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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-1035

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-1035

Date of Receipt Jun. 24, 2017

Date of Test(s) Jun. 28, 2017 ~ Aug. 25, 2017

Date of Issue Aug. 30, 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.

This report may only be reproduced and distributed in full. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS Taiwan Electronic & Communication Laboratory or testing done by SGS Taiwan Electronic & Communication Laboratory in connection with distribution or use of the product described in this report must be approved by SGS Taiwan Electronic & Communication Laboratory in writing.

Signed on behalf of SGS					
Engineer	Supervisor				
Bond Tsai Bond Tsai Date: Aug. 30, 2017	John Teh				
Bond Isal /	John Yeh				
Date: Aug. 30, 2017	Date: Aug. 30, 2017				

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Revision History

Report Number	Revision	Description	Issue Date
E5/2017/60014B-01	Rev.00	Initial creation of document	Aug. 29, 2017
E5/2017/60014B-01	Rev.01	1 st modification	Aug. 30, 2017

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1. General Information

1.1 Testing Laboratory

SGS Taiwan Ltd. Electronics & Communication Laboratory			
No. 2, Keji 1st 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-1035					
FCC ID	2AJOTTA-1035					
	⊠GSM ⊠GPRS ⊠EDGE	⊠WCDMA				
Mada of Opensilas	oxtimesHSDPA $oxtimes$ HSPA-	+ ⊠D	C-HSD	PA		
Mode of Operation	⊠LTE FDD ⊠LTE TDD					
	⊠Bluetooth ⊠WLAN802.11 b/g/n(20M)				
	GSM (DTM multi class B)		1/8.3			
	,		(1Dn4l	•		
	GPRS		6 (1Dn	,		
	(support multi class 12 max)		1 (1Dn2 3 (1Dn1			
		1/8.3 (1Dn1UP) 1/2 (1Dn4UP)				
	EDGE	1/2.76 (1Dn3UP)				
	(support multi class 12 max)	1/4.1 (1Dn2UP)				
Duty Cycle	LTE EDD	1/8.3	3 (1Dn1	UP)		
	LTE FDD (LTE Release Version: R8)		1			
	LTE TDD		0.633			
	(LTE Release Version: R8)	0.000				
	WCDMA	1				
	(HSDPA Category 24) (HSUPA Category 7)					
	WLAN802.11 b/g/n(20M)	1				
	Bluetooth		1			
	GSM850	824	_	849		
	GSM1900	1850	_	1910		
TV F	WCDMA Band II	1850		1910		
TX Frequency Range (MHz)	WCDMA Band IV	1710	_	1755		
(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	WCDMA Band V	824		849		
	LTE FDD Band 2	1850	_	1910		
	LTE FDD Band 4	1710	_	1755		

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	LTE FDD Band 5	824	_	849
	LTE FDD Band 7	2500	_	2570
	LTE FDD Band 12	699	_	716
TX Frequency Range (MHz)	LTE FDD Band 17	704	_	716
(1411 12)	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 7	20775	_	21425
	LTE FDD Band 5	20407	_	20643
	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	□ Right □ Cheek □ Tilt 190		
	GSM 1900	0.14	0.17	□Left ⊠Right ☑Cheek □Tilt 810 Channel		
	WCDMA Band II	0.16	0.16	☐Left ☐Right ☐Cheek ☐TiltChannel		
	WCDMA Band IV	0.25	0.26	□Left ⊠Right □Cheek □Tilt 1412 Channel		
	WCDMA Band V	0.31	0.34	□ Left □ Right□ Cheek □ Tilt■ 4233 □ Channel		
Head	LTE FDD Band 2	0.16	0.16	□Left ⊠Right ☑Cheek □Tilt <u>18700</u> Channel		
	LTE FDD Band 4	0.23	0.27	□Left ⊠Right ⊠Cheek □TiltChannel		
	LTE FDD Band 5	0.27	0.30	□ Left □ Right □ Right □ Tilt □ Tilt □ Channel □ Channel □ Channel □ Channel □ Right □ Right		
	LTE FDD Band 7	0.10	0.10	□ Right □ Right □ Tilt □ Channel		
	LTE FDD Band 12	0.21	0.21	□Left ⊠Right ⊠Cheek □Tilt 23130 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	□ Right □ Right □ Tilt 38000 □ Channel	
Head	WLAN802.11 b	0.46	0.48	□Left ⊠Right ⊠Cheek □Tilt1Channel	

Max. SAR (1 g) (Unit: W/Kg)						
Mode	Band	Measured	Reported	Position / Channel		
	GSM 850	0.26	0.32	⊠Front □Back 190 Channel		
Body-worn (15mm)	GSM 1900	0.21	0.24	⊠Front □Back 810 Channel		
	WCDMA Band IV	0.47	0.49	⊠Front □Back 1412 Channel		
	LTE FDD Band 4	0.39	0.46	⊠Front □Back 20050 Channel		
	LTE FDD Band 7	0.36	0.37	⊠Front □Back 21350 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		
	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	
	WCDMA Band IV	1.21	1.28	☐Front ☐Back ☐Bottom ☐Right ☐Left 1312 Channel	
Hotspot Mode (10mm)	WCDMA Band V	0.53	0.58		
	LTE FDD Band 2	1.10	1.26	☐Front ☐Back ☐Bottom ☐Right ☐Left 19100 Channel	
	LTE FDD Band 4	1.15	1.25	☐Front ☐Back ☐Bottom ☐Right ☐Left	
	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	

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

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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		
	(1711 12)		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		
(Olviolt)	848.8	251	34.5 33.63		24.6		
The di	vision facto	r compared	to the numb	per of TX tir	ne slot		
Division factor							
	וטופועום	i iaciui		-9.03			

GPRS 850 - conducted power table:

of the deed definational factor table.											
	Burst average power										
	ted Avg. Pow olerance (dBr		34.5	30	28.5	27.5					
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP					
EUT mode	Frequency (MHz)	СН	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					
850	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					
830	848.8	251	24.60	23.05	24.05	23.91					
	The div	ision fa		to the number o							
Div	ision factor			e slot 2 TX time slot 3 TX time slot							
	rision factor		-9.03	-6.02	-4.26	-3.01					

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EDGE 850 - conducted power table:

			Burst avera	age power		
	ted Avg. Pow olerance (dBr		27	26	25	23.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	e Frequency CH (MHz)		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
030	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
030	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	vision factor		1 TX time slot -9.03	time slot 2 TX time slot 3 TX time slot 9.03 -6.02 -4.26		4 TX time slot -3.01

GSM 1900 - conducted power table:

		o pomo: u			
			Max.		Source
			Rated	Burst	-based
	Frequency		Avg.	average	time
EUT mode	(MHz)	CH	Power +	power	average
	(1711 12)		Max.		power
			Tolerance	Avg.	Avg.
			(dBm)	(dBm)	(dBm)
00144000	1850.2 512		31.5	30.07	21.04
GSM1900 (GMSK)	1800	661	31.5	30.44	21.41
(Giviort)	1909.8	810	31.5	30.82	21.79
The di	vision facto	r compared	to the numb	per of TX tir	ne slot
	Divisio	n factor		1 TX ti	me slot
	וטופועום	TIACIOI		-9.	03

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GPRS 1900 - conducted power table:

			Burst avera	age power		
	ted Avg. Pow olerance (dBr		31.5	29	27.5	26.5
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	de Frequency (MHz) CH		Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
GPRS	1850.2	512	30.07	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
		Sc	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	actor compared	to the number c	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

EDGE 1900 - conducted power table:

25-21-1000 00:naa0t0a powor tabio:											
	Burst average power										
	ted Avg. Pow olerance (dBr		26.5	25.5	24	22.5					
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP					
EUT mode	ode Frequency C		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		to the number o							
Div	ision factor		1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot					
	rision factor		-9.03	-6.02	-4.26	-3.01					

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

conducted power table (offit: dbill).										
	Band	\	VCDMA							
	TX Channel	9262	9400	9538						
Fre	equency (MHz)	1852.4	1880	1907.6						
Max. Rated Avg. I	Power+Max. Tolerance (dBm)		23.50							
3GPP Rel 99	RMC 12.2Kbps	23.43	23.05	22.91						
Max. Rated Avg. I	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						
SGFF KEI 0	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):

bolladeted power table (offit: abin).									
	Band	V	VCDMA I	V					
	TX Channel	1312	1412	1513					
	equency (MHz)	1712.4	1732.4	1752.6					
Max. Rated Avg. I	Max. Rated Avg. Power+Max. Tolerance (dBm)								
3GPP Rel 99	RMC 12.2Kbps	24.30	24.32	24.24					
Max. Rated Avg. I	Power+Max. Tolerance (dBm)		23.50						
	HSDPA Subtest-1	23.16	23.14	23.31					
3GPP Rel 5	HSDPA Subtest-2	22.73	22.61	22.80					
SGFF Nel S	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					
SGFF KEI 0	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):

Conducted power to	,		1/ODIAA 1	
	Band	V	VCDMA I	V
	TX Channel	1312	1412	1513
Fre	equency (MHz)	1712.4	1732.4	1752.6
Max. Rated Avg. I	Power+Max. Tolerance (dBm)		23.00	
3GPP Rel 99	RMC 12.2Kbps	22.76	22.80	22.93
Max. Rated Avg. I	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
SUFF NEI 0	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):

onducted power table (Onit. dBin).										
	Band	\	VCDMA '	V						
	TX Channel	4132	4183	4233						
Fre	equency (MHz)	826.4	836.6	846.6						
Max. Rated Avg.	Power+Max. Tolerance (dBm)		25.00							
3GPP Rel 99	RMC 12.2Kbps	24.54	24.55	24.63						
Max. Rated Avg. I	Power+Max. Tolerance (dBm)		24.00							
3GPP Rel 5	HSDPA Subtest-1	23.40	23.30	23.45						
	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						
SGFF Nei 0	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	64	15/4	30/15	1.5	0.5

Subtests for WCDMA Release 6 HSUPA

SUB-TEST	βο	βd	β _d (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	9/15	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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LTE FDD Band 2 - conducted power table:

	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				
	QPSK			1900	19100	22.50	23.5	0				
			0	1860	18700	22.30	22.5	0-1				
		50 RB		1880	18900	21.82	22.5	0-1				
				1900	19100	21.72	22.5	0-1				
				1860	18700	22.22	22.5	0-1				
			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			0	1860	18700	22.48	22.5	0-1				
				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	0-1				
				1900	19100	22.21	22.5	0-1				
				1860	18700	21.31	21.5	0-2				
	16-QAM		0	1880	18900	20.82	21.5	0-2				
				1900	19100	20.73	21.5	0-2				
			_	1860	18700	21.09	21.5	0-2				
		50 RB	25	1880	18900	20.94	21.5	0-2				
				1900	19100	20.61	21.5	0-2				
				1860	18700	21.09	21.5	0-2				
			50	1880	18900	20.85	21.5	0-2				
				1900	19100	20.54	21.5	0-2				
				1860	18700	21.17	21.5	0-2				
		100RB		1880	18900	20.90	21.5	0-2				
				1900	19100	20.63	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)				
				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				
			0	1857.5	18675	22.26	22.5	0-1				
	QPSK	QPSK 36 RB		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				
			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				
10			0	1857.5	18675	22.50	22.5	0-1				
				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		RB	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				
			0	1855	18650	22.28	22.5	0-1				
	QPSK	QPSK 25 RB		1880	18900	21.91	22.5	0-1				
				1905	19150	21.86	22.5	0-1				
				1855	18650	22.20	22.5	0-1				
			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				
10			0	1855	18650	22.37	22.5	0-1				
				1880	18900	21.70	22.5	0-1				
				1905	19150	21.76	22.5	0-1				
				1855	18650	22.36	22.5	0-1				
		1 RB	25	1880	18900	22.40	22.5	0-1				
				1905	19150	22.33	22.5	0-1				
				1855	18650	22.45	22.5	0-1				
			49	1880	18900	22.41	22.5	0-1				
				1905	19150	21.99	22.5	0-1				
				1855	18650	21.23	21.5	0-2				
	16-QAM		0	1880	18900	21.06	21.5	0-2				
				1905	19150	20.71	21.5	0-2				
			l .	1855	18650	21.30	21.5	0-2				
		25 RB	12	1880	18900	21.14	21.5	0-2				
				1905	19150	20.67	21.5	0-2				
				1855	18650	21.35	21.5	0-2				
			25	1880	18900	21.22	21.5	0-2				
				1905	19150	20.57	21.5	0-2				
		50RB		1855	18650	21.39	21.5	0-2				
				1880	18900	20.96	21.5	0-2				
				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				
		12 RB		1852.5	18625	22.21	22.5	0-1				
			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				
			0	1852.5	18625	22.29	22.5	0-1				
				1880	18900	22.49	22.5	0-1				
				1907.5	19175	21.71	22.5	0-1				
				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				
	40.0444			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				
		40.55		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				
			40	1852.5	18625	21.17	21.5	0-2				
			13	1880	18900	20.80	21.5	0-2				
	251			1907.5	19175	20.54	21.5	0-2				
			DD	1852.5	18625	21.16	21.5	0-2				
		KR	1880	18900	20.84	21.5	0-2					
				1907.5	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	QPSK 8 RB	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				
			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				
			0	1851.5	18615	22.04	22.5	0-1				
				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				
	16.0444		_	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 DD	A	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				
			7	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				
	156	15	DR	1851.5	18615	21.17	21.5	0-2				
		15	עט	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	PSK	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	0-1				
		6F	RB	1880	18900	21.92	22.5	0-1				
1.4				1909.3	19193	21.67	22.5	0-1				
			0	1850.7	18607	21.98	22.5	0-1				
				1880	18900	22.37	22.5	0-1				
				1909.3	19193	21.52	22.5	0-1				
				1850.7	18607	22.42	22.5	0-1				
		1 RB	2	1880	18900	21.87	22.5	0-1				
				1909.3	19193	22.04	22.5	0-1				
				1850.7	18607	22.39	22.5	0-1				
			5	1880	18900	21.48	22.5	0-1				
				1909.3	19193	22.04	22.5	0-1				
				1850.7	18607	22.43	22.5	0-1				
	16-QAM		0	1880	18900	21.93	22.5	0-1				
				1909.3	19193	22.03	22.5	0-1				
			_	1850.7	18607	22.42	22.5	0-1				
		3 RB	2	1880	18900	22.10	22.5	0-1				
				1909.3	19193	22.10	22.5	0-1				
				1850.7	18607	22.50	22.5	0-1				
			3	1880	18900	22.00	22.5	0-1				
	688			1909.3	19193	21.98	22.5	0-1				
			3.D	1850.7	18607	21.21	21.5	0-2				
		KR	1880	18900	20.69	21.5	0-2					
				1909.3	19193	20.58	21.5	0-2				

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

OPSK	FDD Band 4 (Hotspot OFF)											
OPSK 1 RB 50 1 7732.5 1 20175 1 23.14 2 4 0 1745 1 20300 2 3.06 2 4 0 0 1 7732.5 2 20175 2 2.97 2 4 0 0 1 745 2 20300 2 3.35 2 4 0 0 1 745 2 20300 2 3.35 2 4 0 0 1 745 2 20300 2 3.35 2 4 0 0 1 745 2 20300 2 3.35 2 4 0 0 1 745 2 20300 2 2.92 2 4 0 0 1 745 2 20300 2 2.83 2 4 0 0 1 745 2 20300 2 2.83 2 4 0 0 1 745 2 20300 2 2.83 2 4 0 0 1 745 2 20300 2 2.83 2 3 0 -1 1 745 2 20300 2 2.33 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.15 2 3 0 -1 1 745 2 20300 2 2.15 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.33 0 -1 1 745 2 20300 2 2.33 0 -1 1 745 2 20300 2 2.15 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.30 2 3 0 -1 1 745 2 20300 2 2.30 2 3 0 -1 1 745 2 20300 2 2.06 2 3 0 -1 1 745 2 20300 2 2.07 2 3 0 -1 1 745 2 20300 2 2.15 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.15 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.15 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.20 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20300 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2 2.16 2 3 0 -1 1 745 2 20000 2	BW(Mhz)	Modulation	RB Size	RB Offset		Channel		Power + Max. Tolerance	MPR Allowed per 3GPP(dB)			
1 RB					1720	20050	22.93	24	0			
1 RB				0	1732.5	20175	23.14	24	0			
APSK 1 RB 50 1732.5 20175 22.97 24 0 1745 20300 23.02 24 0 1720 99 1732.5 20175 22.83 24 0 1745 20300 22.92 24 0 1745 20300 22.82 24 0 1745 20300 22.82 24 0 1746 1745 20300 22.83 23 0-1 1745 20300 22.17 23 0-1 1745 20300 22.17 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.06 23 0-1 1745 20300 22.06 23 0-1 1745 20300 22.06 23 0-1 1745 20300 22.06 23 0-1 1745 20300 22.07 23 0-1 1745 20300 22.08 23 0-1 1720 20050 22.99 23 0-1 1745 20300 22.12 23 0-1 1745 20300 22.12 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1746 20300 22.18 23 0-1 1746 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1746 20300 22.18 23 0-1 1746 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1746 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1746 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1745 20300 22.18 23 0-1 1746 20300 22.18 22 0-2 1748 20 20 20 20 20 20 20 20 20 2					1745	20300	23.06	24	0			
OPSK					1720	20050	23.35	24	0			
OPSK			1 RB	50	1732.5	20175	22.97	24	0			
QPSK Part Pa						20300	23.02					
QPSK QPSK 1745 20300 22.82 24 0 1720 20050 22.33 23 0-1 1732.5 20175 22.23 23 0-1 1745 20300 22.17 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.16 23 0-1 1745 20300 22.15 23 0-1 1740 20050 22.15 23 0-1 1720 20050 22.15 23 0-1 1745 20300 22.03 23 0-1 1745 20300 22.03 23 0-1 1745 20300 22.03 23 0-1 1745 20300 22.06 23 0-1 1745 20300 22.06 23 0-1 1745 20300 22.06 23 0-1 1745 20300 22.56 23 0-1 1745 20300 22.12 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 21.00 22 0-2 1745 20300 20.00 20.00 20.00 10000000000					1720	20050	22.92		0			
QPSK O				99	1732.5	20175	22.83	24	0			
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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				
		QPSK		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				
			0	1717.5	20025	22.49	23	0-1				
				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				
	40.0444			1717.5	20025	21.03	22	0-2				
	16-QAM		0	1732.5	20175	21.25	22	0-2				
				1747.5	20325	21.06	22	0-2				
		00.55	10	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	0-2				
			<u> </u>	1747.5	20325	21.14	22	0-2				
			DD	1717.5	20025	21.17	22	0-2				
	75F	KR	1732.5 1747.5	20175	21.13	22	0-2					
					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				
			0	1715	20000	22.16	23	0-1				
	QPSK	QPSK		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				
			0	1715	20000	21.81	23	0-1				
				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				
	40.0			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				
		05.55	40	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				
			0.5	1715	20000	21.09	22	0-2				
			25	1732.5	20175	21.21	22	0-2				
	-			1750	20350	21.09	22	0-2				
			DD	1715 1732.5	20000	21.17	22	0-2				
			50RB		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				
		12 RB		1712.5	19975	22.00	23	0-1				
			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				
			0	1712.5	19975	21.98	23	0-1				
				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				
	40.0414		0	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				
		40.00		1712.5	19975	21.11	22	0-2				
		12 RB	6	1732.5	20175	20.97	22	0-2				
				1752.5	20375	21.10	22	0-2				
			12	1712.5	19975	21.22	22	0-2				
			13	1732.5	20175	20.94	22	0-2				
			<u> </u>	1752.5	20375	21.05	22	0-2				
		25	DR	1712.5	19975	21.32	22	0-2				
		25RB		1732.5 1752.5	20175	21.03	22	0-2				
					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				
		QPSK	0	1711.5	19965	22.19	23	0-1				
	QPSK			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	irb	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				
				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				
				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				
				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				
			ĺ .	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				
	15R			1711.5	19965	20.99	22	0-2				
		RB	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	QPSK 3 RB	0	1732.5	20175	22.93	24	0			
				1754.3	20393	23.03	24	0			
				1710.7	19957	23.02	24	0			
			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			
				1754.3	20393	22.16	23	0-1			
1.4				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	0-1			
			5	1732.5	20175	21.67	23	0-1			
				1754.3	20393	22.44	23	0-1			
				1710.7	19957	21.87	23	0-1			
	16-QAM		0	1732.5	20175	21.74	23	0-1			
				1754.3	20393	22.11	23	0-1			
				1710.7	19957	21.90	23	0-1			
		3 RB	2	1732.5	20175	21.80	23	0-1			
				1754.3	20393	22.12	23	0-1			
				1710.7	19957	21.79	23	0-1			
			3	1732.5	20175	21.79	23	0-1			
				1754.3	20393	22.10	23	0-1			
			•	1710.7	19957	20.85	22	0-2			
	6	RB	1732.5	20175	20.85	22	0-2				
				1754.3	20393	20.92	22	0-2			

