measured) = 12.2 W/kg



0 dB = 12.2 W/kg = 10.87 dBW/kg

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Date: 2017/7/8

Dipole 1900 MHz_SN:5d173_Head

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.396 S/m; ϵ_r = 40.107; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 23.2°C; Liquid temperature: 22.4°C

DASY5 Configuration:

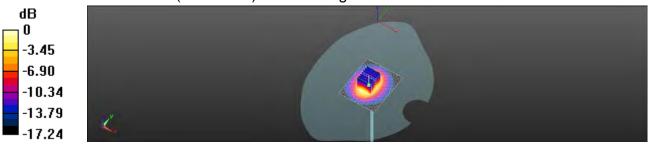
- Probe: EX3DV4 SN3923; ConvF(8.9, 8.9, 8.9); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 13.6 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 100.3 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 16.8 W/kg SAR(1 g) = 9.92 W/kg; SAR(10 g) = 5.22 W/kg Maximum value of SAR (measured) = 13.2 W/kg



0 dB = 13.2 W/kg = 11.22 dBW/kg

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Date: 2017/7/14

Dipole 1900 MHz_SN:5d173_Body

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.524 S/m; ϵ_r = 52.75; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.0°C; Liquid temperature: 21.8°C

DASY5 Configuration:

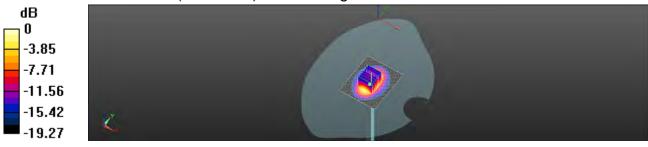
- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 14.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 97.25 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 18.2 W/kg SAR(1 g) = 9.88 W/kg; SAR(10 g) = 5.27 W/kg Maximum value of SAR (measured) = 14.1 W/kg



0 dB = 14.1 W/kg = 11.50 dBW/kg

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Report No. : E5/2017/90025 Page : 155 of 286

Date: 2017/7/4

Dipole 2450 MHz_SN:727_Head

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz; σ = 1.832 S/m; ϵ _r = 38.135; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 22.1°C

DASY5 Configuration:

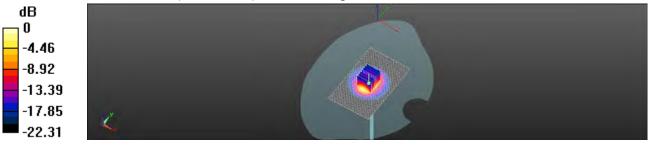
- Probe: EX3DV4 SN3923; ConvF(7.95, 7.95, 7.95); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (71x111x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 21.5 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 106.4 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 27.8 W/kg SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.2 W/kg Maximum value of SAR (measured) = 20.6 W/kg



0 dB = 20.6 W/kg = 13.15 dBW/kg

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Date: 2017/7/5

Dipole 2450 MHz_SN:727_Body

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz; σ = 1.944 S/m; ϵ_r = 52.351; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 21.9°C

DASY5 Configuration:

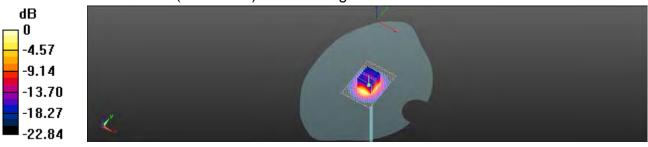
- Probe: EX3DV4 SN3923; ConvF(8.06, 8.06, 8.06); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x71x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 19.4 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 95.44 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 25.4 W/kg SAR(1 g) = 13 W/kg; SAR(10 g) = 5.98 W/kg Maximum value of SAR (measured) = 18.6 W/kg



0 dB = 18.6 W/kg = 12.69 dBW/kg

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Report No. : E5/2017/90025 Page : 157 of 286

Date: 2017/7/12

Dipole 2600 MHz_SN:1005_Head

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2600 MHz; σ = 1.981 S/m; ϵ_r = 39.098; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.0°C

DASY5 Configuration:

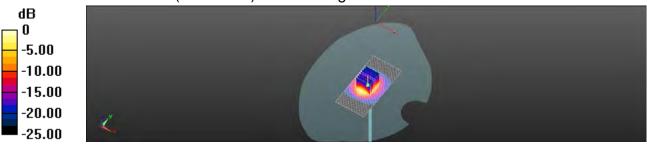
- Probe: EX3DV4 SN3923; ConvF(7.77, 7.77, 7.77); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 22.2 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 109.7 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 32.3 W/kg SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.22 W/kg Maximum value of SAR (measured) = 22.1 W/kg



0 dB = 22.1 W/kg = 13.39 dBW/kg

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Date: 2017/7/5

Dipole 2600 MHz_SN:1005_Body

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2600 MHz; σ = 2.209 S/m; ϵ_r = 51.45; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 22.0°C

DASY5 Configuration:

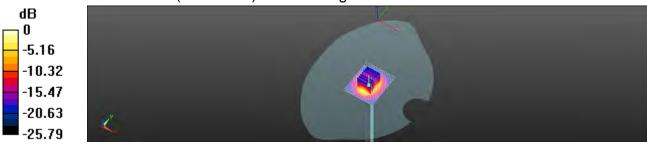
- Probe: EX3DV4 SN3923; ConvF(7.84, 7.84, 7.84); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 22.8 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 96.94 V/m; Power Drift = -0.00 dB Peak SAR (extrapolated) = 30.2 W/kg SAR(1 g) = 13.6 W/kg; SAR(10 g) = 6 W/kg Maximum value of SAR (measured) = 21.5 W/kg



0 dB = 21.5 W/kg = 13.32 dBW/kg

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Date: 2017/10/1

Dipole 750 MHz_SN:1015_Head

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 750 MHz; σ = 0.869 S/m; ϵ_r = 41.704; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.1°C

DASY5 Configuration:

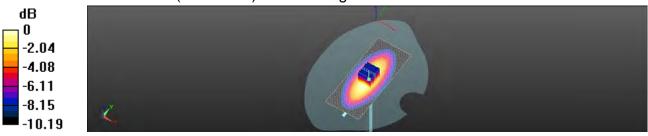
- Probe: EX3DV4 SN3831; ConvF(9.63, 9.63, 9.63); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.58 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 56.19 V/m; Power Drift = -0.08 dB Peak SAR (extrapolated) = 3.09 W/kg SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.4 W/kg Maximum value of SAR (measured) = 2.66 W/kg



0 dB = 2.66 W/kg = 4.24 dBW/kg

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Date: 2017/10/3

Dipole 750 MHz_SN:1015_Body

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 750 MHz; σ = 0.947 S/m; ϵ_r = 54.57; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

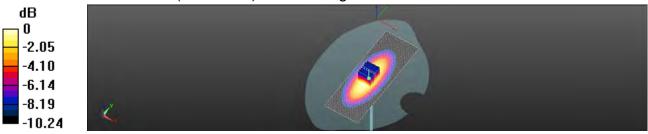
- Probe: EX3DV4 SN3831; ConvF(9.59, 9.59, 9.59); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x141x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 2.82 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 55.72 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 3.37 W/kg SAR(1 g) = 2.27 W/kg; SAR(10 g) = 1.5 W/kg Maximum value of SAR (measured) = 2.87 W/kg



0 dB = 2.87 W/kg = 4.58 dBW/kg

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Date: 2017/10/1

Dipole 835 MHz_SN:4d063_Head

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.878 S/m; ϵ_r = 42.034; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 21.8°C

DASY5 Configuration:

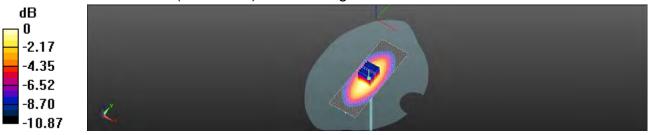
- Probe: EX3DV4 SN3831; ConvF(9.15, 9.15, 9.15); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.12 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 61.10 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 3.70 W/kg SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.61 W/kg Maximum value of SAR (measured) = 3.14 W/kg



0 dB = 3.14 W/kg = 4.97 dBW/kg

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Date: 2017/10/3

Dipole 835 MHz_SN:4d063_Body

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 1.003 S/m; ϵ_r = 53.314; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 21.9°C

DASY5 Configuration:

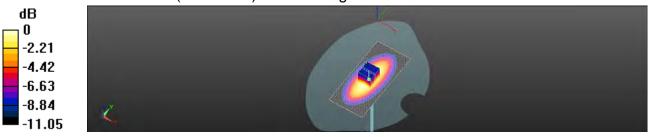
- Probe: EX3DV4 SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x111x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 3.19 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 58.07 V/m; Power Drift = 0.00 dB Peak SAR (extrapolated) = 3.82 W/kg SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.64 W/kg Maximum value of SAR (measured) = 3.24 W/kg



0 dB = 3.24 W/kg = 5.11 dBW/kg

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Date: 2017/10/1

Dipole 1750 MHz_SN:1008_Head

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1750 MHz; σ = 1.417 S/m; ϵ_r = 40.494; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.5°C

DASY5 Configuration:

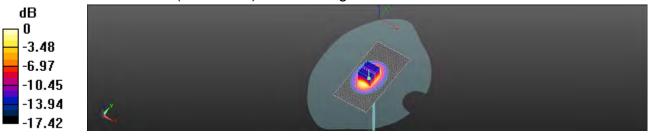
- Probe: EX3DV4 SN3831; ConvF(8.17, 8.17, 8.17); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 12.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 91.32 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 16.3 W/kg SAR(1 g) = 8.91 W/kg; SAR(10 g) = 4.71 W/kg Maximum value of SAR (measured) = 12.7 W/kg



0 dB = 12.7 W/kg = 11.04 dBW/kg

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Date: 2017/10/3

Dipole 1750 MHz_SN:1008_Body

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1750 MHz; σ = 1.439 S/m; ϵ_r = 53.823; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.4°C

DASY5 Configuration:

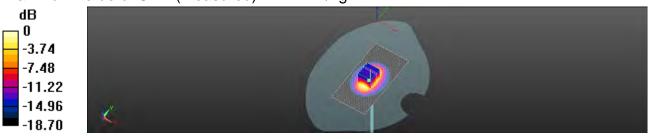
- Probe: EX3DV4 SN3831; ConvF(7.78, 7.78, 7.78); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 14.6 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 98.92 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 18.8 W/kg SAR(1 g) = 9.19 W/kg; SAR(10 g) = 4.87 W/kg Maximum value of SAR (measured) = 14.4 W/kg



0 dB = 14.4 W/kg = 11.58 dBW/kg

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Date: 2017/10/1

Dipole 1900 MHz_SN:5d173_Head

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.404 S/m; ϵ_r = 40.116; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.0°C

DASY5 Configuration:

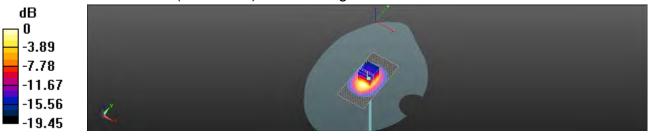
- Probe: EX3DV4 SN3831; ConvF(7.86, 7.86, 7.86); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (41x81x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 14.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 100.0 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 18.4 W/kg SAR(1 g) = 9.85 W/kg; SAR(10 g) = 5.14 W/kg Maximum value of SAR (measured) = 14.0 W/kg



0 dB = 14.0 W/kg = 11.45 dBW/kg

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Date: 2017/10/3

Dipole 1900 MHz_SN:5d173_Body

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.523 S/m; ϵ_r = 52.759; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 21.9°C

DASY5 Configuration:

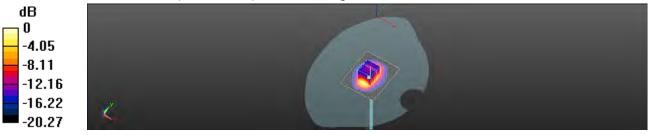
- Probe: EX3DV4 SN3831; ConvF(7.53, 7.53, 7.53); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 15.1 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 97.41 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 18.4 W/kg SAR(1 g) = 9.98 W/kg; SAR(10 g) = 5.31 W/kg Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.55 dBW/kg

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Date: 2017/10/1

Dipole 2450 MHz_SN:727_Head

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz; σ = 1.869 S/m; ϵ _r = 38.408; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.3°C

DASY5 Configuration:

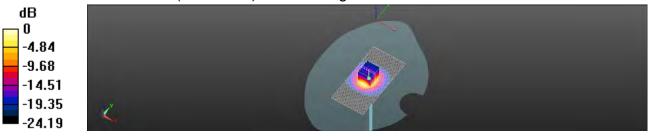
- Probe: EX3DV4 SN3831; ConvF(7.21, 7.21, 7.21); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (61x121x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 21.0 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 106.3 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 28.4 W/kg SAR(1 g) = 13 W/kg; SAR(10 g) = 5.94 W/kg Maximum value of SAR (measured) = 20.4 W/kg



0 dB = 20.4 W/kg = 13.09 dBW/kg

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Report No. : E5/2017/90025 Page : 168 of 286

Date: 2017/10/3

Dipole 2450 MHz_SN:727_Body

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz; σ = 1.952 S/m; ϵ_r = 52.36; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.2°C

DASY5 Configuration:

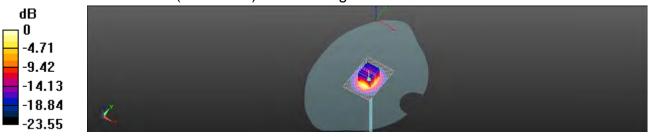
- Probe: EX3DV4 SN3831; ConvF(7.3, 7.3, 7.3); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x71x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 22.8 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 103.9 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 30.0 W/kg SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.16 W/kg Maximum value of SAR (measured) = 22.5 W/kg



0 dB = 22.5 W/kg = 13.44 dBW/kg

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Report No. : E5/2017/90025 Page : 169 of 286

Date: 2017/10/1

Dipole 2600 MHz_SN:1005_Head

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2600 MHz; σ = 2.044 S/m; ϵ_r = 40.556; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.1°C

DASY5 Configuration:

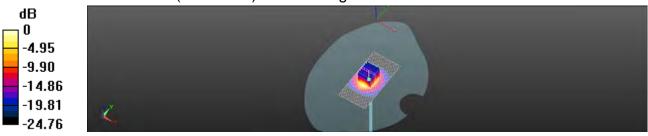
- Probe: EX3DV4 SN3831; ConvF(6.99, 6.99, 6.99); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 22.8 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 105.6 V/m; Power Drift = 0.00 dB Peak SAR (extrapolated) = 31.7 W/kg SAR(1 g) = 14.4 W/kg; SAR(10 g) = 6.32 W/kg Maximum value of SAR (measured) = 22.5 W/kg



0 dB = 22.5 W/kg = 13.52 dBW/kg

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Report No. : E5/2017/90025 Page : 170 of 286

Date: 2017/10/3

Dipole 2600 MHz_SN:1005_Body

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2600 MHz; σ = 2.217 S/m; ϵ_r = 51.459; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.5°C; Liquid temperature: 22.5°C

DASY5 Configuration:

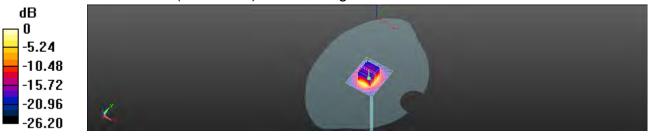
- Probe: EX3DV4 SN3831; ConvF(7.05, 7.05, 7.05); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (51x61x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 22.9 W/kg

Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 96.70 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 30.2 W/kg SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.04 W/kg Maximum value of SAR (measured) = 21.7 W/kg



0 dB = 21.7 W/kg = 13.36 dBW/kg

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7. DAE & Probe Calibration Certificate

Engineering AG aughausstrasse 43, 8004 Zuric	y of		Schweizerischer Kallbrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service
ccredited by the Swiss Accredite he Swiss Accreditation Servic ultilateral Agreement for the r	e is one of the signatories	to the EA	o.: SCS 0108
lient SGS - TW (Aud		Certificate No:	DAE4-547_Mar17
CALIBRATION O	CERTIFICATE		
Object	DAE4 - SD 000 D0	04 BM - SN: 547	
Calibration procedure(s)	QA CAL-06.v29 Calibration proced	lure for the data acquisition electr	onics (DAE)
Calibration date:	March 22, 2017		
The measurements and the unc	ertainties with confidence pro	nal standards, which realize the physical units obability are given on the following pages and facility: environment temperature $(22\pm3)^{\circ}C$	are part of the certificate.
The measurements and the uno All calibrations have been condu Calibration Equipment used (M8	ertainties with confidence pro- ucted in the closed laboratory TE critical for calibration)	obability are given on the following pages and r facility: environment temperature $(22 \pm 3)^{\circ}$ C i	are part of the certificate. and humidity < 70%.
The measurements and the unc All calibrations have been condu Calibration Equipment used (M& Primary Standards	ertainties with confidence pro	obability are given on the following pages and	are part of the certificate.
The measurements and the uno All calibrations have been condu Calibration Equipment used (M8 Primary Standards Keithley Multimeter Type 2001	ertainties with confidence pro- licted in the closed laboratory (TE critical for calibration) ID # SN: 0810278	obability are given on the following pages and facility: environment temperature (22 ± 3)°C i <u>Cal Date (Certificate No.)</u> 09-Sep-16 (No:19065)	are part of the certificate. and humidity < 70%. Scheduled Calibration Sep-17
The measurements and the unc All calibrations have been condu Calibration Equipment used (M& Primary Standards	ettainties with confidence pro- licted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001	obability are given on the following pages and $facility: environment temperature (22 \pm 3) °C + 3$ Cal Date (Certificate No.)	are part of the certificate. and humidity < 70%. Scheduled Calibration
The measurements and the unc All calibrations have been condu Calibration Equipment used (M8 Primary Standards Keithley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit	ettainties with confidence pro- licted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001	bability are given on the following pages and facility: environment temperature (22 ± 3)°C i Cal Date (Certificate No.) 09-Sep-16 (No: 19065) Check Date (in house) 05-Jan-17 (in house check)	are part of the certificate. and humidity < 70%. Scheduled Calibration Sep-17 Scheduled Check In house check: Jan-18
The measurements and the unc All calibrations have been condu Calibration Equipment used (M8 Primary Standards Keithley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit	ettainties with confidence pro- licted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001	bability are given on the following pages and facility: environment temperature (22 ± 3)°C i Cal Date (Certificate No.) 09-Sep-16 (No: 19065) Check Date (in house) 05-Jan-17 (in house check)	are part of the certificate. and humidity < 70%. Scheduled Calibration Sep-17 Scheduled Check In house check: Jan-18
The measurements and the unc All calibrations have been condu Calibration Equipment used (M8 Primary Standards Keithley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit	ettainties with confidence pro- incted in the closed laboratory (TE critical for calibration) ID # SN: 0610278 ID # SE UWS 053 AA 1001 SE UMS 006 AA 1002	bability are given on the following pages and facility: environment temperature (22 ± 3)°C / 09-Sep-16 (No:19065) Check Date (in house) 05-Jan-17 (in house check) 05-Jan-17 (in house check)	are part of the certificate. and humidity < 70%. Scheduled Calibration Sep-17 Scheduled Check In house check: Jan-18 In house check: Jan-16 Signature
The measurements and the unc All calibrations have been condu Calibration Equipment used (M8 Primary Standards Keithley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit Calibrator Box V2.1	ettainties with confidence pro- licted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001 SE UMS 006 AA 1002	bability are given on the following pages and facility: environment temperature (22 ± 3)°C i 09-Sep-16 (No: 19065) Check Date (in house) 05-Jan-17 (in house check) 05-Jan-17 (in house check)	are part of the certificate. and humidity < 70%. Scheduled Calibration Sep-17 Scheduled Check In house check: Jan-18 In house check: Jan-18

Certificate No: DAE4-547_Mar17

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Calibration Laboratory of Schmid & Partner Engineering AG sughausstrasse 43, 8004 Zurich, Switzerland Zeugha



Schweizerischer Kallbrierdiens Service suisse d'étalonnage С Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

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Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary

DAE Connector angle

data acquisition electronics information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- Connector angle: The angle of the connector is assessed measuring the angle . mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a . result from the performance test and require no uncertainty.
 - DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - Common mode sensitivity: Influence of a positive or negative common mode voltage on . the differential measurement.
 - Channel separation: Influence of a voltage on the neighbor channels not subject to an input voltage.
 - AD Converter Values with inputs shorted: Values on the internal AD converter corresponding to zero input voltage
 - Input Offset Measurement: Output voltage and statistical results over a large number of zero voltage measurements.
 - Input Offset Current: Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery ÷. alarm signal is generated.
 - Power consumption: Typical value for information. Supply currents in various operating ۰. modes.

