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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-1007
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-1007
Date of Receipt	Jun. 24, 2017
Date of Test(s)	Jun. 29, 2017 ~ Jul. 14, 2017,Sep.27 ,2017
Date of Issue	Oct. 11, 2017
In the configuration tested, the	EUT complied with the standards specified above.

Remarks:

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

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Signed on behalf of SGS

Engineer

Kondisai

Bond Tsai Date: Oct. 11, 2017

Supervisor

John Teh

John Yeh Date: Oct. 11, 2017

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Revision History

Report Number Revision		ort Number Revision Description	
E5/2017/90029	Rev.00	Initial creation of document	Oct. 11, 2017
	9		



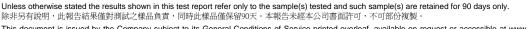
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1. General Information

1.1 Testing Laboratory

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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





1.3 Description of EUT

EUT Name	Smart Phone						
Brand Name	Nokia						
Model No.	TA-1007						
FCC ID	2AJOTTA-1007	A 25 8					
IMEI Number	TA-1007 WWAN 3560390800003 WLAN 35603908000016						
	2 nd solution 356039080014663						
	HSDPA HSUPA HSPA	+ 🛛 HSDPA					
Mode of Operation	LTE FDD						
	Bluetooth WLAN802.11 b/g/n	(20M)					
	GSM (DTM multi class B)	1/8.3					
	GPRS (support multi class 12 max)	1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)					
Duty Cycle	EDGE (support multi class 12 max)	1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)					
,	LTE FDD (LTE Release Version: R8)	1					
	LTE TDD (LTE Release Version: R8)	0.633					
	WCDMA (HSDPA Category 24) (HSUPA Category 7)	C 15					
	WLAN802.11 b/g/n(20M)	1					
	Bluetooth	1					

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GSM850	824		
	024	—	849
GSM1900	1850	_	1910
WCDMA Band II	1850	—	1910
WCDMA Band V	824	-	849
LTE FDD Band 5	824	$+ \leq$	849
LTE FDD Band 7	2500	2	2570
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 V	4132	-	4233
LTE FDD Band 5	20407		20643
LTE FDD Band 7	20775	-	21425
LTE TDD Band 38	37775		38225
WLAN802.11 b/g/n(20M)	1	_	11
Bluetooth	0		78
	WCDMA Band II WCDMA Band V LTE FDD Band 5 LTE FDD Band 7 LTE TDD Band 38 WLAN802.11 b/g/n(20M) Bluetooth GSM850 GSM1900 WCDMA Band II WCDMA Band V LTE FDD Band 5 LTE FDD Band 7 LTE TDD Band 38 WLAN802.11 b/g/n(20M)	WCDMA Band II 1850 WCDMA Band V 824 LTE FDD Band 5 824 LTE FDD Band 7 2500 LTE TDD Band 38 2570 WLAN802.11 b/g/n(20M) 2412 Bluetooth 2402 GSM850 128 GSM1900 512 WCDMA Band II 9262 WCDMA Band V 4132 LTE FDD Band 5 20407 LTE FDD Band 7 20775 LTE FDD Band 38 37775 WLAN802.11 b/g/n(20M) 1	WCDMA Band II 1850 - WCDMA Band V 824 - LTE FDD Band 5 824 - LTE FDD Band 7 2500 - LTE TDD Band 38 2570 - WLAN802.11 b/g/n(20M) 2412 - Bluetooth 2402 - GSM850 128 - GSM1900 512 - WCDMA Band II 9262 - WCDMA Band V 4132 - LTE FDD Band 5 20407 - LTE FDD Band 7 20775 - LTE FDD Band 38 37775 - WLAN802.11 b/g/n(20M) 1 -

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Max. SAR (1 g) (Unit: W/Kg)							
Mode	Band	Measured	Reported	Position ,	/ Channel		
	GSM 850	0.24	0.30	⊠Left ⊠Cheek 190	Right Tilt Channel		
	GSM 1900	0.14	0.17	□Left ⊠Cheek 810	⊠Right □Tilt _Channel		
	WCDMA Band II	0.16	0.17	□Left ⊠Cheek 9262	⊠Right □Tilt _Channel		
	WCDMA Band V	0.30	0.35	⊠Left ⊠Cheek 4233	☐Right ☐Tilt _Channel		
Head	LTE FDD Band 5	0.26	0.27	⊠Left ⊠Cheek 20060	Right Tilt Channel		
	LTE FDD Band 7	0.13	0.13	⊠Left ⊠Cheek 21350	Right Tilt Channel		
	LTE TDD Band 38	0.06	0.06	⊠Left ⊠Cheek 38000	□Right □Tilt _Channel		
	WLAN802.11 b	0.32	0.33	□Left ⊠Cheek 1	⊠Right □Tilt Channel		

Max. SAR (1 g) (Unit: W/Kg)							
Mode	Band	Measured	Reported	Position / Channel			
	GSM 850	0.21	0.26	Front Back			
				<u>190</u> Channel			
Body-worn	n GSM 1900	0.20	0.25	⊠Front □Back			
(15mm)				<u>810</u> Channel			
		0.28	0.29	⊠Front □Back			
				21350 Channel			

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Max. SAR (1 g) (Unit: W/Kg)						
Mode	Band	Measured	Reported	Position / Channel		
	GPRS 850 (1Dn1UP)	0.35	0.44	Front Back Bottom Right Left <u>190</u> Channel		
	GPRS 1900 (1Dn4UP)	0.70	1.08	Front Back Bottom Right Left 810 Channel		
	WCDMA Band II	1.06	1.07	☐Front ☐Back ⊠Bottom ☐Right ☐Left 9400 Channel		
Hotspot Mode (10mm)	WCDMA Band V	0.39	0.45	Front Back Bottom Right Left 4233 Channel		
	LTE FDD Band 5	0.31	0.33	Front Back Bottom Right Left 20060 Channel		
	LTE FDD Band 7	1.02	1.18	Front Back Bottom Right Left 20850 Channel		
	LTE TDD Band 38	0.59	0.59	☐Front ☐Back ⊠Bottom ☐Right ☐Left <u>38000</u> Channe		
	WLAN802.11 b	0.16	0.17	Front Back Bottom Right Left 1 Channel		

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Difference Description:

The only difference between TA-1029 and TA-1007 is SIM card slot,

where the TA-1029 is Dual-SIM (FCC ID: 2AJOTTA-1029), the TA-1007 is Single SIM.

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

Note:

According to the difference description above, TA-1007 is tested at the worst case of TA-1029 (FCC ID: 2AJOTTA-1029).

Change Note:

The major change filed under this application is:

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

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

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

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GSM 850 - conducted power table:

			Max. Rated	Burst	Source -based		
EUT mode	Frequency	СН	Avg. Power +	average power	time		
	(MHz)		Max.	power	average power		
			Tolerance	Avg.	Avg.		
			(dBm)	(dBm)	(dBm)		
001050	824.2	128	34.5	33.27	24.24		
GSM850 (GMSK)	836.6	190	34.5	33.53	24.5		
(emercy	848.8	251	34.5	33.23	24.2		
The di	The division factor compared to the number of TX time slot						
	Divisio	1 TX ti	me slot				
	DIVISIO		-9.	.03			

GPRS 850 - conducted power table:

	Burst average power							
	ted Avg. Power		34.5	30	28.5	27.5		
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP		
EUT mode	Frequency (MHz) CH		Avg. (dBm)	A∨g. (dBm)	Avg. (dBm)	Avg. (dBm)		
GPRS	824.2	128	33.27	28.62	27.67	26.32		
850	836.6	190	33.53	28.78	27.05	25.68		
850	848.8	251	33.23	28.88	26.80	25.36		
		So	ource-based tim	e average powe	er			
GPRS	824.2	128	24.24	22.60	23.41	23.31		
850	836.6	190	24.50	22.76	22.79	22.67		
000	848.8	251	24.20	22.86	22.54	22.35		
	The division factor compared to the number of TX time slot							
Div	vision factor		1 TX time slot -9.03	2 TX time slot -6.02	3 TX time slot -4.26	4 TX time slot -3.01		

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EDGE 850 - conducted power table:

	Burst average power										
	ted Avg. Powe olerance (dBr		27	26	25	23.5					
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP					
EUT mode	Frequency (MHz)	СН	Avg. (dBm)	A∨g. (dBm)	Avg. (dBm)	Avg. (dBm)					
EDGE	824.2	128	25.98	25.16	23.71	22.07					
850	836.6	190	25.94	25.12	23.57	22.04					
650	848.8	251	25.93	25.13	23.54	22.05					
		Sc	ource-based tim	e average powe	er						
EDGE	824.2	128	16.95	19.14	19.45	19.06					
850	836.6	190	16.91	19.10	19.31	19.03					
050	848.8	251	16.90	19.11	19.28	19.04					
	The div	ision fa	actor compared	to the number o	of TX time slot						
Div	ision factor	C	1 TX time slot -9.03	2 TX time slot -6.02	3 TX time slot -4.26	4 TX time slot -3.01					

GSM 1900 - conducted power table:

EUT mode	Frequency (MHz)	СН	Max. Rated Avg. Power + Max.	Burst average power	Source -based time average power	
			Tolerance (dBm)	Avg. (dBm)	Avg. (dBm)	
0014000	1850.2	512	31.5	29.80	20.77	
GSM1900 (GMSK)	1800	661	31.5	30.08	21.05	
	1909.8	810	31.5	30.64	21.61	
The di	vision facto	r compared	to the numb	per of TX tir	ne slot	
	Divisio	n factor		1 TX ti	me slot	
	DIVISIO	Παυισι		-9.03		

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GPRS 1900 - conducted power table:

	Burst average power										
	ted Avg. Powe olerance (dBr		31.5	29	27.5	26.5					
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP					
EUT mode	Frequency (MHz)	СН	Avg. (dBm)	A∨g. (dBm)	Avg. (dBm)	Avg. (dBm)					
GPRS	1850.2	512	29.80	27.87	26.69	25.31					
1900	1880	661	30.08	27.83	25.96	24.55					
1900	1909.8	810	30.64	28.33	26.00	24.62					
		Sc	ource-based tim	e average powe	er						
GPRS	1850.2	512	20.77	21.85	22.43	22.30					
1900	1880	661	21.05	21.81	21.70	21.54					
1900	1909.8	810	21.61	22.31	21.74	21.61					
	The div	ision fa	ctor compared	to the number of	of TX time slot						
Div	ision factor		1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot					
		6.0	-9.03	-6.02	-4.26	-3.01					

EDGE 1900 - conducted power table:

Burst average power											
			Burst avera	age power							
	ted Avg. Power olerance (dBr		26.5	25.5	24	22.5					
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP					
EUT mode	e Frequency CH (MHz)		A∨g. (dBm)	A∨g. (dBm)	Avg. (dBm)	Avg. (dBm)					
EDGE	1850.2	512	25.27	24.22	22.84	21.38					
1900	1880	661	25.31	24.25	22.81	21.29					
1900	1909.8	810	25.68	24.44	23.24	21.72					
		Sc	ource-based tim	e average powe	er						
EDGE	1850.2	512	16.24	18.20	18.58	18.37					
1900	1880	661	16.28	18.23	18.55	18.28					
1900	1909.8	810	16.65	18.42	18.98	18.71					
	The div	ision fa	actor compared	to the number of	of TX time slot						
Div	vision factor		1 TX time slot -9.03	2 TX time slot -6.02	3 TX time slot -4.26	4 TX time slot -3.01					

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

	Band	V	VCDMA			
	TX Channel					
Fre	1852.4	1880	1907.6			
Max. Rated Avg.	Power+Max. Tolerance (dBm)		23.50			
3GPP Rel 99	RMC 12.2Kbps	23.47	23.43	23.19		
Max. Rated Avg.	Power+Max. Tolerance (dBm)		22.50			
	HSDPA Subtest-1	22.32	22.38	22.02		
3GPP Rel 5	HSDPA Subtest-2	21.90	21.98	21.60		
JOFF Nel J	HSDPA Subtest-3	21.93	22.03	21.64		
	HSDPA Subtest-4	21.95	22.06	21.70		
	HSUPA Subtest-1	21.94	22.06	22.18		
	HSUPA Subtest-2	21.03	20.98	20.74		
3GPP Rel 6	HSUPA Subtest-3	20.88	20.57	20.92		
	HSUPA Subtest-4	21.77	21.46	21.61		
	HSUPA Subtest-5	22.40	22.50	22.00		
3GPP Rel 7	HSPA+ Subtest-1	22.14	22.18	21.95		
	DC-HSDPA Subtest-1	22.05	22.09	22.00		
3GPP Rel 8	DC-HSDPA Subtest-2	21.73	21.78	21.55		
JUFF INCIO	DC-HSDPA Subtest-3	21.79	21.83	21.58		
	DC-HSDPA Subtest-4	21.80	21.85	21.59		

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

-	Band TX Channel						
	4132	4183	4233				
Fre	equency (MHz)	826.4	836.6	846.6			
Max. Rated Avg.	Power+Max. Tolerance (dBm)		25.00				
	RMC 12.2Kbps	24.21	24.07	24.34			
Max. Rated Avg. I	Power+Max. Tolerance (dBm)		24.00				
	HSDPA Subtest-1	23.09	23.00	23.07			
3GPP Rel 5	HSDPA Subtest-2	22.61	22.39	22.57			
	HSDPA Subtest-3	22.61	22.39	22.56			
	HSDPA Subtest-4	22.60	22.38	22.56			
	HSUPA Subtest-1	22.88	22.60	22.19			
	HSUPA Subtest-2	21.57	21.87	21.76			
3GPP Rel 6	HSUPA Subtest-3	21.52	21.49	21.39			
	HSUPA Subtest-4	21.89	22.18	22.14			
	HSUPA Subtest-5	22.90	22.80	22.80			
3GPP Rel 7	HSPA+ Subtest-1	22.71	22.53	22.02			
	DC-HSDPA Subtest-1	23.00	22.94	23.01			
3GPP Rel 8	DC-HSDPA Subtest-2	22.67	22.42	22.41			
	DC-HSDPA Subtest-3	22.58	22.30	22.44			
	DC-HSDPA Subtest-4	22.52	22.31	22.18			