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

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		
				1720	20050	21.88	23	0		
		50 RB	25	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		
		100RB		1720	20050	21.91	23	0		
				1732.5	20175	21.84	23	0		
20				1745	20300	22.10	23	0		
		0 1 RB 50	0	1720	20050	22.01	23	0		
				1732.5	20175	22.39	23	0		
			1745	20300	22.20	23	0			
			50	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		
			99	1732.5	20175	21.81	23	0		
				1745	20300	22.91	23	0		
	40.0414			1720	20050	21.04	22	0-1		
	16-QAM		0	1732.5	20175	20.98	22	0-1		
				1745	20300	21.04	22	0-1		
		E0 DD	0.5	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		
			F0	1720	20050	20.99	22	0-1		
			50	1732.5	20175	20.81	22	0-1		
				1745	20300	21.05	22	0-1		
		400	חחח	1720	20050	20.93	22	0-1		
		100)RB	1732.5	20175	20.80	22	0-1		
				1745	20300	21.16	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)	
				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	
				1717.5	20025	21.93	23	0	
		36 RB	18	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	
		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	
				1717.5	20025	21.65	23	0	
			74	1732.5	20175	21.43	23	0	
			L	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	
				1717.5	20025	20.94	22	0-1	
			37	1732.5	20175	20.90	22	0-1	
				1747.5	20325	21.07	22	0-1	
				1717.5	20025	20.95	22	0-1	
		75RB		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		
		1 RB	0	1715	20000	22.35	23	0		
				1732.5	20175	22.31	23	0		
				1750	20350	22.10	23	0		
			25	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		
			49	1732.5	20175	21.38	23	0		
				1750	20350	22.72	23	0		
	40.0444			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		
		05.00	40	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		
			25	1715	20000	21.32	22	0-1		
			25	1732.5	20175	20.74	22	0-1		
				1750	20350	20.91	22	0-1		
			DD	1715	20000	21.16	22	0-1		
		50RB		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			
				1712.5	19975	21.81	23	0			
		12 RB	6	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			
				1712.5	19975	21.76	23	0			
		25RB		1732.5	20175	21.94	23	0			
5				1752.5	20375	22.06	23	0			
		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			
				1712.5	19975	21.48	23	0			
			24	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			
				1712.5	19975	20.72	22	0-1			
			13	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)										
			1001	Jana + (Hotspo	J. OIV)		Target			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	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		
		8 RB	4	1711.5	19965	21.88	23	0		
				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		
				1711.5	19965	21.78	23	0		
		15	₹B	1732.5	20175	21.94	23	0		
3			1	1753.5	20385	22.24	23	0		
		0	1711.5	19965	22.34	23	0			
			0	1732.5	20175	22.29	23	0		
				1753.5	20385	22.12	23	0		
			RB 7	1711.5	19965	21.95	23	0		
		1 KB		1732.5	20175	22.01	23	0		
				1753.5	20385	22.11	23	0		
			4.4	1711.5	19965	22.20	23	0		
			14	1732.5	20175	21.98	23	0		
				1753.5	20385	22.11	23	0		
	16-QAM		0	1711.5	19965	20.92	22 22	0-1		
	16-QAIVI		U	1732.5	20175	20.82		0-1		
				1753.5	20385	20.97	22	0-1		
		8 RB	4	1711.5 1732.5	19965	21.13 20.71	22 22	0-1		
		O ND	- 4	1732.5	20175 20385	21.02	22	0-1 0-1		
				1753.5	19965	21.02	22	0-1 0-1		
			7	1711.5	20175	20.83	22	0-1		
			/	1732.5	20175	21.03	22	0-1		
			l	1753.5	19965	20.98	22	0-1		
		15	RB	1711.5	20175	20.98	22	0-1		
		13	ייי	1752.5	20175	21.35	22	0-1		
				1700.0	20300	21.35	22	U-1		

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FDD Band 4 (Hotspot ON)										
			י טט ד	Janu 4 (Hotspo	J. OIN)		T			
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		
				1710.7	19957	22.51	23	0		
		3 RB	2	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		
		6RB		1710.7	19957	21.78	23	0		
				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		
				1710.7	19957	22.14	23	0		
			5	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		
		6F	RB	1732.5	20175	20.97	22	0-1		
				1754.3	20393	20.99	22	0-1		

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LTE FDD Band 5 - conducted power table:

	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		
			25	829	20450	22.24	23	0-1		
				836.5	20525	22.22	23	0-1		
				844	20600	22.29	23	0-1		
		50RB		829	20450	22.38	23	0-1		
				836.5	20525	22.17	23	0-1		
10				844	20600	22.31	23	0-1		
		1 RB	0	829	20450	22.47	23	0-1		
				836.5	20525	22.81	23	0-1		
				844	20600	22.73	23	0-1		
			25	829	20450	22.53	23	0-1		
				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		
				829	20450	21.13	22	0-2		
			25	836.5	20525	21.22	22	0-2		
				844	20600	21.48	22	0-2		
			NDD.	829	20450	21.35	22	0-2		
		500)RB	836.5	20525	21.08	22	0-2		
				844	20600	21.16	22	0-2		

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FDD Band 5										
				T DD Banu 5			T			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				826.5	20425	23.05	24	0		
			0	836.5	20525	23.18	24	0		
				846.5	20625	23.19	24	0		
				826.5	20425	23.10	24	0		
		1 RB	12	836.5	20525	23.30	24	0		
				846.5	20625	23.51	24	0		
				826.5	20425	23.32	24	0		
			24	836.5	20525	23.42	24	0		
				846.5	20625	23.45	24	0		
				826.5	20425	22.34	23	0-1		
	QPSK		0	836.5	20525	22.17	23	0-1		
				846.5	20625	22.33	23	0-1		
				826.5	20425	22.28	23	0-1		
		12 RB	6	836.5	20525	22.21	23	0-1		
				846.5	20625	22.23	23	0-1		
				826.5	20425	22.34	23	0-1		
			13	836.5	20525	22.11	23	0-1		
				846.5	20625	22.32	23	0-1		
			•	826.5	20425	22.36	23	0-1		
		25	RB	836.5	20525	22.24	23	0-1		
5				846.5	20625	22.29	23	0-1		
5				826.5	20425	22.34	23	0-1		
			0	836.5	20525	22.39	23	0-1		
				846.5	20625	22.69	23	0-1		
				826.5	20425	22.25	23	0-1		
		1 RB	12	836.5	20525	22.19	23	0-1		
				846.5	20625	22.39	23	0-1		
				826.5	20425	22.29	23	0-1		
			24	836.5	20525	22.19	23	0-1		
				846.5	20625	22.59	23	0-1		
				826.5	20425	21.16	22	0-2		
	16-QAM		0	836.5	20525	21.23	22	0-2		
				846.5	20625	21.30	22	0-2		
				826.5	20425	21.28	22	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0-1 0-1		
		12 RB	6	836.5	20525	21.06	22			
				846.5	20625	21.23	22			
				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		
				826.5	20425	21.38	22	0-2		
		25	RB	836.5	20525	21.25	22	0-2		
			846.5	20625	21.36	22	0-2			

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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)		
				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		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		
		8 RB	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				847.5	20635	22.36	23	0-1		
				23	0-1					
			0	836.5	20525	22.55	23	0-1		
				847.5	20635	22.77	23	0-1		
				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			
				847.5	20635	22.45	23			
				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	+		
				825.5	20415	20.95	22	0-2		
		8 RB	4	836.5	20525	21.12	22	0 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-		
				847.5	20635	21.26	22			
			_	825.5	20415	20.96	22			
			7	836.5	20525	21.08	22			
				847.5	20635	21.08	22			
				825.5	20415	21.03	22			
		15	RB	836.5	20525	21.18	22			
				847.5	20635	21.21	22	0-2		

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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)			
				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		0	836.5	20525	22.88	23	0			
				848.3	20643	22.97	23	0			
				824.7	20407	22.81	23	0			
		3 RB	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 0 0 0 0 0 0 0 0			
1			824.7 20407 22.51 23	23	0-1						
			0	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			
				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				
				824.7	20407	21.87	22	0-1			
			3	836.5	20525	21.90	22				
				848.3	20643	21.92	22	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
				824.7	20407	20.93	22				
		61	RB	836.5	20525	20.86	22				
				848.3	20643	21.08	22	0-2			

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

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				2560	21350	21.98	22	0-1			
20				2510	20850	21.80	22	0-1			
			0	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			
				2510	20850	20.72	21	0-2			
		50 RB	25	2535	21100	20.78	21	0-2			
				2560	21350	20.93	21	0-2			
				2510	20850	20.56	21	0-2			
			50	2535	21100	20.83	21	0-2			
				2560	21350	20.88	21	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0-1 0-1 0-			
				2510	20850	20.69	21				
		100	ORB	2535	21100	20.70	21				
				2560	21350	20.85	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)			
				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			
				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			
				2507.5	20825	21.26	22	0-1			
		36 RB	18	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				
				2562.5	21375	21.50	22				
				2507.5	20825	21.33	22	0-1			
		75	RB	2535	21100	21.28	22	0-1			
15				2562.5	21375	21.46	22				
			_	2507.5	20825	21.51	22				
			0	2535	21100	21.64	22				
				2562.5	21375	21.30	22				
				2507.5	20825	21.13	22				
		1 RB	36	2535	21100	20.90	22				
				2562.5	21375	21.84	22				
				2507.5	20825	21.63	22				
			74	2535	21100	20.94	22				
				2562.5	21375	21.38	22				
				2507.5	20825	20.41	21				
	16-QAM		0	2535	21100	20.31	21				
				2562.5	21375	20.43	21				
		26 DD	10	2507.5	20825	20.32	21				
		36 RB	18	2535	21100	20.20	21	1			
				2562.5	21375	20.44	21				
			27	2507.5	20825	20.38	21	3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0-1 0-1 0-1 0-			
			37	2535	21100	20.30	21				
			l	2562.5	21375	20.38	21				
		75RB		2507.5	20825	20.25	21				
		/5	מא	2535	21100	20.26	21				
				2562.5	21375	20.51	21	U-Z			

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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			
				2505	20800	21.36	22	0-1			
		25 RB	12	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 0-1 0-1 0-1 0-1			
10				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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
				2565	21400	20.50	21				
				2505	20800	20.51	21	0-2			
			25	2535	21100	20.18	21	0-2			
				2565	21400	20.40	21	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
		·		2505	20800	20.30	21				
		50	RB	2535	21100	20.18	21				
				2565	21400	20.49	21	0-2			

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FDD Band 7 (Hotspot OFF)										
			I	anu / (moispo	t 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		
				2502.5	20775	21.46	22	0-1		
		12 RB	6	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		
				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			
			24	2535	21100	21.48	22	1		
				2567.5	21425	21.83	22			
			_	2502.5	20775	20.40	21			
	16-QAM		0	2535	21100	20.32	21			
				2567.5	21425	20.87	21			
		40.55		2502.5	20775	20.32	21	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0-1 0-1 0-		
		12 RB	6	2535	21100	20.33	21			
				2567.5	21425	20.52	21			
			40	2502.5	20775	20.32	21	1		
			13	2535	21100	20.20	21	1		
				2567.5	21425	20.30	21			
			DD	2502.5	20775	20.33	21	0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1		
		25	RB	2535	21100	20.28	21			
				2567.5	21425	20.46	21	0-2		

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

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		
20				2510	20850	21.83	22	0		
			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			
				2560	21350	20.74	21	0-1		
			_	2510	20850	20.59	21	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
		50 RB	25	2535	21100	20.68	21			
				2560	21350	20.75	21			
				2510	20850	20.60	21			
			50	2535	21100	20.67	21			
				2560	21350	20.60	21			
				2510 2535	20850	20.66	21	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
		100	100RB		21100	20.81	21			
				2560	21350	20.74	21	0-1		

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FDD Band 7 (Hotspot ON)											
			י טט ד	Janu / (Hotspo	J. 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			
				2507.5	20825	21.53	22	0			
	QPSK		0	2535	21100	21.81	22	0			
				2562.5	21375	21.84	22	0			
				2507.5	20825	21.54	22	0			
		36 RB	18	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	3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
15				2562.5	21375	21.75	22				
				2507.5 20825 21.15 22 0 2535 21100 21.19 22							
			0					Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
				2562.5	21375	21.21	22				
				2507.5	20825	21.37	22				
		1 RB	36	2535	21100	21.68	22				
				2562.5	21375	21.58	22				
				2507.5	20825	21.75	22				
			74	2535	21100	21.05	22				
				2562.5	21375	21.37	22				
	40.044			2507.5	20825	20.64	21	1			
	16-QAM		0	2535	21100	20.72	21				
				2562.5	21375	20.79	21	+			
		26 DD	40	2507.5	20825	20.74	21	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
		36 RB	18	2535	21100	20.60	21				
				2562.5	21375	20.77	21				
			37	2507.5	20825	20.66	21	1			
			31	2535	21100	20.58	21				
				2562.5 2507.5	21375	20.60	21	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
		75	RB	2507.5 2535	20825	20.76	21 21				
		/3	ייי		21100	20.75 20.72		1			
				2562.5	21375	20.72	21	U-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			
				2505	20800	21.56	22	0			
	QPSK		0	2535	21100	21.77	22	0			
				2565	21400	21.68	22	0			
				2505	20800	21.59	22	0			
		25 RB	12	2535	21100	21.74	22	0			
				2565	21400	21.63	22	0			
				2505	20800	21.48	22	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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				22	0						
			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	3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
		25 RB	12	2535	21100	20.67	21				
				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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
		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		0	2535	21100	21.79	22	0			
				2567.5	21425	21.76	22	0			
				2502.5	20775	21.47	22	0			
		12 RB	6	2535	21100	21.63	22	0			
				2567.5	21425	21.66	22	0			
				2502.5	20775	21.45	22	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 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	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
5				2567.5	21425	21.69	22	0			
			2502.5 20775 21.57	22	0						
			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 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
		12 RB	6	2535	21100	20.66	21				
				2567.5	21425	20.52	21				
			1	2502.5	20775	20.38	21				
			13	2535	21100	20.66	21				
				2567.5	21425	20.49	21				
				2502.5	20775	20.47	21				
		25	RB	2535	21100	20.99	21				
				2567.5	21425	20.55	21	0-1			

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LTE FDD Band 12 - conducted power table:

	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				
	QPSK		0	707.5	23095	22.48	23	0-1			
				711	23130	22.73	23	0-1			
				704	23060	22.50	23	0-1			
		25 RB	12	707.5	23095	22.52	23	0-1			
				711	23130	22.77	23	0-1			
				704	23060	22.67	23	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0-1 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 0 0 0 0 0 0 0 0 0 0 0 0 0-1 0-1 0-1 0-			
10				711	23130	22.71	23	0-1			
10				704	23060	22.08	23	0-1			
			0	707.5	23095	22.85	23	0-1			
				711	23130	22.40	23	0-1			
				704	23060	22.42	23	0-1			
		1 RB	25	707.5	23095	22.78	23	0-1			
				711	23130	22.69	23				
				704	23060	22.25	23	0-1			
			49	707.5	23095	22.57	23	0-1			
				711	23130	22.97	23	0-1			
				704	23060	21.48	22				
	16-QAM		0	707.5	23095	21.55	22				
				711	23130	21.86	22				
				704	23060	21.50	22	0-2			
		25 RB	12	707.5	23095	21.47	22				
				711	23130	21.98	22	0 0 0 0 0 0 0 0 0 0-1 0-1 0-1 0-1 0-1 0-			
				704	23060	21.43	22				
			25	707.5	23095	21.57	22				
				711	23130	21.99	22	0-2			
				704	23060	21.50	22				
	50R	50	RB	707.5	23095	21.57	22				
			711	23130	21.87	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)
				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
				701.5	23035	22.56	23	0-1
		12 RB	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			Ī	713.5	23155	22.76	23	0-1
				701.5	23035	22.61	23	0-1
			0	707.5	23095	22.92	23	0-1
				713.5	23155	22.86	23	0-1
		4.55	40	701.5	23035	22.28	23	0-1
		1 RB	12	707.5	23095	22.78	23	0-1
				713.5	23155	22.70	23	0-1
			0.4	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
		12 RB	e	701.5	23035	21.17	22	0-2
		IZ KD	6	707.5	23095	21.54	22	0-2
				713.5	23155	21.92	22	0-2
			13	701.5	23035	21.44	22	0-2
			13	707.5	23095	21.50	22	0-2
			<u> </u>	713.5	23155	21.93 21.40	22 22	0-2 0-2
		25	RB	701.5 707.5	23035 23095	21.40	22	0-2
		25	ND	707.5				
				113.5	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
				700.5	23025	22.40	23	0-1
		8 RB	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
				700.5	23025	22.40	23	0-1
			0	707.5	23095	22.74	23	0-1
				714.5	23165	22.92	23	0-1
		4.00	_	700.5	23025	22.18	23	0-1
		1 RB	7	707.5	23095	22.65	23	0-1
				714.5	23165	22.93	23	0-1
			4.4	700.5	23025	22.71	23	0-1
			14	707.5	23095	22.60	23 23	0-1 0-1
				714.5 700.5	23165 23025	22.91	23	
	16-QAM		0	700.5		21.30 21.74	22	0-2 0-2
	10-QAIVI			707.5	23095 23165	21.74	22	0-2
				714.5	23025	21.04	22	0-2
		8 RB	4	700.5	23025	21.11	22	0-2
		0 70	"	707.5	23165	21.56	22	0-2
				714.5	23025	21.07	22	0-2
			7	700.5	23025	21.26	22	0-2
			·	707.5	23165	21.44	22	0-2
			l	714.5	23025	21.60	22	0-2
		15	RB	700.5	23025	21.64	22	0-2
				714.5	23165	21.66	22	0-2

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				FDD Band 12				
				T DD Banu 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
		61	RB	707.5	23095	22.54	23	0-1
1.4				715.3	23173	22.76	23	0-1
1.4				699.7	23017	22.08	23	0-1
			0	707.5	23095	22.78	23	0-1
				715.3	23173	22.91	23	0-1
				699.7	23017	22.65	23	0-1
		1 RB	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	23173	22.91	23	0-1
				699.7	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:

				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
				709	23780	22.83	23	0-1
			0	710	23790	22.42	23	0-1
				711	23800	22.94	23	0-1
				709	23780	22.95	23	0-1
		1 RB	25	710	23790	22.75	23	0-1
				711	23800	22.92	23	0-1
			1	709	23780	22.92	23	0-1
			49	710	23790	22.93	23	0-1
				711	23800	22.95	23	0-1
				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
			1 .	709	23780	21.87	22	0-2
			25	710	23790	21.97	22	0-2
				711	23800	21.88	22	0-2
				709	23780	21.80	22	0-2
		50	RB	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
				706.5	23755	22.74	23	0-1
		12 RB	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
				706.5	23755	22.41	23	0-1
			0	710	23790	22.94	23	0-1
				713.5	23825	22.91	23	0-1
		4.00	40	706.5	23755	22.90	23	0-1
		1 RB	12	710	23790	22.90	23	0-1
				713.5	23825	22.94	23	0-1
			0.4	706.5	23755	22.85	23	0-1
			24	710	23790	22.92	23	0-1
				713.5	23825	22.63	23	0-1
	16 OAM		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
		12 RB	e	706.5	23755	21.54	22	0-2
		IZ KD	6	710	23790	21.64	22	0-2
				713.5	23825	21.85	22	0-2
			13	706.5	23755	21.47 21.72	22	0-2
			13	710 712.5	23790	.	22	0-2
				713.5 706.5	23825	21.87 21.65	22 22	0-2 0-2
		25	RB	706.5	23755 23790	21.65	22	0-2
		25	מאו			21.85		
				713.5	23825	∠1.84	22	0-2

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LTE TDD Band 38 - conducted power table:

				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
				2610	38150	22.80	23	0-1
				2580	37850	22.76	23	0-1
		50 RB	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)RB	2595	38000	22.74	23	0-1
20				2610	38150	22.66	23	0-1
				2580	37850	22.85	23	0-1
			0	2595	38000	22.96	23	0-1
				2610	38150	22.92	23	0-1
				2580	37850	22.91	23	0-1
		1 RB	50	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
				2580	37850	21.76	22	0-2
	16-QAM		0	2595	38000	21.66	22	0-2
				2610	38150	21.76	22	0-2
				2580	37850	21.87	22	0-2
		50 RB	25	2595	38000	21.83	22	0-2
				2610	38150	21.68	22	0-2
				2580	37850	21.77	22	0-2
			50	2595	38000	21.75	22	0-2
				2610	38150	21.41	22	0-2
				2580	37850	21.73	22	0-2
		100)RB	2595	38000	21.76	22	0-2
				2610	38150	21.61	22	0-2

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				TDD Band 38				
				Tab 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
				2612.5	38175	22.69	23	0-1
				2577.5	37825	22.66	23	0-1
		36 RB	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
13				2577.5	37825	22.60	23	0-1
			0	2595	38000	22.93	23	0-1
				2612.5	38175	22.94	23	0-1
				2577.5	37825	22.71	23	0-1
		1 RB	36	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				
				Tab 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
				2615	38200	22.68	23	0-1
				2575	37800	22.78	23	0-1
		25 RB	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				2575	37800	22.81	23	0-1
			0	2595	38000	22.63	23	0-1
				2615	38200	22.60	23	0-1
				2575	37800	22.89	23	0-1
		1 RB	25	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	38200	21.47	22	0-2
				2575	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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WLAN802.11 b/g/n(20M) conducted power table:

112711002.11	D/g/H(ZUN) CUI	auotou j	JOHO! LUDIC			
		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 nower table:

Biactootii	conaactca	power tab	16.			
Mode	Channel	Frequency	Average	Output Pow	er (dBm)	Max. Rated Avg.
Mode	Charmer	(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	Frequency	Average Output Power (dBm)	Max. Rated Avg.
Mode	Chamer	(MHz)	GFSK	Power + Max. Tolerance
	CH 00	2402	-1.48	
LE	CH 19	2440	0.14	2
	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 MT8820C), and the communication between the EUT and the tester is established by air link.
- 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 the e-field strength of one specific location measured at the beginning with that measured at the end of the SAR testing.
- 4. SAR test reduction for GPRS and EDGE modes is determined by the 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 ≤ ¼ dB higher than the primary mode (GMSK GPRS/EDGE), SAR measurement is not required for the secondary mode (8-PSK EDGE).
- 5. The 3G SAR test reduction procedure is applied to HSDPA with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSDPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSDPA).
- 6. The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSPA) is ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSPA).