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DC Voltage Measurement

High Range:	1LSB =	6.11V	full range =	-100,_+300 mV
Low Range:	1LSB =	6tnV .	full range =	-1+3mV

Calibration Factors	X	Y	Z
High Range	403.189 ± 0.02% (k=2)	403.093 ± 0.02% (k=2)	402.739 ± 0.02% (k=2)
Low Range	3.95348 ± 1.50% (k=2)	3.90456 ± 1.50% (k=2)	3.96243 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	91.0 "±1"
The second se	

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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range		Reading (µV)	Difference (µV)	Error (%)
Channel X	+ Input	200031.23	0.59	0.00
Channel X	+ Input	20005.44	2.04	0.01
Channel X	- Input	-20000.97	4.91	-0.02
Channel Y	+ Input	200029.80	-1.03	-0.00
Channel Y	+ Input	20000.30	-3.03	-0.02
Channel Y	- Input	-20007.73	-1.72	0.01
Channel Z	+ Input	200030.21	-0.96	-0.00
Channel Z	+ Input	20003.13	-0.21	-0,00
Channel Z	- Input	-20005.14	0.81	-0.00

Low Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2000.02	-0.08	-0.00
Channel X + Input	200.18	0.36	0.18
Channel X - Input	-200,16	0.00	-0.00
Channel Y + Input	2000.10	0.06	0.00
Channel Y + Input	199.43	-0.40	-0.20
Channel Y - Input	-200,77	-0,70	0.35
Channel Z + Input	2000.19	0.28	0.01
Channel Z + Input	198.82	-1.00	-0.50
Channel Z - Input	-201.46	-1.37	0.68

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	-2.09	-5.00
	- 200	6.80	4.50
Channel Y	200	-0.67	-1.21
	- 200	0.37	-0,41
Channel Z	200	5.07	4.93
	- 200	-7.67	-8.12

3. Channel separation

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200		2.65	-2.08
Channel Y	200	10.56	÷	3.60
Channel Z	200	4,55	7.85	

Certificate No: DAE4-547_Mar17

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4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

	High Range (LSB)	Low Range (LSB)
Channel X	16364	15364
Channel Y	16476	16801
Channel Z	16077	16468

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec Input $10M\Omega$

	Average (µV)	min. Offset (µV)	max. Offset (μV)	Std. Deviation (µV)
Channel X	-0.53	-1.14	0.26	0.31
Channel Y	-1.03	-2.43	-0.21	0.32
Channel Z	-1.56	-2.31	-0.62	0.35

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25IA

7. Input Resistance (Typical values for information)

	Zeroing (kOhm)	Measuring (MOhm)	
Channel X	-200	200	
Channel Y	200	200	
Channel Z	200	200	

8. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)
Supply (+ Vcc)	+7.9
Supply (- Vcc)	-7,â

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vcc)	-0.01	-8	-9

Certificate No: DAE4-547_Mar17

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ccredited by the Swiss Accredit he Swiss Accreditation Servic fulfilatoral Agreement for the r	e is one of the signatories	to the EA	No.: SCS 0108
SGS - TW (Aud	ien)	Certificate No:	DAE4-1336_Nov16
CALIBRATION	CERTIFICATE		
Object.	DAE4 - SD 000 D	04 BM - SN: 1336	
Calibetion procedure(s)	QA CAL-06.v29 Calibration proceed	ture for the data acquisition electr	ronics (DAE)
Calibration date:	November 22, 201	16	
The measurements and the unc All calibrations have been condu	ertainties with confidence pro	nai standards, which realize the physical unit obsbility are given on the following pages and y tacility: environment temperature (22 + 3)°C	are part of the certificate.
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Certificate No; DAE4-1336_Nov16

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8001 Zurich, Switzerland



Schweizerischer Kalibrierdienst Service suitate d'étalormage Servizie avizzers di teratore Swiss Calibration Service

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Accreditation No.1 SCS 0108

Accreding by the Swiss Accreditation Service (SAS) The Swise Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Glossary

DAE Connector angle

date acquisition electronics information used in DASY system to align probe sensor X to the robot coordinate system.

Methods Applied and Interpretation of Parameters

- DC Voltage Measurement: Calibration Factor assessed for use in DASY system by comparison with a calibrated instrument traceable to national standards. The figure given corresponds to the full scale range of the voltmeter in the respective range.
- Connector angle: The angle of the connector is assessed measuring the angle mechanically by a tool inserted. Uncertainty is not required.
- The following parameters as documented in the Appendix contain technical information as a result from the performance test and require no uncertainty.
 - DC Voltage Measurement Linearity: Verification of the Linearity at +10% and -10% of the nominal calibration voltage. Influence of offset voltage is included in this measurement.
 - Common mode sensitivity: Influence of a positive or negative common mode voltage on the differential measurement.
 - Channel separation: Influence of a voltage on the neighbor channels not subject to an Input voltage.
 - AD Converter Values with inputs shorted: Values on the Internal AD converter corresponding to zero input voltage
 - Input Offset Measurement. Output voltage and statistical results over a large number of zero voltage measurements.
 - Input Offset Current: Typical value for information; Maximum channel input offset current, not considering the input resistance.
 - Input resistance: Typical value for information: DAE input resistance at the connector, during internal auto-zeroing and during measurement.
 - Low Battery Alarm Voltage: Typical value for information. Below this voltage, a battery alarm signal is generated.
 - Power consumption: Typical value for information. Supply currents in various operating modes.

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DC Voltage Measurement

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	ATTN.	Com	order.	Theory	offician.	creminal	

High Range:	1LSB-	6.1µV	= agrun Ilut	-100. +300 mV
Low Range	1LSE ≈	61nV	full mingle =	-1+3mV
DASY measurement p	sarametere, Aut	o Zero Timu: :	sec: Measuring	time: 3 sec

Calibration Factors	X	Υ	Z
High Range	403.332 ± 0.02% (k=2)	403.635 ± 0.02% (k=2)	403,121 ± 0.02% (k=2)
Low Range	3.95216 ± 1.50% (k=2)	3.98718±1.50% (k=2)	3.99680 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	122.0 + ± 1 +
the second statistics to be a present to be the second state of th	100.0

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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	199996.24	0.16	0.00
Cisannel X + Input	20001.25	-0.04	-0.00
Channel X - Input	-19999.81	1.36	-0.01
Channel Y + Input	199994.04	-1.8B	-0.00
Channel Y + Input	20000.69	-0.82	+0.00
Channel Y - Input	-20002.64	-1.77	0.01
Channel Z + Input	199997.44	1.49	D.00
Channel Z + Input	19999.78	-1.82	-0,01
Channel Z - Input	-20003.24	-2.19	0.01

Low Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2001.87	0.66	0.02
Channel X + Input	201.39	-0.11	-0.06
Channel X - Input	-198.27	0.04	-0.02
Channel Y + Input	2001.34	-0,04	-0.00
Channel Y + Input	201.35	-0.36	+0.18
Channel Y - Input	-198.77	-0.62	0.31
Channel Z + Input	2001.30	0,10	10,0
Channel Z + Input	200.72	-0,71	+0.35
Channel Z - Input	-199.12	-0.78	0.39

2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec:

	Common mode Input Voltage (mV)	High Renge Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	5.23	3.90
-	- 200	-3.72	-5.31
Channel Y	200	-4.23	-3,73
	- 500	2.71	2.31
Channel Z	200	80.93	21,36
-	- 200	-23.91	-24.44

3. Channel separation

	Input Voltage (mV)	Channel X (µV)	Channel Y (µV)	Channel Z (µV)
Channel X	200		6.47	+1.27
Channel Y	200	7.97	-	6.72
Channel Z	200	7.94	5,96	1. A.

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4. AD-Converter Values with inputs shorted

DASY measurement parameters: Auto Zero Time: 3 sec. Measuring time: 3 sec.

	High Range (LSB)	Low Range (LSB)
Channel X	15660	15881
Channel Y	15906	15597
Channel Z	(5853	15173

5. Input Offset Measurement

DASY measurement parameters: Aulti Zero Time: 3 sec; Measuring time: 3 sec Input 10MG

- C	Average (µV)	min. Offset (µV)	max. Offset (µV)	Std. Deviation (µV)
Channel X	-0.26	+1.07	0.37	0.98
Channel Y	-0.22	-0.92	0.62	0.34
Channel Z	-0.97	-1.73	0.29	0.36

6. Input Offset Current

Nominal Input circuitry offset current on all channels: <25fA

7. Input Resistance (Typical values for Information)

	Zeroing (kOhm)	Measuring (MOhm)
Channel X	200	200
Channel Y	200	200
Channel Z	200	200

B. Low Battery Alarm Voltage (Typical values for information)

Typical values	Alarm Level (VDC)	
Supply (+ Vcc)	+7,9	
Supply (- Vcc)	-7.6	

9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	+6	+14
Supply (- Vec)	-0.01	-8	-9

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ient SGS-TW (Aud			EX3-3923_Sep16
ALIBRATION	CERTIFICATE		
Object	EX3DV4 - SN:392	3	
Calibration procedure(s)		A CAL-14.v4, QA CAL-23.v5, QA ure for dosimetric E-field probes	CAL-25.v6
Calibration date:	September 2, 2016	6	
	entainties with confidence pro-	bability are given on the following pages and :	are part of the certificate.
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ul calibrations have been condi Calibration Equipment used (M& Primary Standards	ucted in the closed laboratory	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.)	
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Il calibrations have been condi allibration Equipment used (M& Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator	ID SN: 104778 SN: 103244 SN: 103245	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02289) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289)	Scheduled Calibration Apr-17 Apr-17 Apr-17 Dec-16
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Il calibrations have been condi alibration Equipment used (M4 Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Becondary Standards Power meter E44198 Power sensor E4412A	ucted in the closed laboratory &TE ontical for calibration) ID SN: 104778 SN: 103244 SN: 03245 SN: 35277 (20x) SN: 5627 (20x) SN: 560 ID SN: GB41293874 SN: MY41498087	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) D6-Apr-16 (No. 217-02288/02269) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02293) 31-Dec-15 (No. DAE4-660 Dec15) 23-Dec-15 (No. DAE4-660 Dec15) Check Date (in house) 06-Apr-16 (in house) 06-Apr-16 (in house check Jun-16) 06-Apr-16 (in house check Jun-16)	Ind humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Dec-16 Dec-16 Dec-16 Scheduled Check In house check: Jun-18 In house check: Jun-18
Il usilibrations have been condi- tailibration Equipment used (M4 Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards Power meter E4419B Power sensor E4412A Power sensor E4412A	ucted in the closed laboratory &TE ontical for calibration) ID SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 56277 (20x) SN: 3013 SN: 560 ID SN: GB41293874 SN: MY41494087 SN: 000110210	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-15 (No. 217-02289) 05-Apr-16 (In house check Jun-16) 06-Apr-16 (In house check Jun-16)	Scheduled Calibration Apr-17 Apr-17 Apr-17 Dec-18 Dec-16 Dec-16 Scheduled Check In house check: Jun-18
Il usibrations have been condi alibration Equipment used (Mé Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenutor Reference 2	ucted in the closed laboratory &TE ontical for calibration) ID SN: 104778 SN: 103244 SN: 03245 SN: 35277 (20x) SN: 5627 (20x) SN: 560 ID SN: GB41293874 SN: MY41498087	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) D6-Apr-16 (No. 217-02288/02269) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02293) 31-Dec-15 (No. DAE4-660 Dec15) 23-Dec-15 (No. DAE4-660 Dec15) Check Date (in house) 06-Apr-16 (in house) 06-Apr-16 (in house check Jun-16) 06-Apr-16 (in house check Jun-16)	Ind humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Dec-16 Dec-16 Dec-16 Scheduled Check In house check: Jun-18 In house check: Jun-18 In house check: Jun-18
Il usibrations have been condi alibration Equipment used (Mé Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenutor Reference 2	ucted in the closed laboratory &TE ontical for calibration) ID SN: 104778 SN: 103244 SN: 103244 SN: 03245 SN: 56277 (20x) SN: 5627 (20x) SN: 5627 (20x) SN: 5627 (20x) SN: 660 ID SN: GB41293874 SN: 000110210 SN: US37390585	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) D6-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 06-Apr-16 (No. 217-029) 06-Apr-16 (No. 217-029) 06-Apr-16 (No. 217-029) 06-Apr-16 (No. 217-029) 06-Apr-16 (No. 217-029) 06-Apr-16 (No. 217-029) 07-029 0	In house check: Jun-18 In house check: Jun-18 In house check: Jun-18 In house check: Jun-18
UI calibrations have been condi- Calibration Equipment used (MA Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards Power meter E44198 Power sensor E44198 Power sensor E4412A RF generator HP 8648C Network Analyzor HP 8753E	III III IIII SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 55277 (20x) SN: 3013 SN: 660 IID SN: 68041293874 SN: WY41498087 SN: WY41498087 SN: US3842U01700 SN: US3842U01700	facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 06-Apr-16 (No. 217-02289/02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02293) 31-Dec-15 (No. DAE4-660 Dec15) 23-Dec-15 (No. DAE4-660 Dec15) Check Date (in house) 06-Apr-16 (in house check Jun-16) 06-Apr-16 (in house check Jun-16) 06-Apr-16 (in house check Jun-16) 04-Aug-99 (in house check Jun-16)	In house check: Jun-18 In house check: Jun-18 In house check: Jun-18
Ul calibrations have been condi- Calibration Equipment used (M2 Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards Power meter E44198 Power sensor E4412A RF generator HP 8648C Network Analyzer HP 8753E Calibrated by:	ucted in the closed laboratory &TE ontical for calibration) III SN: 104778 SN: 103244 SN: 103245 SN: 3013 SN: 660 III SN: GB41293874 SN: MY41498087 SN: 003110210 SN: US3842U01700 SN: US37390585 Name	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02289/02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02293) 31-Dec-15 (No. E33-3013_Dec15) 23-Dec-15 (No. DAE4-660_Dec15) Check Date (in house) 06-Apr-16 (in house check Jun-16) 04-Aug-99 (in house check Jun-16) 18-Oci-01 (in house check Oci-15) Function	In house check: Jun-18 In house check: Jun-18 In house check: Jun-18 In house check: Jun-18
Ul calibration Equipment used (Mé Calibration Equipment used (Mé Primary Ständards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference 20 dB	ucted in the closed laboratory &TE ontical for calibration) III SN: 104778 SN: 103244 SN: 103245 SN: 203245 SN: 203245 SN: 3013 SN: 660 IID SN: GB41293874 SN: WY41498087 SN: 000110210 SN: US3842U01700 SN: US37390585 Name Michael Weber Kalja Pokovic	facility: environment temperature (22 ± 3)°C e Cal Date (Certificate No.) D6-Apr-16 (No. 217-02288/02269) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 05-Apr-16 (No. 217-0229) 06-Apr-16 (No. 217-029) 06-Apr-16 (No. 217-029) 07-029 07-029 07-029 07-029 07-029 07-029 07-0	In house check: Jun-18 In house check: Jun-18 In house check: Jun-18 In house check: Jun-18

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Galibration Laboratory of Schmid & Partner Engineering AG aughausst/assc 43, 1004 Zurich, Switzerland



Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

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Glossary:

TSL NORMX, Y.Z. ConvF DCP CF A.B.C.D Polarization g Polarization 9

tissue simulating liquid sensitivity in free space sensitivity in TSL / NORMx,y,z diade compression point crest factor (1/duty_cycle) of the RF signal modulation dependent linearization parameters o rotation around probe axis 8 rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., $\vartheta = 0$ is normal to probe axis information used in DASY system to align probe sensor X to the robot coordinate system

Connector Angle

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement
- Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement. Techniques: June 2013 IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005 IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010 KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz" C)

Methods Applied and Interpretation of Parameters:

- NORMx,y,z: Assessed for E-field polarization 3 = 0 (f < 900 MHz in TEM-cell; f > 1800 MHz; R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included. in the stated uncertainty of ConvF.
- DCPx, y, z: DCP are numerical linearization parameters assessed based on the data of power sweep with CW
- signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal . character stics
- Ax,y,z, Bx,y,z, Cx,y,z, Dx,y,z, VRx,y,z, A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode. ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer
- Standard for I ≤ 800 MHz) and inside waveguide using analytical field distributions based on powal Standard for 1's doublet, and inside waveguide using analytical read of automatic database on paveral measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx,y,z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz
- Sphorical isotropy (3D deviation from isotropy); in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor affset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

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EX3DV4 - SN:3923

September 2, 2016

Probe EX3DV4

SN:3923

Manufactured: Repaired: Calibrated:

March 8, 2013 August 30, 2016 September 2, 2016

Calibrated for DASY/EASY Systems (Note: non-compatible with DASY2 system!)

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September 2, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m) ²) ^A	0.55	0.46	0.45	± 10.1 %
DCP (mV) ⁶	101.5	102.8	106.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dBõV	c	D dB	VR mV	Unc ^e (k=2)
0	CW	X	0.0	0.0	1.0	0.00	150.8	±3.0 %
-		Y	0.0	0.0	1.0		149.7	1.000
		Z	0.0	0,0	1.0		151.5	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

^A The uncertainties of Norm X,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6) ^a Numerical linearization parameter: uncertainty not required. ^b Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the field value

Certificate No: EX3-3923 Sep16

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September 2, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

f (MHz) ^c	Relative Permittivity	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ¹³ (mm)	Unc (k=2)
750	41.9	0.89	11.01	11.01	11.01	0,53	0.80	± 12.0 %
835	41.5	0.90	10.66	10.66	10.66	0.47	0.80	± 12.0 %
900	41.5	0,97	10.40	10.40	10.40	0.36	0.93	± 12.0 %
1750	40,1	1.37	9.27	9.27	9.27	0.29	0.80	±12.0 %
1900	40.0	1.40	8.90	8.90	8.90	0,30	0.80	±12.0 %
2000	40.0	1.40	8.92	8.92	8.92	0,34	0.80	± 12.0 %
2450	39.2	1.80	7.95	7.95	7.95	0.33	0.85	± 12.0 %
2600	39.0	1.96	7.77	7.77	7.77	0.33	0.80	± 12.0 %
5250	35.9	4.71	5.36	5.36	5.36	0.30	1.80	±13.1 %
5600	35.5	5.07	4.94	4.94	4.94	0.40	1.80	± 13.1 %
5750	35.4	5.22	4.96	4.96	4.96	0.40	1.80	± 13.1 %

Calibration Parameter Determined in Head Tissue Simulating Media

⁶ Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity of the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity can be extended to ± 110 MHz. The State 20 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
⁶ At requencies below 3 OHz, the validity of tissue parameters (c and r) can be released to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of ilssue parameters (x and r) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated larget tissue parameters.
⁶ At product and the are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after componentiation is applied to the convF uncertainty for frequencies below 3 GHz and below ± 2% for frequencies between 3-8 GHz at any distance larger than half the probe to diameter from the boundary.