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
Γ	2	12/15	15/15	64	12/15	24/15	1.0	0.0
	3	15/15	8/15	64	15/8	30/15	1.5	0.5
	4	15/15	4/15	<mark>6</mark> 4	15/4	30/15	1.5	0.5

Subtests for WCDMA Release 6 HSUPA

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

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LTE FDD Band 5 - conducted power table:

							Target	1
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Power + Max. Tolerance (dBm)	MPR Allowed pe 3GPP(dB)
				829	20450	23.18	24	0
			0	836.5	20525	23.55	24	0
				844	20600	23.51	24	0
				829	20450	23.48	24	0
		1 RB	25	836.5	20525	23.42	24	0
				844	20600	23.74	24	0
				829	20450	23.23	24	0
			49	836.5	20525	23.52	24	0
				844	20600	23.40	24	0
				829	20450	22.47	23	0-1
	QPSK		0	836.5	20525	22.54	23	0-1
				844	20600	22.58	23	0-1
				829	20450	22.62	23	0-1
		25 RB	12	836.5	20525	22.52	23	0-1
				844	20600	22.60	23	0-1
				829	20450	22.38	23	0-1
			25	836.5 20525 22.41	22.41	23	0-1	
				844	20600	22.57	23	0-1
				829	20450	22.53	23	0-1
		50)RB	836.5	20525	22.51	23	0-1
10				844	20600	22.65	23	0-1
10				829	20450	22.32	23	0-1
			0	836.5	20525	22.98	23	0-1
				844	20600	22.84	23	0-1
				829	20450	22.65	23	0-1
		1 RB	25	836.5	20525	22.66	23	0-1
				844	20600	22.94	23	0-1
				829	20450	22.49	23	0-1
			49	836.5	20525	22.51	23	0-1
				844	20600	22.12	23	0-1
				829	20450	21.39	22	0-2
	16-QAM		0	836.5	20525	21.70	22	0-2
				844	20600	21.76	22	0-2
				829	20450	21.42	22	0-2
	<u>></u>	25 RB	12	836.5	20525	21.64	22	0-2
				844	20600	21.71	22	0-2
				829	20450	21.37	22	0-2
			25	836.5	20525	21.54	22	0-2
				844	20600	21.68	22	0-2
				829	20450	21.47	22	0-2
		50	ORB	836.5	20525	21.39	22	0-2
				844	20600	21.41	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 pe 3GPP(dB
				826.5	20425	23.38	24	0
			0	836.5	20525	23.70	24	0
				846.5	20625	23.62	24	0
				826.5	20425	23.23	24	0
		1 RB	12	836.5	20525	23.63	24	0
				846.5	20625	23.59	24	0
				826.5	20425	23.49	24	0
			24	836.5	20525	23.51	24	0
				846.5	20625	23.43	24	0
				826.5	20425	22.38	23	0-1
	QPSK		0	836.5	20525	22.43	23	0-1
				846.5	20625	22.59	23	0-1
				826.5	20425	22.23	23	0-1
		12 RB	6	836.5	20525	22.41	23	0-1
				846.5	20625	22.54	23	0-1
				826.5	20425	22.28	23	0-1
			13	836.5	20525	22.33	23	0-1
				846.5	20625	22.52	23	0-1
				826.5	20425	22.31	23	0-1
		25	RB	836.5	20525	22.40	23	0-1
5				846.5	20625	22.61	23	0-1
5				826.5	20425	22.86	23	0-1
			0	836.5	20525	22.96	23	0-1
				846.5	20625	22.80	23	0-1
				826.5	20425	22.56	23	0-1
		1 RB	12	836.5	20525	22.90	23	0-1
				846.5	20625	22.95	23	0-1
				826.5	20425	22.73	23	0-1
			24	836.5	20525	22.27	23	0-1
				846.5	20625	22.94	23	0-1
				826.5	20425	21.22	22	0-2
	16-QAM		0	836.5	20525	21.28	22	0-2
				846.5	20625	21.41	22	0-2
	·			826.5	20425	21.24	22	0-2
		12 RB	6	836.5	20525	21.16	22	0-2
				846.5	20625	21.54	22	0-2
				826.5	20425	21.31	22	0-2
			13	836.5	20525	21.13	22	0-2
				846.5	20625	21.33	22	0-2
				826.5	20425	21.27	22	0-2
		25	RB	836.5	20525	21.27	22	0-2
1				846.5	20625	21.66	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	23.30	24	0
			0	836.5	20525	23.45	24	0
				847.5	20635	23.53	24	0
				825.5	20415	23.61	24	0
		1 RB	7	836.5	20525	23.62	24	0
				847.5	20635	23.52	24	0
				825.5	20415	23.24	24	0
			14	836.5	20525	23.45	24	0
				847.5	20635	23.37	24	0
				825.5	20415	22.26	23	0-1
	QPSK		0	836.5	20525	22.38	23	0-1
				847.5	20635	22.62	23	0-1
				825.5	20415	22.21	23	0-1
		8 RB	4	836.5	20525	22.36	23	0-1
				847.5	20635	22.52	23	0-1
	8		7	825.5	20415	22.19	23	0-1
				836.5	20525	22.48	23	0-1
				847.5	20635	22.44	23	0-1
			•	825.5	20415	22.20	23	0-1
		15	RB	836.5	20525	22.37	23	0-1
				847.5	20635	22.52	23	0-1
3				825.5	20415	22.73	23	0-1
			0	836.5	20525	22.95	23	0-1
				847.5	20635	22.47	23	0-1
				825.5	20415	22.42	23	0-1
		1 RB	7	836.5	20525	22.86	23	0-1
				847.5	20635	22.40	23	0-1
				825.5	20415	22.16	23	0-1
			14	836.5	20525	22.34	23	0-1
				847.5	20635	22.07	23	0-1
	l l			825.5	20415	21.02	22	0-2
	16-QAM		0	836.5	20525	21.32	22	0-2
				847.5	20635	21.67	22	0-2
				825.5	20415	21.30	22	0-2
		8 RB	4	836.5	20525	21.55	22	0-2
				847.5	20635	21.62	22	0-2
				825.5	20415	21.15	22	0-2
			7	836.5	20525	21.44	22	0-2
				847.5	20635	21.54	22	0-2
				825.5	20415	21.17	22	0-2
		15	RB	836.5	20525	21.38	22	0-2
				847.5	20635	21.55	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	23.26	24	0
			0	836.5	20525	23.36	24	0
				848.3	20643	23.45	24	0
				824.7	20407	23.40	24	0
		1 RB	2	836.5	20525	23.50	24	0
				848.3	20643	23.48	24	0
				824.7	20407	23.13	24	0
			5	836.5	20525	23.30	24	0
				848.3	20643	23.38	24	0
				824.7	20407	23.34	24	0
	QPSK		0	836.5	20525	23.57	24	0
				848.3	20643	23.42	24	0
	1			824.7	20407	23.41	24	0
		3 RB	2	836.5	20525	23.45	24	0
				848.3	20643	23.41	24	0
				824.7	20407	23.35	24	0
			3	836.5	20525	23.49	24	0
				848.3	20643	23.45	24	0
				824.7	20407	22.40	23	0-1
		61	RB	836.5	20525	22.51	23	0-1
				848.3	20643	22.54	23	0-1
1.4				824.7	20407	22.29	23	0-1
			0	836.5	20525	22.12	23	0-1
				848.3	20643	22.64	23	0-1
				824.7	20407	22.62	23	0-1
		1 RB	2	836.5	20525	22.30	23	0-1
				848.3	20643	22.74	23	0-1
				824.7	20407	22.11	23	0-1
			5	836.5	20525	22.27	23	0-1
				848.3	20643	22.42	23	0-1
				824.7	20407	22.08	23	0-1
	16-QAM		0	836.5	20525	22.20	23	0-1
				848.3	20643	22.74	23	0-1
				824.7	20407	22.23	23	0-1
		3 RB	2	836.5	20525	22.33	23	0-1
				848.3	20643	22.73	23	0-1
				824.7	20407	22.37	23	0-1
			3	836.5	20525	22.09	23	0-1
				848.3	20643	22.48	23	0-1
			-	824.7	20407	21.32	22	0-2
		61	RB	836.5	20525	21.28	22	0-2
				848.3	20643	21.35	22	0-2

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							Target	
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Power + Max. Tolerance (dBm)	MPR Allowed pe 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
		10	0RB	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
	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	0-2
				2510	20850	20.69	21	0-2
		100RB	0RB	2535	21100	20.70	21	0-2
				2560	21350	20.85	21	0-2

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

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			FDD B	and 7 (Hotspo	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)
				2507.5	20825	22.92	23	0
			0	2535	21100	22.54	23	0
				2562.5	21375	22.79	23	0
				2507.5	20825	22.85	23	0
		1 RB	36	2535	21100	22.34	23	0
				2562.5	21375	22.67	23	0
				2507.5	20825	22.83	23	0
			74	2535	21100	22.60	23	0
				2562.5	21375	22.95	23	0
				2507.5	20825	21.90	22	0-1
	QPSK		0	2535	21100	21.54	22	0-1
				2562.5	21375	21.85	22	0-1
				2507.5	20825	21.78	22	0-1
		36 RB	18	2535	21100	21.44	22	0-1
				2562.5	21375	21.89	22	0-1
				2507.5	20825	21.65	22	0-1
			37	2535	21100	21.57	22	0-1
	-			2562.5	21375	21.92	22	0-1
				2507.5	20825	21.65	22	0-1
		75RB		2535	21100	21.49	22	0-1
15				2562.5	21375	21.94	22	0-1
15				2507.5	20825	21.94	22	0-1
			0	2535	21100	21.46	22	0-1
				2562.5	21375	21.82	22	0-1
				2507.5	20825	21.39	22	0-1
		1 RB	36	2535	21100	21.06	22	0-1
				2562.5	21375	21.95	22	0-1
				2507.5	20825	21.84	22	0-1
			74	2535	21100	21.48	22	0-1
				2562.5	21375	21.95	22	0-1
				2507.5	20825	20.49	21	0-2
	16-QAM		0	2535	21100	20.59	21	0-2
				2562.5	21375	20.87	21	0-2
				2507.5	20825	20.42	21	0-2
		36 RB	18	2535	21100	20.44	21	0-2
				2562.5	21375	20.95	21	0-2
				2507.5	20825	20.54	21	0-2
			37	2535	21100	20.62	21	0-2
				2562.5	21375	21.00	21	0-2
				2507.5	20825	20.54	21	0-2
		75	RB	2535	21100	20.50	21	0-2
l				2562.5	21375	20.92	21	0-2

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			FDD B	and 7 (Hotspo	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)
				2505	20800	22.77	23	0
			0	2535	21100	22.69	23	0
				2565	21400	22.92	23	0
				2505	20800	22.66	23	0
		1 RB	25	2535	21100	22.69	23	0
				2565	21400	22.91	23	0
				2505	20800	22.80	23	0
			49	2535	21100	22.72	23	0
				2565	21400	22.81	23	0
				2505	20800	21.68	22	0-1
	QPSK		0	2535	21100	21.56	22	0-1
				2565	21400	21.99	22	0-1
				2505	20800	21.62	22	0-1
		25 RB	12	2535	21100	21.56	22	0-1
				2565	21400	21.94	22	0-1
				2505	20800	21.55	22	0-1
			25	2535	21100	21.64	22	0-1
				2565	21400	22.00	22	0-1
			-	2505	20800	21.53	22	0-1
		50	RB	2535	21100	21.58	22	0-1
10				2565	21400	21.92	22	0-1
10				2505	20800	21.79	22	0-1
			0	2535	21100	21.68	22	0-1
				2565	21400	21.63	22	0-1
				2505	20800	21.64	22	0-1
		1 RB	25	2535	21100	21.66	22	0-1
				2565	21400	21.97	22	0-1
				2505	20800	21.66	22	0-1
			49	2535	21100	21.87	22	0-1
				2565	21400	21.82	22	0-1
				2505	20800	20.85	21	0-2
	16-QAM		0	2535	21100	20.54	21	0-2
				2565	21400	20.92	21	0-2
				2505	20800	20.77	21	0-2
		25 RB	12	2535	21100	20.54	21	0-2
				2565	21400	20.98	21	0-2
				2505	20800	20.78	21	0-2
			25	2535	21100	20.37	21	0-2
				2565	21400	20.85	21	0-2
				2505	20800	20.54	21	0-2
1		50	RB	2535	21100	20.52	21	0-2
				2565	21400	20.95	21	0-2

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]				FDD B	and 7 (Hotspo	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)
ſ					2502.5	20775	22.74	23	0
				0	2535	21100	22.46	23	0
					2567.5	21425	22.87	23	0
					2502.5	20775	22.88	23	0
			1 RB	12	2535	21100	22.48	23	0
					2567.5	21425	22.83	23	0
					2502.5	20775	22.75	23	0
				24	2535	21100	22.53	23	0
					2567.5	21425	22.95	23	0
					2502.5	20775	21.64	22	0-1
		QPSK		0	2535	21100	21.53	22	0-1
					2567.5	21425	21.92	22	0-1
					2502.5	20775	21.58	22	0-1
		· · · · · · · · · · · · · · · · · · ·	12 RB	6	2535	21100	21.60	22	0-1
					2567.5	21425	21.96	22	0-1
					2502.5	20775	21.55	22	0-1
				13	2535	21100	21.49	22	0-1
					2567.5	21425	21.88	22	0-1
		-			2502.5	20775	21.65	22	0-1
			25	RB	2535	21100	21.59	22	0-1
-	5				2567.5	21425	21.82	22	0-1
10	5				2502.5	20775	21.82	22	0-1
				0	2535	21100	21.82	22	0-1
					2567.5	21425	21.90	22	0-1
					2502.5	20775	21.40	22	0-1
			1 RB	12	2535	21100	21.64	22	0-1
					2567.5	21425	21.73	22	0-1
					2502.5	20775	21.65	22	0-1
				24	2535	21100	21.51	22	0-1
					2567.5	21425	21.63	22	0-1
					2502.5	20775	20.67	21	0-2
		16-QAM		0	2535	21100	20.56	21	0-2
					2567.5	21425	20.82	21	0-2
					2502.5	20775	20.69	21	0-2
	0		12 RB	6	2535	21100	20.50	21	0-2
					2567.5	21425	20.98	21	0-2
					2502.5	20775	20.56	21	0-2
				13	2535	21100	20.41	21	0-2
					2567.5	21425	20.96	21	0-2
					2502.5	20775	20.98	21	0-2
			25	RB	2535	21100	20.55	21	0-2
					2567.5	21425	20.84	21	0-2