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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 ≤ ¼ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (DC-HSDPA).

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

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	6
Information Bit Payload (N_{INF})	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
Note 1: The RMC is intended to be used for mode and both cells shall transmit parameters as listed in the table. Note 2: Maximum number of transmission retransmission is not allowed. The constellation version 0 shall be use	with identi is limited t e redundar	ical o 1, i.e.,
Inf. Bit Payload 120		
CRC Addition 120 24 CR	С	
Code Block Segmentation 144		
Turbo-Encoding (R=1/3)	432	2
1st Rate Matching	43	32
RV Selection 960		

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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Physical Channel Segmentation

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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

Note1: \triangle_{ACK} , \triangle_{NACK} and $\triangle_{CQI}=8\Leftrightarrow A_{hs}=\beta_{hs}/\beta_c=30/15\Leftrightarrow \beta_{hs}=30/15^*\beta_c$

Note2: CM=1 for $\beta_0/\beta_0 = 12/15$, $\beta_{ha}/\beta_c = 24/15$.

Note3: For subtest 2 the β_oβ_o ratio of 12/15 for the TFC during the measurement period(TF1,TF0) is achieved by setting the signaled gain factors for the reference TFC (TFC1,TF1) to β_0 =11/15 and β_0 =15/15.

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)	β _d	β _{HS} (Note1)	βес	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: $\Delta_{\rm ACK}$, $\Delta_{\rm NACK}$ and $\Delta_{\rm CQI}$ = 30/15 with β_{hs} = 30/15 * β_c .											

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.

βed can not be set directly; it is set by Absolute Grant Value. Note 4:

All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-Note 5: 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.

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 ≤ 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 RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.

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.

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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 ≤ 100 MHz.
- 15. According to KDB865664D01v01r04, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 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 ≥ 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)] $\cdot [\sqrt{f(GHz)}] \le 3.0$ for 1-g SAR, SAR evaluation is not required.

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

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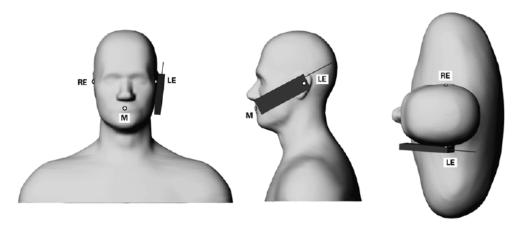
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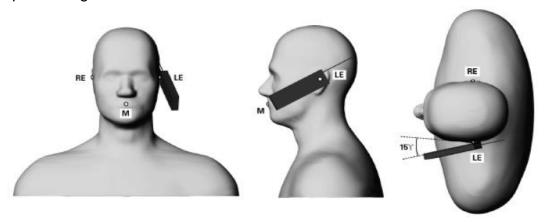
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1.6 Positioning Procedure

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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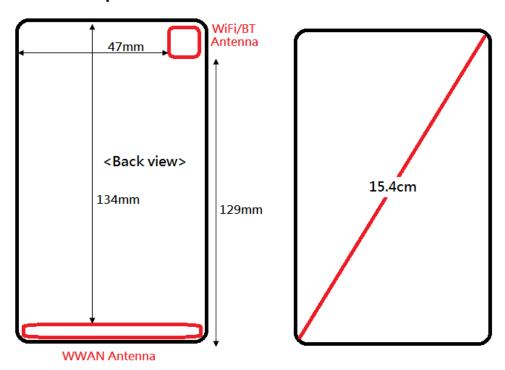
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1.7.1 Antennas placement details



Figue1: The location of the antennas (Back View)

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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 (\sim 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 ±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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- (3) K. Jokela, P. Hyysalo, and L. Puranen, \Calibration of specific absorption rate (SAR) probes in waveguide at 900 MHz", *IEEE Transactions on Instrumentation and Measurements*, vol. 47, no. 2, pp. 432{438, Apr. 1998.

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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.

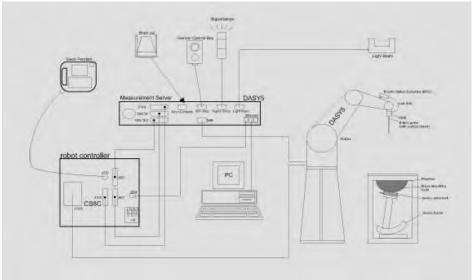


Fig. a A block diagram of the SAR measurement system

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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).
- 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.
- 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	1
	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 ax	ris)
	± 0.5 dB in tissue material (rotation norma	al to probe axis)
Dynamic	10 μW/g to > 100 mW/g	
Range	Linearity: ± 0.2 dB (noise: typically < 1 μV	V/g)
Dimensions	Tip diameter: 2.5 mm	
Application	High precision dosimetric measurements	in any exposure scenario
	(e.g., very strong gradient fields). Onl	y 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 (\$1528 and IEC 62209. It enables the dosimetric evaluations usage as well as body mounted to cover prevents evaporation of 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. An eliquid. 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 Phantom V4.0/V4.0C or Twin SAM, the 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 locked at different phantom locations (left head, right head, flat phantom).	Device Holder

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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 (≤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.

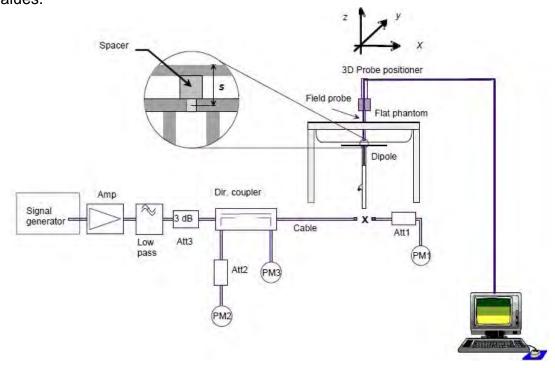


Fig. b The block diagram of system verification

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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
D/30V3	1013 73	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
D635V2	D03572 40003	033	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
D635V2	40120	655	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	1730	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
D2430V2	121	2 4 30	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
D2000 V Z	1005	2000	Body	55.1	13.60	54.40	-1.27%	Jul. 05, 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 (≤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, £r	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%
	Juli. 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%
	Juli. 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%
пеац		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 εr	% dev σ
		2412	39.268	1.766	38.208	1.787	2.70%	-1.18%
	I.I. 04 2047	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%
	L.I. 00, 0047	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%
Pody		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%
		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%
	Jul. 14, 2017	1880	53.300	1.520	52.762	1.504	1.01%	1.05%
	Jul. 1-7, 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, £r	Measured Conductivity, σ (S/m)	% dev εr	% 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, Er	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 Au	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%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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The composition of the tissue simulating liquid:

Fraguenay				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	1	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	1	600 g	1.0L(Kg)
4750	Head	444.52 g	552.42 g	3.06 g	1	1	_	1.0L(Kg)
1750	Body	300.67 g	716.56 g	4.0 g	ı	I	_	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)
0.450	Head	550ml	450ml	_	ı	I	_	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)

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 a 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:

- Uncontrolled environments are defined as locations where there is potential exposure of individuals who have no knowledge or control of their potential exposure.
- 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

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
		()			10101a1100 (a2111)	(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	105
	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	106
(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	107
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	-

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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 (W)	SAR over g /kg)	Plot page
		,			, ,	(aBm)		Measured		
	Re Cheek	-	810	1909.8	31.50	30.82	16.95%	0.141	0.165	108
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	109
(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	110
(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	-

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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		Plot page
		()				(dBm)		Measured	Reported	
	RE Cheek	-	9262	1852.4	23.5	23.43	1.62%	0.158	0.161	111
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	112
Ποιδροί	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	-

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

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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 (dBm)	Scaling	1 (W)	SAR over g /kg)	Plot page
	RE Cheek	-	1412	1732.4	24.5	24.32	4.23%	0.250	0.261	113
11	RE Tilt	-	1412	1732.4	24.5	24.32	4.23%	0.083	0.087	-
Head	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	114
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	115
Hotspot	Bottom side*	10	1312	1712.4	23	22.76	5.68%	1.200	1.268	-
Ποιδροί	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	-

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

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WCDMA Band V - RMC 12.2Kbps

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	l ĭ 1	SAR over g ′kg)	Plot page
		(111111)			Tolcrance (dBill)	(dBm)		Measured	Reported	
	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	-
rieau	LE Cheek	-	4233	846.6	25	24.63	8.89%	0.309	0.336	116
	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	117
	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	-

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LTE FDD Band 2

Mode	Bandwidth	Modulatior	DD Circ	DD start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Casling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	viodulation	RB Size	RD Start	Position	(mm)	OH	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek	-	18700	1860	23.5	23.41	2.09%	0.156	0.159	118
			1 RB	0	RE Tilt	-	18700	1860	23.5	23.41	2.09%	0.052	0.053	-
			1110	Ů	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	-
11000	20111112	α. σ. τ	00.112	ŭ	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	-
					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	119
				00	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	Ů	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

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LTE FDD Band 4

Mode	Bandwidth (MHz)	Modulation	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	120
					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	-
Head	20MHz	QPSK	50 RB	0	RE Tilt	-	20050	1720	23	22.33	16.68%	0.032	0.037	-
пеац	ZUIVITIZ	QFSK	30 KB	U	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	RB	RE Tilt	-	20050	1720	23	22.08	23.59%	0.030	0.037	-
			100	, 110	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	121
				- 00	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 Wolli	ZOWINZ	Q OIL	00110		Back side	15	20050	1720	23	22.33	16.68%	0.215	0.251	-
			100	RB	Front side	15	20050	1720	23	22.08	23.59%	0.294	0.363	-
					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	122
			1 RB	50	Bottom side*	10	20050	1720	23	22.98	0.46%	1.170	1.175	-
					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	50 RB		Back side	10	20300	1745	23	22.05	24.45%	0.335	0.417	-
			50 KB	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 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 0.627	-
					Front side	10	20300	1745	23	22.10	23.03%	0.510 0.332	0.627	
					Back side Bottom side	10	20300	1745 1720	23	22.10 21.91	23.03% 28.53%	0.332	1.188	-
			100	RB	Bottom side	10	20050	1732,5	23	21.91	30.62%	0.924	1.188	-
			100	ND	Bottom side	10	20300	1732,5	23	21.84	23.03%	0.906	1.183	-
					Right side	10	20300	1745	23	22.10	23.03%	0.938	0.156	-
						10		1745	23			0.127	0.156	-
1	1	ı	1		Left side	10	20300	1745	23	22.10	23.03%	0.071	0.087	ı - I

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

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LTE FDD Band 5

Mode	Bandwidth	Modulation	DR Sizo	DR start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot
Wode	(MHz)	viodulatioi	ND SIZE	ND start	Position	(mm)	CIT	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	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	-
			TIND	23	LE Cheek	-	20450	829	24	23.55	10.92%	0.270	0.299	123
					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	-
rieau	TOWNIZ	QFSIX	23 10	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	DR	RE Tilt	-	20450	829	23	22.38	15.35%	0.107	0.123	-
			30	IND	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	124
					Front side	10	20600	844	23	22.42	14.29%	0.293	0.335	-
					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	-
	noispoi Townz				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	-
					Back side	10	20450	829	23	22.38	15.35%	0.270	0.311	-
			50	RB	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	-

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LTE FDD Band 7

Mode	Bandwidth (MHz)	Modulation	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	-	21350	2560	23	22.93	1.62%	0.049	0.050	-
			1 RB	99	RE Tilt	-	21350	2560	23	22.93	1.62%	0.016	0.016	-
			IKD	99	LE Cheek	-	21350	2560	23	22.93	1.62%	0.099	0.101	125
					LE Tilt	-	21350	2560	23	22.93	1.62%	0.040	0.041	-
					RE Cheek	-	21350	2560	22	21.87	3.04%	0.040	0.041	-
Head	20MHz	QPSK	50 RB	25	RE Tilt	-	21350	2560	22	21.87	3.04%	0.014	0.014	-
ricad	ZOWINZ	QI OIX	30 KB	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	-
			100	RB	RE Tilt	-	21350	2560	22	21.98	0.46%	0.015	0.015	-
					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	-
			1 RB	99	Front side	15	21350	2560	23	22.93	1.62%	0.360	0.366	126
					Back side	15	21350	2560	23	22.93	1.62%	0.253	0.257	-
Body-worn	20MHz	QPSK	50 RB	25	Front side	15	21350	2560	22	21.87	3.04%	0.279	0.287	-
•				l	Back side	15	21350	2560	22	21.87	3.04%	0.195	0.201	-
			100	RB	Front side	15 15	21350	2560	22	21.98	0.46%	0.283	0.284	-
				ı	Back side Front side	10	21350 21350	2560 2560	22.5	21.98 22.35	0.46% 3.51%	0.201	0.202 0.757	-
					Back side	10	21350	2560	22.5	22.35	3.51%	0.731	0.757	-
					Bottom side	10	20850	2510	22.5	22.33	6.17%	1.070	1.136	
					Bottom side	10	21100	2535	22.5	22.25	5.93%	1.100	1.165	-
			1 RB	0	Bottom side	10	21350	2560	22.5	22.35	3.51%	1.170	1.211	127
					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	-
		0.0017			Bottom side	10	20850	2510	22	21.66	8.14%	0.941	1.018	-
Hotspot	20MHz	QPSK	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	-
	1				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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LTE FDD Band 12

Mode	Bandwidth	Modulatior	DD Cine	DD stort	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot
ivioue	(MHz)	viodulatioi	NB Size	ND Start	Fosition	(mm)	Оп	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek		23130	711	24	23.99	0.23%	0.208	0.208	128
			1 RB	49	RE Tilt	-	23130	711	24	23.99	0.23%	0.103	0.103	-
			TIND	45	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	10MHz	QPSK	25 RB	49	RE Tilt	-	23130	711	23	22.83	3.99%	0.081	0.084	-
11000	10111112	Qi Oit	2010	-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	RB	RE Tilt	-	23130	711	23	22.71	6.91%	0.078	0.083	-
					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	129
					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	-
					Back side	10	23130	711	23	22.71	6.91%	0.317	0.339	-
1			50	RB	Bottom side	10	23130	711	23	22.71	6.91%	0.084	0.090	-
					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	-

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LTE FDD Band 17

Mode	Bandwidth	Modulation	DR Sizo	DR start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot
Wiode	(MHz)	viodulatioi	ND Size	ND start	r osidon	(mm)	Ö i	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek	-	23780	709	24	23.98	0.46%	0.207	0.208	130
			1 RB	49	RE Tilt	-	23780	709	24	23.98	0.46%	0.099	0.099	-
			TILD	-10	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	10MHz	QPSK	25 RB	25	RE Tilt	-	23800	711	23	22.98	0.46%	0.084	0.084	-
		4. 5			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	-
					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	131
					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	-
11-4	400411-	ODOK	05.00	05	Back side	10	23800	711	23	22.98	0.46%	0.329	0.331	-
Hotspot	10MHz	QPSK	25 RB	25	Bottom side	10 10	23800	711	23	22.98	0.46%	0.082	0.082	-
					Right side		23800	711	23	22.98	0.46%	0.185	0.186	-
					Left side Front side	10 10	23800 23800	711 711	23 23	22.98 22.86	0.46% 3.28%	0.151 0.331	0.152 0.342	-
						10		711	23	22.86		0.331		-
			50	DD	Back side Bottom side	10	23800 23800	711	23	22.86	3.28%	0.326	0.337	-
			50	ND	Right side	10	23800	711	23	22.86	3.28%	0.080	0.063	-
					Left side	10	23800	711	23	22.86	3.28%	0.162	0.166	-

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LTE TDD Band 38

Mode	Bandwidth	Modulation	DD Sizo	DP start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over N/kg)	Plot
ivioue	(MHz)	viodulatioi	ND SIZE	ND start	rosidori	(mm)	5	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	, and the second	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	-
			1110	Ů	LE Cheek	-	38000	2595	24	23.85	3.51%	0.060	0.062	132
					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	-
11000	20	Q. O	00112		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	RB	RE Tilt	-	37850	2580	23	22.83	3.99%	0.012	0.012	-
					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	133
					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	-
					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	-
					Right side	10	37850	2580	23	22.83	3.99%	0.102	0.106	-
1	1				Left side	10	37850	2580	23	22.83	3.99%	0.045	0.047	-

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WiFi 2.4GHz - WLAN802.11b

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S (W/	_	Plot page
		, ,		,	Tolerance (dBm)	(dBm)		Measured	Reported	
	RE Cheek	-	1	2412	17.5	17.34	3.75%	0.464	0.481	134
Head	RE Tilt	-	1	2412	17.5	17.34	3.75%	0.357	0.370	-
rieau	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	-
Hotopot	Back side	10	1	2412	17.5	17.34	3.75%	0.210	0.218	135
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	-

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3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

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

- 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 =
$$\frac{\text{Max.tune up power(mW)}}{\text{Min.test separation distance(mm)}} \times \frac{\sqrt{f(GHz)}}{7.5}$$

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
ВТ	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

reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation							
Frequency	-	101	reported S	ΣSAR			
band	Position		WWAN	WLAN	<1.6W/kg		
		Right cheek	0.297	0.481	0.78		
GSM 850	l l a a al	Right tilt	0.137	0.370	0.51		
G3W 630	Head	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	Hotenot	Тор	-	0.046	0.05		
(1Dn1UP)	Hotspot	Bottom	0.249	1	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		
GSW 1900		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)	Ποισροί	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		
	пеац	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		
	Lloter of	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	ΣSAR			
band	Position		WWAN	WLAN	<1.6W/kg		
		Right cheek	0.261	0.481	0.74		
	Hood	Right tilt	0.087	0.370	0.46		
	Head	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		
	Ποιδροί	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		
	Hood	Right tilt	0.053	0.370	0.42		
	Head	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		1,1	reported S	ΣSAR			
band	Position		WWAN	WLAN	<1.6W/kg		
		Right cheek	0.268	0.481	0.75		
	llaad	Right tilt	0.048	0.370	0.42		
	Head	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		
	Hotopot	Top side	-	0.046	0.05		
	Hotspot	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		
		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	ı	1.21		
		Right side	0.189	ı	0.26		
		Left side	0.404	0.060	0.46		
		Right cheek	0.050	0.481	0.53		
	Head	Right tilt	0.016	0.370	0.39		
	пеац	Left cheek	0.101	0.223	0.32		
		Left tilt	0.041	0.189	0.23		
LTE FDD		Front side	0.757	0.055	0.81		
Band 7		Back side	0.536	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	AR / W/kg	ΣSAR		
band	Position		WWAN	WLAN	<1.6W/kg		
		Right cheek	0.208	0.481	0.69		
	Llaad	Right tilt	0.103	0.370	0.47		
	Head	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		
	Hatanat	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		
	Head	Right cheek	0.208	0.481	0.69		
		Right tilt	0.099	0.370	0.47		
		Left cheek	0.196	0.223	0.42		
		Left tilt	0.100	0.189	0.29		
LTE FDD		Front side	0.446	0.055	0.50		
Band 17		Back side	0.421	0.218	0.64		
	Hotspot	Top side	ı	0.046	0.05		
	Tiotspot	Bottom side	0.116	-	0.12		
		Right side	0.246	-	0.25		
		Left side	0.201	0.060	0.26		
		Right cheek	0.032	0.481	0.51		
	Head	Right tilt	0.012	0.370	0.38		
	ricau	Left cheek	0.062	0.223	0.29		
		Left tilt	0.023	0.189	0.21		
LTE TDD		Front side	0.387	0.055	0.44		
Band 38		Back side	0.256	0.218	0.47		
	Hotspot	Top side	-	0.046	0.05		
	Tiotopot	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	Pos	ition	reported S	SAR / W/kg	ΣSAR		
band	Position		WWAN	Bluetooth	<1.6W/kg		
GSM 850	Body-worn	Front	0.315	0.222	0.54		
GOW 000	Dody-Worn	Back	0.314	0.222	0.54		
GSM 1900	Body-worn	Front	0.244	0.222	0.47		
GSW 1900	Dody-worn	Back	0.168	0.222	0.39		
WCDMA	Body-worn	Front	0.654	0.222	0.88		
Band II	Body-worn	Back	0.457	0.222	0.68		
WCDMA	Body-worn	Front	0.490	0.222	0.71		
Band IV	Body-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	0.84		
LILIDD Band 2		Back	0.435	0.222	0.66		
LTE FDD Band 4	Body-worn	Front	0.455	0.222	0.68		
LTET DD Band 4		Back	0.323	0.222	0.55		
LTE FDD Band 5	Body-worn	Front	0.357	0.222	0.58		
LILIDD Band 3		Back	0.361	0.222	0.58		
LTE FDD Band 7	Body-worn	Front	0.366	0.222	0.59		
LILIDD Ballu 7	Body-worn	Back	0.257	0.222	0.48		
LTE FDD Band 12	Rody worn	Front	0.444	0.222	0.67		
LTET DD Band 12	Body-worn	Back	0.434	0.222	0.66		
LTE FDD Band 17	Body-worn	Front	0.446	0.222	0.67		
LILI DD Baild 17	Dody-worn	Back	0.421	0.222	0.64		
LTE TDD Band 38	Rody-worn	Front	0.387	0.222	0.61		
LIL IDD Danu 30	Body-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	EX3DV4	3923	Sep.02,2016	Sep.01,2017
Of EAG	Probe	270271	7466	Jul.04,2017	Jul.03,2018
		D750V3	1015	Aug.30,2016	Aug.29,2017
		D835V2	4d063	Aug.25,2016	Aug.24,2017
		D03572	4d120	Jul.03,2017	Jul.02,2018
SPEAG	System Validation Dipole	D1750V2	1008	Aug.31,2016	Aug.30,2017
	2.50.0	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 Electronics	DAE4	547	Mar.22,2017	Mar.21,2018
SPEAG			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
Agilont	Dual-directional	772D	MY52180142	Apr.13,2017	Apr.12,2018
Agilent	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
Agilont	Power Sensor	E9301H	MY52200003	Oct.17,2016	Oct.16,2017
Agilent	Power Sensor		MY52200004	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