Certificate No: EX3-3923 Sep16

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September 2, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

f (MHz) ^c	Relative Permittivity ^F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ⁵	Depth (nim)	Unc (k=2)
750	55.5	0.96	10.83	10.83	10.83	0.32	0,98	± 12.0 %
835	55.2	0.97	10.67	10.67	10.67	0.37	0.96	± 12.0 %
900	55,0	1.05	10.52	10.52	10.52	0.44	0.80	± 12.0 %
1750	53.4	1.49	8.78	8.78	8.78	0.39	0.81	±12.0 %
1900	53.3	1.52	8.47	8.47	8.47	0.37	0.80	± 12.0 %
2000	53.3	1.52	8.68	8.68	8.68	0.38	0.80	± 12.0 %
2450	52.7	1.95	8.06	8.06	8.06	0.30	0.80	± 12.0 %
2600	52.5	2,16	7.84	7.84	7.84	0.27	0.80	± 12.0 %
5250	48.9	5.36	4.58	4.58	4.58	0.50	1,90	± 13.1 %
5600	48.5	5.77	4.00	4.00	4.00	0.55	1,90	± 13,1 %
5750	48.3	5.94	4.19	4.19	4.19	0.55	1.90	± 13.1 %

Calibration Parameter Determined in Body Tissue Simulating Media

¹⁶ Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at ballbration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 123, 150 and 220 MHz respectively. Above 5 GHz frequency validity are being above 3 GHz. The validity of tissue parameters (a and a) can be relaxed to ± 10% if iquid compensation formula is applied to measured SAR values. After equencies below 3 GHz the validity of tissue parameters (a and a) can be relaxed to ± 10% if iquid compensation formula is applied to formeasured SAR values. After equencies below 3 GHz the validity of tissue parameters.
 ⁶ AlphaDaph are determined during calculations of the validity of the validity of the validity of the requencies below 3 GHz. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
 ⁶ AlphaDaph are determined during calculations of the validity of the validity of the RSS of the convF uncertainty for indicated target. Alea warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe to demeter from the boundary.

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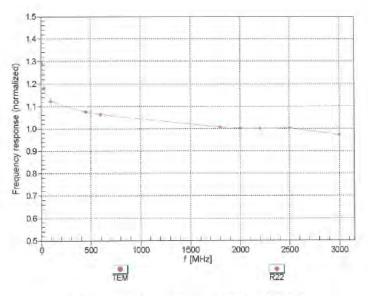
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September 2, 2016

Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

Cartificate No: EX3-3923_Sep16

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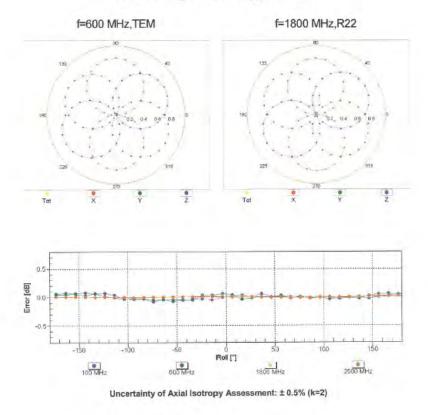
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EX3DV4-SN:3923

September 2, 2016



Receiving Pattern (ϕ), $\vartheta = 0^{\circ}$

Certificate No: EX3-3923_Sep16

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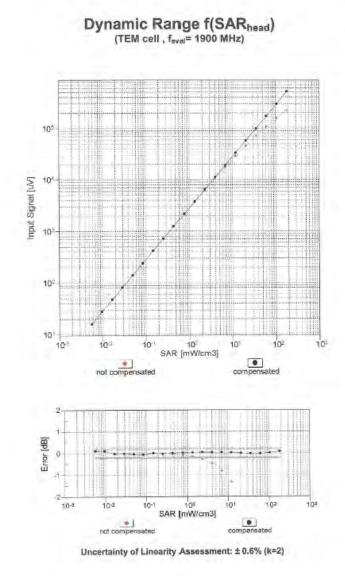
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EX3DV4- SN 3923

September 2, 2016



Certificate No: EX3-3923_Sep16

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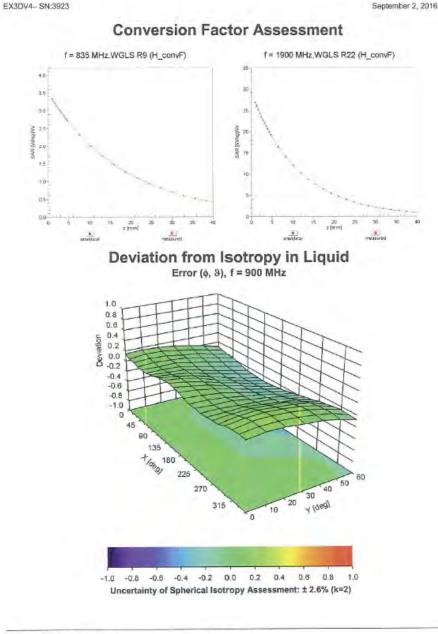
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September 2, 2016

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3923

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	26.4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 നന
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Certificate No: EX3-3923_Sep16

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Report No. : E5/2017/90025 Page : 192 of 286

		"Addate"	
credited by the Swiss Accordit te Swiss Accreditation Servic utiliateral Agreement for the	os is one of the signatorias t	o the EA	reditation No.: SCS 0108
SGS-TW (Aud	en)	Centificate mi	EX3-7466 Jul17
ALIBRATION	CERTIFICATE		
Detect	EX30V4 - SN:746	9	
Calibration (intradium)e)		CAL-14.v4. QA CAL-23.v5. QA ute for dosimetric E-field probes	CAL-25.v6
Gaabration date	July 4, 2017		
		(acilly, unvironment tempterature (22 \pm 3)*C s	and humidity = 70%.
Calibration Equipment used (MI	STE ontical for calibration)		
Calibration Equipment used (Mi Primary Siensande		(acility: anti-instanti fample stare (22 ± 3)°C s Cal Data (Centrolie No.) (04-Apr-17 (No. 217-02522)(02522)	and frumidity < 70% Scheduled Caritration Apr-18
Calibration Equipment used (Mi Primery Stendards Power meter NRP	STE ontical for calibration)	Cal Data (Centificiale No.)	Scheduled Calibration
Dalbration Equipment used (M Primary Stendards Power meter NRP Power sensor NRP-291	TE onlical for calibration)	Cal Data (Centificate No.) 04-Apr-17 (No. 217-02521/02522)	Scheduled Caribration Apr-18
Calibration Equipment used (Mi Primery Stercards Power meter NRP	ID SN: 104778 SN: 104778	Cel Date (Certificale No.) 04-Apr-17 (No. 217-02521/00522) 04-Apr-17 (No. 217-02521)	Scheduled Calibration Apr-18 Apr-18
Calibration Equipment used (M Primary Standarda Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Robersnoo 208-Attanuator Reference Phote EB3DV2	ID SNE 104778 SNE 104778 SNE 104778 SNE 103244 SNE 103245 SNE 58277 (20k) SNE 3013	Cal Data (Centrosie No.) 04-Apr-17 (No. 217-0252 (n0522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02583) 21-Dep-16 (No. 653-3013, Dec16)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17
Calibration Equipment used (M Primary Standards Power meter NRP- Power sensor NRP-291 Reference 20 dB Attenuator	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 58277 (20x)	Cal Date (Centrolie No.) 04-Apr-17 (No. 217-02521/00522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02528)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18
Calibration Equipment used (Mi Primary Stendards Power moter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB-Afteruator Reference Phobe EB3DV2 DAE4	ID SN: 104779 SN: 104779 SN: 103244 SN: 103245 SN: 59277 (20k) SN: 3913 SN: 660	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/00522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02526) 21-Dec-16 (No. ES3-3013, Dec16) 7-Dec-16 (No. DAE4-050, Dec15)	Scheeuled Caritization Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Dac-17
California Equipment used (Mi Primary Standarda Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Phobe EB3DV2 DAE4 Secondary Standards	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 58277 (20x) SN: 3813 SN: 88277 SN: 3813 SN: 88277 SN: 3813 SN: 3813 S	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/00522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-03528) 21-Dec-16 (No. 253-3013, Dec16) 7-Dac-16 (No. DAE4-050, Dec16) Chies, Data (in house)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Dec-17 Scheduled Check
Calibration Equipment used (M Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Phobe EB3DV2 DAE4 Secondary Standards Rowar matter E44196	ID SN: 104778 SN: 104778 SN: 104778 SN: 103245 SN: 58277 (20k) SN: 58277 (20k) SN: 58277 (20k) SN: 680 40 SN: 5841250674	Cal Data (Centitoble No.) 04-Apr-17 (No. 217-0252 (00522) 04-Apr-17 (No. 217-0252) 04-Apr-17 (No. 217-02525) 17-Apr-17 (No. 217-02525) 17-Dan-16 (No. ES3-3013, Dec16) 7-Dan-16 (No. DAE-4-050, Dec16) Check, Data (in House) Ob-Apr-16 (in House)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Des-17 Des-17 Des-17 Scheduled Check In house chuck Jun-18
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Robersnoo 208-Attanuator Reference Phote EB3DV2	ID SN: 104778 SN: 104778 SN: 103244 SN: 103245 SN: 58277 (20x) SN: 3813 SN: 88277 SN: 3813 SN: 3813 SN	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/00522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-03528) 21-Dec-16 (No. 253-3013, Dec16) 7-Dac-16 (No. DAE4-050, Dec16) Chies, Data (in house)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Dec-17 Scheduled Check
Calibration Equipment used (Mi Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attahuator Reference Probe EB3DV2 DAE4 Secondary Glanderds Power sensor E44196 Power sensor E44196	ID SN: 104776 SN: 104776 SN: 105244 SN: 105244 SN: 105245 SN: 50277 (20k) SN: 3013 SN: 660 SN: 534460 SN: 10344 SN: 660 SN: 5344230674 SN: 4440667	Cal Data (Certificate No.) 04-Apr-17 (No. 217-02521/02522) 14-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02525) 17-Apr-17 (No. 217-02525) 17-Dep-16 (No. 253-3013, Dec16) 7-Dep-16 (No. 253-3013, Dec16) 7-Dep-16 (No. 245-4692, Dec16) Check, Data (In Notes Check, Jun 16) 06-Apr-16 (In Notes Check, Jun 16)	Scheduled Carilitation Apr-18 Apr-18 Apr-18 Das-17 Dec-17 Dec-17 Scheduled Check In Nouse check Jun-18 In Nouse check Jun-18
Calibration Equipment used (Mi Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Phote EB3DV2 DAE4 Secondary Standards Power sensor E4412A Power sensor E4412A RF generator HP 88480	ID ID SN: 104776 SN: 105244 SN: 105244 SN: 105245 SN: 105245 SN: 50277 (20x) SN: 2013 SN: 660 SN: 6541250674 SN: 6341250674 SN: 600110210 SN: 000110210	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/00522) 04-Apr-17 (No. 217-02521/00522) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 07-Apr-16 (No. 233-3013, Dec16) 7-Den-16 (No. 233-3013, Dec16) 7-Den-16 (No. 234-052, Dec16) 7-Den-16 (No. 234-052, Dec16) Check, Data (In No.56, Dec16), Dec16) 06-Apr-16 (In No.56, Check, Jun-16) 06-Apr-19 (In No.56, Check, Jun-16)	Scheduled Caritization Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Dec-17 Dec-17 Scheduled Dhock In house check Jun-18 In house check Jun-18
Calibration Equipment used (Mi Primary Steroarde Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuistor Reference Probe EB3DV2 DAE4 Secondary Stendards Power sensor E44196 Power sensor E4412A	ID ID SN: 104778 SN: 105244 SN: 105244 SN: 105245 SN: 105245 SN: 50277 (20k) SN: 3013 SN: 5660 SN: 56244 SN: 56277 (20k) SN: 660 SN: 56277 (20k) SN: 660 SN: 5621250674 SN: 660 SN: 66010210 SN: 000110210 SN: 00542001700 SN: 00547260585 SN: 0052780585	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02528) 21-Dec-16 (No. 245-0303, Dec16) 7-Dec-16 (No. 245-0303, Dec16) 7-Dec-16 (No. 245-030, Dec16) 7-Dec-16 (No. 245-030, Dec16) 06-Apr-18 (No. 245-030, Dec16) 06-Apr-18 (No.246, Dec16), Dec16)	Schequied Carification Apr-18 Apr-18 Apr-18 Dec-17 Dec-17 Dec-17 Dec-17 Scheduled Check In house check Jun-18 In house check Jun-18
Calibration Equipment used (Mi Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Probe EB3DV2 DAE4 Secondary Standards Power sensor E44196 Power sensor HP 83753E	ID SN: 104778 SN: 104778 SN: 104278 SN: 105244 SN: 102245 SN: 102245 SN: 2013 SN: 3013 SN: 68277 (20) SN: 68277 (20) SN: 660 ID SN: 6841250874 SN: 6841250874 SN: 00110210 SN: 000110210 SN: 00011000 SN: 105842001700 SN: 00010255 Name Name	Cal Data (Certificate No.) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 07-Apr-16 (No. CAR-4950 Dec16) 7-Dan-16 (No. DAR-4950 Dec16) Check Data (in house) Ob-Apr-16 (no house check Jun-16) Ob-Apr-16 (no house check Jun-16) Ob-Apr-18 (no house check Jun-16) Ob-Apr-19 (no house check Jun-16) Function	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dar-17 Dec-17 Scheduled Check In Rouse check Jun-18 In Rouse check Jun-18 In Rouse check Jun-18 In Rouse check Jun-18
Calibration Equipment used (Mi Primary Standards Power servor NRP-291 Power servor NRP-291 Reference 20 dB Attrautor Reference Phote EB3DV2 DAE4 Secondary Standards Power meter E44196 Power servor E4412A Primar Lerinor E4412A Rf: generator H# 88462	ID ID SN: 104778 SN: 105244 SN: 105244 SN: 105245 SN: 105245 SN: 50277 (20k) SN: 3013 SN: 5660 SN: 56244 SN: 56277 (20k) SN: 660 SN: 56277 (20k) SN: 660 SN: 5621250674 SN: 660 SN: 66010210 SN: 000110210 SN: 00542001700 SN: 00547260585 SN: 0052780585	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02528) 21-Dec-16 (No. 245-0303, Dec16) 7-Dec-16 (No. 245-0303, Dec16) 7-Dec-16 (No. 245-030, Dec16) 7-Dec-16 (No. 245-030, Dec16) 06-Apr-18 (No. 245-030, Dec16) 06-Apr-18 (No.246, Dec16), Dec16)	Schequied Carification Apr-18 Apr-18 Apr-18 Dec-17 Dec-17 Dec-17 Dec-17 Scheduled Check In house check Jun-18 In house check Jun-18
Calibration Equipment used (Mi Primary Signature) Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Probe EB3DV2 DA54 Secondary Standards Power sensor E44196 Power sensor E44196 Power sensor E44197 Reference HP 83480 Network Analyzer HP 83480	ID SN: 104778 SN: 104778 SN: 104278 SN: 105244 SN: 102245 SN: 102245 SN: 2013 SN: 3013 SN: 68277 (20) SN: 68277 (20) SN: 660 ID SN: 6841250874 SN: 6841250874 SN: 00110210 SN: 000110210 SN: 00011000 SN: 105842001700 SN: 00010255 Name Name	Cal Data (Certificate No.) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 07-Apr-16 (No. CAR-4950 Dec16) 7-Dan-16 (No. DAR-4950 Dec16) Check Data (in house) Ob-Apr-16 (no house check Jun-16) Ob-Apr-16 (no house check Jun-16) Ob-Apr-18 (no house check Jun-16) Ob-Apr-19 (no house check Jun-16) Function	Schequied Carification Apr-18 Apr-18 Apr-18 Dec-17 Dec-17 Dec-17 Dec-17 Scheduled Check In house check Jun-18 In house check Jun-18

Gerencate No: EX3-7486_Jul17

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Calibration Laboratory of Schmid & Partner Engineering AG aughussemess 43, 8004 Zunch, Bwitzerlan



S Scheensentischer Källbri Service seisse d'etale C Servizio svizzoro di taratura Ś Swiss Calibration Sandell

Accorditation No.1 SCS 0108

Accretited by the Sweet Accreditation Service (SAS)

The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates Glossary

TSL	lissue simulating liquid
NORMs,y.z	servitivity in free space
ConvF	sensitivity in TSL / NORMX, y.z.
DCP	diade compression point
OF	crest lactor (1/duty cycle) of the RF signal
W. B. C. D	modulation dependent lineertzetion parameters
Polarization o	g rotation around probe axis
Polarization 3	I) rotation around an axis that is in the plane normal to probe axis (at measurement center).

a = 0 is normal to information used in DASY system to align probe sensor X to the robot coordinate system Connector Angle

Callbration is Performed According to the Following Standards:

a) IEEE Std 1528-2013. "IEEE Recommended Practice for Determining the Peak Spalial-Averaged Specific Techniques", June 2013, Tech Recommended Pracade for Distributing the Heak Spatial Averaged spectrum. Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement. Techniques", June 2013 IEC 62209-1, " Measurement procedure for the assessment of Spacific Absorption Rate (SAR) from hand-held and body-mountiad devices used next to the sar (frequency range of 300 MHz to 8 GHz)", July 2016 IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)". March 2010 VTB aB6664, "SAR Measurement for 100 MHz to 6 GHz)". March 2010

- 205
- 4
- d) KDB 865664, SAR Measurement Requirements for 100 MHz to 6 GHz

Methods Applied and Interpretation of Parameters:

- NORMAX, y.z. Assessed for E-field polarization $\theta = 0$ ($1 \le 900$ MHz in TEM-cell; 1 > 1800 MHz; R22 waveguide). NORMAX, y.z. are only intermediate values, i.e., the uncertainties of NORMAX, y.z. does not affect the E¹-field uncertainty inside TSL (see below ConvF). NORMAY, y.z. = NORMAX, y.z. * inequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software variance later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCPx, y, z. DCP are numerical linearization parameters assassed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but datermined based on the signal characteristics.
- Ax,y,z; Ex,y,z; Cx,y,z; Dx,y,z; VRx,y,z; A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- Media. We is the matching realition range expression in which we using E-field (or Tempetature Transfer Standard for $f \le 800$ MHz) and inside waveguide using analytical field distributions based on power measurements for $f \le 800$ MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASYM software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMs*, y, z^* *Conv*^C whereby the uncertainty corresponds to that given for z = 4500 MHz. The sensitivity in TSL corresponds to *NORMs*, y, z^* *Conv*^C whereby the uncertainty corresponds to that given for z = 4500 MHz. The Com/F is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical (solropy (3D deviation from isotropy)) in a field of low gradients realized using a fial phantom
- exposed by a patch antenna. Sensor Offset, The sensor offset corresponds to the offset of virtual measurement center from the probe 5p
- (on probe axis). No tolerance required. Connector Angle: The angle is assessed using the information gained by determining the NORMs (no unicertainly required).

Certificate No: EX3-7466_Jul/17

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EX3DV4 - SN:7466

July 4, 2017

Probe EX3DV4

SN:7466

Manufactured: Calibrated: October 25, 2016 July 4, 2017

Calibrated for DASY/EASY Systems (Note: non-compatible with DASY2 system!)

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July 4, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7466

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (μV/(V/m) ²) ⁴	0.46	0.40	0.63	± 10.1 %
DCP (mV) ^a	96.7	100.3	93.7	

Modulation Calibration Parameters

UID	Communication System Name		A	в	С	D	VR	Unc	L
			dB	dBõV		dB	mV	(k=2)	L
0	CW	X	0.0	0.0	1.0	0.00	145.9	±3.0 %	L
		Y	0.0	0.0	1.0		148.6		Ĺ
		Z	0.0	0.0	1.0		130.0		L

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

⁵ The uncertainties of Norm X,Y,Z do not affect the E³-field uncertainty inside TSL (see Pages 5 and 6).
⁹ Numerical linearization parameter: uncertainty not required.
⁹ Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the find value. field value.