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BW(Mhz)	Modulation	RB Size	RB Offset	Frequency	Channel	Conducted	Target Power + Max.	MPR Allowed pe
BVV (IVII12)	Wooulation	KB SIZE		(MHz)	Chaine	power (dBm)	Tolerance (dBm)	3GPP(dB)
				2510	20850	21.71	22.5	0
			0	2535	21100	21.95	22.5	0
				2560	21350	21.86	22.5	0
				2510	20850	21.87	22.5	0
		1 RB	50	2535	21100	22.17	22.5	0
				2560	21350	21.99	22.5	0
				2510	20850	21.81	22.5	0
			99	2535	21100	21.64	22.5	0
				2560	21350	21.70	22.5	0
			8.0	2510	20850	21.31	22	0
	QPSK		0	2535	21100	21.40	22	0
				2560	21350	21.33	22	0
				2510	20850	21.24	22	0
		50 RB	25	2535	21100	21.36	22	0
				2560	21350	21.42	22	0
				2510	20850	21.37	22	0
			50	2535	21100	21.39	22	0
				2560	21350	21.43	22	0
				2510	20850	21.23	22	0
		100	0RB	2535	21100	21.35	22	0
20				2560	21350	21.41	22	0
				2510	20850	21.10	22	0
			0	2535	21100	21.76	22	0
				2560	21350	21.41	22	0
				2510	20850	21.74	22	0
		1 RB	50	2535	21100	21.36	22	0
				2560	21350	21.86	22	0
				2510	20850	21.58	22	0
			99	2535	21100	21.36	22	0
		~ ~		2560	21350	21.70	22	0
				2510	20850	20.34	21	0-1
	16-QAM		0	2535	21100	20.48	21	0-1
				2560	21350	20.48	21	0-1
		F0 55	67	2510	20850	20.40	21	0-1
		50 RB	25	2535	21100	20.46	21	0-1
				2560	21350	20.43	21	0-1
			50	2510	20850	20.39	21	0-1
			50	2535	21100	20.43	21	0-1
				2560	21350	20.45	21	0-1
				2510	20850	20.34	21	0-1
		10	ORB	2535	21100	20.31	21	0-1
				2560	21350	20.41	21	0-1

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

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			FDD E	Band 7 (Hotspo	ot 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	21.93	22.5	0
			0	2535	21100	22.05	22.5	0
				2562.5	21375	21.94	22.5	0
				2507.5	20825	21.73	22.5	0
		1 RB	36	2535	21100	21.80	22.5	0
				2562.5	21375	21.67	22.5	0
				2507.5	20825	21.91	22.5	0
			74	2535	21100	21.86	22.5	0
				2562.5	21375	21.84	22.5	0
				2507.5	20825	21.41	22	0
	QPSK		0	2535	21100	21.42	22	0
				2562.5	21375	21.50	22	0
				2507.5	20825	21.29	22	0
		36 RB	18	2535	21100	21.41	22	0
				2562.5	21375	21.43	22	0
				2507.5	20825	21.33	22	0
			37	2535	21100	21.45	22	0
				2562.5	21375	21.46	22	0
				2507.5	20825	21.39	22	0
		75	RB	2535	21100	21.42	22	0
15				2562.5	21375	21.48	22	0
15				2507.5	20825	21.06	22	0
			0	2535	21100	22.00	22	0
				2562.5	21375	21.72	22	0
				2507.5	20825	21.10	22	0
		1 RB	36	2535	21100	21.28	22	0
				2562.5	21375	20.95	22	0
				2507.5	20825	21.67	22	0
	4		74	2535	21100	21.27	22	0
				2562.5	21375	21.23	22	0
				2507.5	20825	20.33	21	0-1
	16-QAM		0	2535	21100	20.41	21	0-1
				2562.5	21375	20.43	21	0-1
				2507.5	20825	20.33	21	0-1
	5	36 RB	18	2535	21100	20.44	21	0-1
				2562.5	21375	20.37	21	0-1
				2507.5	20825	20.37	21 2	0-1
			37	2535	21100	20.54	21	0-1
				2562.5	21375	20.45	21	0-1
				2507.5	20825	20.35	21	0-1
		75	RB	2535	21100	20.45	21	0-1
				2562.5	21375	20.40	21	0-1

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BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed pe 3GPP(dB
		<		2505	20800	21.87	22.5	0
			0	2535	21100	21.94	22.5	0
				2565	21400	21.77	22.5	0
				2505	20800	21.95	22.5	0
		1 RB	25	2535	21100	21.97	22.5	0
				2565	21400	21.83	22.5	0
				2505	20800	21.78	22.5	0
			49	2535	21100	21.88	22.5	0
				2565	21400	21.78	22.5	0
				2505	20800	21.38	22	0
	QPSK		0	2535	21100	21.40	22	0
				2565	21400	21.53	22	0
				2505	20800	21.32	22	0
		25 RB	12	2535	21100	21.47	22	0
				2565	21400	21.48	22	0
				2505	20800	21.32	22	0
			25	2535	21100	21.42	22	0
				2565	21400	21.50	22	0
				2505	20800	21.35	22	0
10		50	RB	2535	21100	21.41	22	0
				2565	21400	21.52	22	0
10				2505	20800	21.60	22	0
			0	2535	21100	21.14	22	0
				2565	21400	21.48	22	0
			25	2505	20800	21.57	22	0
		1 RB		2535	21100	21.77	22	0
				2565	21400	21.76	22	0
				2505	20800	21.83	22	0
			49	2535	21100	21.40	22	0
				2565	21400	21.81	22	0
				2505	20800	20.64	21	0-1
	16-QAM		0	2535	21100	20.58	21	0-1
				2565	21400	20.53	21	0-1
				2505	20800	20.42	21	0-1
		25 RB	12	2535	21100	20.27	21	0-1
				2565	21400	20.63	21	0-1
				2505	20800	20.49	21 2	0-1
			25	2535	21100	20.38	21	0-1
				2565	21400	20.26	21	0-1
				2505	20800	20.44	21	0-1
		50	RB	2535	21100	20.35	21	0-1
				2565	21400	20.46	21	0-1

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			FDD E	Band 7 (Hotspo	ot 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	21.93	22.5	0
			0	2535	21100	22.11	22.5	0
				2567.5	21425	22.03	22.5	0
				2502.5	20775	22.05	22.5	0
		1 RB	12	2535	21100	21.77	22.5	0
				2567.5	21425	22.15	22.5	0
				2502.5	20775	21.79	22.5	0
			24	2535	21100	21.72	22.5	0
				2567.5	21425	22.01	22.5	0
				2502.5	20775	21.24	22	0
	QPSK		0	2535	21100	21.44	22	0
				2567.5	21425	21.50	22	0
	1			2502.5	20775	21.17	22	0
		12 RB	6	2535	21100	21.41	22	0
				2567.5	21425	21.56	22	0
				2502.5	20775	21.24	22	0
			13	2535	21100	21.38	22	0
	-			2567.5	21425	21.39	22	0
				2502.5	20775	21.24	22	0
		25	RB	2535	21100	21.36	22	0
5				2567.5	21425	21.47	22	0
5				2502.5	20775	21.52	22	0
			0	2535	21100	21.56	22	0
				2567.5	21425	21.31	22	0
				2502.5	20775	21.30	22	0
		1 RB	12	2535	21100	21.77	22	0
				2567.5	21425	21.44	22	0
				2502.5	20775	21.49	22	0
	1		24	2535	21100	21.82	22	0
				2567.5	21425	21.19	22	0
				2502.5	20775	20.32	21	0-1
	16-QAM		0	2535	21100	20.46	21	0-1
				2567.5	21425	20.55	21	0-1
				2502.5	20775	20.28	21	0-1
	3	12 RB	6	2535	21100	20.43	21	0-1
				2567.5	21425	20.39	21	0-1
				2502.5	20775	20.29	21 2	0-1
			13	2535	21100	20.35	21	0-1
				2567.5	21425	20.38	21	0-1
				2502.5	20775	20.57	21	0-1
		25	RB	2535	21100	20.61	21	0-1
		25RB		2567.5	21425	20.50	21	0-1

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LTE TDD Band 38 - conducted power table:

BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed pe 3GPP(dB)
				2580	37850	23.63	24	0
			0	2595	38000	23.89	24	0
				2610	38150	23.69	24	0
				2580	37850	23.60	24	0
		1 RB	50	2595	38000	23.56	24	0
				2610	38150	23.42	24	0
			99	2580	37850	23.50	24	0
				2595	38000	23.34	24	0
				2610	38150	23.31	24	0
				2580	37850	22.84	23	0-1
	QPSK		0	2595	38000	22.83	23	0-1
				2610	38150	22.85	23	0-1
				2580	37850	22.78	23	0-1
		50 RB	25	2595	38000	22.91	23	0-1
				2610	38150	22.69	23	0-1
				2580	37850	22.75	23	0-1
			50	2595	38000	22.76	23	0-1
				2610	38150	22.42	23	0-1
				2580	37850	22.75	23	0-1
		10	0RB	2595	38000	22.86	23	0-1
20				2610	38150	22.67	23	0-1
20				2580	37850	22.87	23	0-1
			0	2595	38000	22.98	23	0-1
				2610	38150	22.89	23	0-1
				2580	37850	22.96	23	0-1
		1 RB	50	2595	38000	22.96	23	0-1
				2610	38150	22.57	23	0-1
				2580	37850	22.79	23	0-1
			99	2595	38000	22.74	23	0-1
				2610	38150	22.28	23	0-1
				2580	37850	21.80	22	0-2
	16-QAM		0	2595	38000	21.85	22	0-2
				2610	38150	21.80	22	0-2
	·			2580	37850	21.86	22	0-2
		50 RB	25	2595	38000	21.95	22	0-2
				2610	38150	21.70	22	0-2
				2580	37850	21.72	22	0-2
			50	2595	38000	21.69	22	0-2
				2610	38150	21.50	22	0-2
				2580	37850	21.96	22	0-2
		10	ORB	2595	38000	21.77	22	0-2
				2610	38150	21.65	22	0-2

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				TDD Band 38				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2577.5	37825	23.82	24	0
			0	2595	38000	23.81	24	0
				2612.5	38175	23.72	24	0
				2577.5	37825	23.87	24	0
		1 RB	36	2595	38000	23.55	24	0
				2612.5	38175	23.41	24	0
				2577.5	37825	23.87	24	0
			74	2595	38000	23.57	24	0
				2612.5	38175	23.39	24	0
				2577.5	37825	23.00	23	0-1
	QPSK		0	2595	38000	22.82	23	0-1
				2612.5	38175	22.74	23	0-1
				2577.5	37825	22.90	23	0-1
		36 RB	18	2595	38000	22.82	23	0-1
				2612.5	38175	22.60	23	0-1
				2577.5	37825	22.94	23	0-1
			37	2595	38000	22.67	23	0-1
				2612.5	38175	22.42	23	0-1
				2577.5	37825	22.93	23	0-1
		75	RB	2595	38000	22.77	23	0-1
15				2612.5	38175	22.60	23	0-1
15				2577.5	37825	23.00	23	0-1
			0	2595	38000	22.83	23	0-1
				2612.5	38175	22.96	23	0-1
				2577.5	37825	22.86	23	0-1
		1 RB	36	2595	38000	22.56	23	0-1
				2612.5	38175	22.58	23	0-1
				2577.5	37825	22.93	23	0-1
			74	2595	38000	22.79	23	0-1
				2612.5	38175	22.39	23	0-1
				2577.5	37825	21.57	22	0-2
	16-QAM		0	2595	38000	21.59	22	0-2
				2612.5	38175	21.80	22	0-2
				2577.5	37825	21.52	22	0-2
		36 RB	18	2595	38000	21.60	22	0-2
	3			2612.5	38175	21.65	22	0-2
				2577.5	37825	21.48	22	0-2
			37	2595	38000	21.49	22	0-2
				2612.5	38175	21.48	22	0-2
				2577.5	37825	21.61	22	0-2
		75	RB	2595	38000	21.68	22	0-2
				2612.5	38175	21.57	22	0-2