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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; $\sigma = 0.872$ S/m; $\varepsilon_r = 42.019$; $\rho = 1000$ 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,

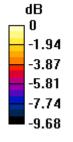
dy=8mm, dz=5mm

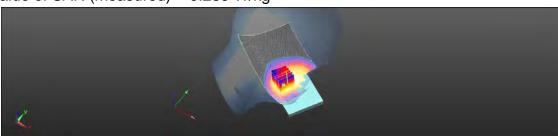
Reference Value = 3.337 V/m; Power Drift = 0.07 dB

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; $\sigma = 1.007 \text{ S/m}$; $\varepsilon_r = 53.299$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

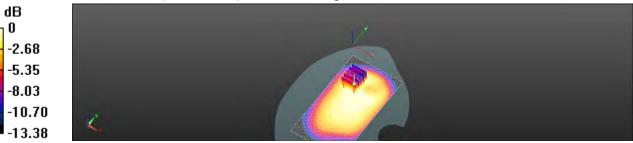
dy=8mm, dz=5mm

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; $\sigma = 1.007$ S/m; $\epsilon_r = 53.299$; $\rho = 1000$ 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,

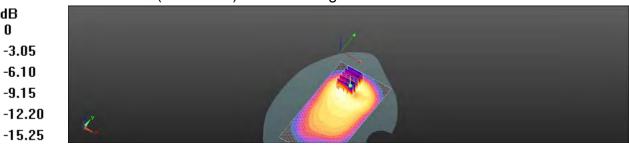
dy=8mm, dz=5mm

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; $\sigma = 1.407 \text{ S/m}$; $\epsilon_r = 39.997$; $\rho = 1000 \text{ kg/m}^3$

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

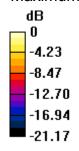
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

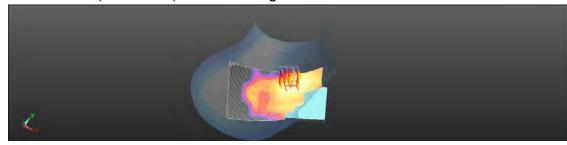
dy=8mm, dz=5mm

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; $\sigma = 1.534 \text{ S/m}$; $\varepsilon_r = 52.736$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

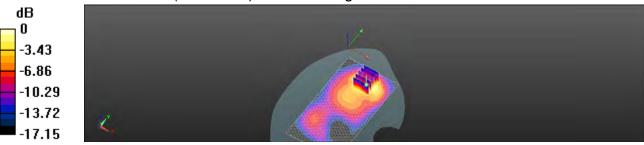
dy=8mm, dz=5mm

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; $\sigma = 1.474 \text{ S/m}$; $\varepsilon_r = 52.927$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

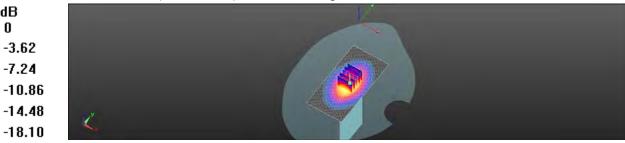
dy=8mm, dz=5mm

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; $\sigma = 1.344 \text{ S/m}$; $\varepsilon_r = 40.206$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

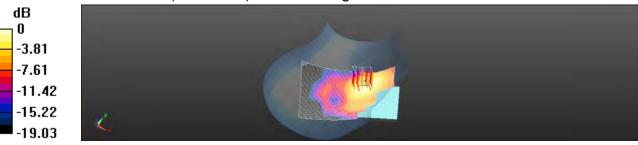
dy=8mm, dz=5mm

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; $\sigma = 1.504 \text{ S/m}$; $\varepsilon_r = 52.762$; $\rho = 1000 \text{ kg/m}^3$

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

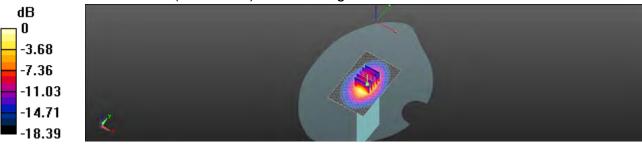
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

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; $\sigma = 1.322 \text{ S/m}$; $\epsilon_r = 39.898$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

dy=8mm, dz=5mm

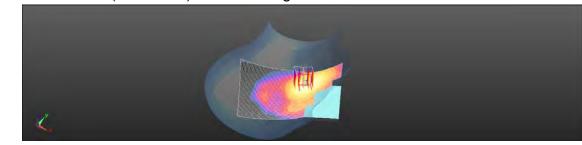
-3.58-7.15-10.73-14.30-17.88

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; $\sigma = 1.419 \text{ S/m}$; $\epsilon_r = 53.851$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

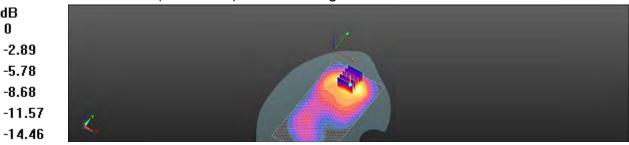
dy=8mm, dz=5mm

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; $\sigma = 1.406 \text{ S/m}$; $\varepsilon_r = 53.9$; $\rho = 1000 \text{ kg/m}^3$

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

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

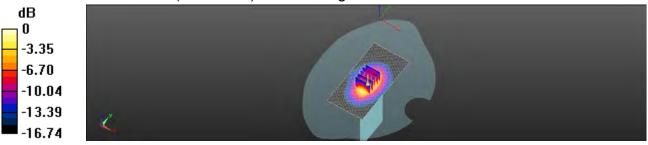
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

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/kgMaximum 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; $\sigma = 0.884$ S/m; $\varepsilon_r = 42.009$; $\rho = 1000$ 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

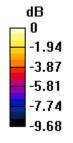
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

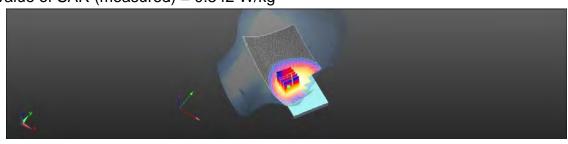
dy=8mm, dz=5mm

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; $\sigma = 1.019$ S/m; $\varepsilon_r = 53.192$; $\rho = 1000$ 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

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,

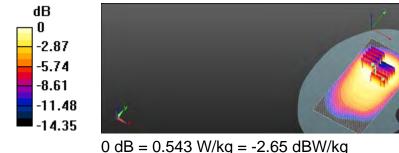
dy=8mm, dz=5mm

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



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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; $\sigma = 1.353 \text{ S/m}$; $\varepsilon_r = 40.15$; $\rho = 1000 \text{ kg/m}^3$

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,

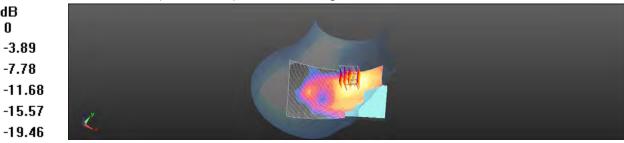
dy=8mm, dz=5mm

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; $\sigma = 1.504 \text{ S/m}$; $\varepsilon_r = 52.762$; $\rho = 1000 \text{ kg/m}^3$

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

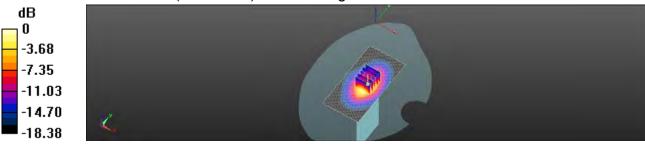
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

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; $\sigma = 1.314 \text{ S/m}$; $\epsilon_r = 39.917$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

dy=8mm, dz=5mm

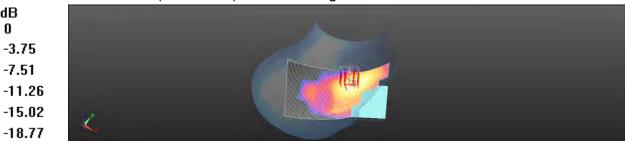
-3.75-7.51

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; $\sigma = 1.411 \text{ S/m}$; $\varepsilon_r = 53.884$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

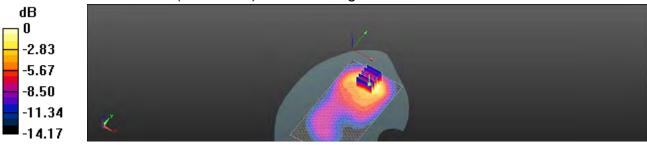
dy=8mm, dz=5mm

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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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; $\sigma = 1.411 \text{ S/m}$; $\varepsilon_r = 53.884$; $\rho = 1000 \text{ kg/m}^3$

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

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

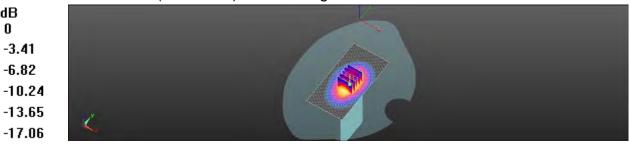
Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

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/kgMaximum 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; $\sigma = 0.911$ S/m; $\varepsilon_r = 41.757$; $\rho = 1000$ 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,

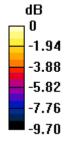
dy=8mm, dz=5mm

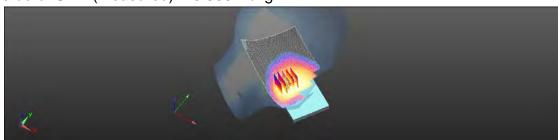
Reference Value = 6.767 V/m; Power Drift = 0.09 dB

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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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; $\sigma = 1$ S/m; $\varepsilon_r = 54.591$; $\rho = 1000$ 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

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

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

dy=8mm, dz=5mm

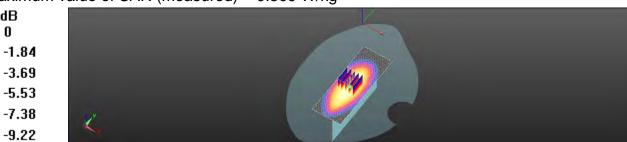
dB

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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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; $\sigma = 1.934 \text{ S/m}$; $\varepsilon_r = 39.144$; $\rho = 1000 \text{ kg/m}^3$

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,

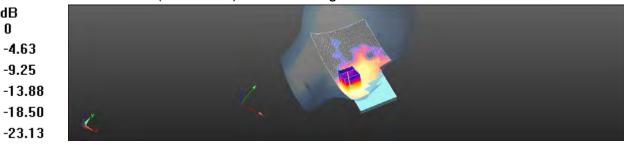
dy=5mm, dz=5mm

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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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; $\sigma = 2.153 \text{ S/m}$; $\varepsilon_r = 51.521$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

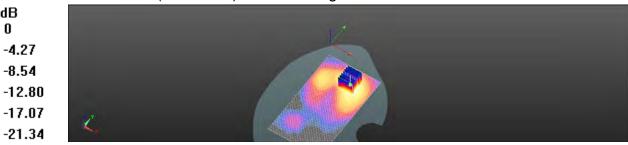
dy=5mm, dz=5mm

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/kq = -2.74 dBW/kq

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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; $\sigma = 2.153 \text{ S/m}$; $\epsilon_r = 51.521$; $\rho = 1000 \text{ kg/m}^3$

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

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

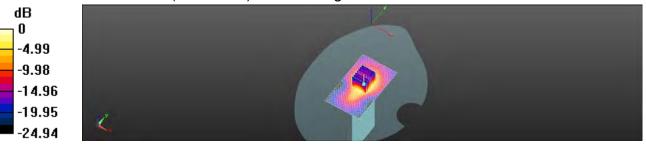
Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

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/kgMaximum value of SAR (measured) = 1.76 W/kg



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

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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; $\sigma = 0.855$ S/m; $\varepsilon_r = 41.919$; $\rho = 1000$ 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

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

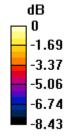
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

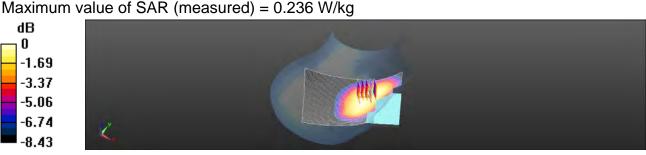
dy=8mm, dz=5mm

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





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

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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; $\sigma = 0.934$ S/m; $\varepsilon_r = 54.717$; $\rho = 1000$ 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

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

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

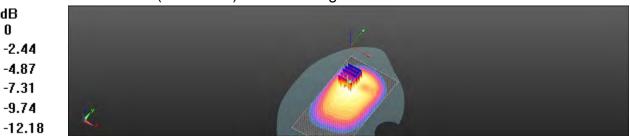
dy=8mm, dz=5mm

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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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; $\sigma = 0.854$ S/m; $\varepsilon_r = 41.933$; $\rho = 1000$ 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

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

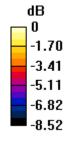
Configuration/Head/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm,

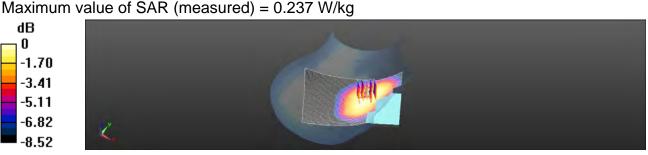
dy=8mm, dz=5mm

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





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; $\sigma = 0.934$ S/m; $\varepsilon_r = 54.742$; $\rho = 1000$ 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

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/kgMaximum 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; $\sigma = 1.974 \text{ S/m}$; $\epsilon_r = 39.104$; $\rho = 1000 \text{ kg/m}^3$

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

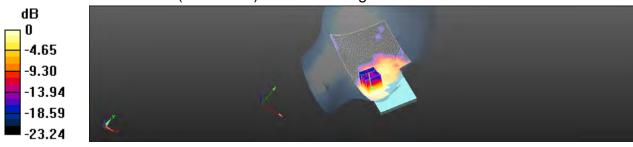
Configuration/Head/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

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; $\sigma = 2.202$ S/m; $\varepsilon_r = 51.462$; $\rho = 1000$ 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

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

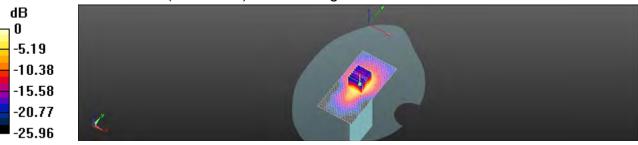
Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm,

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/kgMaximum value of SAR (measured) = 1.06 W/kg



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

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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; $\sigma = 1.787 \text{ S/m}$; $\varepsilon_r = 38.208$; $\rho = 1000 \text{ kg/m}^3$

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

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

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

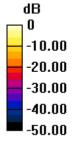
dy=5mm, dz=5mm

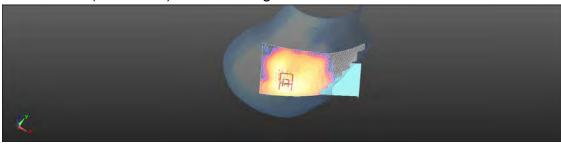
Reference Value = 6.781 V/m: Power Drift = 0.12 dB

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; $\sigma = 1.907 \text{ S/m}$; $\varepsilon_r = 52.415$; $\rho = 1000 \text{ kg/m}^3$

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,

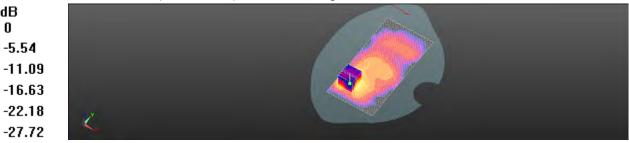
dy=5mm, dz=5mm

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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prosecuted to the fullest extent of the law.



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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; $\sigma = 0.861 \text{ S/m}$; $\epsilon_r = 41.695$; $\rho = 1000 \text{ kg/m}^3$

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

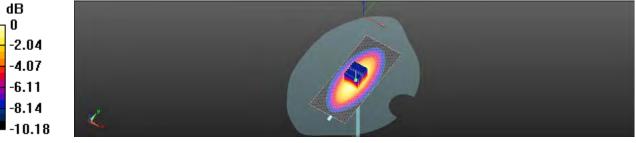
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum 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; $\sigma = 0.939 \text{ S/m}$; $\varepsilon_r = 54.561$; $\rho = 1000 \text{ kg/m}^3$

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,

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

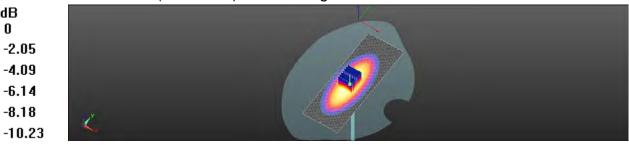
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum 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; $\sigma = 0.87 \text{ S/m}$; $\varepsilon_r = 42.025$; $\rho = 1000 \text{ kg/m}^3$

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, dv=15 mm

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

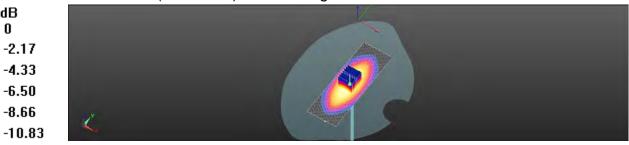
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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; $\sigma = 1.005 \text{ S/m}$; $\varepsilon_r = 53.305$; $\rho = 1000 \text{ kg/m}^3$

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,

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

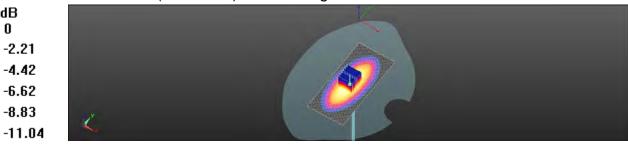
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum 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; $\sigma = 0.918 \text{ S/m}$; $\varepsilon_r = 41.721$; $\rho = 1000 \text{ kg/m}^3$

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, dv=15 mm

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

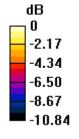
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

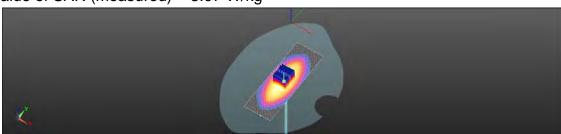
dx=5mm, dy=5mm, dz=5mm

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; $\sigma = 1.006 \text{ S/m}$; $\varepsilon_r = 54.562$; $\rho = 1000 \text{ kg/m}^3$

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,

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

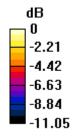
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

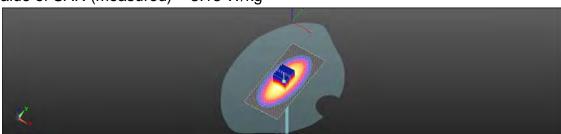
dx=5mm, dy=5mm, dz=5mm

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/kgMaximum 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; $\sigma = 1.332 \text{ S/m}$; $\epsilon_r = 39.861$; $\rho = 1000 \text{ kg/m}^3$

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,

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

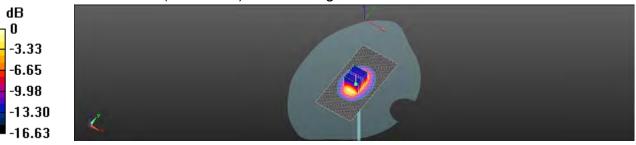
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum 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; $\sigma = 1.431 \text{ S/m}$; $\varepsilon_r = 53.814$; $\rho = 1000 \text{ kg/m}^3$

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,

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

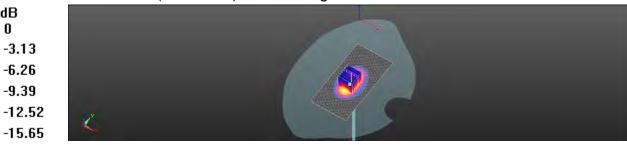
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum 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; $\sigma = 1.396 \text{ S/m}$; $\varepsilon_r = 40.107$; $\rho = 1000 \text{ kg/m}^3$

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

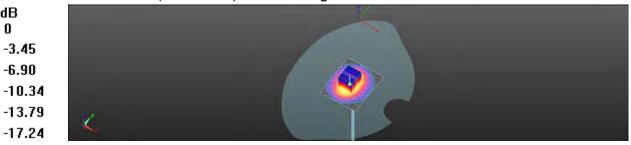
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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; $\sigma = 1.524 \text{ S/m}$; $\varepsilon_r = 52.75$; $\rho = 1000 \text{ kg/m}^3$

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,

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

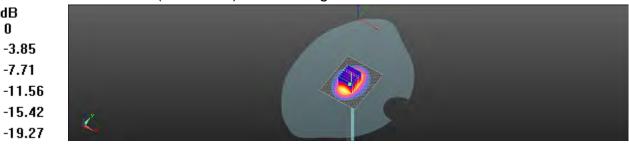
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum value of SAR (measured) = 14.1 W/kg



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

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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; $\sigma = 1.832 \text{ S/m}$; $\varepsilon_r = 38.135$; $\rho = 1000 \text{ kg/m}^3$