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July 4, 2017

f (MHz) ^c	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ¹³ (mm)	Unc (k=2)
835	41.5	0.90	10.20	10.20	10.20	0.60	0.84	± 12.0
900	41.5	0.97	9.95	9.95	9.95	0.42	0.94	± 12.0
1750	40.1	1.37	8.84	8.84	8.84	0.34	0.80	± 12.0
1900	40.0	1.40	8.52	8.52	8.52	0.35	0.80	± 12.0
2000	40.0	1.40	8.47	8.47	8.47	0.35	0.80	± 12.0
2450	39.2	1.80	7.81	7.81	7.81	0.35	0.99	± 12.0
2600	39.0	1.96	7.58	7.58	7.58	0.37	0.95	± 12.0
5200	36.0	4.66	5.81	5.81	5.81	0.35	1.80	± 13.1
5300	35.9	4.76	5.56	5.56	5.56	0.35	1.80	± 13.1
5600	35.5	6.07	4.98	4.98	4.98	0.40	1.80	±13.1
5800	35.3	5.27	5.17	5.17	5.17	0.40	1.80	± 13.1

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7466

^D Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v1.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the Conv² uncertainty is calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for Conv² assessments at 30, 64, 120, 150 and 220 MHz respectively. Above 5 GHz frequency validity use between 306 MHz is ± 10, 25, 40, 50 and 70 MHz for Conv² assessments at 30, 64, 120, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be enabled to a 100 MHz. * At frequencies below 3 GHz, the validity of tissue parameters (s and e) can be relaxed to ± 10% if "liquid componention formula is applied to measured SAR values. Af frequencies is a 100 MHz, the validity of tissue parameters (s and e) is restricted to ± 5%. The uncertainty for indicated target tissue parameters. * At frequencies below 3 GHz, the validity of tissue parameters (s and e) is restricted to ± 5%. The uncertainty is the RSS of the Conv² uncertainty for indicated target tissue parameters. * At frequencies the target tissue parameters. * At frequencies that 15% for the uncertainty is the RSS of the Conv² uncertainty for indicated target tissue parameters. * At the remaining deviation due to the boundary effect after compensation is advays lass than 15% for the frequencies below 3 GHz and below a 2% for the quencies below a 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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July 4, 2017

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Una (k=2
835	55.2	0.97	10.24	10.24	10.24	0.39	0.96	± 12.0
900	55.0	1.05	10.06	10.06	10.06	0.34	1.01	± 12.0
1750	53.4	1.49	8.52	8.52	8.52	0.39	0.87	± 12.0
1900	53.3	1.52	8.14	8.14	8.14	0.34	0.91	± 12.0
2000	53.3	1.52	8.30	8.30	8.30	0.33	0.94	± 12.0
2450	52.7	1.95	7.94	7.94	7.94	0.28	1.10	± 12.0
2600	52.5	2.16	7.66	7.66	7.66	0.27	1.15	± 12.0
5200	49.0	5.30	5.20	5.20	5.20	0.40	1.90	± 13.1
5300	48.9	5.42	5.10	5.10	5.10	0.40	1.90	± 13.1
5600	48.5	5.77	4.27	4.27	4.27	0.50	1.90	± 13.1
5800	48.2	6.00	4.48	4.48	4.48	0.50	1.90	± 13.1

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7466

^C Frequency validity above 360 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is realriched to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at estimation frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF essentents at 30, 64, 128, 156 and 220 MHz respectively. Above 5 GHz frequency validity volidity can be extended to ± 10 MHz. In the frequencies below 3 GHz, the validity of tissue parameters (s and 4) can be relaxed to ± 10% if liquid componration formule is applied to measured SAR values. Af frequencies device 3 GHz, the validity of tissue parameters (s and 4) can be relaxed to ± 10% if liquid componration formule is applied to measured SAR values. Af frequencies device 3 GHz, the validity of tissue parameters (s and 4) can be relaxed to ± 0%. The uncertainty is the RSS of the ConvF uncertainty for indicated torget tissue parameters.

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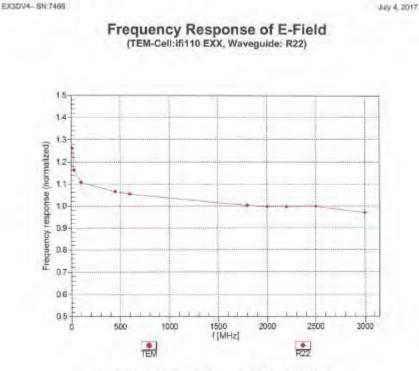
Page 6 of 11

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Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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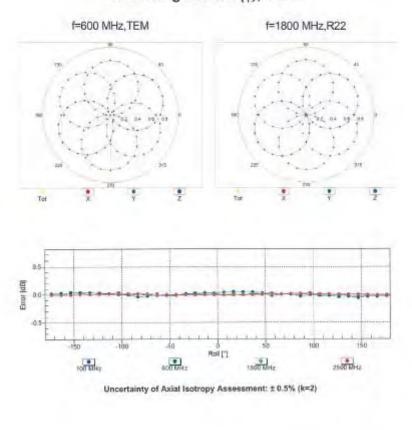
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EX30V4-SN:7466

July 4, 2017



Receiving Pattern (\$), 9 = 0°

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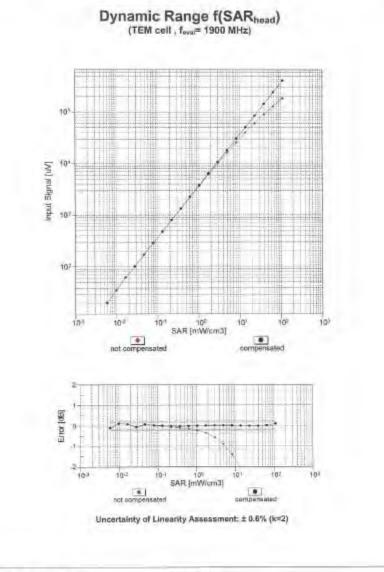
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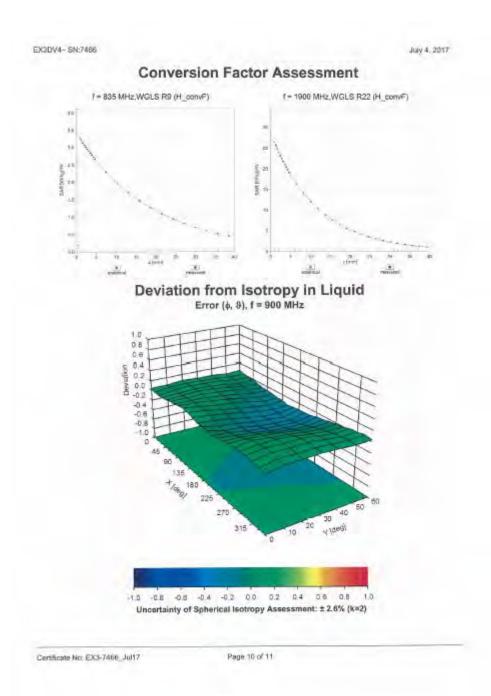
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July 4, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7466

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-3.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Certificate No: EX3-7466_Jul17

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alibration Laborator chmid & Partner Engineering AG ughausstrasse 43, 8004 Zuric		C S	Schweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service
credited by the Swiss Accredite e Swiss Accreditation Service Itilateral Agreement for the re	e is one of the signatories t	o the EA	ditation No.: SCS 0108
ient SGS-TW (Aude	en)	Cartificate No: E	EX3-3831_Jan17
ALIBRATION	CERTIFICATE		
Daject	EX3DV4 - SN:383	1	
Calibration procedure(s)	QA CAL-01 v9, QA Calibration proced	A CAL-14.v4, QA CAL-23.v5, QA (ure for dosimetric E-field probes	CAL-25:V6
Calibration date:	January 23, 2017		
Calibration Equipment used (M8		facility; environment temperature (22 \pm 3) ⁴ C at	
Primary Standards	(D)	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-Z91	SN: 103244	05-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 55277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN. 3013	31-Dec-16 (No. ES3-3019_Dec16)	Dec-17
DAE4	SN. 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E44198	SN G841293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN MY41498087	06-Apr-16 (in house check Jun-16)	In house check, Jun-18
Power sensor E/412A	SN: 000110210	05-Apr-16 (in house check Jun-16)	In house check: Jun-18
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-16)	In house check. Jun-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (in house check Oct-18)	In house check: Oct-17
	klama.	Function	Signature
Calibrated by	Name Jeton Kastrati	Laboratory Teolwiclen	of la
Approved by:	Kalja Pokevic	Technical Manager	tol 15

Certificate No: EX3-3831_Jan17

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Calibration Laboratory of Schmid & Partner Engineering AG aughausstrasse 43, 8004 Zurich, Switzerland Zeugha



Schweizerischer Kalibrierdienst S Service suisse d'étalonnage C Servizio svizzero di taratura S Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA

Multilateral Agreement for the recognition of calibration cartificates Glossary

G103301 Yr	
TSL	tissue simulating liquid
NORMX, V.Z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx.y.z.
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A.B.C.D	modulation dependent linearization parameters
Polarization o	o retation around probe axis
Polarization 8	9 rotation around an axis that is in the plane normal to probe axis (at measurement center).
	i.e. 9 = 0 is normal to probe axis

information used in DASY system to align probe sensor X to the robot coordinate system Connector Angle

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement
- Techniques", June 2013 IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close b) proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005 IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)". March 2010 PDP 85584, "SAR USAR TRANSPORT Provide Communication devices and the second se
- c)
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz" dì

Methods Applied and Interpretation of Parameters:

- NORMx, y, z: Assessed for E-field polarization 8 = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz; R22 waveguide). NORMx, y, z are only intermediate values, i.e., the uncertainties of NORMx, y, z does not affect the E^{*}-field uncertainty inside TSL (see below *ConvF*).
- NORM(f)x,y,z = NORMx,y,z * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media, PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal
- - characteristics
- Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z; A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer ConvF and Boundary Effect Parameters: Assessed in nat phantom using E-neo (or temperature transfer Standard for f \$ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx, y, z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHZ.
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset corresponde to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle. The angle is assessed using the information gained by determining the NORM/ (no uncertainty required).

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EX3DV4 - SN:3831

lanuary 23, 2017

Probe EX3DV4

SN:3831

Manufactured: Calibrated: September 6, 2011 January 23, 2017

Calibrated for DASY/EASY Systems (Note: non-compatible with DASY2 system!)

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January 23, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m) ²) ^A	0.43	0.41	0.42	± 10.1 %
DCP (mV) ^B	101.7	102.0	100.6	

Modulation Calibration Parameters

מוט	Communication System Name		dB	B dBõV	C	dB	VR mV	Unc ^c (k=2)
0	CW	X	0.0	0.0	1.0	0.00	149.3	±2.2 %
		Y	0.0	0.0	1.0		138.4	
		Z	0.0	0.0	1.0		142.6	

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

The uncertainlies of Norm X,Y,Z do not affect the E⁴-field uncertainly inside TSL (see Pages 5 and 6). Numerical linearization parameter: uncertainty not required. Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the Field value

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January 23, 2017

f (MHz) ^c	Relative Permittivity ^F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha	Depth ⁰ (mm)	Unc (k=2)
750	41.9	0.89	9.63	9.63	9.63	0.57	0.80	± 12.0 %
835	41.5	0.90	9,15	9.15	9.15	0.53	0.81	£ 12.0 %
900	41.5	0.97	9.08	9.08	9.08	0.42	0.86	± 12.0 %
1450	40.5	1,20	8.41	8.41	8.41	0.35	0.80	± 12.0 %
1750	40,1	1.37	8.17	8.17	8.17	0.32	0.80	± 12.0 %
1900	40.0	1.40	7.86	7,86	7.86	0.39	0.80	± 12.0 9
2000	40.0	1.40	7,80	7,80	7.80	0.35	0.80	± 12.0 %
2300	39.5	1.67	7,59	7.59	7.59	0.26	1.02	± 12.0 %
2450	39.2	1.80	7.21	7.21	7.21	0,40	0.80	± 12.0 %
2600	39.0	1,96	6.99	6.99	6.99	0,38	0.80	± 12.0 9
3500	37.9	2.91	6.55	6.55	6.55	0.30	1.20	± 13.1 9
5200	36.0	4.66	5.02	5.02	5.02	0.30	1.80	± 13.1 9
5300	35.9	4.76	4.70	4.70	4.70	0.35	1.80	± 13.1 5
5600	35.5	5.07	4.51	4.51	4.51	0.40	1,80	± 13.1 %
5800	35.3	5.27	4.46	4.46	4.48	0.40	1.80	±13.1 9

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

⁹ Prequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else is is restricted to ± 50 MHz. The uncertainty is the RSS of the ComF uncertainty at calibration frequency and the uncertainty for the uncertainty is the RSS of the ComF uncertainty at calibration frequency and the uncertainty for the uncertainty at calibration frequency and the uncertainty for the uncertainty at calibration frequency and the uncertainty for the uncertainty for the uncertainty is the RSS of the ComF uncertainty at calibration frequency and the uncertainty for the uncertainty for the uncertainty for ComF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
⁷ Affrequencies below 3 GHz, the validity of lissue parameters (c and e) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of lissue parameters.
⁷ AlphaDepth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation talkays less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the prohe tip diameter from the boundary.

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FX3DV4- SN-3831

January 23, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

f (MHz) ^c	Relative Permittivity	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^{G.}	Depth ⁰ (mm)	Unc (k=2)
750	55.5	0.96	9.59	9,59	9.59	0.46	0.80	± 12.0 %
835	55.2	0.97	9.25	9,25	9.25	0.48	0.80	± 12.0 %
900	55.0	1.05	9.15	9.15	9.15	0.35	0.80	± 12.0 %
1750	53.4	1.49	7.78	7.78	7.78	0,36	0.80	± 12.0 %
1900	53.3	1.52	7.53	7.53	7.53	0.38	0.80	± 12.0 %
2000	53,3	1.52	7,66	7.66	7.66	0.32	0.80	± 12.0 %
2300	52.9	1.81	7.32	7.32	7.32	0.29	1.00	± 12.0 %
2450	52.7	1.95	7.30	7.30	7.30	0.33	0.80	± 12.0 9
2600	52.5	2.16	7.05	7.05	7.05	0.30	0.80	± 12.0 9
5200	49.0	5,30	4.47	4.47	4.47	0,40	1.90	± 13.1 3
5300	48.9	5,42	4.21	4.21	4.21	0,45	1.90	± 13.1 %
5600	48.5	5.77	3.67	3.67	3.67	0.50	1.90	± 13.1 9
5800	48,2	6.00	3.87	3.87	3.87	0.50	1.90	± 13.1 9

Calibration Parameter Determined in Body Tissue Simulating Media

^C Frequency validity above 900 MHz of ± 100 MHz only applies for DASY v4.4 and nigher (see Page 2), else is is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty of adiatriality is the RSS of the ConvF uncertainty of adiatriality for ConvF seesawerst at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz. The validity of tissue parameters (c and a) can be released to ± 10% If liquid compensation formula is applied to measured SAR values. All frequencies above 3 GHz, the validity of tissue parameters (c and a) can be released to ± 50%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters. ^A AlphaDept are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe type diameter from the boundary.

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January 23, 2017 EX3DV4-SN:3831 Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22) 1.5 1.4 1.3 Frequency response (normalized) 1.2 1.1 1.0 0.9 0.8 0.7 0.6 05 3000 2500 ò 500 1000 1500 2000 f [MHz] R22 TEM

Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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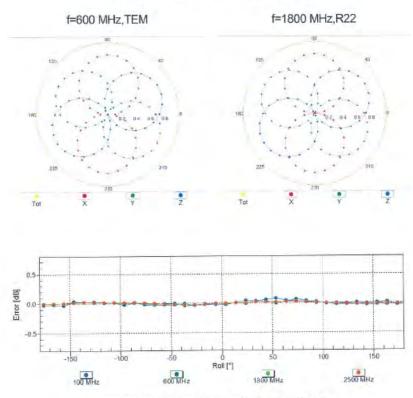
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EX3DV4- SN:3831

January 23, 2017



Receiving Pattern (ϕ), $\vartheta = 0^{\circ}$



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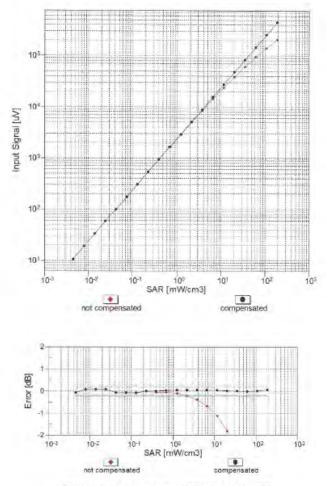
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January 23, 2017

Dynamic Range f(SAR_{head}) (TEM cell , f_{eval}= 1900 MHz)



Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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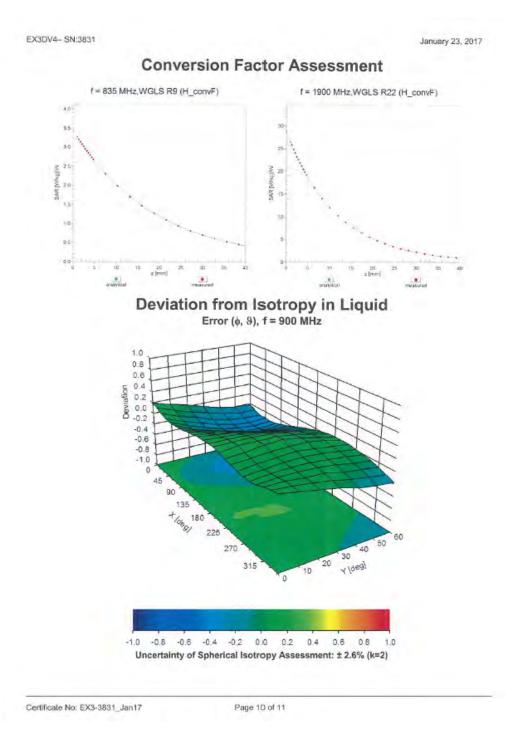
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EX3DV4-SN:3831

January 23, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-16.3
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diamèter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Certificate No: EX3-3831_Jan17

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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台灣檢驗科技股份有限公司

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8. Uncertainty Budget

А	с	D	е		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probabilit y	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.00%	Ν	1	1	1	1	6.00%	6.00%	8
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
lsotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	8
Modulation Response	2.40%	R	√3	1.732	1	1	1.40%	1.40%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	8
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	~
Readout Electronics	0.30%	Ν	1	1	1	1	0.30%	0.30%	~
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	8
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	∞
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Probe Positioning with respect to phantom	2.90%	R	√3	1.732	1	1	1.67%	1.67%	∞
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	~
Liquid permittivity (mea.)	3.97%	N	1	1	0.64	0.43	2.54%	1.71%	м
Liquid Conductivity (mea.)	4.25%	Ν	1	1	0.6	0.49	2.55%	2.08%	М
Combined standard uncertainty		RSS					11.97%	11.72%	
Expant uncertainty (95% confidence							23.94%	23.44%	

Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

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9. Phantom Description

Schmud & Panner Engineering AG

Zeughausetmees 42, 8004 Zurich, Switzellav Phone +41 1 245 9700, Fax +41 1 245 9779 info@spasg.com.http://www.spasg.com

Certificate of Conformity / First Article Inspection

tem	SAM Twin Phentom V4.0			
Type No .	QD 000 P40 C			
Series No	TP-1150 and higher			
Manufacturer	SPEAG Zeughausstrasse 43 GH-8004 Zörich Switzerland			

Tests

Tess: The series production process used allows the imitation to test of first articles. Complete tests were made on the pre-series Type No. GD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. GD 000 P40 BA, Serial No. TP-1006. Certain parameters have been releated using further series items (called samples) or are tested at each item.