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BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max.	MPR Allowed p
							Tolerance (dBm)	3GPP(dE
				2575	37800	23.42	24	0
			0	2595	38000	23.84	24	0
				2615	38200	23.49	24	0
				2575	37800	23.85	24	0
		1 RB	25	2595	38000	23.84	24	0
				2615	38200	23.36	24	0
				2575	37800	23.63	24	0
			49	2595	38000	23.60	24	0
				2615	38200	23.49	24	0
	[2575	37800	22.70	23	0-1
	QPSK		0	2595	38000	22.96	23	0-1
				2615	38200	22.81	23	0-1
	~			2575	37800	22.73	23	0-1
		25 RB	12	2595	38000	22.91	23	0-1
				2615	38200	22.64	23	0-1
				2575	37800	22.70	23	0-1
			25	2595	38000	22.76	23	0-1
				2615	38200	22.41	23	0-1
			•	2575	37800	22.76	23	0-1
10		50	RB	2595	38000	22.84	23	0-1
				2615	38200	22.55	23	0-1
				2575	37800	22.85	23	0-1
			0	2595	38000	22.99	23	0-1
				2615	38200	22.75	23	0-1
			25	2575	37800	22.94	23	0-1
		1 RB		2595	38000	22.92	23	0-1
				2615	38200	22.96	23	0-1
				2575	37800	22.87	23	0-1
			49	2595	38000	22.58	23	0-1
				2615	38200	22.47	23	0-1
				2575	37800	21.85	22	0-2
	16-QAM		0	2595	38000	21.96	22	0-2
			1	2615	38200	21.90	22	0-2
				2575	37800	21.99	22	0-2
		25 RB	12	2595	38000	21.95	22	0-2
				2615	38200	21.90	22	0-2
				2575	37800	21.94	22	0-2
			25	2595	38000	21.94	22	0-2
				2615	38200	21.69	22	0-2
				2575	37800	21.79	22	0-2
		50	RB	2595	38000	21.80	22	0-2
				2615	38200	21.64	22	0-2

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				TDD Band 38				
BW(M	hz) Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				2572.5	37775	23.46	24	0
			0	2595	38000	23.72	24	0
				2617.5	38225	23.39	24	0
				2572.5	37775	23.60	24	0
		1 RB	12	2595	38000	23.86	24	0
				2617.5	38225	23.74	24	0
				2572.5	37775	23.50	24	0
			24	2595	38000	23.61	24	0
				2617.5	38225	23.24	24	0
				2572.5	37775	22.61	23	0-1
	QPSK		0	2595	38000	22.72	23	0-1
				2617.5	38225	22.52	23	0-1
				2572.5	37775	22.58	23	0-1
		12 RB	6	2595	38000	22.64	23	0-1
				2617.5	38225	22.46	23	0-1
				2572.5	37775	22.61	23	0-1
			13	2595	38000	22.77	23	0-1
				2617.5	38225	22.38	23	0-1
				2572.5	37775	22.65	23	0-1
		25	RB	2595	38000	22.79	23	0-1
5				2617.5	38225	22.38	23	0-1
5				2572.5	37775	22.73	23	0-1
			0	2595	38000	22.87	23	0-1
				2617.5	38225	22.67	23	0-1
				2572.5	37775	22.74	23	0-1
		1 RB	12	2595	38000	22.77	23	0-1
				2617.5	38225	22.45	23	0-1
				2572.5	37775	22.66	23	0-1
			24	2595	38000	22.82	23	0-1
				2617.5	38225	22.47	23	0-1
				2572.5	37775	21.73	22	0-2
	16-QAM		0	2595	38000	21.53	22	0-2
				2617.5	38225	21.52	22	0-2
				2572.5	37775	21.80	22	0-2
		12 RB	6	2595	38000	21.87	22	0-2
			L	2617.5	38225	21.40	22	0-2
	T			2572.5	37775	21.82	22	0-2
			13	2595	38000	21.81	22	0-2
				2617.5	38225	21.32	22	0-2
				2572.5	37775	21.89	22	0-2
		25	RB	2595	38000	21.94	22	0-2
		25RB		2617.5	38225	21.49	22	0-2

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

WLAN802.11 b/g/n(20M) conducted power table:

Bluetooth conducted power table:

	Mode	Channel	Frequency (MHz)	Average	Max. Rated Avg.		
	Mode			1Mbps	2Mbps	3Mbps	Power + Max. Tolerance
ĺ		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	

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

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SAR test exclusion for DC-HSDPA 7.

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

Paramet	er	Unit	Value	
Nominal Avg. Inf. Bit Rate)	kbps	60	
Inter-TTI Distance		TTI's	1	
Number of HARQ Proces	ses	Proces	6	
Information Bit Payload (.	N _{INF})	ses Bits	120	
Number Code Blocks	111	Blocks	1	
Binary Channel Bits Per T	ті	Bits	960	
Total Available SML's in U		SML's	19200	
Number of SML's per HA	-	SML's	3200	
Coding Rate	la moo.	0	0.15	
Number of Physical Chan	nel Codes	Codes	1	
Modulation			QPSK	
Note 2: Maximum num retransmission	listed in the table. ber of transmission is not allowed. The ersion 0 shall be use			
Inf. Bit Payload	120			
CRC Addition	120 24 CR	C		
Code Block Segmentation	144			
Turbo-Encoding (R=1/3)	432	2	12 Tail Bit	
1st Rate Matching		43	2	
RV Selection	960			
Physical Channel Segmentation 9	60			

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

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

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

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Sub-set	βε	β_{e} β_{a} β_{a} β_{a} β_{a}/β_{a} β_{he} β_{he} (note 1, note		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)	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	
Note2: CM Note3: Fo	A=1 for $\beta_0/\beta_0=1$ r subtest 2 the		1/15. 2/15 for the	TFC during th	5*β _¢ ne measurement per (TFC1,TF1) to β _c =1			

8. SAR test exclusion for HSPA+

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

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

Sub- test	β _c (Note3)	βd	βнs (Note1)	β _{ec}	β _{ed} (2xSF2) (Note 4)	β _{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β _{ed} 1: 30/15 β _{ed} 2: 30/15	β _{ed} 3: 24/15 β _{ed} 4: 24/15	3.5	2.5	14	105	105
Note 1 Note 2	Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.										
	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.										
Note 4											
Note 5											E-
	DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.										

9. LTE modes test according to KDB 941225D05v02r05.

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

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

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

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

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

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

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

For QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation in 5.2.1 and 5.2.2 are ≤ 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 > $\frac{1}{2}$ 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 > 1/2 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.

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

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WLAN802.11b DSSS SAR Test Requirements:

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

802.11g/n OFDM SAR Test Exclusion Requirements:

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

Other

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

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Mode Maximum power (dBm) Maximum power(mW) front/back sides Image: Maximum power (mW) test separation distance (mm) Exclusion threshold						
Mode power (dBm) power(mW) test separation distance Exclusion SAR				fro	ont/back sides	
	Mode			distance		
BT 12 15.849 15 1.664 NO	BT	12	15.849	15	1.664	NO

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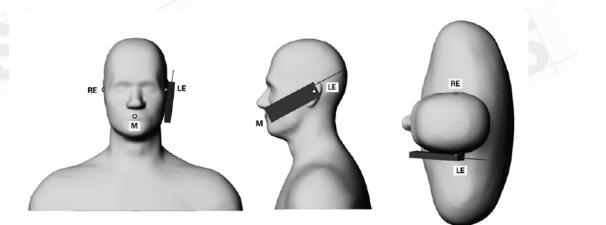
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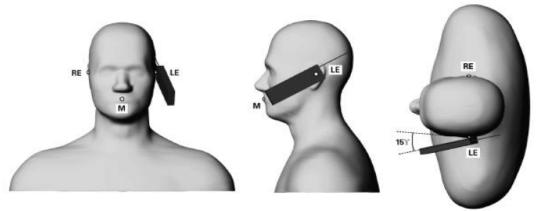
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1.6 Positioning Procedure

Head SAR measurement statement



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



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

Cheek/Touch Position:

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

Ear/Tilt Position:

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

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Body SAR measurement statement

1. Body-worn exposure: 15mm

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

2. Hotspot exposure: 10mm

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

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

Test configurations of WLAN

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

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

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1.7 Power reduction information

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

Hotspot ON

A fixed level power reduction is applied for 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 band

Operation Frequency Band	Mode	Reduction of maximum output power (dB)
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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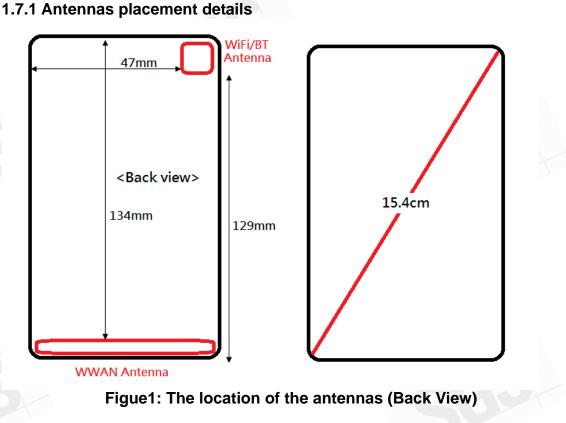
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1.8 Evaluation Procedures

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:

- 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

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

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

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

1.9.2 Calibration with Analytical Fields

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

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

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

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- (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.

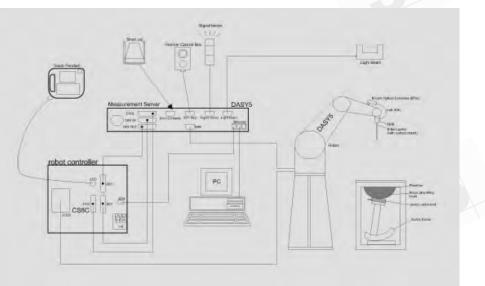


Fig. a A block diagram of the SAR measurement system

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

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1.11 System Components

EX3DV4 E-Field Probe

Const	ruction	Symmetrical design with triangular core	100					
		Built-in shielding against static charges	a see all a second					
		PEEK enclosure material (resistant to	1					
T		organic solvents, e.g., DGBE)	1					
Calibr	ation	Basic Broad Band Calibration in air						
		Conversion Factors (CF) for HSL						
		835/1900/2450/2600 MHz Additional CF						
		for other liquids and frequencies upon						
		request						
		10 MHz to > 6 GHz, Linearity: ± 0.6 dB						
Frequ	ency							
Direct	ivity	± 0.3 dB in HSL (rotation around probe ax	is)					
		± 0.5 dB in tissue material (rotation norma	I to probe axis)					
Dynar	nic	10 μW/g to > 100 mW/g						
Range	e	Linearity: \pm 0.2 dB (noise: typically < 1 μ W	//g)					
Dimer	nsions							
Applic	ation	n High precision dosimetric measurements in any exposure scer						
		(e.g., very strong gradient fields). Only	y probe which enables					
	compliance testing for frequencies up to 6 GHz with precision							
		better 30%.						

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

DEVICE HOLDER

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

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1.12 SAR System Verification

The microwave circuit arrangement for system verification is sketched in Fig. b. The daily system accuracy verification occurs within the flat section of the SAM phantom. A SAR measurement was performed to see if the measured SAR was within +/- 10% (according to KDB865664D01v01r04) from the target SAR values. These tests were done at 835/1900/2450/2600 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.

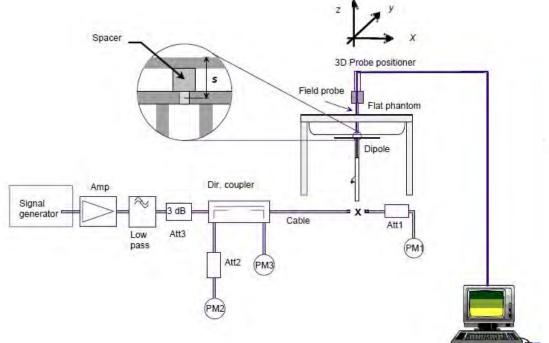


Fig. b The block diagram of system verification

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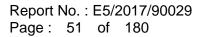
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Validation Kit	S/N	Frequ (Mł	,	1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date		
D835V2	4d063	835	Head	9.4	2.41	9.64	2.55%	Jun. 29, 2017		
D035V2	2 40003 035	5 035	000	Body	9.57	2.44	9.76	1.99%	Jul. 03, 2017	
D1900V2	5d172	5d173 1900	Head	40.7	9.92	39.68	-2.51%	Jul. 08, 2017		
D1900v2	50175		Body	40.2	9.88	39.52	-1.69%	Jul. 14, 2017		
D2450V2	727	2450	Head	52.2	13.40	53.60	2.68%	Jul. 04, 2017		
D2450V2	2 121 24		121 2450		Body	50.6	13.00	52.00	2.77%	Jul. 05, 2017
D2600V2	1005	5 2600	Head	55.5	13.70	54.80	-1.26%	Jul. 11, 2017		
D2000V2	1005	2000	Body	55.1	13.60	54.40	-1.27%	Jul. 05, 2017		

	Validation Kit	S/N	Frequ (MF	-	1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
	D835V2	4d120	835	Head	9.5	2.36	9.44	-0.63%	Sep. 29, 2017
	D035V2	40120	Body 9.68	9.68	2.47	9.88	2.07%	Sep. 29, 2017	
	D1900V2	900V2 5d173 1900 Head	Head	40.7	9.73	38.92	-4.37%	Sep. 29, 2017	
	D1900V2	50175	1900	Body	40.2	10.00	40.00	-0.50%	Sep. 29, 2017
	D2450V2	450V2 727 2450	2450	Head	52.2	13.10	52.40	0.38%	Sep. 29, 2017
	DZ400VZ	121	2450	Body	50.6	13.20	52.80	4.35%	Sep. 29, 2017
	D2600V2 1005 2600	Head	55.5	14.10	56.40	1.62%	Sep. 29, 2017		
D2600	D2000V2	1005	2000	Body	55.1	13.60	54.40	-1.27%	Sep. 29, 2017
			-			<i>.</i> .	1. 1		

Table 1. Results of system validation

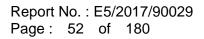
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1.13 Tissue Simulant Fluid for the Frequency Band