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,

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

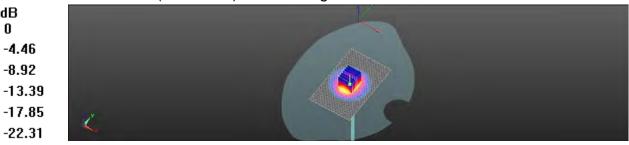
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum 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; $\sigma = 1.944 \text{ S/m}$; $\varepsilon_r = 52.351$; $\rho = 1000 \text{ kg/m}^3$

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, dv=12 mm

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

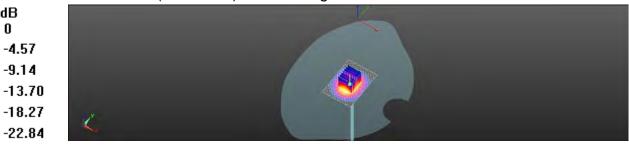
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum value of SAR (measured) = 18.6 W/kg



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

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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; $\sigma = 1.981 \text{ S/m}$; $\varepsilon_r = 39.098$; $\rho = 1000 \text{ kg/m}^3$

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,

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

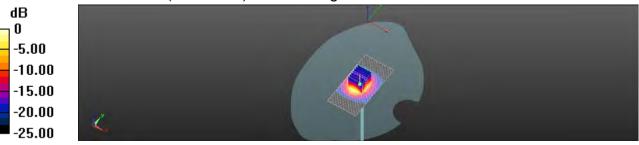
Configuration/Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

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/kgMaximum 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; $\sigma = 2.209 \text{ S/m}$; $\varepsilon_r = 51.45$; $\rho = 1000 \text{ kg/m}^3$

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,

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

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

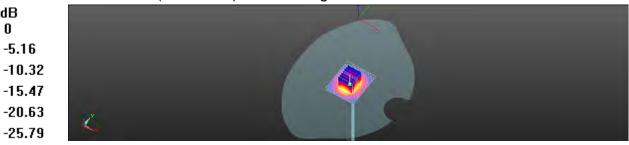
dx=5mm, dy=5mm, dz=5mm

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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7. DAE & Probe Calibration Certificate

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





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

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

Client SGS - TW (Auden)

Accreditation No.: SCS 0108

Certificate No: DAE4-547 Mar17

CALIBRATION C	ERTIFICATE		
Object	DAE4 - SD 000 D	04 BM - SN: 547	
Calibration procedure(s)	QA CAL-06.v29 Calibration proced	lure for the data acquisition electron	onics (DAE)
Calibration date:	March 22, 2017		
The measurements and the unce All calibrations have been condu- Calibration Equipment used (M&	ertainties with confidence proceed in the closed laboratory TE critical for calibration)	nal standards, which realize the physical units obability are given on the following pages and a facility: environment temperature (22 \pm 3)°C a	are part of the certificate.
Primary Standards Keithley Multimeter Type 2001	ID # SN: 0810278	Cal Date (Certificate No.) 09-Sep-16 (No:19065)	Scheduled Calibration Sep-17
nominal manners Type Louis	Dit. Garacia	as out to transcery	Coop 11
Secondary Standards	ID #	Check Date (in house)	Scheduled Check
Auto DAE Calibration Unit Calibrator Box V2.1		05-Jan-17 (in house check) 05-Jan-17 (in house check)	In house check: Jan-18 In house check: Jan-16
	Name	Function	Signature
Calibrated by:	Eric Hainfeld	Technician	
Calibrated by:	Eric Hainfeld	Technician	
Calibrated by: Approved by:	Eric Hainfeld Fin Bomholt	Technician Deputy Technical Manager	. N. B. Jimur
		-	Issued, March 22, 2017

Certificate No: DAE4-547_Mar17

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Calibration Laboratory of

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Accreditation No.: SCS 0108

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Glossary

DAE data acquisition electronics

Connector angle 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

A/D - Converter Resolution nominal

High Range: 6.1hrv . full range = -100, +300 mV Low Range: ILSB = BtnV . full range = -1 - +3mV DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec

Calibration Factors	X	Y	2
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	9104+10
Contractor wildle to be produit which I shotell	910 21

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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

	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

	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	

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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

	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,Ġ	

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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Calibration Laboratory of Schmid & Partner

Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland





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Client SGS - TW (Auden)

Accreditation No.: SCS 0108

Certificate No: DAE4-1336_Nov16

CALIBRATION CERTIFICATE DAE4 - SD 000 D04 BM - SN: 1336 Object Calibration procedure(s) **DA GAL-06-929** Calibration procedure for the data acquisition electronics (DAE) November 22, 2016 This celebration certificate documents the traceability to national standards, which realize the physical units of measurements (Si). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the closed laboratory tectity: environment temperature (22 + 3)°C and flumidity < 70%. Calibration Equipment used (M&TE critical for calibration) ID # Cal Date (Certricate No.) Scheduled Calibration Primery Standards Kertiley Multimeter Type 2001 SN: 0810278 09-Sep-16 (No.19065) Sep-17 Secondary Standards 10.0 Check Date (in house) Schedured Check Auto DAE Calibration Unit SE UWS 063 AA 1001 05-Jan-15 (in house check) In house check: Jan-17 SE UMB 006 AA 1002 06-Jan-16 (in house check) In house check: Jan-17 Calibrator Box V≥ 1 Martin Function Calibrated by: Adrian Genino Tachnician Approved by Deputy Technical Manager Fin Bomhelt Issued November 22, 2016 This calibration certricate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: DAE4-1336_Nov16

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Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





S Schweizerischer Kalibrierdienst
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S Swiss Calibration Service

Accreditation No.: SCS 0108

Accreding by the SWIS Accreditation Service (SAS)
The SWISE Accreditation Service is one of the eignatories to the EA
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Glossary

DAE date acquisition electronics

Connector angle 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.

Dentificate Not DAE4-1835, Nov16

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DC Voltage Measurement

A/D - Converter Resolution nominal High Range: 1LSB = 6.1µV full range = -100 ...+300 mV full range = -1+3mV Low Range TLSE = 61nV DASY measurement parameters. Auto Zero Time: 3 ses; Measuring time: 3 sec.

Calibration Factors	X	Ψ.	Z
High Range	403.332 ± 0.02% (k=2)	403.635 ± 0.02% (k=2)	403,121 ± 0,02% (fc=2)
Low Range	3.95216 ± 1.50% (k=2)	3.98718 ± 1.50% (k=2)	3.99680 ± 1.50% (k=2)

Connector Angle

Participal Annabatic Annabatic Participal of the	400 D.S. 4.5
Connector Angle to be used in DASY system:	122.0 °±1 °

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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
Channel X + Input	20001.25	-0.04	-0.00
Channel X - Input	-19999.81	1.35	-0.01
Channel Y + Input	199994.04	-1.BB	-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	0.00
Channel Z + Input	19999.78	-1.62	-0,01
Channel Z + Input	-20003.24	-2.19	0.01

Low Range	Reading (µV)	Difference (µV)	Ervor (%)
Channel X + Input	2001.87	0.66	0.03
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	-0.48
Channel Y - Input	-198.77	-0.62	0.31
Channel Z + Input	2001.30	0.10	0.01
Channel Z + Input	200,72	-0,71	+0.35
Channel Z - Input	≥199.12	-0.78	0.39

2. Common mode sensitivity

	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	300	-4.23	-3,73
	-500	2.71	18.5
Channel Z	200	20.93	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	9-1	fi.47	+1.27
Channel Y	200	7.97	-	6.72
Channel Z	200	7.94	5,96	2.00

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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	15680	15881
Channel Y	15906	15597
Channel Z	(5853	15173

5. Input Offset Measurement

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

Imput 10Mg

	Average (µV)	min. Offset (μV)	max. Offset (μV)	Std. Deviation (µV)
Channel X	-0.26	⇒1.07	0.37	0.99
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	500	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	

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	-6	.9

Cartificate No: DAE4-1936_Nov16

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Galibration Equipment used (M&TE ontical for calibration)

client SGS-TW (Auden)

Certificate No: EX3-3923 Sep16

CALIBRATION CERTIFICATE Object EX3DV4 - SN:3923 Calibration procedure(s) QA CAL-01.v9, QA CAL-14.v4, QA CAL-23.v5, QA CAL-25.v6 Calibration procedure for dosimetric E-field probes Calibration date: September 2, 2016 This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI). The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate. All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Primary Standards	ID	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	06-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	08-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: S5277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES3DV2	SN: 3013	31-Dec-15 (No. ES3-3013_Dec15)	Dec-16
DAE4	SN: 660	23-Dec-15 (No. DAE4-660_Dec15)	Dec-16
Secondary Standards	ID.	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	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 E4412A	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-15)	In house check: Oct-16

	Name	Function	Signature
Calibrated by:	Michael Weber	Laboratory Technician	M.West
Approved by:	Katja Pokovic	Technical Manager	18th
			Issued: September 2, 2016

Certificate No: EX3-3923_Sep16

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Calibration Laboratory of Schmid & Partner Engineering AG eughausstraesu 43, III004 Zurich, Switzerland





Schweizerischer Kalibrierdienst

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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

Glossary:

tissue simulating liquid NORMX, y, Z sensitivity in free space sensitivity in TSL / NORMx,y,z diade compression point ConvF DCF

crest factor (1/duty_cycle) of the RF signal modulation dependent linearization parameters CF A.B.C.D

Polarization o o rotation around probe axis

8 rotation around an axis that is in the plane normal to probe axis (at measurement center), Polarization 9

i.e., $\beta=0$ 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:

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"

Methods Applied and Interpretation of Parameters:

NORMx,y,z: Assessed for E-field polarization $\vartheta = 0$ (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(t)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

Standard for I ≤ 800 MHz) and inside waveguide using analytical field distributions based on power Standard for 7 = 800 MHz, and fission waveguing analysis and standard for 7 = 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 * CanvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent CanvF 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 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: March 8, 2013 Repaired: August 30, 2016 Calibrated: September 2, 2016

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

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EX3DV4-SN:3923

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) ⁸	101.5	102.8	106.7	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dB√μV	C	D dB	VR mV	Unc (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	
		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%.

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The uncertainties of Norm X,Y,Z do not affect the E²-field uncertainty inside TSL (see Pages 5 and 6).

Numerical linearization parameter: uncertainty not required.

Uncertainty is determined using the max, deviation from linear rissponse applying rectangular distribution and is expressed for the square of the



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EX3DV4-SN:3923

September 2, 2016

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

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^{tr} (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	08.0	±12.09
2000	40.0	1.40	8.92	8.92	8,92	0,34	0.80	±12.09
2450	39.2	1.80	7.95	7.95	7.95	0.33	0.85	± 12.0 9
2600	39.0	1.96	7.77	7:77	7.77	0.33	0.80	± 12.0 9
5250	35.9	4.71	5.36	5.36	5.36	0.30	1.80	±13.19
5600	35.5	5.07	4.94	4.94	4.94	0.40	1.80	±13.19
5750	35.4	5.22	4.96	4.96	4.96	0.40	1.80	± 13.1 9

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 below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 126, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.

All frequencies below 3 GHz, the validity of tissue parameters (c and a) can be released to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (t, and a) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

AppliaDepth 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 3-8 GHz at any distance target than half the probe tip diamoster from the boundary.

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EX3DV4-SN:3923

September 2, 2016

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

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) C	Relative Permittivity F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ⁵	Depth (mm)	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 %

[&]quot;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 ConvE uncertainty at ballbraillor frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ±10, 25, 40, 50 end 70 MHz for ConvE assessments at 30, 64, 123, 150 and 220 MHz respectively. Above 5 GHz frequency validity validity or the extended to ±110 MHz.

At frequencies below 3 GHz, the validity of tissue parameters (a and a) can be released to ±10% if injuid compensation formula is applied to measured SAR values. Afterquencies above 3 GHz, the validity of tissue parameters (it and a) is restricted to ±5%. The uncertainty is the RSS of the ConvE uncertainty for indicated target tissue parameters.

Alpha/Dapth are determined during cathrolic safeAG 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 3-5 GHz at any distance larger than half the probe tip-diameter from the boundary.

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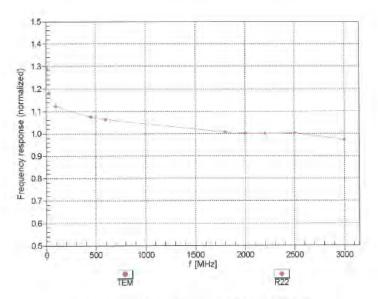
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Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



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

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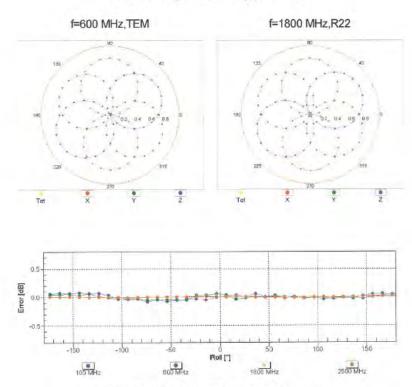
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Receiving Pattern (\$\phi\$), 9 = 0°



Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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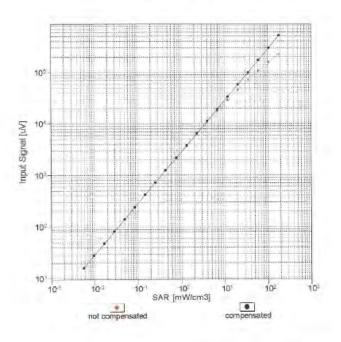
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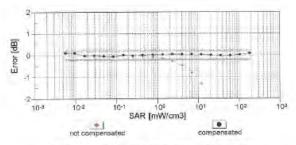


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Dynamic Range f(SAR_{head}) (TEM cell , f_{syal}= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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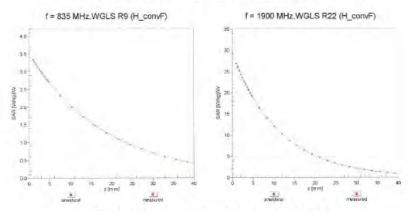
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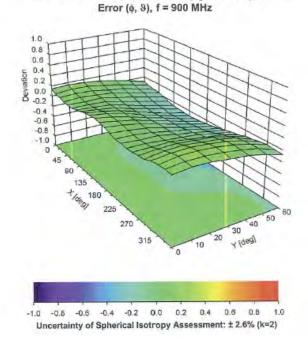
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Conversion Factor Assessment



Deviation from Isotropy in Liquid



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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 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: EX3-3923_Sep16

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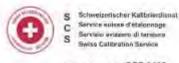
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Calibration Laboratory of Schmid & Partner Engineering AG sughausatusse 43, 9904 Zurich, Switzerland





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Accreditation No.: SCS 0108

SGS-TW (Auden)

Configuration EX3-7466 Jul 17

CALIBRATION CERTIFICATE

EX3DW4 - SN:7466 Object

QA CAL-01.ve, QA CAL-14.W. QA CAL-23.v5. QA CAL-25.v6 Calibration procedure for dosimetric E-field probes Calibratum (micedure)s)

July 4, 2017 Castrition calls

This coloration certificate documents the inscending to national standards, which relation the physical units of measurements (81) The consumerants and the uncertainties with confidence probability are given on the following pages and are part of the confliction.

All calibrations have been conducted in the closed (aboratory facility: environment temperature (22 ± 3)°C and (surviving < 70%)

Calibration Equipment used (M&TE critical for calibration)

Primary Stancards	(D	Gal Date (Certificate No.)	Scheduled Carmetion
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02921/02922)	Apr-18
Power sensor NRP-Z91	SN: 103244	04-Apr-17 (No. 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	04-Apr-17 (No. 217-02525)	Apr-18
Reference 20 dB Affertuator	SN: 58277 (20x)	07-Apr-17 (No. 217-02528)	Apr-18
Reference Probe EB3DV2	SN 3013	21-Dep 16 (No. ES3-3012_Dec16)	Dec-17
DAE4	SNL 660	7-Den-16 (No. DAE4-650_Dec15)	Dec-17
Secondary Standards	0	Check Date (in house)	Scheduled Check
Power meter E44196	-SN: G841293674	Ob-Apr-16 (in hoose check dun-16)	try house chack: Jun-18
Power sensor E4412A	SN: MY41408087	06-Apr-18 (in house check dun-16)	In house chack: Juni 18
Power sersor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-16)	In house check Jun-18
RE generator HP 864BC	EN: US3642U0 1700	(M-Aug-99 (in fiques check Jun-16)	In house sheck, Jun 19
Network Analyzes HP 8753E	SN: US37290585	18-Cct-01 (in house check Oct-16)	In house check: GcI-17

	Name	Function	Signature
Calibrated by	Left Klyemer	Laboratory Technician	Sef The
Azemies by	Каць Роколо	Tecopical Mession	Section -
			(squed: July 0, 2017

Germanie No. EX3-7486_Jul17

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Service seisse d'étale C Servizio svizzoro di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

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Glossary:

lissue simulating fourd NORMs,y,z sensitivity in free space sensitivity in TSL / NORMx,y,z. ConvF diade compression point crest factor (1/duty_cycle) of the RF signal DCP

CF W. B. C. D modulation dependent linearization parameters

Polarization o protation around probe axis

Polarization 5 It rotation around an ows that is in the plane normal to probe axis (at measurement center).

 a = 0 is normal to pribe 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, ""Measurement procedure for the assessment of Specific Absorption Rate (SAR) from handheld and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz", July 2016
IEC 62209-2, "Pracedure to determine the Specific Absorption Rate (SAR) for wireless communication device used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)" March 2010
WIRE ABSECCA. "CAR Measurement Representation for 100 MHz to 6 GHz."

d) KDB 865664, SAR Messurement Requirements for 100 MHz to 6 GHz

Methods Applied and Interpretation of Parameters:

NORM, y, z: Assessed for E-field polarization if = 0 (f ≤ 900 MHz in TEM-cell, f > 1800 MHz. R22 waveguide). NORMs, y, z are only intermediate values, i.e., the uncartainties of NORMs, y, z does not affect the E²-field uncertainty inside TSL (see below ConvF). NORMs(f)x, y, z = NORMs, 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 ConnF.

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

An.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 didde.

ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer ConvF and Boundary Error Parameters: Assessed in this phantom using E-neric (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 companisation (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 NORMx,y,z = ConvF whereby the uncertainty corresponds to that given for ConvF is Requency dependent. Com-F is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz

Spherical (sotropy (30 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 to

(on probe axis). No solerance required.

Connector Angle: The angle is assessed using the information gained by determining the MORM's (no uncertainty required).

Certificate No: EX3-7466_Jul 17

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EX3DV4 - SN:7488 July 4, 2017

Probe EX3DV4

SN:7466

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

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

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EX3DV4-SN:7466

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) ^A	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 dB	B dB√μV	С	D dB	VR mV	Uno [©] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	145.9	±3.0 %
		Υ	0.0	0.0	1.0		148.6	
		Z	0.0	0.0	1.0		130.0	

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%.

Page 4 of 11 Certificate No: EX3-7466 Jul17

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^Δ The uncertainties of Norm X,Y,Z do not affect the E²-field uncertainty 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



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EX3DV4-- SN:7466

July 4, 2017

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

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) ^C	Relative Permittivity ^F	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ⁶ (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 %

^o Frequency validity above 300 MHz of ± 190 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the 1935 of the Conv^o uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for Conv^o assessments at 30, 44, 120, 130 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 510 MHz.

*At frequencies below 3 GHz, the validity of tissue parameters (a and e) can be relaxed to ± 19% if figuid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (a and e) is restricted to ± 5%. The uncertainty is the RSS of the Conv^o uncertainty for indicated target dissue parameters.

*AphsCopth are determined during calibration. SPEAC warrants that the remaining deviation due to the boundary effect after compensation is always lass than ± 1% for frequencies below 3 GHz and below a 2% for frequencies between 3-8 GHz at any distance targer than half the probe 5p dismeter from the boundary.

Certificate No: EX3-7466_Jul17

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July 4, 2017

EX3DV4-SN:7466

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

Calibration Parameter Determined in Body Tissue Simulating Media

anbration	Parameter D	eterminea in	Body H	sue 5im	ulating Me	edia		
f (MHz) ^C	Relative Permittivity F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ⁶	Depth ^G (mm)	Unc (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	10.08	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 %

[©] Firequency validity above 360 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), alse it is restricted to ± 50 MHz. The uncertainty is the RSS of the Com/F uncertainty at distriction frequency and the uncertainty for the indicated frequency band. Firequency validity below 360 MHz is ± 10, 25, 40, 50 and 70 MHz for Com/F assessments at 30, 64, 128, 156 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 10 MHz.

*At frequencies below 3 GHz, the validity of tissue parameters (a and o) can be refused to ± 10% if liquid compensation formula is applied to measured SAR values. Aftergranding above 3 GHz, the validity of tissue parameters (c and o) is restricted to ± 6%. The uncertainty is the RSS of the Com/F uncertainty for indicated target tissue parameters.

*Application are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less fram ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-8 GHz at any distance larger than half the probe tip dismeter from the boundary.