Test	Requirement	Details	Units tested
Dimensions Compliant with the geometry according to the CAD model.		IT'IS CAD File (*)	First article, Samples
Material thickness Compliant with the requirements according to the standards		2mm +/- 0.2mm in flat and specific areas of head section	First article, Samples, TP-1314 ff,
Material thickness Compliant with the requirements at ERP according to the standards		6mm +/- 0.2mm at ERP	First article, All items
Material parameters	Dielectric parameters for required Mequancies	300 MHz - 0 GHz: Relative permittivity < 5. Loss tangent < 0.05	Material samples
Material resistivity The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility.		DEGMBE based simulating liquids	Pre-series, First article, Material samples
Sagging	Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating liquid	< 1% typical < 0.8% if filed with 155mm of HSL900 and without OUT below	Prototypes, Sample testing

Standards

CENELEC EN 50381 IEEE Std 1528-2003 IEC 62209 Part I 1234

The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

Conformity

Based on the sample tests abovo, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standarda [1] to [4]

Date 07.07.2005 Signature / Stamp		Subject of Pagenary Engineering AG Subject of Pagenary Engineering AG Strategies 43, 8094 (2016), Subject and Phone 40, 2, 345 97500 (2014) (21, 547) Into Pagenag, com, http://www.aparing.com
Doc He MIT - OD 000 PAD C		Page 111

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10. System Validation from Original Equipment Supplier

		Whitelike.	
condited by the Swiss Accredia he Swiss Accreditation Servic Iulfilateral Agreement for the n	e is one of the signatorie	is to the EA	ccreditation No.: SCS 0108
linni SGS-TW (Aude	4		D750V3-1015_Aug16
CALIBRATION C	ERTIFICATE		
Nejoci	D750V3 - SN: 10	115	
Calibration proceduro(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz		
Sautzation date:	August 30, 2016		
	suggine out in to		
Al calibrations have been condu Calibration Equipment used (M&		ry facility: environment temperature (22 \pm 3)*	G and humidity < 70%.
Calibration Equipment used (M&		ry facility: environment temperature (22 ± 3)* Cal Date (Centilicate No.)	C and humidity < 70%. Schoolwed Calibration
Calibration Equipment used (M&	TE ontical for calibration)		
Calibration Equipment used (M& ² nmary Standards ² owar mater NRP	FE onlical for calibration)	Cal Date (Certificate No.)	Schaduled Calibration
Calibration Equipment used (M& ² nmary Standards ² owar mater NRP ² ower sensor NRP-731	FE ontical for calibration(ID # SN: 104778	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288)	Echaduled Calibration
Calification Equipment used (M& Primary Standards Power mater NRP Power sensor NRP-Z91 Power sensor NRP-291 Retarence 20 dB Attenuator	FE onlice) for celibration(ID A SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02282)	Schadulad Calibration Apr-17 Apr-17 Apr-17 Apr-17
Calibration Equipment used (M& Primary Standards Power sensor NRP-Z91 Power sensor NRP-Z91 Haterance 20 dB Attanuator Type-N mismatch combination	TE onlice) for celibration) ID A SN: 104778 SN: 103244 SN: 103245 SN: 5068 (20k) SN: 5047.2 / 06327	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02282) 05-Apr-16 (No. 217-02295)	Schadulad Galibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17
Calibration Equipment used (MS Primary Standards Power sensor NRP-Z91 Power sensor NRP-Z91 Power sensor NRP-Z91 Alateracics 20 GB Attenuator Type-N mismatch combination Reference Prote EX30V4	FE onlice) for celibration(ID A SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02282)	Schadulad Calibration Apr-17 Apr-17 Apr-17 Apr-17
Calification Equipment used (M& Primary Standards Power mater NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Retenence 20 dB Attenuator Type-N mismatch combination Retenence Probe EX30V4 DAE4	FE ontical for calibration(ID A SN: 104778 SN: 103244 SN: 103245 SN: 5005 (200) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 7349 SN: 601	Cal Date (Centilicate Nd.) 06-Apr-16 (No. 217-02288)02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02280) 05-Apr-16 (No. 217-02280) 06-Apr-16 (No. 217-02296) 15-Jun-16 (No. 217-02296) 15-Jun-16 (No. 217-02296) 36-Cec-15 (No. DAE4-601, Dec15)	Echaclulad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Dac-16
Calification Equipment used (M& Primary Standards Power sensor NRP-231 Power sensor NRP-231 Power sensor NRP-231 Reterence 20 dB Attenuator Type-N mismatch combination Reterence Prote EX3DV4 DAE4 Secondary Standards	FE ontical for celibration(ID A SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 5049 SN: 601	Cal Date (Centilisate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02280) 05-Apr-16 (No. 217-02282) 06-Apr-16 (No. 217-02292) 06-Apr-16 (No. 217-02292) 15-Jun-16 (No. EX3-7349_Jun-16) 304-Cec-15 (No. DAE4-601_Dec15) Check Date (in house)	Echaclulad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Dec-16 Scheduled Check
Calibration Equipment used (M& Power mater NRP Power sensor NRP-731 Power sensor NRP-731 Power sensor NRP-731 Reterence 20 dB Attenuator Type-N mismatch combination Reterence Prote EX3094 DAE4 Secondary Standaritis Power mater EPM-442A	FE onlice) for celibration(ID A SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 5049 SN: 601 ID 4 SN: 6837480704	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02290) 06-Apr-16 (No. 217-02290) 15-Jun-16 (No. EX3-7349_atur16) 304-Cec-15 (No. DAE-4-601_Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222)	Echadulad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Disc-16 Scheduled Check in house chack: Oct-16
Calibration Equipment used (M8: Primary Staindards Power sensor NRP-Z91 Power sensor NRP-Z91 Reterence 20 GB Attornutor Type-N mismatch combination Reterence Prote EX3094 DAE4 Secondary Standards Power mater EPM-442A Power stans EPM-442A	FE ontical for celibration) ID A SR: 104778 SN: 103244 SN: 103245 SN: 50472 (20k) SN: 50472 (20k) SN: 50472 (20k) SN: 601 ID 4 SN: G837460704 SN: US37292783	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288)(02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02295) 15-Juni 6 (No. 217-02295) 15-Juni 6 (No. 217-02295) 07-Oct-15 (No. DAF4-601 Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222)	Echadulad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Jun-17 Dec-16 Scheduled Check In house check: Oct-16 In house check: Oct-16
Calification Ecutoment used (M8: Primary Standards Power sensor NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reterence 20 dB Attonuator Type-N mismatch combination Reterence Prote EX3D94 DAE4 Secondary Standardis Power sensor HP 8481A Power sensor HP 8481A	PE-ontical for calibration) ID A SN: 104778 SN: 103244 SN: 103245 SN: 5068 (20k) SN: 5067.2 / 06827 SN: 5071 ID 4 SN: 6837460704 SN: 6837460704 SN: 057282783 SN: MY41082317	Cal Date (Centilizate Nd.) 06-Apr-16 (No. 217-02288)(02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02280) 05-Apr-16 (No. 217-02290) 05-Apr-16 (No. 217-02290) 05-Apr-16 (No. 217-02290) 15-Jun 16 (No. 217-02290) 07-Oct-15 (No. 217-02292) 07-Oct-15 (No. 217-02292) 07-Oct-15 (No. 217-02292) 07-Oct-15 (No. 217-02292) 07-Oct-15 (No. 217-02292)	Echaclulad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jan-17 Jan-17 Dao-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Calibration Equipment used (M& Power mater NRP Power sensor NRP-731 Power sensor NRP-731 Power sensor NRP-731 Reterence 20 dB Attenuator Type-N mismatch combination Reterence Prote EX3094 DAE4 Secondary Standaritis Power mater EPM-442A	FE ontical for celibration) ID A SR: 104778 SN: 103244 SN: 103245 SN: 50472 (20k) SN: 50472 (20k) SN: 50472 (20k) SN: 601 ID 4 SN: G837460704 SN: US37292783	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288)(02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02295) 15-Juni 6 (No. 217-02295) 15-Juni 6 (No. 217-02295) 07-Oct-15 (No. DAF4-601 Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222)	Echadulad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Jun-17 Dec-16 Scheduled Check In house check: Oct-16 In house check: Oct-16
Calification Equipment used (M& Primary Standards Power sensor NRP-Z91 Power sensor NRP-Z91 Reterence 20 GB Attenuator Type-N mismatch combination Reterence Prote EX3094 DAE4 Secondary Standards Power stansor HP 8481A Power stansor HP 8481A Power stansor HP 8481A Power stansor HP 8481A Power stansor HP 8481A	PE-ontical for celibration(ID A SN: 104778 SN: 103244 SN: 103245 SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 5047.2 / 0637 SN: 5047.2 / 0637 SN: 603 ID 4 SN: 6637400704 SN: 6637400704 SN: 0537292783 SN: My41062817 SN: 102972	Cal Date (Centilicate No.) 06-Apr-16 (No. 217-02288)02289) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02280) 05-Apr-16 (No. 217-02280) 05-Apr-16 (No. 217-02280) 15-Jun-16 (No. 217-02280) 15-Jun-16 (No. 217-02280) 04-Cec-15 (No. DAE4-601 Dec15) Check Date (m house) 07-Oct-16 (No. 217-02220) 07-Oct-16 (No. 217-02220) 07-Oct-16 (No. 217-02220) 15-Jun-15 (n house check Jun-15)	Echaciliad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Dac-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Calification Equipment used (M8: Primary Staindards Power sensor NRP-Z91 Power sensor NRP-Z91 Reterence 20 GB Attornutor Type-N misimatich combination Reterence Prote EX3094 DAE4 Secondary Standardis Power mater EPM-442A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A	TE ontical for celibration) ID-A SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20h) SN: 5047.2 / 06327 SN: 7349 SN: 601 ID 6 SN: 683748070A SN: 0537282178 SN: MV41052317 SN: 100072 SN: 1053739/585	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02296) 15-Jun 16 (No. EX3-7349_stun16) 30-Cec-15 (No. DAE4-601_Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 15-Jun 15 (in house check Jun-16) 18-Oct-01 (in house check Oct-15)	Echaciliad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Dac-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Calification Equipment used (M& Primary Standards Power sensor NRP-Z91 Power sensor NRP-Z91 Reterence 20 GB Attenuator Type-N mismatch combination Reterence Prote EX3094 DAE4 Secondary Standards Power stansor HP 8481A Power stansor HP 8481A Power stansor HP 8481A Power stansor HP 8481A Power stansor HP 8481A	PE-ontical for celibration) ID A SR: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 5005 (20k) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 7519 SN: 901 ID 4 SN: 00372807004 SN: 00372817 SN: 103728 SN: 103788 SN: 1037888 SN: 1037888 SN: 1037888	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288)(02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 07-Oct-15 (No. DAF4-601 Dec15) Check Date (in house) 07-Oct-15 (No. 217-02223) 07-Oct-15 (No. 217-02223) 07-Oct-15 (No. 217-02223) 15-Jun 15 (in house check Jun-16) 18-Oct-01 (in house check Jun-16) 18-Oct-01 (in house check Oct-15) Fundion	Echaciliad Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Dac-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
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Calibration Laboratory of Schmid & Partner Engineering AG Zeughauseinsse 43, 1004 Zurich, Switzerland



S Schweizerlucher Kalibrierdiese G Service solste d'étalonnage Service avizzuro di tavature S Swiss Calibration Service

Accreditation No.: SCS 0108

According by the Swiss Accreditation Service (SAS)

The Swise Accorditation Service is one of the signatories to the EA Multiplerni Agreement for the recognition of calibration certificance Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards.

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) In the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phentom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power, No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D750V3 1015 Aug10

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASYS	V52.8.8
Extrapolation	Advanced Extrapolation	
Phanton	Modular Flat Phantom	
Distance Dipole Center - TSL.	13 mm.	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.4 ± 6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	-	

SAR result with Head TSL

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1V7	8.32 W/kg ± 17.0 % (k=2)
PAB sustained out; 10 cm ² (10 ct bland TS)	condition	
SAR averaged over 10 cm ² (10 g) of Head TSL.	condition	t 38 WAro
SAR averaged over 10 cm ^s (10 g) of Head TSL SAR measured SAR for nominal Head TSL parameters	condition 250 mW input power normalized to 1W	1.36 W/kg 5.46 W/kg ± 16.5 % (k=2)

Body TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.5	0,96 inho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.9 ± 6 %	0,99 mbio/m ± 6 %
Body TSL temperature change during test	<0.5 °C		-

SAR result with Body TSL

SAR averaged over 1 cm ² (1 g) of Body TSL	Condition	
SAFI measured	250 mW input power.	2;25 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	8.77 W/kg + 17.0 % (k=2)
and itser trattictum menery and hereits status		
SAR averaged over 10 cm ¹ (10 g) of Body TSL	condition	
	condition 250 mW input power	1.47 ₩/kg

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.1 Q - 0.2 jQ	
Retwo Loss	-30.5 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	49.0 Q - 2,8 jQ
Return Loss	· 30.6 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.037 ns	

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard similingid coaxial cable. The center conductor of the leading line is directly connected to the second arm of this dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when leaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excassive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	March 22, 2010	

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DASY5 Validation Report for Head TSL

Date: 30,08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

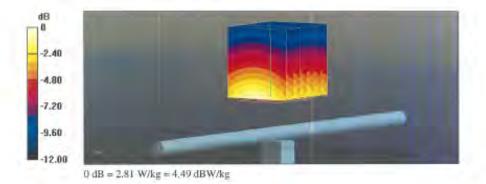
Communication System: UID 0 - CW; Frequency: 750 MHz Medium parameters used: f = 750 MHz, $\sigma = 0.91$ S/m; $v_c = 42.4$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12,2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.26 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 3.16 W/kg SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.38 W/kg Maximum value of SAR (measured) = 2.81 W/kg



Certificate No: D750V3-1015_Aug16

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f (886-2) 2298-0488



DASY5 Validation Report for Body TSL

Date: 30.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN: 1015

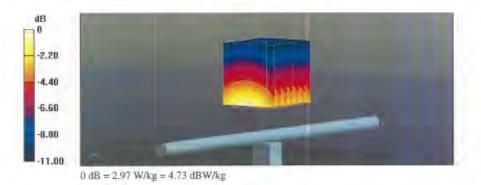
Communication System: UID 0 - CW; Frequency; 750 MHz Medium parameters used: l' = 750 MHz; $\sigma = 0.99$ S/m; $\epsilon_r = 54.9$; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(9.99, 9.99, 9.99); Calibrated: 15.06.2016;
- · Sensor-Surface: I.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30,12.2015
- · Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5num, dy=5num, dz=5num Reference Value = 57.47 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 3.39 W/kg SAR(1 g) = 2.25 W/kg; SAR(10 g) = 1.47 W/kg Maximum value of SAR (measured) = 2.97 W/kg



Certificate No: D750V3-1015_Aug16

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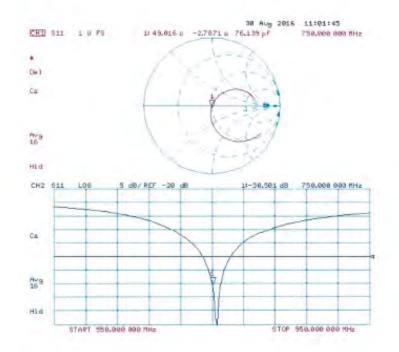
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Impedance Measurement Plot for Body TSL



Certificate No: D750V3-1015_Aug16

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Genificate No: 0750V3-1015_Aug17

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Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Accession No.: SCS 0108

Actreated by the twos Accessories Service (SAS)

The Swine Accession of Service is one of the eigenomics to the EA. Multilateral Agreement for the recognition of safetration certificates Glossary:

Glossa

TSL	tissue semulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 8 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 5 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the and of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL. The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 85%.

Gertlicen No. D75555-1015_Aug17

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Measurement Conditions

DASY system configuration, as far as not given on page 1

DASYS	V5z.40.0
Advanced Extrapolation	
Modular Fiel Presidem	
15 mm	with-Essader
dx, dy, da = 5 mm	
750 MHz = T MHz	
	Advanced Extrapolation Modular Fiel Phanlom 15 mm dx, dy, d2 = 5 mm

Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 *0	41.9	0.89 mhaim
Measured Head TSL paraminiare	(22.8 ± 0.2) °C	41.126%	0.50 mitalm a/0 1
Head TSL temperature change during test	<0.5°C	-	-

SAR result with Head TSL

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measored	250 mW aquit power	2.09 Wag
SAR for nominal Heat TSL personeters	wormalized to 1W	8.25 Wikg ± 17.0 % (k=2)
	1	
BAR averaged over 10 cm ³ (10 g) of Head TSL	sondiban	
SAR averaged over 10 cm ¹ (10 g) of Head TSL. SAR measured	soudilition 250 mW input power	1.35 W/kg

Body TSL parameters

The following parameters and calculations were applied

	Temperatile	Parmillavity	Conductivity
Nominal Body TSL parameters	22.0 °C	58.6	0.95 million
Measured Body TSL parameters	(22.0 : 0.2) 位	55.5 ± 0 %	0.95 mno/m ± 8 %
Body TSL temperature change during test	<0.5 °C	-	-

SAR result with Body TSL

SAR averaged over 1 cm ² (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.19.W/kg
SAR for nominal Body TSL parameters	mammaikzed to 1W	8.76 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ¹ (10 g) of Body TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Body TSL SAR measured	250 mW input power	1.44 Wikg

Certilizate No: 0750V3 1010_Aug17

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, iransformed to feed point	53.9 (1 + 0.3 (1)
Return Loss	- 28.6 dB

Antenna Parameters with Body TSL

Impediance, transformed to feed point	48.6 (2 - 3.4)(2	
Return Loss	- 28.4 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.037 ns
----------------------------------	----------

After long tarm use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured

The dipole is made of standard semiligid cosstal cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might band or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 22, 2010

Geraficate No: D750V3-1815_Aug17

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DASY5 Validation Report for Head TSL

Date: 18.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1015

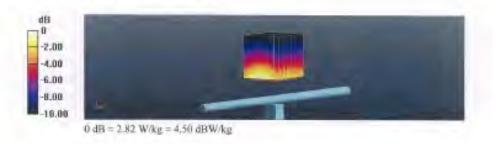
Communication System: UID 0 - CW; Frequency: 750 MHz Medium parameters used: f = 750 MHz; $\sigma = 0.9$ S/m; $e_r = 41.1$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.49, 10.49, 10.49); Calibrated: 31.05.2017.
- Sensor-Surface: L4mm (Mechanical Surface Detection)
 - Electronics: DAE4 Sn601; Calibrated: 28.03.2017
 - Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
 - DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 58.52 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 3.21 W/kg SAR(1 g) = 2.09 W/kg; SAR(10 g) = 1.35 W/kg Maximum value of SAR (measured) = 2.82 W/kg



Certificate No: D750V3-1015_Aug17

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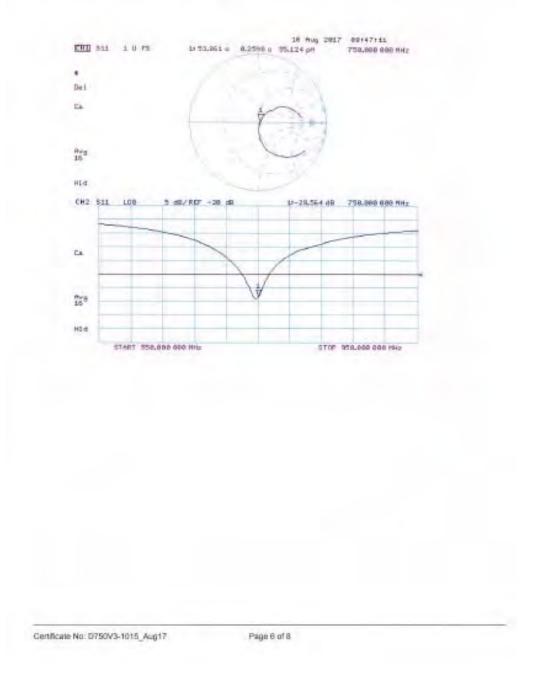
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 21.08,2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1015

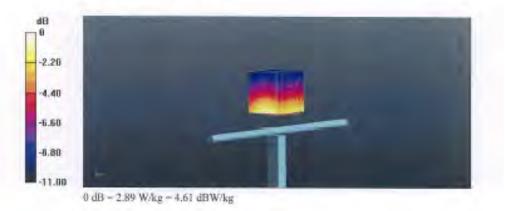
Communication System: UID 0 – CW; Frequency: 750 MHz Medium parameters used: f = 750 MHz; $\sigma = 0.96$ S/m; $\epsilon_r = 55.5$; $\rho = 1000$ kg/m³ Phantom section: Flat Section. Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.35, 10.35, 10.35); Calibrated: 31.05.2017;
- * Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417).