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, εr	Measured Conductivity, σ (S/m)	% dev ɛr	% dev σ
			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	y, % dev εr -1.28% -1.27% -1.26% -1.27% -1.25% -1.25% -1.24% -1.23% -1.23% -1.23% -1.23% -1.23% -0.52% -0.52% -0.52% -0.52% -0.37% -0.32% -0.37% -0.32% -0.32% -0.27% 0.00% 0.01% 2.70% 2.71% 2.72% 2.73% -3.90% -3.92% -3.94%	3.28%
		Jun. 29, 2017	836.6	41.500	0.902	42.019	0.872	-1.25%	3.30%
$\langle $			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%
			846.6	41.500	0.912	42.009	0.884	-1.23%	3.12%
			848.8	41.500	0.915	42.006	0.887	-1.22%	3.05%
			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%
	Head	Jul. 08, 2017	1880	40.000	1.400	40.129	1.375	-0.32%	1.79%
	пеац		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%
	ſ		2412	39.268	1.766	38.208	1.787	2.70%	-1.18%
		Jul. 04, 2017	2437	39.223	1.788	38.159	1.820	2.71%	-1.76%
		Jul. 04, 2017	2450	39.200	1.800	38.135	1.832	2.72%	-1.78%
			2462	39.185	1.813	38.114	1.847	2.73%	-1.87%
			2510	39.124	1.865	40.651	1.930	-3.90%	-3.46%
			2535	39.092	1.893	40.622	1.959	-3.91%	-3.50%
			2560	39.060	1.920	40.593	1.989	-3.92%	-3.59%
		Jul. 11, 2017	2580	39.035	1.942	40.570	2.012	-3.93%	-3.61%
			2595	39.015	1.958	40.553	2.029	-3.94%	-3.62%
			2600	39.009	1.964	40.547	2.036	-3.94%	-3.69%
			2610	38.996	1.975	40.535	2.047	-3.95%	-3.65%
ſ			824.2	55.242	0.969	53.362	1.000	3.40%	-3.18%
	Body	Jul. 03, 2017	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%

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Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, ɛr	$\begin{array}{c} \text{Measured} \\ \text{Conductivity,} \\ \sigma \text{ (S/m)} \end{array}$	% dev ɛr	% dev σ
		835	55.200	0.970	53.305	1.005	3.43%	-3.61%
		836.5	55.195	0.972	53.299	1.007	3.44%	-3.62%
	Jul. 03, 2017	836.6	55.195	0.972	53.299	1.007	3.44%	-3.60%
	5ul. 05, 2017	844	55.172	0.981	53.200	1.016	3.57%	-3.56%
		846.6	55.164	0.984	53.192	1.019	3.58%	-3.53%
		848.8	55.158	0.987	53.179	1.021	3.59%	-3.45%
1		1850.2	53.300	1.520	52.927	1.474	0.70%	3.03%
		1852.4	53.300	1.520	52.919	1.476	0.71%	2.89%
	Jul. 14, 2017	1880	53.300	1.520	52.762	1.504	1.01%	1.05%
		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%
Body		1909.8	53.300	1.520	52.736	1.534	1.06%	-0.92%
		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. 05, 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%
		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%

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Tiss Typ		Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivi ty, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivi ty, σ (S/m)	% dev ɛr	% dev σ
		835	41.500	0.900	41.525	0.907	-0.06%	-0.78%
	000.0047	836.6	41.500	0.902	41.519	0.909	-0.05%	-0.81%
	Sep. 29, 2017	844	41.500	0.910	41.511	0.919	-0.03%	-1.02%
		846.6	41.500	0.912	41.509	0.921	-0.02%	-0.93%
		1852.4	40.000	1.400	39.706	1.381	0.73%	1.36%
	Sep. 29, 2017	1900	40.000	1.400	39.607	1.433	0.98%	-2.36%
Hea		1909.8	40.000	1.400	39.497	1.444	1.26%	-3.14%
	Sep. 29, 2017	2412	39.268	1.766	39.855	1.811	-1.50%	-2.54%
	Sep. 29, 2017	2450	39.200	1.800	39.785	1.845	-1.49%	-2.50%
		2560	39.060	1.920	39.593	1.952	-1.36%	-1.67%
	Sep. 29, 2017	2595	39.015	1.958	39.553	1.992	-1.38%	-1.73%
		2600	39.009	1.964	39.547	1.999	-1.38%	-1.80%
		835	55.200	0.970	53.805	0.968	2.53%	0.21%
	Sep. 29, 2017	836.6	55.195	0.972	53.799	0.970	2.53%	0.20%
1	Sep. 29, 2017	844	55.172	0.981	53.700	0.979	2.67%	0.21%
		846.6	55.164	0.984	53.692	0.982	2.67%	0.23%
	/	1880	53.300	1.520	53.132	1.504	0.32%	1.05%
	Sep. 29, 2017	1900	53.300	1.520	53.120	1.524	0.34%	-0.26%
Boo	dy	1909.8	53.300	1.520	53.106	1.534	2.67%0.21%2.67%0.23%0.32%1.05%	-0.92%
	Sep. 29, 2017	2412	52.751	1.914	52.785	1.907	-0.07%	0.35%
	Sep. 29, 2017	2450	52.700	1.950	52.721	1.944	-0.04%	0.31%
		2510	52.624	2.035	51.964	2.075	1.25%	-1.96%
	Sep. 29, 2017	2560	52.560	2.106	51.891	2.146	1.27%	-1.90%
	060.23,2017	2595	52.515	2.156	51.832	2.195	1.30%	-1.83%
		2600	52.509	2.163	51.820	2.202	1.31%	-1.82%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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Fraguanay				Ingre	Ingredient				
Frequency (MHz)	Mode	DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	Total amount	
050	Head	-	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)	
850	Body	_	631.68 g	11.72 g	1.2 g		600 g	1.0L(Kg)	
1000	Head	444.52 g	552.42 g	3.06 g	-	y y		1.0L(Kg)	
1900	Body	300.67 g	716.56 g	4.0 g	_		1	1.0L(Kg)	
0450	Head	550ml	450ml	—	_	-	_	1.0L(Kg)	
2450	Body	301.7ml	698.3ml	—	—		_	1.0L(Kg)	
0000	Head	550ml	450ml		_		_	1.0L(Kg)	
2600	Body	301.7ml	698.3ml		_	_	_	1.0L(Kg)	

The composition of the tissue simulating liquid:

Table 3. Recipes for tissue simulating liquid

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1.14 Test Standards and Limits

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

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

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

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

Occupational/Controlled limits apply when persons are exposed as 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

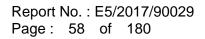
Notes:

prosecuted to the fullest extent of the law.

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

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2. Summary of Results

GSM 850

The data of TA-1029 from the FCC ID: 2AJOTTA-1029.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g ′kg)	Plot page
		(1111)				(dBm)		Measured	Reported	
	Re Cheek	-	190	836.6	34.50	33.53	25.03%	0.181	0.226	-
Head	Re Tilt	-	190	836.6	34.50	33.53	25.03%	0.075	0.094	-
(GSM)	Le Cheek	-	190	836.6	34.50	33.53	25.03%	0.184	0.230	73
	Le Tilt	-	190	836.6	34.50	33.53	25.03%	0.061	0.076	-
Body-worn	Front side	15	190	836.6	34.50	33.53	25.03%	0.208	0.260	74
(GSM)	Back side	15	190	836.6	34.50	33.53	25.03%	0.191	0.239	-
	Front side	10	190	836.6	34.50	33.53	25.03%	0.352	0.440	75
Hotspot	Back side	10	190	836.6	34.50	33.53	25.03%	0.265	0.331	-
(GPRS)	Bottom side	10	190	836.6	34.50	33.53	25.03%	0.161	0.201	-
<1Dn1Up>	Right side	10	190	836.6	34.50	33.53	25.03%	0.191	0.239	-
	Left side	10	190	836.6	34.50	33.53	25.03%	0.222	0.278	-

Tested TA-1007 SAR at the worst case position of TA-1029.

	Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1 (W/	SAR over g /kg)	Plot page
			` '			, , , , , , , , , , , , , , , , , , , ,	(dBm)		Measured	Reported	
	Head (GSM)	Le Cheek	-	190	836.6	34.50	33.53	25.03%	0.241	0.301	76
Ī	Body-worn (GSM)	Front side	15	190	836.6	34.50	33.53	25.03%	0.199	0.249	-
	Hotspot (GPRS) <1Dn1Up>	Front side	10	190	836.6	34.50	33.53	25.03%	0.298	0.373	-

2nd spot check

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1	•,	Plot page
Head (GSM)	Le Cheek	-	190	836.6	34.50	33.47	26.77%	0.176	0.223	-
Body-worn (GSM)	Front side	15	190	836.6	34.50	33.47	26.77%	0.194	0.246	-
Hotspot (GPRS) <1Dn1Up>	Front side	10	190	836.6	34.50	33.47	26.77%	0.344	0.436	-

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GSM 1900

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g ⁄kg)	Plot page
		(1111)				(dBm)		Measured	Reported	
	Re Cheek	-	810	1909.8	31.50	30.64	21.90%	0.140	0.171	77
Head	Re Tilt	-	810	1909.8	31.50	30.64	21.90%	0.044	0.054	-
(GSM)	Le Cheek	-	810	1909.8	31.50	30.64	21.90%	0.102	0.124	-
	Le Tilt	-	810	1909.8	31.50	30.64	21.90%	0.047	0.057	-
Body-worn	Front side	15	810	1909.8	31.50	30.64	21.90%	0.203	0.247	78
(GSM)	Back side	15	810	1909.8	31.50	30.64	21.90%	0.151	0.184	-
	Front side	10	512	1850.2	26.50	25.31	31.52%	0.343	0.451	-
	Back side	10	512	1850.2	26.50	25.31	31.52%	0.216	0.284	-
Hotspot	Bottom side	10	512	1850.2	26.50	25.31	31.52%	0.690	0.908	-
(GPRS)	Bottom side	10	661	1880	26.50	24.55	56.68%	0.644	1.009	-
<1Dn4Up>	Bottom side	10	810	1909.8	26.50	24.62	54.17%	0.697	1.075	79
	Right side	10	512	1850.2	26.50	25.31	31.52%	0.083	0.109	-
	Left side	10	512	1850.2	26.50	25.31	31.52%	0.053	0.070	-

The data of TA-1029 from the FCC ID: 2AJOTTA-1029.

Tested TA-1007 SAR at the worst case position of TA-1029.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1	SAR over g /kg) Reported	Plot page
Head (GSM)	Re Cheek	-	810	1909.8	31.50	30.64	21.90%	0.100	0.122	-
Body-worn (GSM)	Front side	15	810	1909.8	31.50	30.64	21.90%	0.189	0.230	-
Hotspot (GPRS) <1Dn4Up>	Bottom side	10	512	1850.2	26.50	25.31	31.52%	0.596	0.784	-

2nd spot check

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1	/kg)	Plot page
Head (GSM)	Re Cheek	-	810	1909.8	31.50	30.66	21.34%	0.135	0.164	-
Body-worn (GSM)	Front side	15	810	1909.8	31.50	30.66	21.34%	0.189	0.229	-
Hotspot (GPRS) <1Dn4Up>	Bottom side	10	512	1850.2	26.50	24.59	55.24%	0.684	1.062	-

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WCDMA Band II – RMC 12.2Kbps

The data of TA-1029 from the FCC ID: 2AJOTTA-1029.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g ⁄kg)	Plot page
		()				(dBm)		Measured	Reported	
	RE Cheek	-	9262	1852.4	23.5	23.47	0.69%	0.149	0.150	80
Head	RE Tilt	-	9262	1852.4	23.5	23.47	0.69%	0.037	0.037	-
Heau	LE Cheek	-	9262	1852.4	23.5	23.47	0.69%	0.124	0.125	-
	LE Tilt	-	9262	1852.4	23.5	23.47	0.69%	0.060	0.060	-
	Front side	10	9262	1852.4	23.5	23.47	0.69%	0.633	0.637	-
	Back side	10	9262	1852.4	23.5	23.47	0.69%	0.428	0.431	-
	Bottom side	10	9262	1852.4	23.5	23.47	0.69%	1.020	1.027	-
Hotspot	Bottom side	10	9400	1880	23.5	23.43	1.62%	1.060	1.077	81
Ποιδροι	Bottom side*	10	9400	1880	23.5	23.43	1.62%	1.050	1.067	-
	Bottom side	10	9538	1907.6	23.5	23.19	7.40%	0.995	1.069	-
	Right side	10	9262	1852.4	23.5	23.47	0.69%	0.145	0.146	-
	Left side	10	9262	1852.4	23.5	23.47	0.69%	0.093	0.093	-

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

Tested TA-1007 SAR at the worst case position of TA-1029.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1 (W/	/kg)	Plot page
Head	RE Cheek	-	9262	1852.4	23.5	23.47	0.69%	0.164	0.165	82
Hotspot	Bottom side	10	9400	1880	23.5	23.43	1.62%	1.050	1.067	-

2nd spot check

	Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1	SAR over g (kg) Reported	Plot page
1	Head	RE Cheek	-	9262	1852.4	23.5	23.49	0.23%	0.133	0.133	-
	Hotspot	Bottom side	10	9400	1880	23.5	23.49	0.23%	0.978	0.980	-

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WCDMA Band V – RMC 12.2Kbps

The data of TA-1029 from the FCC ID: 2AJOTTA-1029.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	1	SAR over g /kg)	Plot page
		()				(dBm)		Measured	Reported	
	RE Cheek	-	4233	846.6	25	24.34	16.41%	0.214	0.249	-
Head	RE Tilt	-	4233	846.6	25	24.34	16.41%	0.088	0.102	-
Heau	LE Cheek	-	4233	846.6	25	24.34	16.41%	0.218	0.254	83
	LE Tilt	-	4233	846.6	25	24.34	16.41%	0.070	0.081	-
	Front side	10	4233	846.6	25	24.34	16.41%	0.386	0.449	84
	Back side	10	4233	846.6	25	24.34	16.41%	0.309	0.360	-
Hotspot	Bottom side	10	4233	846.6	25	24.34	16.41%	0.202	0.235	-
	Right side	10	4233	846.6	25	24.34	16.41%	0.202	0.235	-
	Left side	10	4233	846.6	25	24.34	16.41%	0.241	0.281	-

Tested TA-1007 SAR at the worst case position of TA-1029.