Certificate No: EX3-7466_Jul17 Page 6 of 11

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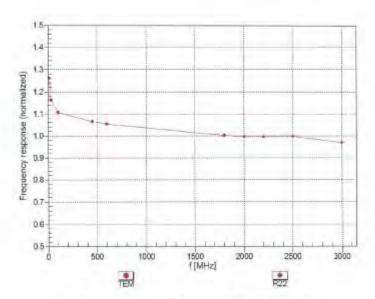


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EX3DV4-SN:7468

July 4, 2017

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



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

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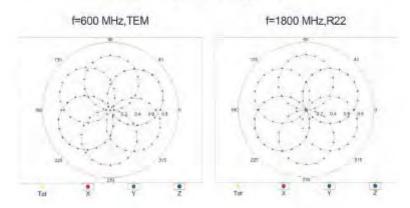
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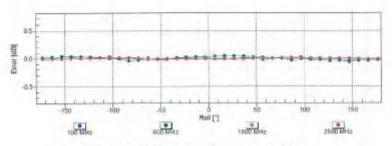


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EX3DV4-SN:7466 July 4, 2017

Receiving Pattern (6), 9 = 0°





Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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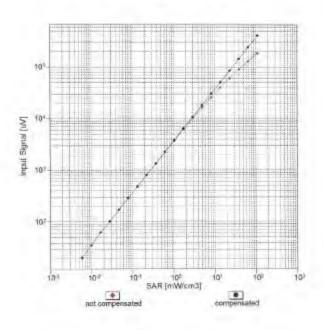
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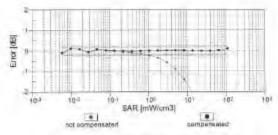


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EX3DV4- SN:7466 July 4, 2017.

Dynamic Range f(SAR_{head}) (TEM cell , f_{eval}= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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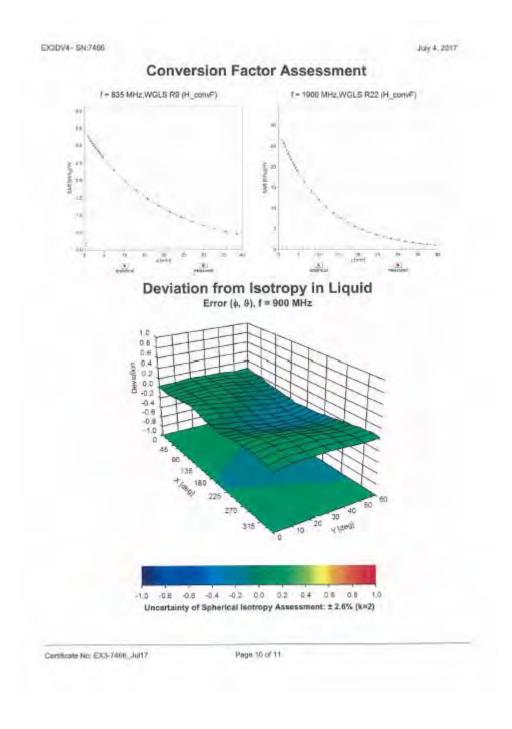
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EX3DV4-- SN:7466

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 Langth	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 Page 11 of 11

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8. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test (0.3-3G)

A	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%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%		√3	1.732	1	1			∞
Isotropy,	9.60%	R	√3	1.732		1	5.54%	5.54%	∞
Hemispherical 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%	∞
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	∞
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	∞
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	∞
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	∞
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%	∞
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.)	3.59%	N	1	1	0.64	0.43	2.30%	1.54%	М
Liquid Conductivity (mea.)	4.25%	N	1	1	0.6	0.49	2.55%	2.08%	М
Combined standard uncertainty		RSS					11.92%	11.70%	
Expant uncertainty (95% confidence							23.84%	23.40%	

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9. Phantom Description

ougheunstraser 43, 80	04 Zurich, Switzelland		g		
none +41 1 245 9700, fo G eorgicom, http://					
Certificate of Co	onformity / First Article Inspecti	on			
tiom	SAM Twin Phensom V4.0		_		
Type No .	QD 000 P40 C				
Series No	TP-1150 and higher				
Manufacturer	SPEAG Zeughausstrasse 43 CH-8004 Zürich				
ests	Switzerland				
complete tests were eries first article Typ sing further series i	n process used allows the imitation to to made on the pre-series Type No. QD 0 pe No. QD 000 P40 BA, Sensi No. TP-1 tens (called samples) or are tested at e	00 P40 AA, Serial No. TP-1 006. Certain parameters ha ach item.	ve been retes		
Test Dimensions	Requirement Compliant with the geometry	Oetalis (TIS CAD File (*)	First article.		
L/HTMPIDELINIS.	according to the CAD model.	II In PART CHE!	Samples		
Material thickness of shell	Compilant with the requirements according to the standards	2mm +/- 0.2mm in flat and specific areas of head section	First article, Samples, TP-1314 ff.		
Motorial thickness at ERP	Compliant with the requirements according to the standards	6mm +/- 0.2mm at ERP	First article, All flems		
Material parameters	Dielectric parameters for required frequencies	300 MHz - 6 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 < 0.6% if filled with 155mm of HSL900 and without OUT below	Prototypes, Sample testing		
(*) The IT'IS CAD f the other docum conformity Issed on the sample equirements of SAR Date	2003 1 tin 65, Supplement C, Edition 01-01 lie is derived from [2] and is also within	in compilence with the unor	ertainty		
Signature / Stamp		ZydyTrauspisses 43, 8004 Zurieh. Phone phj. Lipes Ursov rausk by	245 9773		

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10. System Validation from Original Equipment Supplier

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





S Schweizerischer Kallbrierdienst
C Service suisse d'étalonnage
Servizie svizzere di teretura
S Swiss Calibration Service

Accreditation No.: SCS 0108

According by the Swiss Accordination Service (SAS)
The Swiss Accordination Service is one of the signatures to the EA.

Multilateral Agreement for the recognition of colibration cortificates

Client SG:

SGS-TW (Auden)

Certificate No: D750V3-1015_Aug16

3	ERTIFICATE		
Disjoci	D750V3 - SN: 10	115	
Calibration procedure(s)	QA CAL-05.v9		
	Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Contraine date:	August 30, 2016		
The measurements and the unco	rtainties with confidence p	ional standards, which realize the physical un yobability are given on the following pages an	d are part of the certificate.
All calibrations have been condu Calibration Equipment used (M&		ry facility: anvironment temperature (22 ± 3)*(G and humidity < 70%.
Primary Standards	ID+	Cal Date (Certificate No.)	Schaduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288 02288)	Apr-17
Power sensor NRP-Z91	SN: 103244	06-Apr-15 (No. 217-02288)	Apr-17
ower sensor NRP-Z91	SN: 100245	06-Apr-16 [No. 217-02289]	Apr-17
	SN: 5058 (20k)	05-Apr-16 (No. 217-02292)	Apr-17
Reference 20 dB Attenuator	The state of the s	William Committee of the Committee of	Apr-17
	SN: 5047.2 / 06327	06-Apr-16 (No. 217-02295)	1.84 (1)
Type-N mismatch combination	SN: 5047.2 / 06327 SN: 7349	0G-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7349_Jun16)	Just-17
Type-N mismatch combination Reference Probe EX3DV4	I STATE OF STREET	ACTUAL TO A SECURE AND A SECURE AND A SECURE ASSESSMENT AND A SECURE ASSESSMENT ASSESSME	
Ratarence 20 cB Attenuator Type-N mismatch combination Returence Probe EX3094 DAE4 Secondary Standards	SN: 7349	15-Jun-16 (No. EX3-7349_Jun16)	Jun-17
Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	SN: 7349 SN: 601	15-Jun-16 (No. EX3-7349 Jun-16) 36-Dec-15 (No. DAE4-601 Dec-15)	Jun-17 Dac-16 Scheduled Check
Type-N mismatch combination Returence Prote EXSDV4 DAE4 Secondary Standards Power motor EPM-442A	SN: 7349 SN: 601	15-Jun-16 (No. EX3-7349_Jun16) 30-Cec-15 (No. DAE4-601_Dec15) Check Date (in house)	Jun-17 Dac-16 Scheduled Check In house check Oct-16
Type-N mismatch combination Returnice Prote EX3DV4 DAE4 Secondary Standards Power Index EPM-442A Power stansor HP 8481A	SN: 7349 SN: 601 ID 4 SN: G837460704	15-Jun-16 (No. EX3-7349 _Jun16) 30-Cec-15 (No. DAE4-601 _Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222)	Jun-17 Dec-16 Scheduled Check In house check Oct-16 In house check Oct-16
Type-N mismatch combination Returence Prote EX3094 DAE4 Secondary Standards Power Inster EPM-442A Power sensor HP 8481A	SN: 7349 SN: 601 ID 4 SN: GB37460704 SN: US37292783	15-Jun-16 (No. EX3-7349 Jun16) 36-Cec-15 (No. DAE4-601 Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222)	Jun-17 Dac-16 Scheduled Check In house check Oct-16 In house check Oct-16 In house check Oct-16
Type-N mismatch combination Reference Prote EX30V4 DAE4 Secondary Standards Power moter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	SN: 7349 SN: 601 ID 4 SN: GB37460704 SN: USS7282783 SN: MY41052317	15-Jun-16 (No. EX3-7349 Jun16) 30-Dec-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. 217-02223)	Jun-17 Dec-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Type-N mismatch combination Reterence Probe EX3094 DAE4	SN: 7349 SN: 601 ID 4 SN: G837480704 SN: US57282783 SN: MY41052317 SN: 100972	15-Jun-16 (No. EX3-7349 Jun16) 30-Cec-15 (No. DAE4-601 Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222) 07-Oct-16 (No. 217-02222) 07-Oct-16 (No. 217-02223) 15-Jun-15 (No. 217-02223)	Jun-17 Dec-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Type-N mismatch combination Retarence Prote EX3DV4 DAE4 Secondary Standards Power Instar EPM-442A Power sonsor HP 8481A Power sonsor HP 8481A HF generator R&S SMT-06 Network Analyzer HP 8763E	SN: 7349 SN: 601 ID 4 SN: G837400704 SN: US37282783 SN: MY41082317 SN: 100072 SN: US37380585	15-Jun-16 (No. EX3-7349 Jun16) 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. 217-02223) 15-Jun-15 (in house check Jun-15)	Jun-17 Dec-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Type-N mismatch combination Reterence Probe EX3DV4 DAE4 Secondary Standards Power inster EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06	SN: 7349 SN: 601 ID 4 SN: G837460704 SN: US37282783 SN: MY41082317 SN: 100072 SN: US37390585	15-Jun-16 (No. EX3-7349 Jun16) 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. 217-02223) 15-Jun-15 (in house check Jun-15) 18-Oct-01 (in nouse check Oct-15)	Ast-17 Dac-16
Type-N mismatch combination Returence Prote EX3DV4 DAE4 Secondary Standards Power Instart EPM-442A Power sonsor HP 8481A Promer sensor HP 8481A PF generalor R&S SMT-06 Network Analyzer HP 8763E	SN: 7349 SN: 601 ID 4 SN: G837460704 SN: US37282783 SN: MY41082317 SN: 100072 SN: US37390585	15-Jun-16 (No. EX3-7349 Jun16) 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. 217-02223) 15-Jun-15 (in house check Jun-15) 18-Oct-01 (in nouse check Oct-15)	Jun-17 Dec-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Type-N mismatch combination Returence Probe EXSDV4 DAE4 Secondary Standards Power motor EPM-442A Power sonsor HP 8481A Power sensor HP 8481A Power sensor HP 8481A RE cenerator R&S SMT-06 Network Analyzer HP 8763E Cationaled by:	SN: 7349 SN: 601 ID 4 SN: G837480704 SN: US37282783 SN: MY41082317 SN: 100072 SN: US37390585 Nume Michael Weber	15-Jun-16 (No. EX3-7349 Jun16) 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. 217-02223) 15-Jun-15 (No. 217-02223) 15-Jun-15 (in house check Jun-15) 18-Oct-01 (in house check Jun-15) Function Laboratory Technicien	Jun-17 Dec-16 Scheduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16

Certificate No: D750V3-1015_Aug16

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





Schweizelscher Kalibrierd Service suisse d'étalonnag C Servizio avizzaro di tarature Swigs Calibration Service

creditation No.: SCS 0108

According by the Bass Accordington Service (SAS)

The Series Accorditation Service is one of the signaturies to the EA Multisterni Agreement for the recognition of calibration certific

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
- EC 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: D750V3 1015 Aug10

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Measurement Conditions

DASY system configuration, as far as not given on page 1

Advanced Extrapolation	
Modular Flat Phanton	
13 mm	with Spacer
dx, dy, dz = 5 mm	
750 MHz ± 1 MHz	
	dx, dy, dz = 5 mm

Head TSL parameters

	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 cm² (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.11 W/kg
SAR for nominal Head TSL parameters	normalized to 1VV	8.32 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ² (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1.36 W/kg
SAR for nominal Head TSL parameters	Wr of busilsemen	5.45 W/kg ± 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied:

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22,0 °C	55.5	0,96 mho/m
Measured Body TSI, parameters	(22.0 ± 0.2) °C	54.9 ± 6 %	0,99 mha/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	(_

SAR result with Body TSL

SAR averaged over 1 cm2 (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)

SAR averaged over 10 cm1 (10 g) of Body TSL	condition	
SAFI measured	250 mW input power	1.47 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	5.76 W/kg ± 16.5 % (k=2)

Certificate No: D750V3-1015, Aug 16

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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 Ω - 0.2 <u>μ</u> Ω
Return Loss	- 30.5 dB

Antenna Parameters with Body TSL

Impédance, transformed to feed point	49.0 (2 - 2,8 j(2	
Return Loss	30.5 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 the dipole. The antenne is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the clipple arms in order to improve matching when leaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR date 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	March 22, 2010	

Cartilicate No. 0780V3-1015_Aug16

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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; $\varepsilon_c = 42.4$; p = 1000 kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

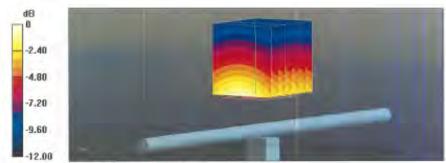
DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 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 [4.6.10(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



0 dB = 2.81 W/kg = 4.49 dBW/kg

Certificate No: D750V3-1015_Aug16

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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; $\sigma = 0.99 \text{ S/m}$; $\epsilon_r = 54.9$; $\rho = 1000 \text{ kg/m}^3$

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: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sp601; Calibrated: 30.12.2015
- · Phanton: 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=5nnm, dy=5nnm, dz=5nnm 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

SAR(1 g) = 2.25 W/kg; SAR(10 g) = 1.47 W/kgMaximum value of SAR (measured) = 2.97 W/kg



0 dB = 2.97 W/kg = 4.73 dBW/kg

Certificate No: D750V3-1015_Aug16

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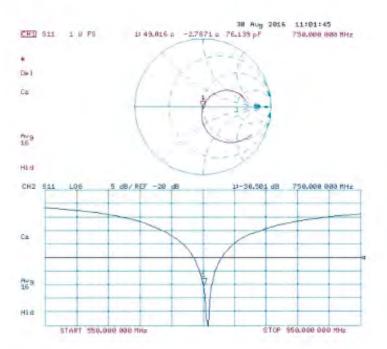
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Impedance Measurement Plot for Body TSL



Certificate No: D750V3-1015_Aug16

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





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Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAB)

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PCC TH (Audus)

jeci	D835V2 - SN:4d6	063	
alibration procedure(t)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ve 700 MHz
Difference days	August 25, 2016		
ne measurements and the once	rtainties with confidence p	onel standents, which realize the physical un- presability are given on the following pages an my facility: emiration of the operations (22 = 3)*1	d are part of the certificate
Calibration Equipment isset (M&	TE critical for custoration)		
Primary Standards	ID #	Cal Dete (Cerifficals No.)	Scheduled Calibration
Power mases NEP	5N: 104778	D6-Apr-15 (No. 217-02288/02289)	Apr-17
Carried House Street			
Cwer sensor NRP-291	SN: 103244	16-Apr-16 (No. 217-02288)	Apr-17
Power sensor MRP-291 Power sensor MRP-291	SN£ 103240	06-Apr-10 (No. 217-02289)	Apr-17
rower sensor MRP-291 rower sensor MRP-291 reference 20 dB Attenuator	SN: 103240 SN: 5058 (20k)	06-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02292)	Apr-57 Apr-57
rower sensor NRP-291 Fower sensor NRP-291 reference 20 dB Attenuator ype-N mismatch combination	SN: 103240 SN: 5058 (20k) SN: 5047 2 / 06327	05-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 317-02295)	Apr-17 Apr-17
rower sensor MRP-291 rower sensor MRP-291 reference 20 dB Attenuator ype-N mismatch combination reference Prote EX3DV4	SNL 103240 SNL 5058 (20k) SNL 5047 2 / 06327 SNL 7348	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7340_Jun16)	Apr-17 Apr-17 Jun-17
Cover sensor NRF-291 Cover sensor NRF-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Prote EXSDV4	SN: 103240 SN: 5058 (20k) SN: 5047 2 / 06327	05-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 317-02295)	Apr-17 Apr-17
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuatur Type-N mismatch combination Reference Probe EXSDV4 DAE4	SNL 103240 SNL 5058 (20k) SNL 5047 2 / 06327 SNL 7348	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7340_Jun16)	Apr-17 Apr-17 Jun-17
Power sensor NRP-281 Power sensor NRP-281 Power sensor NRP-281 Reference 20 dB Attenuarin Pope-N mismatch combination Reference Probe EXSDV4 DAE4 Biscondary Standards	SN: 103240 SN: 5058 (20k) SN: 5047 2 / 06327 SN: 7348 SN: 604	00-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02295) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7340_Jun16) 30-Dec-15 (No. DAE4-B01_Dec15)	Apr-57 Apr-57 Apr-17 Jun-17 Dec-16
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4 DAE4 Secondary Stantiside Power meter EFM-142A	SN: 103240 SN: 5058 (204) SN: 5047 2 / 06327 SN: 7340 SN: 664	06-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7340_Jun16) 30-Dec-15 (No. DAE4-801_Dec15) Check Date (in house)	Apr-57 Apr-17 Apr-17 Jun-17 Den-16 Benedulen Check
Power sensor NRP-281 Power sensor NRP-291 Reference 20 BB Attenualur Type-N mismatch combination Reference Probe EXSDV4 DAE4 Secondary Standards Power meter EPN-142A Power sensor HP 5481A	SN: 103240 SN: 5058 (204) SN: 9617 2 (106327 SN: 7348 SN: 661	06-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7340_Jun16) 30-Dec-15 (No. DAE4-801_Dec15) Chock Date (In house) 07-Oct-16 (No. 217-02222)	Apr-17 Apr-17 Apr-17 Jun-17 Deb-16 Sepectation Check In house check: Dct-18
Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuatur Poye-N mismatch combination Reference Probe EXSDV4 DAE4 Biscondary Standards Power meter EFN-142A Power sensor HP 8481A	SNL 103240 SNL 5058 (204) SNL 5058 (204) SNL 5047 2 (106327 SNL 504 SNL 504 SNL 5057202783	06-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 317-02295) 15-Jun-16 (No. EX3-7340_Jun16) 30-Dec-15 (No. DAE4-B01_Dec15) Chock Date (In house) 07-Oct-15 (No. 217-02222) 07-Oct-16 (No. 217-02222)	Apr-17 Apr-17 Apr-17 Jun-17 Den-16 Senschlied Check In house check: Oct-18 In house check: Oct-18
Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power mismatch combination Reference Proter EXSDV4 JAE4 Secondary Standards Power meter EPM-142A Power sensor HP 34814 DE generator F&S SMT-06	SN: 103240 SN: 5058 (204) SN: 5047 2 / 06327 SN: 7340 SN: 667 ID 4 SN: GB37480704 SN: US37292783 SN: MV41002317	06-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7340_Jun16) 30-Dec-15 (No. DAE4-B01_Dec-15) Check Date (In nouse) 07-Oct-16 (No. 217-02222) 07-Oct-16 (No. 217-02222)	April 7 April 7 April 7 April 7 Junil 7 Junil 7 Jenil 6 Beneduted Eheck In house check: Detil 6 In house check: Detil 6 In house check: Detil 6
Power sensor NRP-281 Power sensor NRP-291 Reference 20 dB Attenuatur Type-N mismatch combination Reference Probe EXSOV4 DAE4 Secondary Standards Power meter EPN-142A Power sensor HP 8481A DF generator FBS SMT-06	SN: 103240 SN: 5058 (204) SN: 5058 (204) SN: 5061 SN: 5061 SN: GES7/480704 SN: USS7/502783 SN: MV4100/317 SN: 100972 SN: USS7/39/305	06-Apr-10 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. 203-7940_Jun16) 30-Dec-15 (No. DAE4-B01_Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222) 07-Oct-16 (No. 217-02222) 07-Oct-16 (No. 217-02223) 15-Jun-15 (in house others Jun-10)	Apr-17 Apr-17 Apr-17 Jun-17 Dec-16 Senschled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuation Type-N mismatch combination Reference Probe EXSDV4 DAE4 Secondary Standards Power meter EPN-142A Power sensor HP 8481A Fromerous F&S SMT-06 Veleron, Ansiyzer HP 8753E	SN: 103240 SN: 5058 (204) SN: 5067 (2 / 06327 SN: 7340 SN: 660 SN: GB37480704 SN: GB37480704 SN: US37202783 SN: MV41002317 SN: 100872 SN: US37390505	06-Apr-10 (Nn. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. EX2-7340_Jun16) 30-Dec-15 (No. DAS-4-B01_Dec15) Chock 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. 217-02223) 15-Jun-15 (in house check Jun-10) 18-Oct-07 (in house check Jun-10) 18-Oct-07 (in house check Jun-10)	Apr-17 Apr-17 Apr-17 Jun-17 Deb-16 Sepectuled Check In house check: Oct-16
Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuation Type-N mismatch combination Reference Probe EXSDV4 DAE4 Secondary Standards Power meter EPN-142A Power sensor HP 8481A Fromerous F&S SMT-06 Veleron, Ansiyzer HP 8753E	SN: 103240 SN: 5058 (204) SN: 5058 (204) SN: 5061 SN: 5061 SN: GES7/480704 SN: USS7/502783 SN: MV4100/317 SN: 100972 SN: USS7/39/305	06-Apr-10 (No. 217-0288) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02293) 15-Jun-16 (No. 217-02293) 15-Jun-16 (No. DAS-4-801_Dac15) Check Date (in house) 07-Oct-16 (No. 217-02222) 07-Oct-16 (No. 217-02222) 07-Oct-16 (No. 217-02223) 15-Jun-16 (in house check Jun-10) 18-Oct-07 (in house check Jun-10)	Apr-17 Apr-17 Apr-17 Jun-17 Deb-16 Sepectuled Check In house check: Oct-16
Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EXSDV4 DAE4 Biscondary Standards Power meter EPN-142A Power sensor HP 8481A DF generalor FAS SMT-OS Network Analyzer HP 8753IE Cathrared by: Approved try:	SN: 103240 SN: 5058 (204) SN: 5067 (2 / 06327 SN: 7340 SN: 660 SN: GB37480704 SN: GB37480704 SN: US37202783 SN: MV41002317 SN: 100872 SN: US37390505	06-Apr-10 (Nn. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. EX2-7340_Jun16) 30-Dec-15 (No. DAS-4-B01_Dec15) Chock 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. 217-02223) 15-Jun-15 (in house check Jun-10) 18-Oct-07 (in house check Jun-10) 18-Oct-07 (in house check Jun-10)	Aprint Aprint Aprint Aprint Juni17 Debi16 Sepectuled Check In house check: Oct-16

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Glossary:

TSL

tissue simulating liquid

ConvF N/A sensitivity in TSL / NORM x,y,z 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
- EC 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%.