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 57.77 V/m; Power Drift = -0.00 dB Peak SAR (extrapolated) = 3.27 W/kg SAR(1 g) = 2.19 W/kg; SAR(10 g) = 1.44 W/kg Maximum value of SAR (measured) = 2.89 W/kg



Certificate No: D750V3-1015_Aug17

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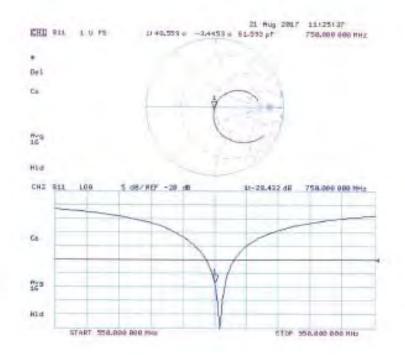
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Impedance Measurement Plot for Body TSL



Certificate No: D750V3-1015_Aug17

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Clertificale No: D835V2-4d053_Aug16

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Calibration Laboratory of Schmid & Partner Engineering AG Zaughausstrasse 43, 8004 Zarich, Switzenami



S Schwisemacher Kallbrierden G Service walaas d'étalonrage Service evizers di taroura S swiss Cartination Service

Aborecitasion No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

The Swise Accredits	itten Service is one of the signalaties to the EA.
Multiment Agreem	uni for the recognition of calibration cartification
Glossary:	
TSL	tissue simulating liquid

1 Cle	insome sufficienting inductor
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)". February 2005
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Flate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)⁶, March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the and
 of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL. The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power, No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna food point. No uncertainty required.
- · SAR measured: SAR measured at the stated antenna inpul power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Gertflipate No: Dea5V3-4d063_Aug16

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Measurement Conditions

	DASY 3	ystem configuratio	n, an lar as not	given on page
--	--------	--------------------	------------------	---------------

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL.	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz = 1 MHz	

Head TSL parameters

	Temperature	Parmittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.1 ± 6 %	0.93 mh(a/m ± 6 %
Head TSL lemperature change during tast	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.40 W/kg
SAR for nominal Head TSL parameters	Wf of besilemon	9.40 W/kg = 17.0 % (k=2)
SAR averaged over 10 cm ² (10 g) of Head TSL	condition	
SAR averaged over 10 cm ² (10 g) of Haad TSL SAR measured	condition 250 mW input power	1.54 W/kg

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mhorm
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.7 ± 6.%	1.01 mborm = 6 %
Body TSL temperature change during test	< 0,5 °C	-	-

SAR result with Body TSL

SAR averaged over 1 cm ⁷ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.47 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.57 W/kg ± 17.0 % (k=2)
and the monthly see of	and the second se	
SAR averaged over 10 cm ² (10 g) of Body TSL	candition	
	candition 250 mW input power	1.81 W/kg

Certilicate No: D835V2-4d063_Aug16

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

impedance, transformed to feed point	51.2 Q - 2.8 jQ
Return Loss	- 30.3 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.3 Ω - 5,5 jΩ
Return Loss	-24.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.392 ns
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After long term use with 100W rediated power, only a slight warming of the dipola near the leadpoint can be measured

The dipole is made of standard seminigid coastal cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend of the subleved connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 27, 2006

Centilicate No. D635V2-4d003_Aug16

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DASY5 Validation Report for Head TSL

Date: 25.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063

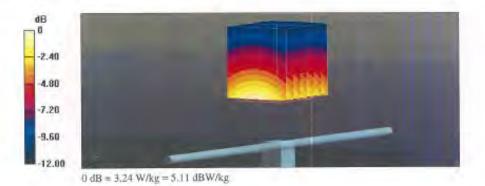
Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz; $\sigma = 0.93$ S/m; $v_e = 42.1$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(9.72, 9.72, 9.72); Calibrated: 15.06.2016;
- Sensor-Surface: 1,4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 61.75 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 3.65 W/kg SAR(1 g) = 2.4 W/kg; SAR(10 g) = 1.54 W/kg Maximum value of SAR (measured) = 3.24 W/kg



Certificate No: D835V2-4d063_Aug16

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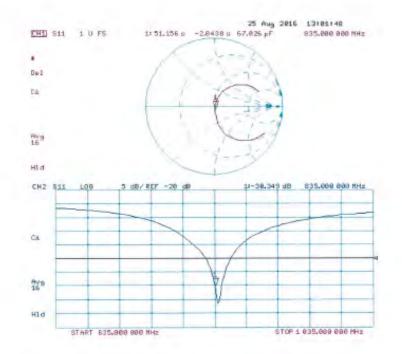
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Impedance Measurement Plot for Head TSL



Certificate No: D835V2-4d063_Aug16

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DASY5 Validation Report for Body TSL

Date: 25.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063

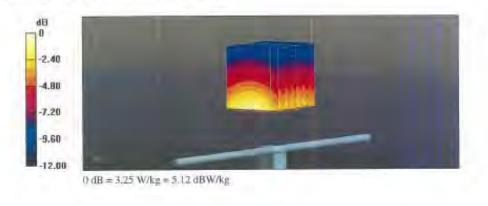
Communication System: UID 0 - CW; Frequency; 835 MHz Medium parameters used: f = 835 MHz; $\sigma = 1.01$ S/m; c = 54.7; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63 19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(9.73, 9.73, 9.73); Calibrated: 15.06.2016;
- · Sensor-Surface: I.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Su601; Calibrated: 30.12.2015
- · Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 59.83 V/m; Power Drift = -0.00 dB Peak SAR (extrapolated) = 3.63 W/kg SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.61 W/kg Maximum value of SAR (measured) = 3.25 W/kg



Certilicate No: DE35V2-4d003_Aug16

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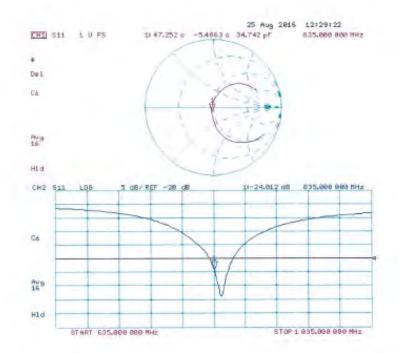
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Impedance Measurement Plot for Body TSL



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Report No. : E5/2017/90025 Page : 239 of 286

chmid & Partner Engineering AG oghousstrasse 43, 6004 Zurich	y of h. Switzerland	RAC MRA	Schweizerischer Kalibrierdienet Servizio suisse d'étalonnage Servizio svizzero di tantura Swiss Calibration Service
ccredited by the Swiss Accredital he Swiss Accreditation Service uitilateral Agreement for the re	is one of the signatories	to the EA	creditation No.: SCS 0108
lient Audon			D835V2-4d120_Jul17
ALIBRATION C	ERTIFICATE		
totec1	D835V2 - SN:4d1	20	
Dalibuation proceedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ve 700 MHz
Calibration date:	July 03, 2017		
Calibration Equipment used (M&T		iy lacify environment temperature (22 ± 3)°C	
Primary Standards	ID #		
	SN: 104778	Cal Date (Certificate No.)	Scheduled Calibration
Contex Instant (1) - 2	210 11 11 11 11	04-Apr-17 (No. 217-02521/02522)	Apr-18
owei sensor NRP-Z91	SN: 103244	04-Apt-17 (No. 217-02521/02522) 04-Apt-17 (No. 217-02521)	Apr-18 Apr-16
Power sensor NRP-Z91 Power sensor NRP-Z91	SN: 103244 SN: 103245	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522)	Арт-18 Арт-16 Арт-18
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Altersator	SN: 103244 SN: 103245 SN: 5058 (20k)	04-April7 (No. 217:02521/02522) 04-April7 (No. 217:02521) 04-April7 (No. 217:02521) 07-April7 (No. 217:02528)	Арт-18 Арт-16 Арт-18 Арт-18
Powei sensor NRP-291 Powei sensor NRP-291 Reference 20 dB Alterwalo/ Type-N mismatich combination	SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 2 / 06327	04-April7 (No. 217.0252102522) 04-April7 (No. 217.02521) 04-April7 (No. 217.02521) 07-April7 (No. 217.02528) 07-April7 (No. 217.02528)	Apr-18 Apr-16 Apr-18 Apr-18 Apr-18 Apr-18
Powel sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Lype-N mismatich combination Reference Probe EX3DV4	SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 2 / 06327 SN: 7348	04-April7 (No. 217-02521/02522) 04-April7 (No. 217-02521) 04-April7 (No. 217-02521) 07-April7 (No. 217-02528) 07-April7 (No. 217-02528) 07-April7 (No. 217-02528) 31-May-17 (No. EX3-7349, May17)	Арг-18 Арг-16 Арг-18 Арг-18
Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Spe-N mismatich combination Reference Probe EX3DV4	SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 2 / 06327	04-April7 (No. 217.0252102522) 04-April7 (No. 217.02521) 04-April7 (No. 217.02521) 07-April7 (No. 217.02528) 07-April7 (No. 217.02528)	Apr-18 Apr-16 Apr-18 Apr-18 Apr-18 May-10 Mar-18
Powei sensor NRP-291 Power sensor NRP-291 Reference 20 dtS Attervation type-N mismatich combination Reference Probe EX3DV4 DAE4 Stecondary Standards	SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 2 / 06327 SN: 5047 2 / 06327 SN: 5047 SN: 504	04-Apri17 (No. 217-02521/02522) 04-Apri17 (No. 217-02521) 04-Apri17 (No. 217-02521) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 31-May-17 (No. EX3-7349, May17) 28-Mar-17 (No. DAE4-601_Ma(17) Check Date (in house)	Apr-18 Apr-16 Apr-18 Apr-18 Apr-18 May-10 Mar-18 Scheduled Check
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuation Type-N mismatch combination Reference Probe EX3DV4 DAE4 Stecondary Standards Power mailer EPM 442A	SN: 103244 SN: 103245 SN: 5056 (20k) SN: 5647 2. / 06327 SN: 7346 SN: 6047 2. / 06327 SN: 7346 SN: 601	04-April7 (No. 217-02521/02522) 04-April7 (No. 217-02521) 04-April7 (No. 217-02521) 07-April7 (No. 217-02528) 07-April7 (No. 217-02528) 07-April7 (No. 217-02528) 31-May-17 (No. EX3-7349, May17) 28-Mar-17 (No. DAE4-601, Mar17) Check Date (in house) 07-Dc)-15 (in house check Dcf-16)	Apr-18 Apr-16 Apr-16 Apr-18 Apr-18 May-10 Mar-18 Scheduled Chock In house check: Oct-18
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4 DAE4 Secondary Standards Power millior EPM-442A Power millior EPM-442A	SN: 103244 SN: 103245 SN: 5056 (20k) SN: 5047 2 / 08327 SN: 5047 2 / 08327 SN: 5047 2 / 08327 SN: 501 ID 4 SN: 6837490704 SN: U537292783	04-April7 (No. 217-02521/02522) 04-April7 (No. 217-02521) 04-April7 (No. 217-02521) 07-April7 (No. 217-02528) 07-April7 (No. 217-02528) 07-April7 (No. 217-02528) 31-May-17 (No. EX3-7349, Mag17) 28-Mar-17 (No. DAE4-601, Mar17) Check Date (in house) 07-Oct-15 (in house check Dct-16) 07-Oct-15 (in house check Dct-16)	Apr-18 Apr-16 Apr-16 Apr-18 Apr-18 May-10 Mar-18 Scheduled Chock In house check: Cicl-18 In house check: Cicl-18
Power sensor NRP-291 Power sensor NRP-291 Reference 20 ct6 Alteruator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power millor EPM-442A Power sensor HP 6481A Power sensor HP 6481A	SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 2 / 06327 SN: 724e SN: 501 ID 4 SN: GB37490704 SN: US37292783 SN: WY41002317	04-Apri17 (No. 217-02521/02522) 04-Apri17 (No. 217-02521) 04-Apri17 (No. 217-02521) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 01-Apri17 (No. 217-02528) 03-Apri17 (No. 217-02528) 03-Apri17 (No. 217-02528) 03-Apri17 (No. 217-02528) 04-April 7 (No. 217-02528) 07-Apri17 (No. 217-02528) 07-April 7 (No. 217-02528) 07-Apri	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-10 Mar-18 Scheduled Chock In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Power sensor NRP-291 Power sensor NRP-291 Reference 20.05 Aftersiator (ype-N mismatch combination Reference Probe EX32/V4 DAEA Secondary Standards Power mator EFM 442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 2 / 06527 SN: 7348 SN: 501 ID # SN: GB37490704 SN: GB37490704 SN: U587292783 SN: My41002317 SN: 106972	94-Apri17 (No. 217-02521/02522) 94-Apri17 (No. 217-02521) 94-Apri17 (No. 217-02521) 97-Apri17 (No. 217-02528) 97-Apri17 (No. 217-02528) 97-Apri17 (No. 217-02528) 91-Apri17 (No. EX3-7349, May17) 28-Mar-17 (No. EX3-7349, May17) 29-Orl-15 (n house check Oct-16) 07-Oct-15 (n house check Oct-16) 15-Jun-15 (n house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-10 Mar-18 Schoduled Check In house check: Ord-18 In house check: Ord-18 In house check: Ord-18 In house check: Ord-18 In house check: Ord-18
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dS Alternation (ype-N miamatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor FP 4481A Power sensor HP 6481A RF generator R&S SMT-06	SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 2 / 06327 SN: 724e SN: 501 ID 4 SN: GB37490704 SN: US37292783 SN: WY41002317	04-Apri17 (No. 217-02521/02522) 04-Apri17 (No. 217-02521) 04-Apri17 (No. 217-02521) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 01-Apri17 (No. 217-02528) 03-Apri17 (No. 217-02528) 03-Apri17 (No. 217-02528) 03-Apri17 (No. 217-02528) 04-April 7 (No. 217-02528) 07-Apri17 (No. 217-02528) 07-April 7 (No. 217-02528) 07-Apri	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-10 Mar-18 Scheduled Chock In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Power sensor NRP-Z91 Power sensor NRP-Z91 Reterence 20 dB Alterustor Type-N mismatch combination Reterence Probe EX3DV4 DAE4 Secondary Standards Power mellor EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 2 / 06527 SN: 7348 SN: 501 ID # SN: GB37490704 SN: GB37490704 SN: U587292783 SN: My41002317 SN: 106972	94-Apri17 (No. 217-02521/02522) 94-Apri17 (No. 217-02521) 94-Apri17 (No. 217-02521) 97-Apri17 (No. 217-02528) 97-Apri17 (No. 217-02528) 97-Apri17 (No. 217-02528) 91-Apri17 (No. EX3-7349, May17) 28-Mar-17 (No. EX3-7349, May17) 29-Orl-15 (n house check Oct-16) 07-Oct-15 (n house check Oct-16) 15-Jun-15 (n house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-10 Mar-18 Schoduled Check In house check: Ord-18 In house check: Ord-18 In house check: Ord-18 In house check: Ord-18 In house check: Ord-18
Power motor NPP Power sensor NPP-Z91 Power sensor NPP-Z91 Power sensor NPP-Z91 Reference 20:08 Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor Pote 442A Power sensor NP 6481A Power sensor NP 6481A RF generator R&S SMT-06 Network Analyzer HP 6753E Calibrated by	SN: 103244 SN: 103245 SN: 5047 2 / 06327 SN: 5047 2 / 06327 SN: 5047 2 / 06327 SN: 501 ID 4 SN: G837490704 SN: US37292783 SN: MY41002317 SN: 106972 SN: US37390685	04-Apri17 (No. 217-02521/02522) 04-Apri17 (No. 217-02521) 04-Apri17 (No. 217-02521) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 03-14/apri17 (No. 217-02528) 03-14/apri17 (No. 217-02528) 03-14/apri17 (No. 217-02528) 03-14/apri17 (No. 217-02528) 03-021-15 (n. house check 01-16) 07-021-15 (n. house check 021-16) 07-021-15 (n. house check 021-16) 18-021-01 (n. house check 021-16)	Apr-18 Apr-16 Apr-16 Apr-18 Apr-18 May-10 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Alteruator Type-N mismatch combination Reference Probe EX30V4 DAE4 Secondary Standards Power metor EPM-442A Power metor EPM-442A Power sensor HP 6481A Power sensor HP 6481A RF generator R&S SMF-0e Network Analyzer HP 6753E	SN: 103244 SN: 103245 SN: 5047 2/ 08327 SN: 5047 2/ 08327 SN: 5047 2/ 08327 SN: 501 ID # SN: 6837490704 SN: 0537392783 SN: WY41002317 SN: 100072 SN: US37390585 Name	94-April7 (No. 217-02521/02522) 94-April7 (No. 217-02521) 94-April7 (No. 217-02521) 97-April7 (No. 217-02522) 97-April7 (No. 217-02528) 97-April7 (No. 217-02528) 93-44gy-17 (No. 217-0	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-10 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Power sensor NRP-291 Pewer sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combantion Reference Proba EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer HP 8753E Calibrated by	SN: 103244 SN: 103245 SN: 5056 (20k) SN: 5047 2 / 06327 SN: 7348 SN: 6047 2 / 06327 SN: 7348 SN: 6147 2 / 06327 SN: 10547 2 / 0637 SN: 10547 2 / 063	04-Apri17 (No. 217-02521/02522) 04-Apri17 (No. 217-02521) 04-Apri17 (No. 217-02523) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 07-Apri17 (No. 217-02528) 31-May-17 (No. EX3-7349, May17) 28-Mar-17 (No. EX3-7349, May17) 29-Mar-17 (No. EX3-7349, May17	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-10 Mar-18 Scheduled Check In house check: Cet-18 In house check: Cet-18 In house check: Cet-18 In house check: Cet-18 In house check: Cet-18

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughnusstrasse 43, 8004 Zurich, Switzerland



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Accreditation No.: SCS 0106

Accludited by the Swiss Accreditation Service (SAS)

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TSL	lissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 8 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized; SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters. The measured TSL parameters are used to calculate the nominal SAB result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Contribution No. 13835/3-4d120_04/17

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASYS	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) "C	41.0 = 6 %	0.93 mha/m ± 6 %
Head TSL temperature change during test	~0.5 °C	-	2000

SAR result with Head TSL

SAR averaged over 1 cm ⁴ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.44 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.50 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	condition 250 mW input power	1,58 W/kg

Body TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.7 ± 8 %	1,00 mbahn ± 8 %
Body TSL temperature change during test	< 0.5 °C	_	2000

SAR result with Body TSI

SAR averaged over 1 cm ⁴ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.48 W/kg
SAR for nominal Body TSL parameters	noimalized to 1W	9.68 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ⁴ (10 g) of Body TSL	condition	
	condition 250 mW input power	1.62 W/kg

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impetiance, inansformed to feed point	51.20-23(0
Return Loss	+31.7 dB

Antenna Parameters with Body TSL

impedance, transformed to feed point	相302-4710
Rehim Loss	-25.9.013

General Antenna Parameters and Design

Electrical Dalay (one direction)	1.397 ///s
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After long term use with 100W radiated power, only a slight warming of the opcio mar the lendpoint dart be measured.