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1	′kg)	Plot page
Head	LE Cheek	-	4233	846.6	25	24.34	16.41%	0.300	0.349	85
Hotspot	Front side	10	4233	846.6	25	24.34	16.41%	0.363	0.423	-

2nd spot check

Mode	Position	Distanc e (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	<u> </u>	SAR over g /kg) Reported	Plot page
Head	LE Cheek	-	4233	846.6	25	24.31	17.22%	0.209	0.245	-
Hotspot	Front side	10	4233	846.6	25	24.31	17.22%	0.375	0.440	-

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LTE FDD Band 5

The data of TA-1029 from the FCC ID: 2AJOTTA-1029.

Mode	Bandwidth (MHz)	Modulation	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
mode	(MHz)	inoculation	ND 0120	TE otart	1 Contorn	(mm)		(MHz)	Max. Toleranc e (dBm)	Power (dBm)	oouning	Measured	Reported	page
					RE Cheek	-	20060	844	24	23.74	6.17%	0.173	0.184	-
			1 RB	25	RE Tilt	-	20060	844	24	23.74	6.17%	0.093	0.099	-
			TIXD	25	LE Cheek	-	20060	844	24	23.74	6.17%	0.190	0.202	86
					LE Tilt	-	20060	844	24	23.74	6.17%	0.090	0.096	-
					RE Cheek	-	20450	829	23	22.62	9.14%	0.129	0.141	-
Head	10MHz	QPSK	25 RB	12	RE Tilt	-	20450	829	23	22.62	9.14%	0.070	0.076	-
ricad	1010112	GFOR	2310	12	LE Cheek	-	20450	829	23	22.62	9.14%	0.141	0.154	-
					LE Tilt	-	20450	829	23	22.62	9.14%	0.068	0.074	-
					RE Cheek	-	20060	844	23	22.65	8.39%	0.121	0.131	-
			50	DB	RE Tilt	-	20060	844	23	22.65	8.39%	0.067	0.073	-
			50	ΝD	LE Cheek	-	20060	844	23	22.65	8.39%	0.137	0.148	-
					LE Tilt	-	20060	844	23	22.65	8.39%	0.066	0.072	-
					Front side	10	20060	844	24	23.74	6.17%	0.314	0.333	87
					Back side	10	20060	844	24	23.74	6.17%	0.236	0.251	-
			1 RB	25	Bottom side	10	20060	844	24	23.74	6.17%	0.140	0.149	-
					Right side	10	20060	844	24	23.74	6.17%	0.211	0.224	-
					Left side	10	20060	844	24	23.74	6.17%	0.217	0.230	-
					Front side	10	20450	829	23	22.62	9.14%	0.235	0.256	-
					Back side	10	20450	829	23	22.62	9.14%	0.176	0.192	-
Hotspot	10MHz	QPSK	25 RB	12	Bottom side	10	20450	829	23	22.62	9.14%	0.105	0.115	-
				R L Fi B	Right side	10	20450	829	23	22.62	9.14%	0.158	0.172	-
					Left side	10	20450	829	23	22.62	9.14%	0.164	0.179	-
					Front side	10	20060	844	23	22.65	8.39%	0.236	0.256	-
					Back side	10	20060	844	23	22.65	8.39%	0.178	0.193	-
			50	RB	Bottom side	10	20060	844	23	22.65	8.39%	0.109	0.118	-
					Right side	10	20060	844	23	22.65	8.39%	0.159	0.172	-
					Left side	10	20060	844	23	22.65	8.39%	0.166	0.180	-

Tested TA-1007 SAR at the worst case position of TA-1029.

Mode		Bandwidth	Modulatior	PP Sizo	PP start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	;	(MHz)	viodulation	KD SIZE	RD SIAN	Position	(mm)	Сп	(MHz)	Max. Toleranc e (dBm)	Avg. Power (dBm)	, i i i i i i i i i i i i i i i i i i i	Measured	Reported	page
Head		10MHz	QPSK	1 RB	25	LE Cheek	-	20060	844	24	23.74	6.17%	0.256	0.272	88
Hotspo	ot	10MHz	QPSK	1 RB	25	Front side	10	20060	844	24	23.74	6.17%	0.125	0.133	-

2nd spot check

Mode	Bandwidth	Vodulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling		SAR over V/kg)	Plot
Would	(MHz)	VIOLULIU	10020	ND Start	T OSMOT	(mm)	5	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	, in the second s	Measured	Reported	page
Head	10MHz	QPSK	1 RB	25	LE Cheek	-	20060	844	24	23.64	8.64%	0.186	0.202	-
Hotspot	10MHz	QPSK	1 RB	25	Front side	10	20060	844	24	23.64	8.64%	0.306	0.332	-

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LTE FDD Band 7

The data of TA-1029 from the FCC ID: 2AJOTTA-1029.

head width (MH2)					_										
Head 20MHz 0.9FK 1 RB 50 RE Titl - 21360 2560 23 22.96 0.93% 0.017 0.017 - Head 20MHz 0.9FK 50 RB 50 RE Cheek - 21360 2560 23 22.96 0.93% 0.044 0.045 - LE Cheek - 21350 2560 22 21.98 0.46% 0.034 0.034 - LE Cheek - 21350 2560 22 21.98 0.46% 0.034 0.034 - LE Cheek - 21350 2560 22 21.98 1.46% 0.033 - LE Cheek - 21350 2560 22 21.95 1.46% 0.003 0.033 - RE Cheek - 21350 2560 22 21.95 1.46% 0.033 0.033 - LE Cheek - 21350 2560 22 21.95 1.46%	Mode		Modulatior	RB Size	RB start	Position		СН		Rated Avg. Power + Max. Toleranc	d Avg. Power	Scaling	1g (V	V/kg)	
Head 20MHz 0.9FK 1 RB 50 RE Titl - 21360 2560 23 22.96 0.93% 0.017 0.017 - Head 20MHz 0.9FK 50 RB 50 RE Cheek - 21360 2560 23 22.96 0.93% 0.044 0.045 - LE Cheek - 21350 2560 22 21.98 0.46% 0.034 0.034 - LE Cheek - 21350 2560 22 21.98 0.46% 0.034 0.034 - LE Cheek - 21350 2560 22 21.98 1.46% 0.033 - LE Cheek - 21350 2560 22 21.95 1.46% 0.003 0.033 - RE Cheek - 21350 2560 22 21.95 1.46% 0.033 0.033 - LE Cheek - 21350 2560 22 21.95 1.46%						RE Cheek	-	21350	2560	23	22.96	0.93%	0.044	0.045	-
Head 20MHz QPSK 50 RB 50 B 6 - 21350 2560 23 22.96 0.93% 0.132 0.048 0.045 Head 20MHz 60 RF - 21350 2560 23 22.96 0.93% 0.013 0.0034 0.034 - RE - 21350 2560 22 21.98 0.46% 0.013 0.013 - LE Check - 21350 2560 22 21.98 0.46% 0.034 0.034 - LE The - 21350 2560 22 21.95 1.16% 0.033 - - LE Check - 21350 2560 22 21.95 1.16% 0.033 - - - 1.16% 0.033 - - - 2.160 0.37% 0.283 0.286 0.90 - - 2.160 0.38% - 0.16 0.16							-								-
Head 20MHz QPSK 0.04k 0.03k 0.03k <th0< td=""><td></td><td></td><td></td><td>1 RB</td><td>50</td><td>LE Cheek</td><td>-</td><td>21350</td><td>2560</td><td>23</td><td>22.96</td><td>0.93%</td><td>0.132</td><td>0.133</td><td>89</td></th0<>				1 RB	50	LE Cheek	-	21350	2560	23	22.96	0.93%	0.132	0.133	89
Head 20MHz QPSK 50 RB 50 RE Tit - 21350 2560 22 21.98 0.46% 0.013 0.013 - LE Cheek - 21350 2560 22 21.98 0.46% 0.024 0.034 0.034 0.034 0.034 0.034 0.034 0.034 0.033 0.033 - Hotspot - 10° RE RE Cheek - 21350 2560 22 21.95 1.16% 0.033 0.033 - Body-worn 20MHz QPSK 1 RB 50 RE Tit - 21350 2560 22 21.95 1.16% 0.033 0.033 - Body-worn 20MHz QPSK 1 RB 50 RE cheek - 21350 2560 22 21.95 1.16% 0.033 0.033 - - Body-worn 20MHz QPSK 50 RB 50 RE cheek 15 21350 2560 22							-				22.96	0.93%	0.044		
Head 20MHz QPSk 50 RB 50 LE Cheek 21350 2560 22 21,98 0.46% 0.102 0.102 Hotspot 100 RB LE Tilt - 21350 2560 22 21,98 0.46% 0.034 0.033 0.033 Body-worn 200Hz QPSk 1 RB 50 RE Tilt - 21350 2560 22 21,95 1.16% 0.033 0.033 Body-worn 200Hz QPSk 1 RB 50 Front side 15 21350 2560 22 21,95 1.16% 0.010 0.010 Body-worn 20MHz QPSk 50 RB 50 Front side 15 21350 2560 23 22,96 0.93% 0.280 0.281 0.221 222 Botdy-worn 20MHz QPSk 50 RB 50 Front side 15 21350 2560 22 21,95						RE Cheek	-	21350	2560	22	21.98	0.46%	0.034	0.034	-
Body-worn 20MHz QPSK 1 RB 50 Front side 15 21350 2560 22 21.98 0.46% 0.102 0.102 0.102 0.102 0.102 0.102 0.102 0.102 0.102 0.102 0.102 0.102 0.103 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.013 0.010 0.101 0.010 0.101 0.010 0.101 0.010 0.101 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.033 0.035 0.036 0.	Unad	001411-	ODOK		50	RE Tilt	-	21350	2560	22	21.98	0.46%	0.013	0.013	-
Body-worn 20MHz QPSK RE Cheek - 21350 2560 22 21.95 1.16% 0.033 0.033 - Body-worn 20MHz QPSK 1 RB 50 Ernit - 21350 2560 22 21.95 1.16% 0.003 0.003 - Body-worn 20MHz QPSK 1 RB 50 Eront side 15 21350 2560 22 21.95 1.16% 0.003 0.003 - - 1.010 - 1.017 - 2.260 0.93% 0.283 0.286 90 3.83 - 3.22.96 0.93% 0.083 0.281 0.222 - - 3.22.96 0.93% 0.195 0.197 - 3.22.96 0.93% 0.281 0.221 - 2.21 - 1.05% 0.195 0.151 - - 7.75 7.75 3.22.60 2.22 2.195 1.16% 0.021 0.221 - 2.81 1.51%	Head	20MHZ	QPSK	50 RB	50	LE Cheek	-	21350	2560	22	21.98	0.46%	0.102	0.102	-
$ \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$						LE Tilt	-	21350	2560	22	21.98	0.46%	0.034	0.034	-
$ \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$						RE Cheek	-	21350	2560	22	21.95	1.16%	0.033	0.033	-
Body-worn 20MHz QPSK 1 RB 50 Front side 15 21350 2250 22 21.95 1.16% 0.100 0.101 - Body-worn 20MHz PQPSK 1 RB 50 RB 15 21350 2560 22 21.95 1.16% 0.033 0.033 - Body-worn 20MHz QPSK 1 RB 50 RB 15 21350 2560 22 21.98 0.46% 0.021 0.221 - Body-worn 50 RB 50 RB 50 RE 15 21350 2560 22 21.98 0.46% 0.161 - <td< td=""><td></td><td></td><td></td><td>100</td><td></td><td>RE Tilt</td><td>-</td><td>21350</td><td>2560</td><td>22</td><td>21.95</td><td>1.16%</td><td>0.013</td><td>0.013</td><td>-</td></td<>				100		RE Tilt	-	21350	2560	22	21.95	1.16%	0.013	0.013	-
Body-worn 20MHz QPSK 1 RB 50 Front side 15 21350 2560 23 22.96 0.93% 0.283 0.286 90 Body-worn 50 RB 50 RB 50 Front side 15 21350 2560 23 22.96 0.93% 0.195 0.197 - 100 RB 50 RB 50 Front side 15 21350 2560 22 21.98 0.46% 0.221 0.221 - 100 RB Front side 15 21350 2560 22 21.95 1.16% 0.46% 0.150 0.516 - Back side 10 21100 2535 22.5 22.17 7.89% 0.305 0.545 - Bottom side 10 20850 2510 22.5 21.87 15.61% 1.000 1.168 0.352 - Bottom side 10 21100 2535 22.5 21.87 15.61% 1.000 1.179 91 <td></td> <td></td> <td></td> <td>100</td> <td>RB</td> <td>LE Cheek</td> <td>-</td> <td>21350</td> <td>2560</td> <td>22</td> <td>21.95</td> <td>1.16%</td> <td>0.100</td> <td>0.101</td> <td>-</td>				100	RB	LE Cheek	-	21350	2560	22	21.95	1.16%	0.100	0.101	-
Body-worn 20MHz QPSK 1RB 50 Back side 15 21350 2560 23 22.96 0.93% 0.195 0.197 - Body-worn 20MHz QPSK 50 RB 50 Front side 15 21350 2560 22 21.98 0.46% 0.221 0.2221 - Back side 15 21350 2560 22 21.95 1.16% 0.218 0.221 - Back side 15 21350 2560 22 21.95 1.16% 0.147 0.149 - Back side 15 21350 2560 22 21.95 1.16% 0.026 0.336 - Back side 10 21100 2535 22.5 22.17 7.89% 0.326 - - Botom side 10 2100 2535 22.5 21.97 7.89% 0.964 1.029 - - Botom side 10 21100 2535 22.5 21.						LE Tilt	-	21350	2560	22	21.95	1.16%	0.033	0.033	-
Body-worn 20MHz QPSK 6 6 6 15 21350 2560 22 21.98 0.46% 0.221 0.222 Body-worn 0 P 50 RB 50 Back side 15 21350 2560 22 21.98 0.46% 0.221 0.222 0.221 0.221 0.221 0.221 0.221 0.221 0.221 0.221 0.221 0.211 0.221 0.211 0.221 0.211 0.221 0.211 0.221 0.221 0.211 0.221 0.211 0.221 0.211 0.221 0.211 0.221 0.211 0.221 0.211 0.221 0.211 0.255 0.217 7.89% 0.326 0.352 0.55 0.505 0.505 0.545 0.505 0.545 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505 0.505				4.00	50	Front side	15	21350	2560	23	22.96	0.93%	0.283	0.286	90
Body-worn 20MHz QPSK 50 RB 50 Back side 15 21350 2560 22 21.98 0.46% 0.150 0.151 - 100 RB Front side 15 21350 2560 22 21.95 1.16% 0.218 0.221 - Back side 15 21350 2560 22 21.95 1.16% 0.147 0.149 - Back side 10 21100 2535 22.5 22.17 7.89% 0.505 0.545 - Back side 10 21100 2535 22.5 22.17 7.89% 0.326 0.352 - Bottom side 10 2100 2535 22.5 22.17 7.89% 0.954 1.029 - Bottom side 10 2100 2535 22.5 22.17 7.89% 0.954 1.029 - Bottom side 10 21100 2535 22.5 2.177 7.89% 0.160				TRB	50	Back side	15	21350	2560	23	22.96	0.93%	0.195	0.197	-
Hotspot 20MHz QPSK Additional and the second se	Podu worp	2014	ODek	FODD	50	Front side	15	21350	2560	22	21.98	0.46%	0.221	0.222	-
Hotspot 20MHz QPSK Image: height side in the side in	Body-worn		QPSN	50 KB	50	Back side	15	21350	2560	22	21.98	0.46%	0.150	0.151	-
Hotspot 20MHz QPSK QPSK Front side 10 21300 22500 22 21.95 1.16% 0.147 0.149 - Hotspot Image: Second Sec				100	DD	Front side	15	21350	2560	22	21.95	1.16%	0.218	0.221	-
Hotspot 20MHz QPSK arr R 50 RB 50 RB 50 RB 50 RB 50 RB 10 21100 2235 22.5 21.17 7.89% 0.326 0.352 Hotspot 1 RB 1 RB 50 RB 10 20850 2510 22.5 21.87 15.61% 1.000 1.156 Bottom side 10 21300 2556 22.5 21.87 15.61% 1.000 1.156 Bottom side 10 21300 2560 22.5 21.17 7.89% 0.966 1.029 Bottom side 10 21100 2535 22.5 22.17 7.89% 0.160 0.173 Left side 10 21100 2535 22.5 22.17 7.89% 0.010 0.118 Bottom side 10 21350 2560 22 21.43 14.02% 0.268 0.306 Bottom side 10 2135				100	ND	Back side	15	21350	2560	22	21.95	1.16%	0.147	0.149	-
Hotspot 20MHz QPSK R 50 RB 0 Bottom side 10 20850 2510 22.5 21.87 15.61% 1.020 1.179 91 Hotspot 1 RB 50 Bottom side 10 20850 2510 22.5 21.87 15.61% 1.000 1.156 - Bottom side 10 21100 2535 22.5 22.17 7.89% 0.954 1.029 - Bottom side 10 21100 2535 22.5 22.17 7.89% 0.100 0.118 - S0 RB 0 Bottom side 10 21100 2535 22.5 22.17 7.89% 0.100 0.118 - 50 RB 0 Bottom side 10 21350 2560 22 21.43 14.02% 0.810 0.930 - Bottom side 10 21350 2560 22 21.43 14.02% 0.268 0.306 - - Left side						Front side	-								-
Hotspot 20MHz QPSK 1 RB 50 Bottom side* 10 20850 2510 22.5 21.87 15.61% 1.000 1.156 - Hotspot 1 RB - Bottom side 10 21100 2535 22.5 22.17 7.89% 0.954 1.029 - Bottom side 10 21100 2535 22.5 22.17 7.89% 0.160 0.173 - Left side 10 21100 2535 22.5 22.17 7.89% 0.109 0.118 - 50 RB 0 Bottom side 10 21100 2535 22 21.40 14.82% 0.810 0.930 - 50 RB 0 Bottom side 10 21350 2560 22 21.43 14.02% 0.816 0.0306 - Back side 10 21350 2560 22 21.43 14.02% 0.919 - Bottom side 10 21350						Back side	10	21100	2535	22.5	22.17	7.89%	0.326	0.352	-
Hotspot 20MHz QPSK 1 RB 50 Bottom side 10 21100 2535 22.5 22.17 7.89% 0.954 1.029 - Hotspot 20MHz QPSK Right side 10 21100 2535 22.5 22.17 7.89% 0.954 1.029 - Hotspot 20MHz QPSK Right side 10 21100 2535 22.5 22.17 7.89% 0.160 0.173 - 50 RB 0 Bottom side 10 21100 2535 22.5 22.17 7.89% 0.109 0.118 - 50 RB 0 Bottom side 10 21350 2560 22 21.43 14.02% 0.414 0.472 - Back side 10 21350 2560 22 21.43 14.02% 0.286 0.306 - Hotspot 50 RB 50 Right side 10 21350 2560 22 21.43 14.02%							-			-	-				91
Hotspot 20MHz QPSK Gentsmann Bottom side 10 21100 2535 22.5 22.17 7.89% 0.954 1.029 - Hotspot 20MHz QPSK Image: constraint of the second sec				1 RB	50	Bottom side*	10	20850	2510	-	-				2-
Hotspot 20MHz QPSK Right side 10 21100 2535 22.5 22.17 7.89% 0.160 0.173 - Hotspot 50 RB 0 Bottom side 10 21100 2535 22.5 22.17 7.89% 0.109 0.118 - 50 RB 0 Bottom side 10 21100 2535 22 21.40 14.82% 0.810 0.930 - 50 RB 0 Bottom side 10 21350 2560 22 21.43 14.02% 0.414 0.472 - Back side 10 21350 2560 22 21.43 14.02% 0.268 0.306 - Bottom side 10 21350 2560 22 21.43 14.02% 0.791 0.902 - Right side 10 21350 2560 22 21.43 14.02% 0.091 - Bottom side 10 21350 2560 22 <t< td=""><td></td><td>/</td><td></td><td> =</td><td></td><td></td><td>-</td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td>-</td></t<>		/		=			-			-					-
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Hotspot 20MHz QPSK 50 RB 0 Bottom side 10 21100 2535 22 21.40 14.82% 0.810 0.930 - Hotspot 50 RB 0 Bottom side 10 21350 2560 22 21.43 14.02% 0.414 0.472 - Back side 10 21350 2560 22 21.43 14.02% 0.268 0.306 - Back side 10 21350 2560 22 21.43 14.02% 0.268 0.306 - Bottom side 10 21350 2560 22 21.43 14.02% 0.791 0.902 - Right side 10 21350 2560 22 21.43 14.02% 0.791 0.902 - Right side 10 21350 2560 22 21.43 14.02% 0.085 0.097 - Front side 10 21350 2560 22 21.41 <td< td=""><td></td><td>1</td><td></td><td></td><td></td><td>9</td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td></td><td>-</td></td<>		1				9				-					-
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Hotspot 20MHz QPSk 50 RB 50 RB <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td></td><td></td><td>-</td><td></td><td>-</td><td>-</td><td></td></t<>							-				-		-	-	
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3	1				/		-								
						Left side	10	21350	2560	22	21.41	14.55%	0.083	0.095	