Gertilipate No. Dea5V3-4d063_Aug16

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Measurement Conditions

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

The following parameters and calculations were applied.

	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 mha/m ± 6 %
Head TSL lemperature 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	2.40 W/kg
SAR for nominal Head TSL parameters	W of basilermon	9.40 W/kg = 17.0 % (k=2)

SAR averaged over 10 cm² (10 g) of Head TSL	condition	
SAFI measured	250 mW input power	1.54 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.05 W/kg ± 16.5 % (k=2)

Body TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mhovm
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.7 ± 6.%	1.01 mborn = 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	2.47 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9,57 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm2 (10 g) of Body TSL	candition	
SAR measured	250 mW input power	1.81 W/kg
SAFI for nominal Body TSL parameters	normalized to tW	8,28 W/kg ± 16,5 % (k=2)

Certificate No: D835V2-4d063_Aug16

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impadance, transformed to feed point	51.2 D - 2.8 ju	
Réturn Loss	-30,3 dS	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.3 Ω - 5,5 jΩ
Relum Loss	-24.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.392 ns

After long term use with 100W radiated power, only a slight warming of the dipole near the leedpoint 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 lesided according to the position as explained in the "Messurement Conditions" paragraph. The SAFI data are not affected by this change. The dverall dipole length is still according to the Standard.

No excussive force must be applied to the dipole arms, because they might bend to the subleted connections near the feedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	November 27, 2006	

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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; $\epsilon_i = 42.1$; $\rho = 1000$ 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

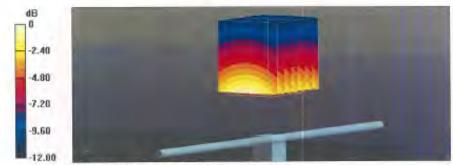
Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001

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) = 1.54 W/kg



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

Certificate No: D835V2-4d063_Aug16

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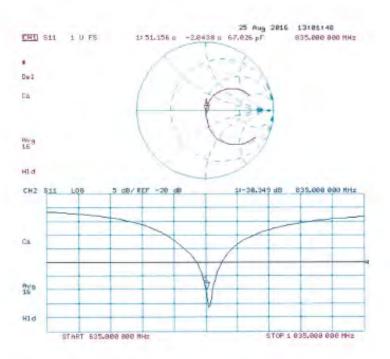
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號

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Impedance Measurement Plot for Head TSL



Certificate No: D635V2-4d063_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; $\epsilon_c = 54.7$; $\rho = 1000$ kg/m²

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: L4mm (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)

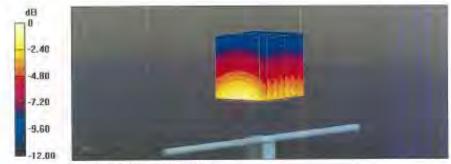
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

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



0 dB = 3.25 W/kg = 5.12 dBW/kg

Gerillicate No: DB35V2-4d003_Aug16

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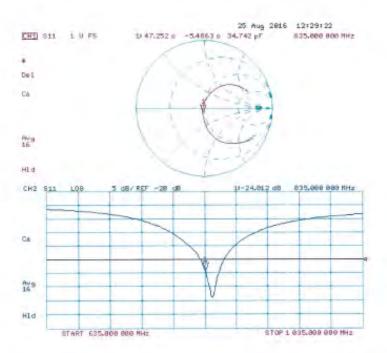
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Impedance Measurement Plot for Body TSL



Certificate No: D835V2-4d063_Aug16

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Calibration Laboratory of

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Accreditation No.: SCS 0108

CALIBRATION C	ERTIFICATE		
Doject	D835V2 - SN:4d1	120	
Calibration procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ye 700 MHz
Calibration date:	July 03, 2017		
All calibrations have been portion	ded in the closed laborato	recobility are given on the following paper on ny lactiny invircement temperature (22 ± 3) $^{\circ}$ 0	
Calibration Equipment used (M&	the state of the s	Andrew Security	Scheduled Calibration
Primary Standards	ID #	Cal Date (Certificate No.)	
Power motor NRP	SN: 104778	04-Apr-17 (No. 217-82521/82522)	Apr-16 Apr-16
Power sensor NRP-Z91 Power sensor NRP-Z91	SN: 103244 SN: 103245	04-Apr-17 (No. 217-82521) 04-Apr-17 (No. 217-82522)	April 18
	SN: 5058 (20k)	07-Apr-17 (No. 217-02526).	Apr-18
		DI ARBITT HAD ELL GENEDY	
Reference 20 of Afferwator		AT Apr. 17 (No. 217 (49535)	A67-18
Heterence 20 dB Attenuator Type-N mismatch combination	SN: 5047.2 / 08327	07-Apr-17 (No. 217-02529)	Apr.18 May-18
Reference 20 dB Affectuator Type-N mismatch combination Reference Probe EXSDV4		07-Apr-17 (No. 217-02529) 31-May-17 (No. EX3-7349, May17) 28-Mar-17 (No. DAE4-601_Mar17)	Apr-18 May-10 Mar-18
Heterence 20 dB Affertuator Type-N mismatch combination Reference Probe EXSDV4	SN: 5047 2 / 06327 SN: 7349	31-May-17 (No. EX3-7349_May17).	May-10
Reference 20 cts Afferwator Type-N mismajch combination Reference Probe EX30V4 DAE4 Secondary Standards	SN: 5047 2 / 06327 SN: 7348 SN: 601	31-May-17 (No. EX3-7349, May17) 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 09-Det-15 (in house chack Oct-16)	May-18 Mar-18 Scheduled Chock
Heference 20 ctf Affensator Type-N mismatch combination Reference Probe EX3DV4 DAE4	SN: 5047 2 / 06327 SN: 7348 SN: 601 ID # SN: GB37490704 SN: US37292783	31-May-17 (No. EX3-7349, 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)	May-10 Mar-18 Scheduled Chock In house check: Oct-18 In house check: Oct-18
Reference 20 dB Afferwator Type-N mismatch combination Reference Probe EXSDV4 DAE4 Secondary Standards Power major EFM-442A	SN: 5047 2 / 08327 SN: 7348 SN: 601 ID 4 SN: GB37490704	31-May-17 (No. EX3-7349, May17), 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 09-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16)	May-18 Scheduled Chock In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Heterence 20 cts Afferwator Type-N mismajch combination Birterence Probe EX30V4 DAE4 Secondary Standards Power mistor EPM-442A Power sensor HP 8481A Fower sensor HP 6481A	SN: 5047 2 / 06327 SN: 7348 SN: 501 ID 4 SN: GB37490704 SN: US37292783 SN: MY41002317 SN: 100972	31-May-17 (No. EX3-7349, May17), 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16)	May-18 Scheduled Chock In house check: Cict-18 In house check: Cict-18 In house check: Cict-18 In house check: Cict-18
Reference 20 cts Afterwator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Stecondary Standards Power mistor EPM-442A Power sensor HP 8481A RE-generator R&S SMT-06	SN: 5047 2 / 06327 SN: 7348 SN: 601 ID 4 SN: GB37490704 SN: US37292783 SN: MY41082317	31-May-17 (No. EX3-7349, May17), 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 09-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16)	May-18 Scheduled Chock In house check: Cict-18 In house check: Cict-18 In house check: Cict-18 In house check: Cict-18
Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX30V4 DAE4 DAE4 Secondary Standards Power major EFM-442A Power sensor HP 8481A Reference INP 8481A RE-generator R&S SMF-06 Network Analyzer HP 8753E	SN: 5047 2 / 06327 SN: 7048 SN: 601 ID 4 SN: GB97490704 SN: US37292783 SN: MY41002317 SN: 100972 SN: US37390585	31-May-17 (No. EX3-7349, 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) 15-Jun-15 (in house check Oct-16) 18-Oct-01 (in house check Oct-16)	May-10 Mar-18
Reference 20 dB Attenuator Type-N mismajch combination Reference Probe EX30V4 DAE4 Secondary Standards Power metry EPM-442A Power sensor HP 8481A Reference RESSMT-06	SN: 5047 2 / 06327 SN: 7348 SN: 501 ID 4 SN: GB37490704 SN: US37292783 SN: MY41002317 SN: 106972 SN: US37390685	31-May-17 (No. EX3-7349, May17) 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 09-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)	May-10 Mar-18 Scheduled Chook 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 Reference Probe EX30V4 DAE4 DAE4 Secondary Standards Power major EFM-442A Power sensor HP 8481A Reference INP 8481A RE-generator R&S SMF-06 Network Analyzer HP 8753E	SN: 5047 2 / 06327 SN: 7048 SN: 601 ID 4 SN: GB97490704 SN: US37292783 SN: MY41002317 SN: 100972 SN: US37390585	31-May-17 (No. EX3-7349, 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) 15-Jun-15 (in house check Oct-16) 18-Oct-01 (in house check Oct-16)	May-10 Mar-18 Scheduled Chook 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 mismajch combination Reference Probe EXSDV4 DAE4 Secondary Standards Power metric EPM-442A Power sensor HP 6481A RF generator R&S SMF-06 Network Analyzer HP 8753E Celibrated by	SN: 5047 2 / 06327 SN: 7048 SN: 501 ID # SN: GB37490704 SN: US37292783 SN: MY41002317 SN: 100972 SN: US37390585 Name Jeton Kashati	31-May-17 (No. EX3-7349, May17) 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 09-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 (iii house check Oct-16) Function Laboratory Technician	May-18 Scheduled Chock In house check: Cot-18 In house check: Cot-18 In house check: Cot-18 In house check: Cot-18 In house check: Cot-17

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Accreditation No.: SCS 0106

According by the Swiss Accordington Service (SAS)

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Glossary:

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 52209-2, "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%.

Direllicate No. (3835Y5-4d120_0417)

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Measurement Conditions

DASY Version	DASY5	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

	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	-	See all

SAR result with Head TSL

SAR averaged over 1 cm* (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 cm3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	1,58 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	6.19 W/kg ± 16.5 % (k=2)

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 ± 6 %	1,00 mha/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		>

SAR result with Body TSI

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition.	
SAR measured	250 mW input power	2.48 W/kg
SAR for nominal Body TSL parameters	Wil at bestamion	9.66 W/kg ± 17.0 % (k=2)

SAR averaged over 10 cm ⁴ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	1.62 W/kg
SAR for nominal Body TSL parameters.	normalized to 1W	6.36 W/kg a 16.5 % (k=2)

Certificate No. D835V2-4d120 Jul17

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impetiance, transformed to feed point	51.2 (1 - 2.3 (0
Return Lose	+31.7 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.3 12 -4.7 (12	
Rehim Loss	-25,9 dB	

General Antenna Parameters and Design

Electrical Delay (one direction)	1.397 ns
mineral and the control of	

After long term use with 100W radiated power, only a slight warming of the cipcio inter-the lengthorn cart be treasured.

The dipole is made of standard semirigid coaxial cable. The center conductor of the leading line is directly connected in the second arm of the dipole. The antenna a 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 cipole arms, because they might band or the soldered connections near the feedpoint may be damaged.

Additional EUT Data

SPEAG
June 29, 2010

Continents No. DR35V2-4d120, 3/017

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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; $\sigma = 0.93$ S/m; $\epsilon_r = 41$; 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=5nun, 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



0 dB = 3.31 W/kg = 5.20 dBW/kg

Certificate No: D835V2-4d120 Jul 17

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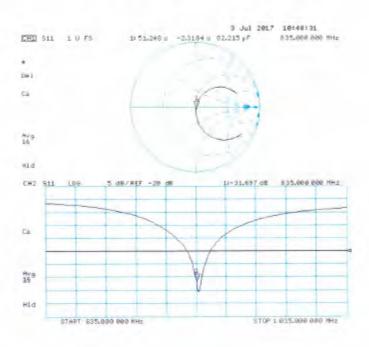
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Impedance Measurement Plot for Head TSL



Certificate No: D835V2-4d120_Jul17

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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; $\sigma = 1 \text{ S/m}$; $\varepsilon_r = 54.7$; $\rho = 1000 \text{ kg/m}^3$

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)

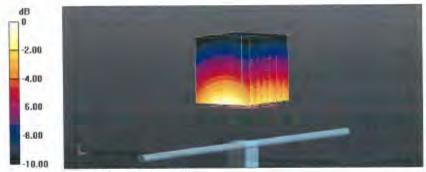
Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0:

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



0 dB = 3.29 W/kg = 5.17 dBW/kg

Certificate No: D835V2-4d120_Jul17

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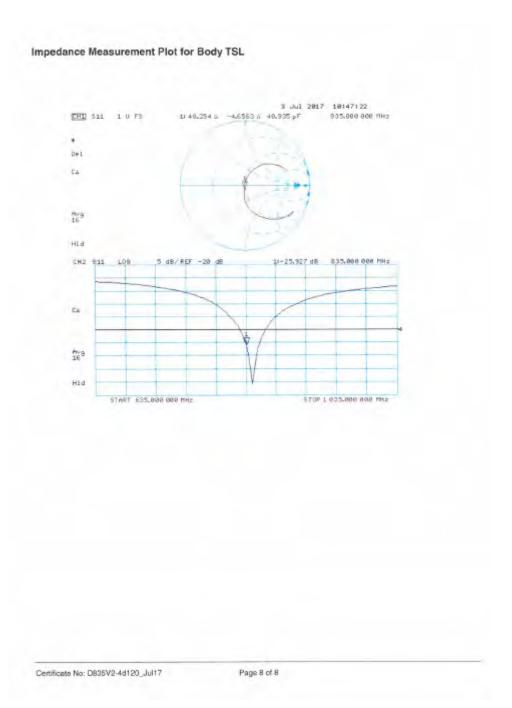
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C Service sulsse d'étalonnage
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Accreditation No.: SCS 0108

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Client

SGS-TW (Auden)

Continue No. D1750V2-1008 Aug 16

	ERTIFICATE		
Disject	D1750V2 - SN:10	900	
Calibration procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Calibration date:	August 31, 2016		
The measurements and the unce	rtainties with confidence p	ional standards, which routize the physical un robetvity are given on the following pages an ry lacility: environment température (25 ± 3)*(chare part of the cestificate.
Calibration Equipment used (M&		a la como de la lice	Scheduled Calibration
Printary Standards	ID# SN: 164778	Cal Date (Certificate No.) 06-April 16 (No. 217-02288/02299)	Apr-17
lower meter NAP	SN: 103244	06-Ap-16 (No. 217-02288)	Apr-17
	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
	SN: 5058 (20k)	05-Apr-15 (No 217-02292)	A0r-17
Miles and a second transfer or A To		OC MALLO MAN KIN OPERCY	(30-11
Reference 20 dB Attenuator		06-Apr-18 (No. 217-02296)	Apr-17
eference 20 dB Attenuator ype-N mismatch combination	SN: 5047.2 / 06327	05-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7349 Jun 16)	Apr-17
Reference 20 dB Attenuator Fype-N mismatch combination Reference Probe EX3DV4		05-Apr-16 (No. 217-02295) 15-Jun-16 (No. EX3-7345_Jun16) 30-Dec-15 (No. DAE4-601_Dec15)	Apr-17 Jun-17 Dec-16
Reference 20 dB Attenuator Type-N mismatch combinetion Reference Probe EX3DV4 DAE4	SN: 5047.2 / 06827 SN: 7349	15-Jun-16 (No. EX3-7345_Jun16)	Jun-17 Dec-16 Scheduled Check
leterence 20 dB Attenuator type-N mismatch combination leterence Probe EX3DV4 3AE4 Secondary Standards	SN: 5047.2 / 06927 SN: 7349 SN: 601 ID 4 SN: GB37480704	15-Jun-16 (No. EX3-7349 Jun16) 30-Dec-15 (No. DAE4-601 Dec15) Check Date (in house) 07-Oct-15 (No. 217-02282)	Jun-17 Dec-16 Scheduled Check In house dheck: Oct-16
telesence 20 dB Attenuation ype-N mismatch combination telesence Protee EX3DV4 NAE4 secondary Standards rower mater EPN-442A pwer sensor HP 8461A	SN: 5047.2 / 06927 SN: 7348 SN: 601 ID 4 SN: 5837480704 SN: US37292783	15-Jun-16 (No. EX3-7348 Jun16) 30-Dec-15 (No. DAE4-601 Dec15) Check Date (in house) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222)	Jun-17 Dac-16 Scheduled Check In house check: Oct-16 In house check: Oct-16
Reference 20 dB Attenuation Pupe-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power mater EPN-442A Power sensor HP 8481A	SN: 5047.2 / 08327 SN: 7348 SN: 601 D 4 SN: G837480704 SN: US37202783 SN: MY41092317	15-Jun-16 (No. EX3-7349 Jun16) 30-Dec-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. 217-02223)	Jun-17 Dac-16 Scheduled Check In house dheck: Oct-16 In house check: Oct-18 In house check: Oct-18
Reference 20 dB Attenuation Pype-N mismatch combination Reference Probe EX3DV4 DAE4 Recondary Standards Power meter EPN-442A Power sensor HP 8481A RF generator RSS SMT-00	SN: 5047.2 / 06827 SN: 7348 SN: 601 SN: 6837480704 SN: G837480704 SN: US37292783 SN: MY41092317 SN: 100972	15-Jun-16 (No. EX3-7349 Jun16) 30-Dec-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. 217-02223) 15-Jun-15 (in house check Jun-15)	Jun-17 Dac-16 Scheduled Check In house dheck: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Reference 20 dB Attenuation Pype-N mismatch combination Reference Probe EX3DV4 DAE4 Recondary Standards Power meter EPN-442A Power sensor HP 8481A RF generator RSS SMT-00	SN: 5047.2 / 08327 SN: 7348 SN: 601 D 4 SN: G837480704 SN: US37202783 SN: MY41092317	15-Jun-16 (No. EX3-7349 Jun16) 30-Dec-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. 217-02223)	Jun-17 Dac+16 Scheduled Check In house dheck: Oct-16 In house check: Oct-16 In house check: Oct-16
Retirience 20 dB Attenuation Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power mater EPN-142A Power sensor HP 8491A Prower sensor HP 8491A RF generator R&S SMT-05 Network Analyzer HP 8753E	SN: 5047.2 / 06827 SN: 7348 SN: 601 SN: 6037480704 SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390586 Name	15-Jun-16 (No. EX3-7348_Jun16) 30-Dec-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. 217-02223) 15-Jun-15 (in house check Jun-15) 18-Oct-01 (in house check Dec15)	Jun-17 Dac-16 Scheduled Check In house dheck: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Power sensor NRP-Z91 Reference 20 dB Attenuator Fype-N mismatch combined on Reference Probe EX3DV4 EAE4 Secondary Standards Power mater EPN-442A Power sensor HP B491A Power sensor HP B491A RF generator RSS SMT-05 Network Analyzer HP 8753E Calibrated by.	SN: 5047.2 / 06827 SN: 7349 SN: 601 4D 4 SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37290586	15-Jun-16 (No. EX3-7348 Jun16) 30-Dec-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. 217-02223) 15-Jun-15 (in house check Jun-15)	Jun-17 Dac-16 Schieduled Check In house check: Oct-16 In house check: Oct-16 In house check: Oct-16 In house check: Oct-16
Retirience 20 dB Attenuation Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power mater EPN-142A Power sensor HP 8491A Prower sensor HP 8491A RF generator R&S SMT-05 Network Analyzer HP 8753E	SN: 5047.2 / 06827 SN: 7348 SN: 601 SN: 6037480704 SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390586 Name	15-Jun-16 (No. EX3-7348_Jun16) 30-Dec-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. 217-02223) 15-Jun-15 (in house check Jun-15) 18-Oct-01 (in house check Dec15)	Jun-17 Dac-16 Schieduled 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

Certificate No: D1750V2-1008_Aug16

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Glossary:

TSL CanvF

N/A

tissue simulating liquid

sensitivity in TSL / NORM x,y,z 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%.

Geridicate No. D1750V2-1006, Aug 16.

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Measurement Conditions

DASY system configuration, as far as not given an page 1.