The dipole is made of standard semingid coaxial cable. The center conductor of the leading line is directly connected in the second arm of the dipole. The antenna is therefore short-biculied for DC-signals. On some of the dipoles, small and caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" persgraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the cipole arms, because they might bend on the soldered connections near the leadpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	Juna 29, 2010
start of the start	

Certificate No: DE35V2-4d120_3/171

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DASY5 Validation Report for Head TSL

Date: 03.07.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d120

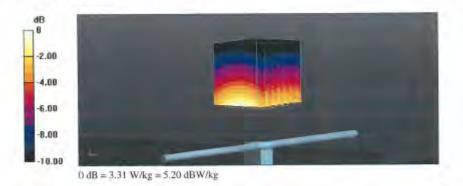
Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz; σ = 0.93 S/m; ε_r = 41; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe; EX3DV4 SN7349; ConvF(10.07, 10.07, 10.07), Calibrated: 31.05.2017;
- · Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 62.12 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 3.77 W/kg SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.58 W/kg Maximum value of SAR (measured) = 3.31 W/kg



Certificate No: D835V2-4d120_Jul17

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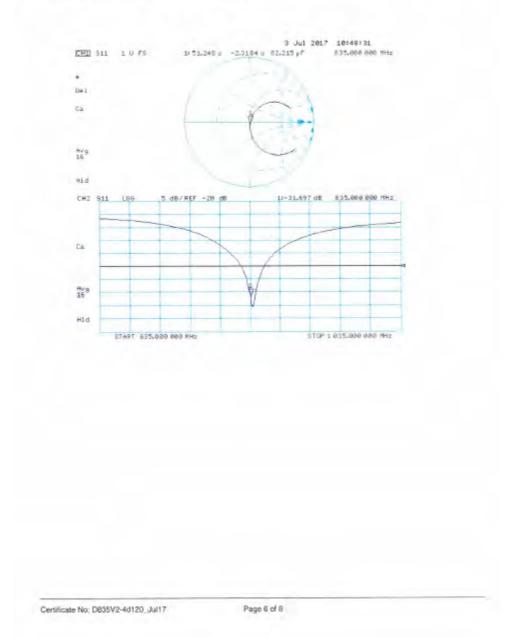
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Impedance Measurement Plot for Head TSL



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Report No. : E5/2017/90025 Page : 245 of 286

DASY5 Validation Report for Body TSL

Date: 03.07.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d120

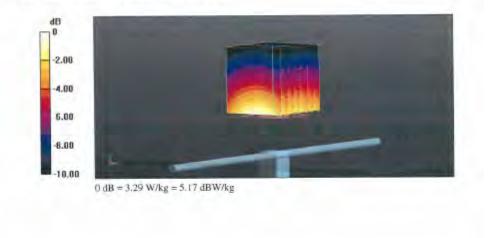
Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz; σ = 1 S/m; ε_r = 54.7; ρ = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.2, 10.2, 10.2); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 60.53 V/m; Power Drift = -0.08 dB. Peak SAR (extrapolated) = 3.75 W/kg SAR(1 g) = 2.48 W/kg; SAR(10 g) = 1.62 W/kg Maximum value of SAR (measured) = 3.29 W/kg



Certificate No: D835V2-4d120_Jul17

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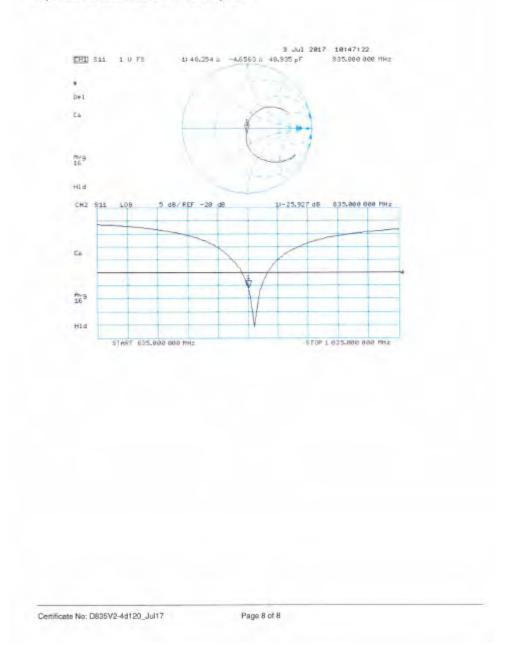
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Impedance Measurement Plot for Body TSL



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lient SGS-TW (Aude	<i>.</i>	12 4 12 4	: D1750V2-1008_Aug16
CALIBRATION	CERTIFICATE		
Cibject	D1750V2 - SN:10	900	
Calibration processure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits ab	ove 700 MHz
Calibration date:	August 31, 2016		
	cted in the closed laborato	ry isolity: environment temperature (22 ± 3)	
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Certificate No: D1750V2-1008_Aug16

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Calibration Laboratory of Schmid & Partner Engineering AG Jeuchaustrass 43, 8004 Zurich, Seitzerland



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Accreditation No.: SCS 0108

Accredited by the Swise Accredition Service (SAS)

The Swiss Accreditation Service is one of the signaturies to the EA MultiIntensi Agreement for the recognition of calibration certificates Glosseary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30) MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are svailable from the Validation Report at the end
 of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid Illed phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAP result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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Measurement Conditions

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °G	40.3 ± 6 %	1.37 mha/m ± 8 3
Head TSL temperature change during test	< 0.5 °C	-	

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.28 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	37.2 W/kg = 17.0 % (k=2)
SAR everaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR everaged over 10 cm ⁵ (10 g) of Head TSL SAR measured	condition 250 mW input power	4.90 W/kg

Body TSL parameters

The following parameters and calculations wore applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53,4	1,19 mha/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.1±6 %	1.49 mho/m ± 6.%
Body TSL temperature change during test	<0.5 °C	-	

SAR result with Body TSL

SAR averaged over 1 cm ² (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	37.3 W/kg + 17.0 % (k=2)
SAR averaged over 10 cm ² (10 g) of Body TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Body TSL SAR measured	condition 250 mW input power	4,36 W/kg

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Paramoters with Head TSL

Impedance, transitioned to lead point	51.0 Ω - 0.2 jΩ
Ratum Loss	- 40.1 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.7 Ω - 0.5 jΩ	
Return Loss	- 29,3 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.221 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the teadpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circulied for DC-signals. On some of the dipoles, small end cape are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections hear the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	May 27, 2003

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DASY5 Validation Report for Head TSL

Date: 24.08.2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

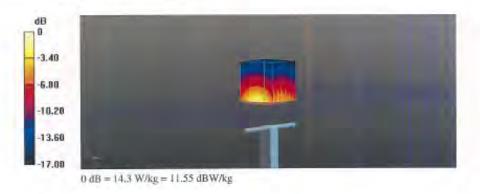
Communication System: UID 0 – CW; Frequency: 1750 MHz Medium parameters used: f = 1750 MHz; $\pi = 1.37$ S/m; $\epsilon_r = 40.3$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard; DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.46, 8.46, 8.46); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52,8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 105.8 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 17.2 W/kg SAR(1 g) = 9.28 W/kg; SAR(10 g) = 4.9 W/kg Maximum value of SAR (measured) = 14.3 W/kg



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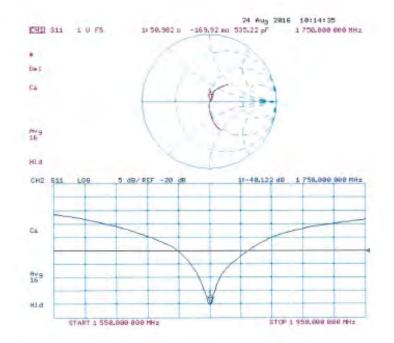
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 31.08 2016

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

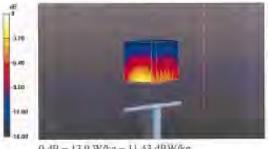
Communication System: UID 0 - CW: Frequency: 1750 MHz Medium parameters used: f = 1750 MHz; o = 1.49 S/m; e = 53.1; p = 1000 kg/m3 Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.25, 8.25, 8.25); Calibrated: 15.06.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015
- Phantom: Flat Phantom 5.0 (back), Type: QD000P50AA, Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 100.8 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 16.4 W/kg SAR(1 g) = 9.34 W/kg; SAR(10 g) = 4.98 W/kg Maximum value of SAR (measured) = 13.9 W/kg



0 dB = 13.9 W/kg = 11.43 dBW/kg

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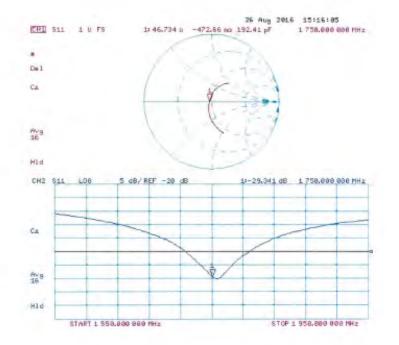
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Impedance Measurement Plot for Body TSL



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Calibration Experiment used (WW Privacy Standards Prover sensor NRP-201 Power sensor NRP-201 Reference 20 68 Attenuation Type-N miscrater combination Reference Probe EX3DV4	TE besical for calibration) SN 104778 SN 103244 SN 103245 SN 2066 (206) SN 2066 (206) SN 20473 / 00327 SN 1342	Cul Data (Carificata No.) D4-Apr-17 (No. 217-02521/02522) D4-Apr-17 (No. 217-02521) D4-Apr-17 (No. 217-02521) D7-Apr-17 (No. 217-02528) D7-Apr-17 (No. 217-02528) D1-Apr-17 (No. 217-02528) D1-Apr-17 (No. 217-02528)	Schweduled Gelitmian Apr-18 Apr-18 Apr-18 Apr-18
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Calibration Equipment used (WW Privary Standards Prover sensor NRP -201 Prover sensor NRP -201 Prover sensor NRP -201 Reference 20 dB Attenuator Type-N mismatch combination Nationerca Probe EX35V/4 (DAE4 Secondary Standards Prover meter EPN4-442A Prover sensor HIP DAE1A Prover sensor HIP DAE1A Prover sensor HIP DAE1A Prover sensor HIP DAE1A RF generator R&S SMT-08 Network Analyzer HIP 6753E	TE besteal for calibration) IE 4 SN 104778 SN 103244 SN 103245 SN 3068 (20k) SN 5068 (20k) SN 5068 (20k) SN 5068 (20k) SN 506 (20k) SN	Cal Date (Carifhonia No.) Di-Ap-17 (No. 217-02521(02322) Di-Ap-17 (No. 217-02521(02322) Di-Ap-17 (No. 217-02523) 07-Ap-17 (No. 217-02528) 07-Ap-17 (No. 217-02528) 07-Ap-17 (No. 217-02528) 05-Ap-17 (No. 217-02528) 05-Ap-17 (No. 217-02528) 05-Ap-17 (No. 217-02528) 05-Ap-17 (No. 217-02528) 05-Ap-17 (No. 217-02528) 07-Oct-15 (n house check Oct-16) 07-Oct-15 (n house check Oct-16) 07-Oct-15 (n house check Oct-16) 07-Oct-15 (n house check Oct-16) 07-Oct-15 (n house check Oct-16) 15-Jun-15 (n house check Oct-16) 15-Jun-15 (n house check Oct-16)	Scheeduled Celibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 May-18 May-18 Scheiduder Check In focuse streeck Col-18 In focuse streeck Col-18
Calibration Equipment used (AM Privary Standards Prover version NRP -251 Power version NRP -251 Power version NRP -251 Reference 20 dB Attenuation Type A missission combination Network on 20 dB Attenuation Network on 20 dB Attenuation Network on 20 dB Attenuation Network media: EPM-42A Power service 14P 0481A Power service 14P 0481A RF generation PRS SMT-08 Network Analyzer HP 6753E Calibrated by	TE based for celloration)	Cal Data (Canthoata No.) Di App-17, No. 217402521(02022) Di App-17, No. 217402521(02022) Di App-17, No. 217402520 Di App-17, No. 21740200 Di App-17, No. 21740200 Di App-17, No. 217400000000000000	Scheeduled Celibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 May-18 May-18 Scheiduder Check In focuse streeck Col-18 In focuse streeck Col-18

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Calibration Laboratory of Schmid & Partner Engineering AG Zeugtausstresse 43, 8094 Zump, Settlerteril



S Schweisentscher Kaltbrierdamit Service sursse d'Ablomage Service sursse d'Ablomage Service suizers d'Israhum S Swaa Calibration Service

Accreditation No.: SCS 0108

Acceded by the Swise Acceditation Service (SAS)

The Swies Accorditation Service is one of the signatures to the EA Multiseneral Agreement for the recognition of calibration certificates

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x.y.z.
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013.
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 5 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 885664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
 of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phentom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the american connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Dentificate No: D1790V2-1089_Aug17

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASYS	V52,10,0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dz, dy, dz = ≤ mm	
Frequency	1750 MHz & 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1 37 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	39.1±6%	1.35 mbb/m ± 8 %
Head TSL temperature change during test	×0.5*C	-	100

SAR result with Head TSL

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	8,98 Wilkg
SAR for nominal Head TSL parameters	Normalized to 1W	36.0 W/kg ± 17.0 % (k=2)
	-	
SAR averaged over 10 cm ² (10 g) of Head TSL	condition	
SAR averaged over 10 cm ² (10 g) of Head TSL. SAR measured	250 mW input power	4.76 W/kg

Body TSL parameters

Thin	fully loss through the state	calculations were applied.
1114	TORDWICE DATATIONS AND	Calculations were approx.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.40 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) *0	53.9 ± 6 %	1.47 mbcm ± 6 %
Body TSL temperature change during test	<0.5 °C	-	-

SAR result with Body TSL

SAR averaged over 1 cm ⁴ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.09 W/kg
SAR for nominal Body 75L parameters	normalized to 1W	36.7 W/kg ± 17.0 % (k=2)
	l.	
SAR averaged over 10 cm ² (10 g) of Body TBL	condition	
SAR averaged over 10 cm ² (10 g) of Body TBL SAR measured	condition 250 mW input power	4.87 Witg

Centricate No: 01750V2-1008_Aug17

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to fees point.	48.8 12 - 12 4 32
Hetum Loss	#6.7 dB

Antenna Parameters with Body TSL

impetience, transformed to feed point	48.3 (1 - 1.4 g2	
Relam Lose	-27 % df	

General Antenna Parameters and Design

Electrical Dalay (one chector)	1.221 ns
--------------------------------	----------

After long term use with 100W radiated power, only a slight waiming of the cipole near the teedpoint can be measured.

The dipole is made of standard seminald coastal cable. The center conductor of the feecing line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small and case are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Meaturement Conditions" paragraph. The BAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they wight bend or the redered connections cent the feedpoint may be damaged.

Additional EUT Data

Warwfectioned by	SPEAG
Manufactured co	February 11, 2009

Centilizate No: D1750V2+1005_Aug17

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DASY5 Validation Report for Head TSL

Date: 21.08.2017

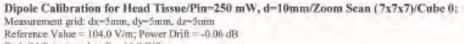
Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

Communication System: UID 0 - CW: Frequency: 1750 MHz Medium parameters used: F = 1750 MHz; n = 1.35 S/m; e_e = 39.1; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY32 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.73, 8.73, 8.73); Calibrated: 31.05.2017;
- Sensor-Surface: L4mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front): Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)



Peak SAR (extrapolated) = 16.8 W/kg SAR(1 g) = 8.98 W/kg; SAR(10 g) = 4.75 W/kg Maximum value of SAR (measured) = 13.7 W/kg



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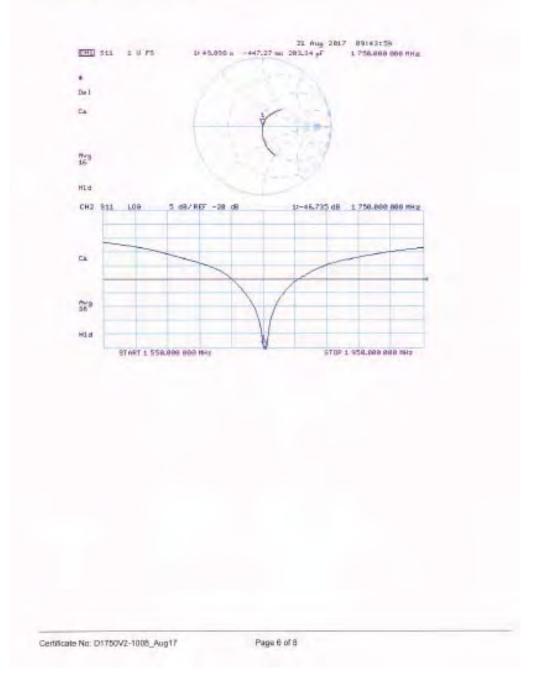
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Impedance Measurement Plot for Head TSL



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Report No. : E5/2017/90025 Page : 261 of 286

DASY5 Validation Report for Body TSL

Date: 18.08.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

Communication System: UID 0 - CW; Frequency: 1750 MHz Medium parameters used: f = 1750 MHz; n = 1.47 S/m; e_p = 53.9; p = 1000 kg/m⁵ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANS) C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.46, 8.46, 8.46); Calibrated; 31.05.2017;
- · Sensor-Surface: L4mm (Mechanical Surface Detection)
 - Electronics: DAE4 Su601: Calibrated: 28.03.2017
 - Phantom: Flat Phantom 5.0 (back): Type: QD 000 P50 AA; Serial: 1002
 - DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:
Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 99.85 V/m; Power Drift = -0.00 dB
Peak SAR (extrapolated) = 15.8 W/kg

SAR(1 g) = 9.09 W/kg; SAR(10 g) = 4.87 W/kg Maximum value of SAR (measured) - 13.3 W/kg

d8 0 -3.27 -6.54 -9.82		
-13.09 -16.36 0 dB = 13.3 W/	kg = 11.24 dBW/kg	

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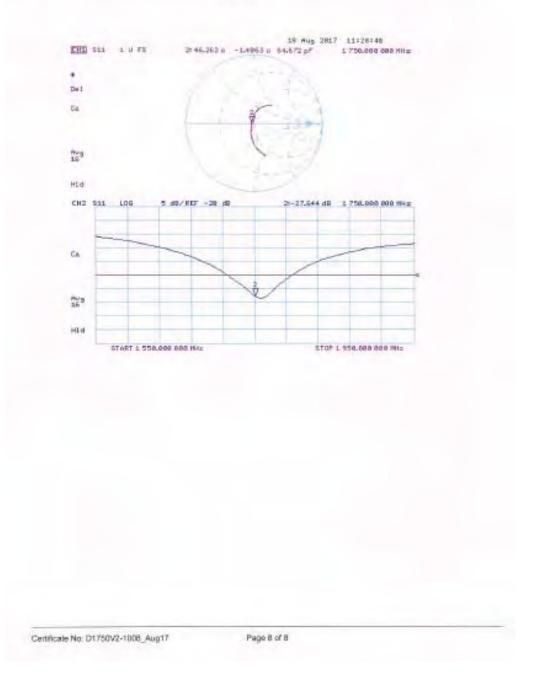
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Impedance Measurement Plot for Body TSL



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Report No. : E5/2017/90025 Page : 263 of 286

Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland

Schweizerischer Kallbrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

SGS-TW (Auden)