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

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only. 除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。

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Tested TA-1007 SAR at the worst case position of TA-1029.

Mode	Bandwidth	Modulatior	PP Sizo	PP start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V		Plot
Mode	(MHz)	viodulatioi	KB SIZE	ND SIGH	Position	(mm)	бп	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	, in the second s	Measured	Reported	page
Head	20MHz	QPSK	1 RB	50	LE Cheek	-	21350	2560	23	22.96	0.93%	0.076	0.077	-
Body-worn	20MHz	QPSK	1 RB	50	Front side	15	21350	2560	23	22.96	0.93%	0.267	0.269	-
Hotspot	20MHz	QPSK	1 RB	50	Bottom side	10	20850	2510	22.5	21.87	15.61%	0.980	1.133	-

2nd spot check

Mode	Bandwidth	Modulatior	PB Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V		Plot
Mode	(MHz)	viodulatioi	KD SIZE	ND SIAN	FUSICION	(mm)	Сп	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	, in the second s	Measured	Reported	page
Head	20MHz	QPSK	1 RB	50	LE Cheek	-	21350	2560	23	22.91	2.09%	0.088	0.090	-
Body-worn	20MHz	QPSK	1 RB	50	Front side	15	21350	2560	23	22.91	2.09%	0.274	0.280	-
Hotspot	20MHz	QPSK	1 RB	50	Bottom side	10	20850	2510	22.5	22.91	-9.01%	1.000	0.910	-

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LTE TDD Band 38

The data of TA-1029 from the FCC ID: 2AJOTTA-1029.

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	viodulation	110 0120	ND Start	rositori	(mm)	01	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	ocanng	Measured	Reported	page
					RE Cheek	-	38000	2595	24	23.89	2.57%	0.027	0.028	-
			1 RB	0	RE Tilt	-	38000	2595	24	23.89	2.57%	0.010	0.010	-
			IND	0	LE Cheek	-	38000	2595	24	23.89	2.57%	0.061	0.063	92
					LE Tilt	-	38000	2595	24	23.89	2.57%	0.035	0.036	-
					RE Cheek	-	38000	2595	23	22.91	2.09%	0.020	0.020	-
Head	20MHz	QPSK	50 RB	25	RE Tilt	-	38000	2595	23	22.91	2.09%	0.008	0.008	-
Heau	ZUIVINZ	QFSN	30 KB	20	LE Cheek	-	38000	2595	23	22.91	2.09%	0.047	0.048	-
					LE Tilt	-	38000	2595	23	22.91	2.09%	0.027	0.028	-
					RE Cheek	-	38000	2595	23	22.86	3.28%	0.020	0.021	-
			100	RB	RE Tilt	-	38000	2595	23	22.86	3.28%	0.008	0.008	-
			100	ND	LE Cheek	-	38000	2595	23	22.86	3.28%	0.046	0.048	-
					LE Tilt	-	38000	2595	23	22.86	3.28%	0.027	0.028	-
					Front side	10	38000	2595	24	23.89	2.57%	0.285	0.292	-
					Back side	10	38000	2595	24	23.89	2.57%	0.179	0.184	-
			1 RB	0	Bottom side	10	38000	2595	24	23.89	2.57%	0.578	0.593	93
					Right side	10	38000	2595	24	23.89	2.57%	0.107	0.110	-
					Left side	10	38000	2595	23	22.91	2.09%	0.060	0.061	-
					Front side	10	38000	2595	23	22.91	2.09%	0.221	0.226	-
1					Back side	10	38000	2595	23	22.91	2.09%	0.140	0.143	-
Hotspot	20MHz	QPSK	50 RB	25	Bottom side	10	38000	2595	23	22.91	2.09%	0.452	0.461	-
					Right side	10	38000	2595	23	22.91	2.09%	0.082	0.084	-
					Left side	10	38000	2595	23	22.91	2.09%	0.045	0.046	<u> </u>
	/				Front side	10	38000	2595	23	22.86	3.28%	0.218	0.225	-
					Back side	10	38000	2595	23	22.86	3.28%	0.138	0.143	-
			100	RB	Bottom side	10	38000	2595	23	22.86	3.28%	0.444	0.459	-
					Right side	10	38000	2595	23	22.86	3.28%	0.080	0.083	-
					Left side	10	38000	2595	23	22.86	3.28%	0.044	0.045	-

Tested TA-1007 SAR at the worst case position of TA-1029.

Mode	Bandwidth	Modulatior	PR Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Widde	(MHz)	viodulation	10 5126	ND Start	rosition	(mm)	6	(MHz)	Max. Toleranc e (dBm)	Power (dBm)	· ·	Measured	Reported	page
Head	20MHz	QPSK	1 RB	0	LE Cheek	-	38000	2595	24	23.89	2.57%	0.060	0.062	-
Hotspot	20MHz	QPSK	1 RB	0	Bottom side	10	38000	2595	24	23.89	2.57%	0.497	0.510	-

2nd Spot check

2	Mode	Bandwidth (MHz)	Modulatior	RB Size	RB start	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Toleranc e (dBm)	Measure d Avg. Power (dBm)	Scaling	Averaged 1g (V Measured	V/kg)	Plot page
	Head	20MHz	QPSK	1 RB	0	LE Cheek	·	38000	2595	24	23.95	1.16%	0.050	0.051	-
	Hotspot	20MHz	QPSK	1 RB	0	Bottom side	10	38000	2595	24	23.95	1.16%	0.567	0.574	-

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WiFi 2.4GHz – WLAN802.11b

The data of TA-1029 from the FCC ID: 2AJOTTA-1029.

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	
0.0	RE Cheek	-	1	2412	17.5	17.34	3.75%	0.315	0.327	94
Head	RE Tilt	-	1	2412	17.5	17.34	3.75%	0.204	0.212	-
Tieau	LE Cheek	-	1	2412	17.5	17.34	3.75%	0.151	0.157	-
	LE Tilt	-	1	2412	17.5	17.34	3.75%	0.114	0.118	-
	Front side	10	1	2412	17.5	17.34	3.75%	0.047	0.049	-
Hotspot	Back side	10	1	2412	17.5	17.34	3.75%	0.161	0.167	95
riotspot	Top side	10	1	2412	17.5	17.34	3.75%	0.033	0.034	-
	Left side	10	1	2412	17.5	17.34	3.75%	0.046	0.048	-

Tested TA-1007 SAR at the worst case position of TA-1029.