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phanton	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 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	40:3 ± 8 %	1:37 mha/m ± 8 %
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	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 cm3 (10 g) of Head TSL	condition	
SAR measured	250 mW input power	4.90 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	19,6 W/kg ± 16,5 % (k=2)

Body TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53,4	1,49 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 cm2 (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 ³ (10 g) of Body TSL	condition	
SAR measured	250 mW input power	4.96 W/kg
SAR for nominal Body TSL parameters	mormalized to 1W	19.9 W/kg ± 16.5 % (k=2)

Certificate No. D1750V2-1009_Aug18.

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to load point	51.0 Ω - 0.2 jΩ	
Return Loss	-40.1 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.7 Ω - 0.5 jΩ
Return Loss	29,3 tlB

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 feedpoint can be measured.

The dipole is made of standard semingid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The entenna is therefore short-circulied 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 date are not affected by this change. The overell 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	May 27, 2003

Cartillosle No: D1756V2-1008_Aug16

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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; $\sigma = 1.37 \text{ S/m}$; $\epsilon_r = 40.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

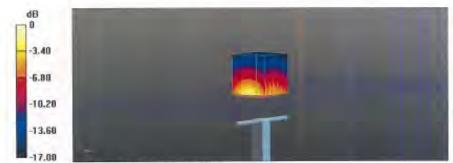
DASY52 Configuration:

- 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: 1003
- 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



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

Certificate No: D1750V2-1008_Aug16

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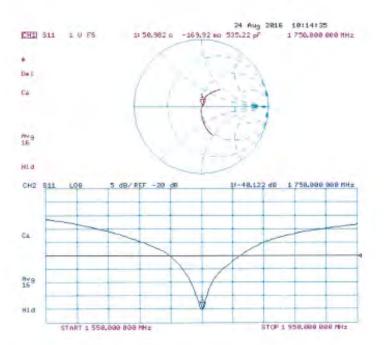
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Impedance Measurement Plot for Head TSL



Certificate No: D1750V2-1008_Aug16

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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; $\sigma = 1.49 \text{ S/m}$; $\varepsilon_c = 53.1$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

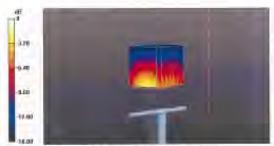
DASY52 Configuration:

- 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=5rnm, dy=5rnm, 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/kgMaximum value of SAR (measured) = 13.9 W/kg



0 dB = 13.9 W/kg = 11.43 dBW/kg

Certificate No: D1750V2-1008_Aug16

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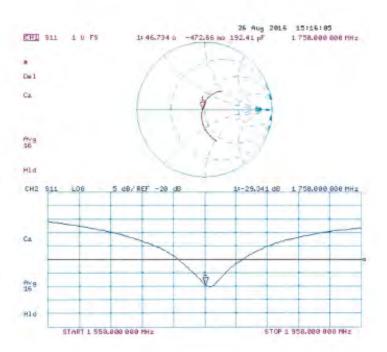
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Impedance Measurement Plot for Body TSL



Certificate No: D1750V2-1008 Aug16

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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)

Certificate No: D1900V2-5d173_May17

Object	D1900V2 - SN:50	173	
Calibration procedure(s)	QA CAL-05.v9 Calibration procedure for dipole validation kits above 700 MHz		
Calibration date:	May 31, 2017		
The measurements and the uncer	tainties with confidence p	onal standards, which realize the physical uni- robability are given on the following pages and y facility: environment temperature $(22\pm3)^2$ C	d are part of the certificate.
Calibrations have been conduct Calibration Equipment used (M&T		y lability. environment temperature (EE 2 5)	a direction of the control of the co
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
	ID # SN: 104778	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/02522)	Scheduled Calibration Apr-18
Power meter NRP		Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521)	
Power meter NRP Power sensor NRP-Z91	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91	SN: 104778 SN: 103244	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521)	Apr-18 Apr-18
Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator	SN: 104778 SN: 103244 SN: 103245	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522)	Apr-18 Apr-18 Apr-18
Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528)	Apr-18 Apr-18 Apr-18 Apr-18
Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18
Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7460	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18
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	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7460 SN: 601	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7480_May17) 28-May-17 (No. DAE4-601_Mar17)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 Mar-18
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	SN: 104778 SN: 103244 SN: 103245 SN: 5056 (20k) SN: 5047.2 / 06327 SN: 7460 SN: 601	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17) 28-May-17 (No. DAE4-601_Mar17) Check Date (in house)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 May-18 Mar-18
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	SN: 104778 SN: 103244 SN: 103244 SN: 5058 (20k) SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7460 SN: 601	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17) 28-May-17 (No. DAE4-601_Mar17) Check Date (in house) 07-0ct-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 May-18 Mar-18 Scheduled Check In house check: Oct-18
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	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 7460 SN: 601	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 19-May-17 (No. EX3-7460_May17) 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 May-18 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18
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	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 7460 SN: 601	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 19-May-17 (No. EX3-7480_May17) 28-May-17 (No. EX3-7480_May17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 May-18 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
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 RE generator R&S SMT-06	SN: 104778 SN: 103244 SN: 103245 SN: 5056 (20k) SN: 5047.2 / 06327 SN: 7460 SN: 601	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 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) 15-Jun-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
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 RF generator R&S SMT-06 Network Analyzer HP 8753E	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 7460 SN: 601 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585 Name	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 19-May-17 (No. EX3-7460_May17) 28-May-17 (No. EX3-7460_May17) Chack Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 18-Dct-01 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 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-19 In house check: Oct-17
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 RE generator R&S SMT-06	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 7460 SN: 601 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585	04-Apr-17 (No. 217-02521)02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 19-May-17 (No. 217-02529) 19-May-17 (No. DAE4-601_May17) 28-May-17 (No. DAE4-601_May17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 18-Oct-01 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 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-19 In house check: Oct-17
Power sensor HP 8481Ä RF generator R&S SMT-06 Network Analyzer HP 8753E	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 7460 SN: 601 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585 Name	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 19-May-17 (No. EX3-7460_May17) 28-May-17 (No. EX3-7460_May17) Chack Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 18-Dct-01 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 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-19 In house check: Oct-17

Certificate No: D1900V2-5d173_May17

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S Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS)

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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:

- 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 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 wheless 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

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	1900 MHz ± 1 MHz	

Head TSL parameters

	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	can)	17001

SAR result with Head TSL

SAR averaged over 1 cm3 (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)

SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR measured	250 mW input power	5.26 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	21.1 W/kg ± 16.5 % (k=2)

Body TSL parameters

ng parameters and calculations were applied.

to tollowing politicines and a second	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 mha/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	444	

SAR result with Body TSL

SAR averaged over 1 cm3 (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)

SAR averaged over 10 cm3 (10 g) of Body TSL	condition	
SAR measured	250 mW input power	5.30 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	21.3 W/kg ± 16.5 % (k=2)

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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	$47.5 \Omega + 6.0 \Omega$
Return Loss	- 23.5 dB

General Antenna Parameters and Design

BELLEVIEW BOOKS	1.199 ns
Electrical Delay (one direction)	1,199 fts

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

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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; $\sigma = 1.4 \text{ S/m}$; $\epsilon_f = 41.3$; $\rho = 1000 \text{ kg/m}^3$

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/kgMaximum value of SAR (measured) = 15.3 W/kg



0 dB = 15.3 W/kg = 11.85 dBW/kg

Certificate No: D1900V2-5d173_May17

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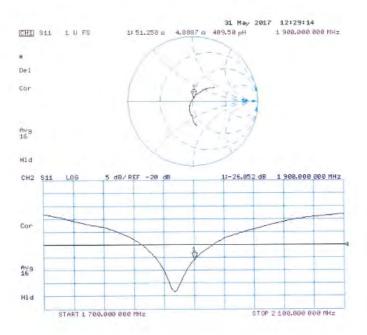
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 31.05.2017

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; $\sigma = 1.51 \text{ S/m}$; $\varepsilon_r = 54.2$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

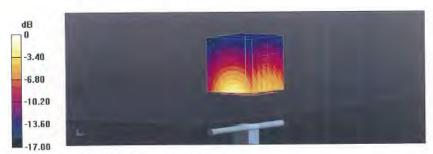
Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

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/kgMaximum value of SAR (measured) = 14.3 W/kg



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

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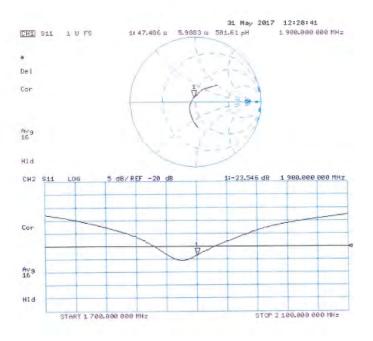
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Impedance Measurement Plot for Body TSL



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





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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

CALIBRATION	ERTIFICATE		
Object	D2450V2 - SN: 7	27	
Calibration procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Calibration date:	April 21, 2017		
The measurements and the unce	rtainties with confidence p	ional standards, which realize the physical un robability are given on the following pages an ry facility: environment temperature (22 ± 3)°(nd are part of the certificate.
The state of the s			
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
	ID # SN: 104778	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apv-18
Power meter NRP Power sensor NRP-Z91	SN: 104778 SN: 108244	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521)	Apr-18 Apr-18
Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91	SN: 104778 SN: 105244 SN: 103245	04-Apr-17 (No. 217-02521/02522)	Apv-18
Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator	SN: 104778 SN: 108244	04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522)	Apr-18 Apr-18 Apr-18
Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	04-Apr-17 (No. 217-02521/025221) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528)	Apr-18 Apr-18 Apr-18 Apr-18
Power meter NBP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18
Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dfl Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	SN: 104778 SN: 105244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EX3-7349_Dec16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17
Power meter NBP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power mater EPM-442A	SN: 104778 SN: 108244 SN: 108245 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 7349 SN: 601	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EX3-7349_Dec16) 26-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 07-0ct-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Mar-18 Scheduled Check In house check: Oct-18
Power meter NBP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power maler EPM-442A Power sensor HP 8481A	SN: 104778 SN: 108244 SN: 108245 SN: 5058 (20k) SN: 50547 2 / 06327 SN: 7349 SN: 601	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EX3-7349_Dec16) 28-Mar-17 (No. DAE4-601_Mar-17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18
Power meter NBP Power sensor NRP-Z91 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power mater EPM-442A Power sensor HP 8481A	SN: 104778 SN: 108244 SN: 108245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349 SN: 601 ID III SN: GB37480704 SN: US37292783 SN: MY41092317	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EX3-7349_Dec16) 26-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Power sensor NBP-291 Power sensor NRP-291 Power sensor NRP-291 Peterence 20 dB Attenuator Type-N mismatch combination Teletrence Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A	SN: 104778 SN: 108244 SN: 108244 SN: 108245 SN: 5058 (20%) SN: 5047.2 / 06827 SN: 7349 SN: 601 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EXS-7349_Dec16) 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Mar-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Power meter NBP 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	SN: 104778 SN: 108244 SN: 108245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349 SN: 601 ID III SN: GB37480704 SN: US37292783 SN: MY41092317	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EX3-7349_Dec16) 26-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Mar-18 Scheduled Check In house check: Dct-18 In house check: Cct-18 In house check: Cct-18
Power meter NBP 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 RF generator R&S SMT-08	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349 SN: 6611 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585 Name	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EX3-7349_Dec16) 26-Mar-17 (No. DAE4-601_Mar-17) 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) 15-Jun-15 (in house check Oct-16) 16-Oct-01 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Mar-18 Scheduled Check In house check: Oct-18
Power meter NBP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power maler EPM-442A Power sensor HP 8481A	SN: 104778 SN: 108244 SN: 108245 SN: 5058 (20k) SN: 50547.2 / 06327 SN: 7349 SN: 601 ID II SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EX3-7349_Dec16) 28-Mar-17 (No. DAE4-601_Mar17) Check Date (in house) 07-0ct-15 (in house check Oct-16) 07-0ct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-16) 16-Oct-01 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Mar-18 Scheduled Check In house check: Oct-18
Power meter NBP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power maler EPM-442A Power sensor HP 8481A RF generator R&S SMT-08 Network Analyzer HP B753E	SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349 SN: 6611 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585 Name	04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 31-Dec-16 (No. EX3-7349_Dec16) 26-Mar-17 (No. DAE4-601_Mar-17) 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) 15-Jun-15 (in house check Oct-16) 16-Oct-01 (in house check Oct-16)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Mar-18 Scheduled Check In house check: Oct-18

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 C 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

Glossary:

tissue simulating liquid TSL sensitivity in TSL / NORM x,y,z ConvF 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_April7

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No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號 t (886-2) 2299-3279 f (886-2) 2298-0488

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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 measured	250 mW input power	6.18 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.3 W/kg ± 16.5 % (k=2)

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 measured	250 mW input power	6.01 W/kg .
SAR for nominal Body TSL parameters	normalized to 1W	23.8 W/kg ± 16.5 % (k=2)

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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 Page 4 of 8

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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; $\sigma = 1.87$ S/m; $\epsilon_r = 37.7$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

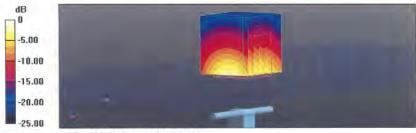
DASY52 Configuration:

- 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/kgMaximum value of SAR (measured) = 21.1 W/kg



0 dB = 21.1 W/kg = 13.24 dBW/kg

Certificate No: D2450V2-727_Apr17

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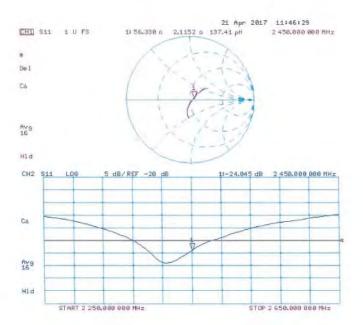
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Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-727_Apr17

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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; $\epsilon_1 = 52.5$; $\rho = 1000$ kg/m³

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

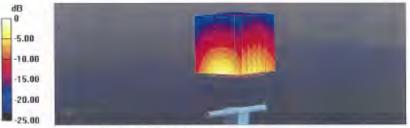
DASY52 Configuration:

- 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



0 dB = 20.0 W/kg = 13.01 dBW/kg

Certificate No: D2450V2-727_April7

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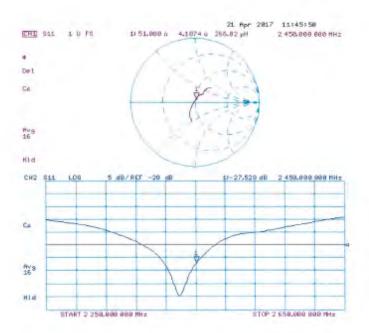
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Impedance Measurement Plot for Body TSL



Certificate No: D2450V2-727_Apr17

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Calibration Laboratory of Schmid & Partner

Engineering AG Zeughausstrasse 43, 8004 Zurich, Switzerland





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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)

Certificate No: D2600V2-1005 Jan17

Object	D2600V2 - SN:10	005	
Calibration procedure(s)	QA CAL-05.v9		
Januarion proceedings,		dure for dipole validation kits abo	ove 700 MHz
Calibration date:	January 25, 2017	,	
		ional standards, which realize the physical un	
The measurements and the unce	rtaintles with confidence p	robability are given on the following pages an	d are part of the certificate.
	and the same of the same		and the state of t
All calibrations have been conduc	cled in the closed laborator	ry facility: environment temperature (22 ± 3)°0	and humidity < 70%.
Calibration Equipment used (M&	TE critical for nalibration)		
Calibration Equipment used (Ma	TE GROCALITOT CARDINATION)		
Primary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
	DEC CHOCKE	00 4 10 (11 547 00000)	Apr-17
ower sensor NRP-Z91	SN: 103244	06-Apr-16 (No. 217-02288)	whi-15
Canal Sauces Time (AS)	SN: 103244 SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Power sensor NRP-Z91	Sec. 21 (1) (2) (2)		
Power sensor NRP-Z91 Reference 20 dB Attenuator	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination	SN: 103245 SN: 5058 (20k)	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292)	Apr-17 Apr-17
Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295)	Apr-17 Apr-17 Apr-17
Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 7349	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)	Apr-17 Apr-17 Apr-17 Dec-17
Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349 SN: 601	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. EXS-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17)	Apr-17 Apr-17 Apr-17 Dec-17 Jan-18 Scheduled Check
Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A	SN: 103245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349 SN: 601	06-Apr-16 (No. 217-02269) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. EX3-7349_Dec16) 04-Jan-17 (No. DAE-4-601_Jan17) Check Date (in house)	Apr 17 Apr-17 Apr-17 Dec-17 Jan-18 Scheduled Check In house check: Oct-18
Power sensor NRP-Z91 Reference 20 dB Attenualor Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A	SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 7349 SN: 601	06-Apr-16 (No. 217-02269) 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) 07-Oct-15 (in house check Oct-16)	Apr-17 Apr-17 Apr-17 Dec-17 Jan-18 Scheduled Check In house check: Oct-18 In house check: Oct-18
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	SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 7349 SN: 601	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. EXS-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16)	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
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 RF generator R&S SMT-06	SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 7349 SN: 601 ID # SN: GB37480704 SN: US37292783 SN: MY41092317	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. EX3-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17) 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-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 In house check: Oct-18
Power sensor NRP-Z91 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4	SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 7349 SN: 801 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972	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) 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)	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 In house check: Oct-18 In house check: Oct-17 Signature
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	SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 801 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585 Name	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. EXS-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17) 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) 18-Oct-01 (in house check Oct-16)	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 In house check: Oct-18 In house check: Oct-17 Signature
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	SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 7349 SN: 601 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. EXS-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 17-Oct-15 (in house check Oct-16) 18-Jun-15 (in house check Oct-16)	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 In house check: Oct-18 In house check: Oct-17
Power sensor NRP-Z91 Reference 20 dB Attenualor Type-N mismatic 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: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 601 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585 Name Johannes Kurikks	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. EXS-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17) 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) 18-Oct-01 (in house check Oct-16)	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 In house check: Oct-18 In house check: Oct-17 Signature
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	SN: 103245 SN: 5058 (20%) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 801 ID # SN: GB37480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585 Name	06-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02295) 31-Dec-16 (No. EXS-7349_Dec16) 04-Jan-17 (No. DAE4-601_Jan17) 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) 18-Oct-01 (in house check Oct-16) Function Laboratory Technician	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 In house check: Oct-18 In house check: Oct-17 Signature

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





Schweizenscher Kallbrierdiesut Service subse d'étalennage Service avizzere di Gentura Swiss Califoration Service

Acceptation No.: SCS 0108

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The Swiss Accreditation Service is one of the signatories to the EA. Multilateral Agreement for the recognition of cell bration 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
- i) 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%.

Confidence No: D96000VS-1006, Jan 17

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Measurement Conditions

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phentom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2800 MHz ± 1 MHz	

Head TSL parameters

	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 cm³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.3 W/kg
SAR for nominal Head TSL parameters	W of besilemon	55.5 W/kg = 17.0 % (k=2)

SAR averaged over 10 cm [§] (10 g) of Head TSL	condition	
SAR measured	250 mW Input power	6.32 W/kg
SAR for nominal Head TSL parameters	normalized to TW	24.8 W/kg ± 16.5 % (k=2)

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 °C	(100)	

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 ^S (10 g) of Body TSL	condition	
SAR measured	250 mW Input power	6.20 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	24.7 W/kg ± 16.5 % (k=2)

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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	
Return Loss	- 26.5 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	44.7 0 - 3.2 10	
Fleturn Loss	-23,7 dB	

General Antenna Parameters and Design

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 semitiglid 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 litted 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 conhections near the feedpoint 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, Zurich, 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; $\sigma = 2.05 \text{ S/m}$; $\varepsilon_c = 37.4$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.56, 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



0 dB = 25.2 W/kg = 13.84 dBW/kg

Certificate No: D2600V2-1005_Jan17

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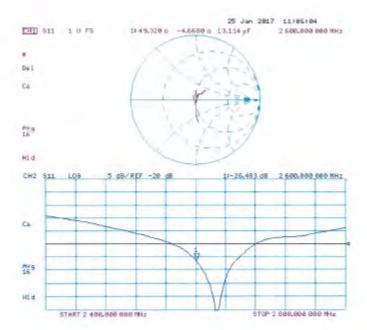
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 18.01.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT; Dipole 2600 MHz; Type: D2600V2; Serial: D2600V2 - SN:1005

Communication System: LIID 0 - CW; Frequency: 2600 MHz.

Medium parameters used: f = 2600 MHz; $\sigma = 2.2 \text{ S/m}$; $z_c = 52.3$; $\rho = 1000 \text{ kg/m}^3$

Phantom section: Flat Section

Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

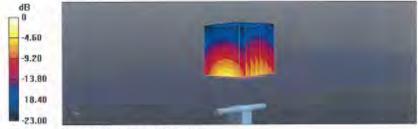
DASY52 Configuration:

- 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

SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.2 W/kgMaximum value of SAR (measured) = 23.3 W/kg



0 dB = 23.3 W/kg = 13.67 dBW/kg

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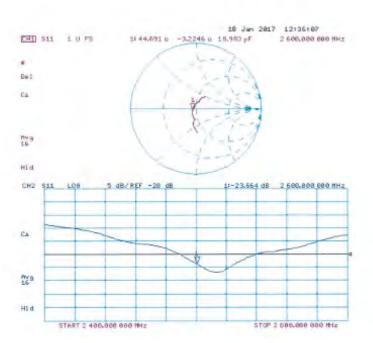
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134 號

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Impedance Measurement Plot for Body TSL



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- End of 1st part of report -

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