Client

Certificate No: D1900V2-5d173_May17

bject	D1900V2 - SN:5d173				
calibration procedure(s)	QA CAL-05.v9 Calibration proces	dure for dipole validation kits abo	ve 700 MHz		
Calibration date;	May 31, 2017				
The measurements and the unce	rtainties with confidence p	onal standards, which realize the physical un robability are given on the following pages an	d are part of the certificate.		
All calibrations have been conduc Calibration Equipment used (M&T		ry facility: environment temperature $(22 \pm 3)^{\circ}$	а мена онистики × то ток.		
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration		
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18		
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18		
	SN: 103245	04-Apr-17 (No. 217-02522)	Apr-18		
ower sensor NRP-Z91			A		
and an and the state of the state of the	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18		
Reference 20 dB Attenuator	SN: 5058 (20k) SN: 5047.2 / 06327	07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529)	Apr-18		
Reference 20 dB Attenuator Type-N mismatch combination	Concernance of the second s		Apr-18 May-18		
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18		
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4	SN: 5047.2 / 06327 SN: 7460	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17)	Apr-18 May-18		
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	SN: 5047.2 / 06327 SN: 7460 SN: 601	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17) 28-Mar-17 (No. DAE4-601_Mar17)	Арг-18 Мау-18 Маг-18		
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A	SN: 5047.2 / 06327 SN: 7460 SN: 601	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460, May17) 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house)	Apr-18 May-18 Mar-18 Scheduled Check		
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A	SN: 5047.2 / 06327 SN: 7460 SN: 601 ID # SN: GB37480704	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17) 28-Mar-17 (No. DAE4-801_Mar17) Check Date (in house) 07-Oct-15 (in house check Oct-16)	Apr-18 May-18 Mar-18 Scheduled Check In house check: Oct-18		
Reference 20 dB Attenuator Type-N mismatch combination Retarence Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A	SN: 5047.2 / 06327 SN: 7460 SN: 601 ID # SN: G837480704 SN: US37292783	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460, May17) 28-Mar-17 (No. DAE4-801, May17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16)	Apr-18 May-18 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18		
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	SN: 5047.2 / 06327 SN: 7460 SN: 601 ID # SN: G837480704 SN: US37292783 SN: MY41092317	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460, May17) 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16)	Apr-18 May-18 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18		
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	SN: 5047.2 / 06327 SN: 7460 SN: 601 SN: GB37480704 SN: US37292783 SN: WY41092317 SN: 100972 SN: US37390585	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460, May17) 28-Mar-17 (No. DAE4-601_May17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16)	Apr-18 May-18 Mar-18 Scheduled Check In house check: Cot-18 In house check: Cot-18 In house check: Cot-18 In house check: Cot-18		
Reference 20 dB Attenuator Type-N mismatch combination Refarence Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer HP 8753E	SN: 5047.2 / 06327 SN: 7460 SN: 601 D ≢ SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390685 Name	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17) 28-Mar-17 (No. DAE4-801_May17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 18-Oct-01 (in house check Oct-16)	Apr-18 May-18 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-19 In house check: Oct-17		
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	SN: 5047.2 / 06327 SN: 7460 SN: 601 SN: GB37480704 SN: US37292783 SN: WY41092317 SN: 100972 SN: US37390585	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17) 28-Mar-17 (No. DAE4-801_May17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 18-Oct-01 (in house check Oct-16) Function	Apr-18 May-18 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-19 In house check: Oct-17		
Power sensor NIR-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer HP 8753E Calibrated by:	SN: 5047.2 / 06327 SN: 7460 SN: 601 D ≢ SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390685 Name	07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17) 28-Mar-17 (No. DAE4-801_May17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 18-Oct-01 (in house check Oct-16) Function	Apr-18 May-18 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-19 In house check: Oct-17		

Certificate No: D1900V2-5d173_May17

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Report No. : E5/2017/90025 Page : 264 of 286

Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



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Giossaly.	
TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
 of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- · SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D1900V2-5d173_May17

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Measurement Conditions

DASY	system	configurat	ion.	as	far	as	not	given	on	c

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.3±6%	1.40 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		1

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.7 W/kg ± 17.0 % (k=2)
SAD everygood over 10 cm ³ (10 a) of Head TSI	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	condition 250 mW input power	5.26 W/kg

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 "C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) "C	54.2 ± 6 %	1.51 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.98 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	40.2 W/kg ± 17.0 % (k=2)
	the second se	
SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
	condition 250 mW input power	5.30 W/kg

Certificate No: D1900V2-5d173_May17

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.3 Ω + 4.9]Ω	
Return Loss	- 26.1 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.5 Ω + 6.0 μΩ
Return Loss	- 23.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.199 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard seminigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	June 08, 2012	

Certificate No: D1900V2-5d173_May17

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DASY5 Validation Report for Head TSL

Date: 31.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

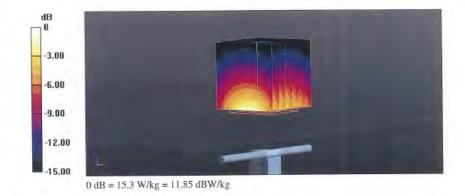
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d173

Communication System: UID 0 - CW; Frequency: 1900 MHz Medium parameters used: f = 1900 MHz; σ = 1.4 S/m; ε_r = 41.3; ρ = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7460; ConvF(7.98, 7.98, 7.98); Calibrated: 19.05.2017;
- · Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 107.7 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 18.9 W/kg SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.26 W/kg Maximum value of SAR (measured) = 15.3 W/kg



Certificate No: D1900V2-5d173_May17

Page 5 of 8

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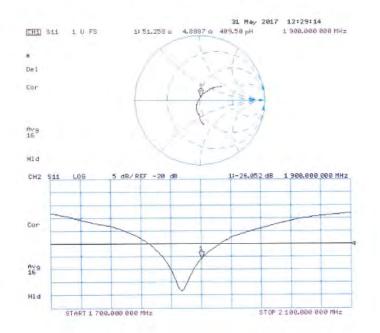
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Impedance Measurement Plot for Head TSL



Certificate No: D1900V2-5d173_May17

Page 6 of 8

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DASY5 Validation Report for Body TSL

Date: 31.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d173

 $\begin{array}{l} \mbox{Communication System: UID 0 - CW; Frequency: 1900 MHz} \\ \mbox{Medium parameters used: } f = 1900 MHz; \ \sigma = 1.51 \ \mbox{S/m}; \ \epsilon_r = 54.2; \ \rho = 1000 \ \mbox{kg/m}^3 \\ \mbox{Phantom section: Flat Section} \\ \mbox{Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)} \\ \end{array}$

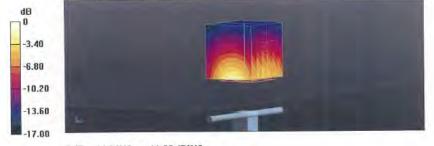
DASY52 Configuration:

- Probe: EX3DV4 SN7460; ConvF(7.82, 7.82, 7.82); Calibrated: 19.05.2017;
- · Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 102.9 V/m; Power Drift = -0.08 dB Peak SAR (extrapolated) = 17.5 W/kg SAR(1 g) = 9.98 W/kg; SAR(10 g) = 5.3 W/kg

Maximum value of SAR (measured) = 14.3 W/kg



0 dB = 14.3 W/kg = 11.55 dBW/kg

Certificate No: D1900V2-5d173_May17

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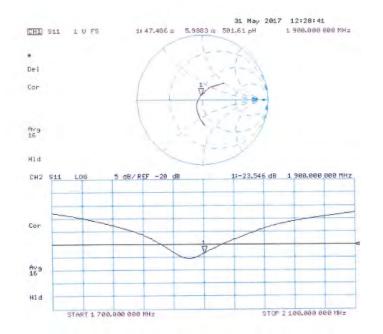
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Impedance Measurement Plot for Body TSL



Certificate No: D1900V2-5d173_May17

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Report No. : E5/2017/90025 Page : 271 of 286

Calibration Laboratory Schmid & Partner Engineering AG eughausstrasse 43, 8004 Zurich		BC NRA Contraction of the second seco	Sohweizerischer Kalibrierdienst Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service
Accredited by the Swiss Accreditat The Swiss Accreditation Service Multilateral Agreement for the re	is one of the signatorie	s to the EA	ccreditation No.: SCS 0108
Client SGS -TW (Aude			o: D2450V2-727_Apr17
CALIBRATION C	ERTIFICATE		
Object	D2450V2 - SN: 7	27	
Calibration procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Galibration date:	April 21, 2017		
All calibrations have been conduc Colibration Equipment used (M&T	TE critical for calibration)	ry facility: environment temperature $(22 \pm 3)^{\circ}$	
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NBP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power settsor NRP-Z91	SN: 103245	04-Apt-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenuator	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2 / 06327	07-Apr-17 (No. 217-02529)	Apr-18
Reference Probe EX3DV4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	28-Mar-17 (No. DAE4-601_Mar17)	Mar-18
Secondary Standards	lipe	Check Date (in house)	Scheduled Check
Power meler EPM-442A	SN: GB37480704	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: US37292783	07-Ocl-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN: MY41092317	07-Oct-15 (In house check Oct-16)	In house check: Oct-18
FIF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Oct-16)	In house check: Oct-18
Network Analyzer HP 8753E	SN: US37390585	18-Oct-01 (In house check Oct-16)	In house check: Oct-17
	Name	Function	Signature
and the second se	Michael Weber	Laboratory Technician	11165
Calibrated by			MARCE
Approved by:	Каца Рокочо	Technical Manager	fillty

Certificate No: D2450V2-727_Apr17

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Calibration Laboratory of Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland



Schweizerischer Kalibrierdienst Service sulsse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

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Accredited by the Swiss Accreditation Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA

Multilateral Agreement for the recognition of calibration certificates Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)*, March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end
 of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

Certificate No: D2450V2-727_Apr17

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.7 ± 6 %	1.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.2 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	condition 250 mW input power	6.18 W/kg

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.5 ± 6 %	2.03 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.9 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	50.6 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Body TSL SAR measured	condition 250 mW input power	6.01 W/kg

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	56.3 Ω + 2.1 jΩ
Return Loss	- 24.0 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.1 Ω + 4.1 jΩ
Return Loss	- 27.5 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.148 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 09, 2003

Certificate No: D2450V2-727_Apr17

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DASY5 Validation Report for Head TSL

Date: 21.04.2017

Test Laboratory: SPEAG, Zurich, Switzerland

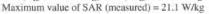
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

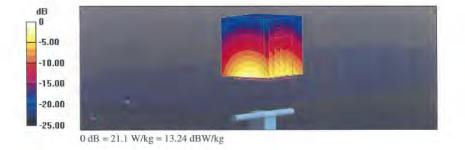
Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz; σ = 1.87 S/m; ϵ_r = 37.7; ρ = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.72, 7.72, 7.72); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017 .
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 109.8 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 27.3 W/kg SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.18 W/kg





Certificate No: D2450V2-727_Apr17

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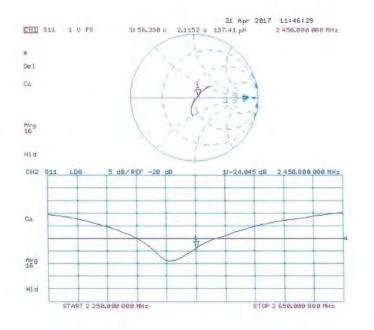
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 21.04.2017

Test Laboratory: SPEAG, Zurich, Switzerland

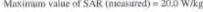
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

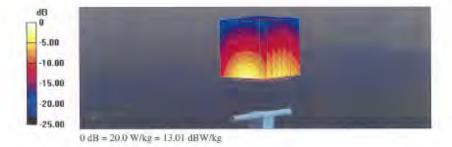
Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: l = 2450 MHz; $\sigma = 2.03$ S/m; $\epsilon_l = 52.5$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63, 19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.79, 7.79, 7.79); Calibrated: 31.12,2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection) .
- · Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 105.0 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 25.4 W/kg SAR(1 g) = 12.9 W/kg; SAR(10 g) = 6.01 W/kg Maximum value of SAR (measured) = 20.0 W/kg





Certificate No: D2450V2-727_Apr17

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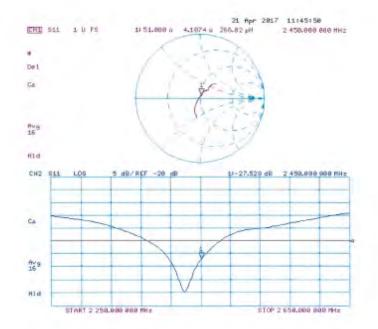
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Impedance Measurement Plot for Body TSL



Certificate No: D2450V2-727_Apr17

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Report No. : E5/2017/90025 Page : 279 of 286

ughausstrasse 43, 8004 Zurich	n, Switzerland	BICMEA (B) S	Service suisse d'étalonnage Servizio svizzero di taratura Swiss Calibration Service
coredited by the Swiss Accredita he Swiss Accreditation Service Jultilateral Agreement for the re	e is one of the signatorie ecognition of calibration	s to the EA certificates	Creditation No.: SCS 0108
SGS-TW (Aude			: D2600V2-1005_Jan17
Dbject	D2600V2 - SN:10	005	
Calibration procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Calibration date:	January 25, 2017	7	
The measurements and the unce	rtainties with confidence p	robability are given on the following pages ar	id are part of the certificate.
All calibrations have been conduc Calibration Equipment used (M&1	cted in the closed laborato	ry facility: environment temperature $(22\pm3)^{\circ}$	C and humidily < 70%.
All calibrations have been conduc Calibration Equipment used (M&T Primary Standards	cted in the closed laborato TE critical for calibration)	ry facility: environment temperature $(22 \pm 3)^{\circ}$ Cal Date (Certificate No.)	C and humidity < 70%. Scheduled Calibration
All calibrations have been conduc Calibration Equipment used (M&1 Primary Standards Power meter NRP	cted in the closed laborato TE critical for calibration) ID # SN: 104778	ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02289)	C and humidity < 70%. Scheduled Calibration Apr-17
All calibrations have been conduc Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-291	cted in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103244	ry facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17
All calibrations have been conduct Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91	cted in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02289) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17
All calibrations have been conduc Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator	tted in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	cy facility: environment temperature (22 ± 3)* <u>Cal Date (Certificate No.)</u> 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17
All calibrations have been conduct Calibration Equipment used (M&1 Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination.	ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02289) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17
All calibrations have been conduct Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	tted in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	cy facility: environment temperature (22 ± 3)* <u>Cal Date (Certificate No.)</u> 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17
All calibrations have been conduc Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4	Cited in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20%) SN: 7349	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02289) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. EX3-7349_Dec16)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Dec-17 Dec-17
All calibrations have been conduc Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	Cted in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103245 SN: 5058 (20k) SN: 5047.2./06327 SN: 7349 SN: 601	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. EX3-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Dec-17 Jan-18
All calibrations have been conduct Calibration Equipment used (M&T Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A	ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 5056 (20%) SN: 5047.2 / 06327 SN: 7349 SN: 601 ID #	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02289) 06-Apr-16 (No. 217-02289) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. EX3-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17) Check Date (in house)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Der-17 Jan-18 Scheduled Check
All calibrations have been conduct Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A	Cted in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103244 SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 5041 ID # ID # SN: GB37480704	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02289) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. 217-0	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Dec-17 Jan-18 Scheduled Check In house check: Oct-18
All calibrations have been conduc Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A	Cited in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 7349 SN: 501 ID # SN: 6817480704 SN: 037292783	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-17 (No. DAE4-601_Jan17) Check Date (In house check Oct-16) 07-Oct-15 (In house check Oct-16)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Der-17 Jan-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
All calibrations have been conduct Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 6481A RF generator R&S SMT 06	Cted in the closed laborato TE critical for calibration) ID # SN: 103245 SN: 5058 (20k) SN: 5058 (20k) SN: 5047 2 / 06327 SN: 601 D # SN: 6837480704 SN: WY41092317	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288)02289) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. 217-0	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Dec-17 Jan-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
All calibrations have been conduct Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 6481A RF generator R&S SMT 06	Cted in the closed laborato TE critical for calibration) ID # SN: 103244 SN: 103244 SN: 103244 SN: 103244 SN: 5058 (20k) SN: 5047 2 / 06327 SN: 5041 ID # SN: 6801 ID # SN: GB37480704 SN: W379292783 SN: 109972	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. 217-02295) 07-Oct-15 (In house check Oct-16) 07-Oct-15 (In house check Oct-16) 15-Jun-15 (In house check Oct-16)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Der-17 Jan-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
All calibrations have been conduc Calibration Equipment used (M&T Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer HP 8753E	Cited in the closed laborato TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 5058 (20%) SN: 5058 (20%) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 601 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 10972 SN: US37390585	Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-17 (No. DAE4-601_Jan17) Check Date (In house check Oct-16) 07-Oct-15 (In house check Oct-16) 07-Oct-15 (In house check Oct-16) 15-Jun-15 (In house check Oct-16) 18-Oct-01 (In house check Oct-16)	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Dec-17 Jan-18 Scheduled Check In house check: Oct-18 In house check: Oct-18
	D # ID # ID # SN: 104778 SN: 103245 SN: 103245 SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5047.2 / 06327 SN: 5051 (20k) SN: 5041 D # SN: 6837480704 SN: US37292783 SN: Y41092317 SN: 100972 SN: US37390585 Name Name	cy facility: environment temperature (22 ± 3)* Cal Date (Certificate No.) 06-Apr-16 (No. 217-02288/02288) 06-Apr-16 (No. 217-02288) 06-Apr-16 (No. 217-02288) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. 217-02295) 31-Dec-16 (No. 217-02295) 31-Dec-16 (No. 217-02295) 31-Dec-16 (No. 217-02295) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 18-Oct-01 (in house check Oct-16) 18-Oct-01 (in house check Oct-16) Function	C and humidity < 70%. Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Dec-17 Jan-18 Scheduled Check In house check: Oct-18 In house check: Oct-17 Signature

Certificate No: D2600V2-1005_Jan17

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Page 1 of 8

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Calibration Laboratory of Schmid & Partner Engineering AG Zeugnausstrasse 43, 8004 Zurien, Switzerland



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Acceptellitation No.: SCS 0108

Accredient by the Swee Accreditation Service (SA5) The Swiss Accreditation Service is one of the signatories to the EA. Multilateral Agreement for the recognition of celloration certificates

Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- EEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664. "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

a) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

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Measurement Conditions

DASY system configuration, as far as not given on page 1.

DASY Version	DASYS	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.95 mho/m
Measured Head TSL parameters	(22,0 ± 0,2) °C	37.4 ± 6 %	2.05 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.3 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	55.5 W/kg = 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ⁸ (10 g) of Head TSL SAR measured	condition 250 mW input power	6.32 W/kg

Body TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.8 °C	52.5	2.16 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.3 ± 6 %	2.20 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °G	(4.000)	

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.9 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	55.1 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ² (10 g) of Body TSL	condition	
SAR averaged over 10 cm ^S (10 g) of Body TSL SAR measured	condition 250 mW input power	6.20 W/kg

Certificate No: D2600V2-1005 Jan17

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	49.3 Ω - 4.7 μΩ
Pieturn Loss	- 26.5 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.7 G - 0.2 JO
Return Loss	-23,7 dB

General Antenna Parameters and Design

The second secon		
Electrical Delay (one direction)	1.154 ns	

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semitigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small and caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not effected by this change. The overall dipole length is atili according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the teadpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	December 23, 2006

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DASY5 Validation Report for Head TSL

Date: 25.01.2017

Test Laboratory: SPEAG, Znrich. Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1005

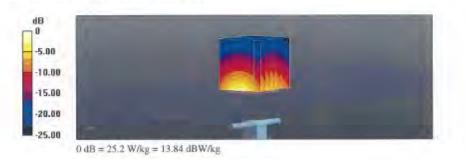
Communication System: UID 0 - CW; Frequency: 2600 MHz Medium parameters used: f = 2600 MHz; σ = 2.05 S/m; ϵ_e = 37,4; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63,19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.56, 7.56, 7.56); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 116.2 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 30.5 W/kg SAR(1 g) = 14.3 W/kg; SAR(10 g) = 6.32 W/kg Maximum value of SAR (measured) = 24.2 W/kg



Centificate No: D2600V2-1005_lan17

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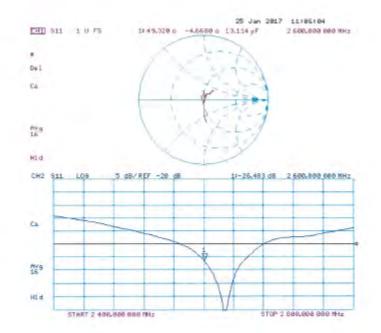
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Impedance Measurement Plot for Head TSL



Certificate No: D2600V2-1005_Jan17 Pi

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DASY5 Validation Report for Body TSL

Date: 18.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1005

Communication System: LID 0 - CW; Frequency: 2600 MHz Medium parameters used: f = 2600 MHz; $\sigma = 2.2 \text{ S/m}$; $z_c = 52.3$; $p = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.48, 7.48, 7.48); Calibrated: 31.12.2016;
- · Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 108.8 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 28.8 W/kg SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.2 W/kg Maximum value of SAR (measured) = 23.3 W/kg



Certificate No: D2600V2-1005_Jan17

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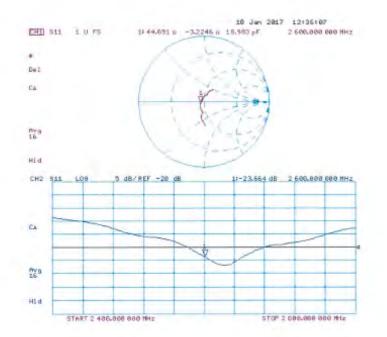
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Impedance Measurement Plot for Body TSL





- End of 1st part of report -

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