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S (W/	•	Plot page
		· · ·		· · · ·	Tolerance (dBm)	(dBm)		Measured	Reported	
Head	RE Cheek	-	1	2412	17.5	17.34	3.75%	0.230	0.239	-
Hotspot	Back side	10	1	2412	17.5	17.34	3.75%	0.126	0.131	-

2nd spot check

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged S (W/	′kg)	Plot page
		. ,		、 ,	Tolerance (dBm)	(dBm)		Measured	Reported	
Head	RE Cheek	-	1	2412	17.5	17.29	4.95%	0.307	0.322	-
Hotspot	Back side	10	1	2412	17.5	17.29	4.95%	0.143	0.150	

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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.

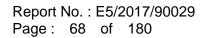
4.Based on KDB447498D01 note 36, when SAR test exclusion is allowed by other published RF exposure KDB procedures, such as the 2.5 cm hotspot mode SAR test exclusion for an edge or surface, then estimated SAR is not required to determine simultaneous SAR test exclusion.

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

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

mode	position	max. power (dB)	max. power (mW)	f(GHz)	distance (mm)	х	Estimated SAR
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 \leq 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 T	Fransmission	Combination
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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation						
Frequency		.,.	reported S	ΣSAR		
band		osition	WWAN	WLAN	<1.6W/kg	
			0.226	0.327	0.55	
GSM 850	Head	Right tilt	0.094	0.212	0.31	
G3W 050	пеац	Left cheek	0.301	0.157	0.46	
		Left tilt	0.076	0.118	0.19	
		Front	0.440	0.049	0.49	
		Back	0.331	0.167	0.50	
GPRS 850	Hotspot	Тор		0.034	0.03	
(1Dn1UP)	Ποιδροι	Bottom	0.201	-	0.20	
		Right	0.239	-	0.24	
		Left	0.278	0.048	0.33	
	Head	Right cheek	0.171	0.327	0.50	
GSM 1900		Right tilt	0.054	0.212	0.27	
G2IN 1900		Left cheek	0.124	0.157	0.28	
			0.057	0.118	0.18	
	Hotspot	Front	0.451	0.049	0.50	
		Back	0.284	0.167	0.45	
GPRS 1900		Тор	-	0.034	0.03	
(1Dn4UP)		Bottom	1.075	-	1.08	
		Right	0.109	-	0.13	
		Left	0.070	0.048	0.12	
		Right cheek	0.165	0.327	0.49	
	Head	Right tilt	0.037	0.212	0.25	
	Head	Left cheek	0.125	0.157	0.28	
		Left tilt	0.060	0.118	0.18	
WCDMA		Front	0.637	0.049	0.69	
Band II		Back	0.431	0.167	0.60	
		Тор	-	0.034	0.03	
	Hotspot	Bottom	1.077	-	1.08	
		Right	0.146	-	0.15	
		Left	0.093	0.048	0.14	

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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation						
Frequency		:4:	reported S	ΣSAR		
band	Position		WWAN	WLAN	<1.6W/kg	
		Right cheek	0.249	0.327	0.58	
	Head	Right tilt	0.102	0.212	0.31	
	Tieau	Left cheek	0.349	0.157	0.51	
		Left tilt	0.081	0.118	0.20	
WCDMA		Front	0.449	0.049	0.50	
Band V		Back	0.360	0.167	0.53	
	Hotspot	Тор	-	0.034	0.03	
	Tiotopot	Bottom	0.235	-	0.24	
		Right	0.235	-	0.24	
		Left	0.281	0.048	0.33	
	Head	Right cheek	0.184	0.327	0.51	
		Right tilt	0.099	0.212	0.31	
		Left cheek	0.272	0.157	0.43	
		Left tilt	0.096	0.118	0.21	
LTE FDD	Hotspot	Front	0.333	0.049	0.38	
Band 5		Back	0.251	0.167	0.42	
		Тор	-	0.034	0.03	
		Bottom	0.149	-	0.15	
		Right	0.224	-	0.22	
		Left	0.230	0.048	0.28	
		Right cheek	0.045	0.327	0.37	
		Right tilt	0.017	0.212	0.23	
	Head	Left cheek	0.133	0.157	0.29	
1		Left tilt	0.045	0.118	0.16	
LTE FDD		Front	0.545	0.049	0.59	
Band 7		Back	0.352	0.167	0.52	
	Hotspot	Тор	-	0.034	0.03	
	rioispol	Bottom	1.179	-	1.18	
		Right	0.173	-	0.17	
		Left	0.118	0.048	0.17	

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reported SAR WWAN and WLAN 2.4GHz, ΣSAR evaluation							
Frequency	Position		reported SAR / W/kg		ΣSAR		
band			WWAN	WLAN	<1.6W/kg		
Head		Right cheek	0.028	0.327	0.36		
	Head	Right tilt	0.010	0.212	0.22		
		Left cheek		0.157	0.22		
		Left tilt	0.036	0.118	0.15		
LTE TDD	Hotspot	Front	0.292	0.049	0.34		
Band 38		Back	0.184	0.167	0.35		
		Тор	-	0.034	0.03		
		Bottom	0.593	-	0.59		
		Right	0.110	-	0.11		
		Left	0.062	0.048	0.11		

reported SAR WWAN and Bluetooth, ΣSAR evaluation							
Frequency			reported SAR / W/kg		ΣSAR		
band	Pos	ition	WWAN	Bluetooth	<1.6W/kg		
GSM 850	Body-worn	Front	0.260	0.222	0.48		
0.0101 0.000	Douy-worn	Back	0.239	0.222	0.46		
GSM 1900	Body-worn	Front	0.247	0.222	0.47		
GSIM 1900	Bouy-worn	Back	0.184	0.222	0.41		
WCDMA	Body-worn	Front	0.637	0.222	0.86		
Band II		Back	0.431	0.222	0.65		
WCDMA	Rody worn	Front	0.449	0.222	0.67		
Band V	Body-worn	Back	0.360	0.222	0.58		
LTE FDD Band 5	Body-worn	Front	0.333	0.222	0.56		
LTE FDD Banu 5		Back	0.251	0.222	0.47		
LTE FDD Band 7	Body-worn	Front	0.286	0.222	0.51		
LTE FDD Ballu 7	Bouy-worn	Back	0.197	0.222	0.42		
LTE TDD Band 38	Body-worn	Front	0.292	0.222	0.51		
LTE TOD Bailu 30	Bouy-worn	Back	0.184	0.222	0.41		

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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
	Probe	EX3DV4	3831	Jan .23,2017	Jan .22,2018
		D835V2	4d063	Aug.25,2016	Aug.24,2017
		D835V2	4d120	Jul.03,2017	Jul.02,2018
SPEAG	System Validation Dipole	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	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
Agilopt	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
Agilopt	Devuer Concer	E020411	MY52200003	Oct.17,2016	Oct.16,2017
Agilent	Power Sensor	E9301H	MY52200004	Oct.17,2016	Oct.16,2017
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; σ = 0.872 S/m; ϵ_r = 42.019; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 23.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

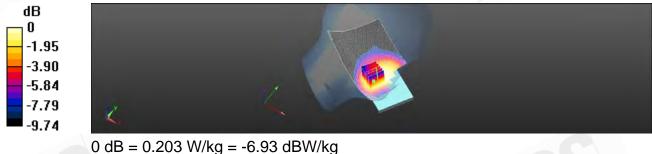
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2; •
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.207 W/kg

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

dy=8mm, dz=5mm Reference Value = 4.210 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 0.220 W/kg SAR(1 g) = 0.184 W/kg; SAR(10 g) = 0.144 W/kgMaximum value of SAR (measured) = 0.203 W/kg



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Date: 2017/7/3

GSM 850 Body-worn Front side CH 190 15mm

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

DASY5 Configuration:

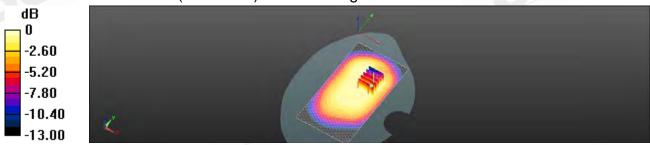
- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.206 W/kg

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

dy=8mm, dz=5mm Reference Value = 14.12 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 0.282 W/kg SAR(1 g) = 0.208 W/kg; SAR(10 g) = 0.154 W/ka Maximum value of SAR (measured) = 0.244 W/kg



0 dB = 0.244 W/kg = -6.13 dBW/kg

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Date: 2017/7/3

GPRS 850_Hotspot_Front side_CH 190_10mm

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

DASY5 Configuration:

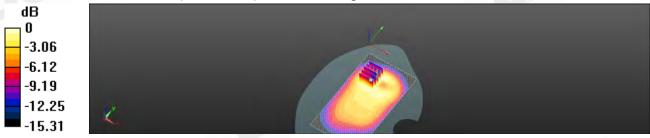
- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.466 W/kg

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

dy=8mm, dz=5mm Reference Value = 15.55 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 0.576 W/kg SAR(1 g) = 0.352 W/kg; SAR(10 g) = 0.227 W/kg Maximum value of SAR (measured) = 0.460 W/kg



0 dB = 0.460 W/kg = -3.37 dBW/kg

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GSM 850 Head Le Cheek CH 190

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

DASY5 Configuration:

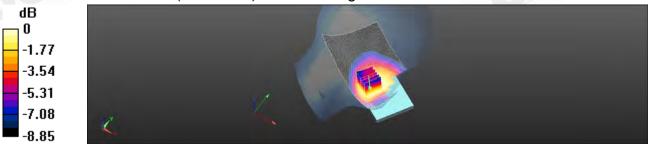
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.274 W/kg

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

dy=8mm, dz=5mm Reference Value = 6.885 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 0.286 W/kg SAR(1 g) = 0.241 W/kg; SAR(10 g) = 0.188 W/kg Maximum value of SAR (measured) = 0.268 W/kg



0 dB = 0.268 W/kg = -5.73 dBW/kg

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Date: 2017/7/8

GSM 1900 Head Re Cheek CH 810

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

DASY5 Configuration:

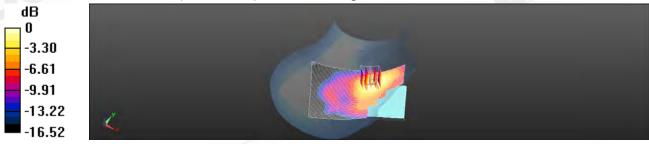
- Probe: EX3DV4 SN3923; ConvF(8.9, 8.9, 8.9); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.181 W/kg

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

dy=8mm, dz=5mm Reference Value = 4.693 V/m; Power Drift = 0.11 dB Peak SAR (extrapolated) = 0.208 W/kg SAR(1 g) = 0.140 W/kg; SAR(10 g) = 0.090 W/kg Maximum value of SAR (measured) = 0.178 W/kg



0 dB = 0.178 W/kg = -7.50 dBW/kg

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Date: 2017/7/14

GSM 1900 Body-worn Front side CH 810 15mm

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

DASY5 Configuration:

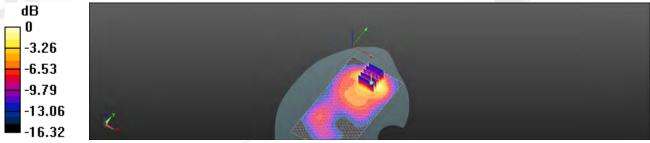
- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.274 W/kg

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

dy=8mm, dz=5mm Reference Value = 4.275 V/m; Power Drift = 0.13 dB Peak SAR (extrapolated) = 0.331 W/kg SAR(1 g) = 0.203 W/kg; SAR(10 g) = 0.117 W/ka Maximum value of SAR (measured) = 0.273 W/kg



0 dB = 0.273 W/kg = -5.64 dBW/kg

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Date: 2017/7/14

GPRS 1900 Hotspot Bottom side CH 810 10mm

Communication System: GPRS (1Dn4Up); Frequency: 1909.8 MHz; Duty Cycle: 1:2 Medium parameters used: f = 1910 MHz; σ = 1.534 S/m; ϵ r = 52.736; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.0°C; Liquid temperature: 21.8°C

DASY5 Configuration:

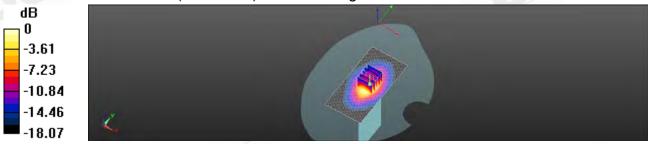
- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 1.04 W/kg

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

dy=8mm, dz=5mm Reference Value = 25.54 V/m; Power Drift = -0.15 dB Peak SAR (extrapolated) = 1.18 W/kg SAR(1 g) = 0.697 W/kg; SAR(10 g) = 0.375 W/ka Maximum value of SAR (measured) = 0.955 W/kg



0 dB = 0.955 W/kg = -0.20 dBW/kg

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Date: 2017/7/8

WCDMA Band II_Head_Re Cheek_CH 9262

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

DASY5 Configuration:

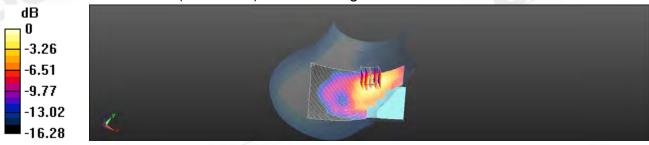
- Probe: EX3DV4 SN3923; ConvF(8.9, 8.9, 8.9); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.187 W/kg

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

dy=8mm, dz=5mm Reference Value = 4.406 V/m; Power Drift = 0.13 dB Peak SAR (extrapolated) = 0.222 W/kg SAR(1 g) = 0.149 W/kg; SAR(10 g) = 0.094 W/kg Maximum value of SAR (measured) = 0.190 W/kg



0 dB = 0.190 W/kg = -7.21 dBW/kg

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WCDMA Band II Hotspot Bottom side CH 9400 10mm

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

DASY5 Configuration:

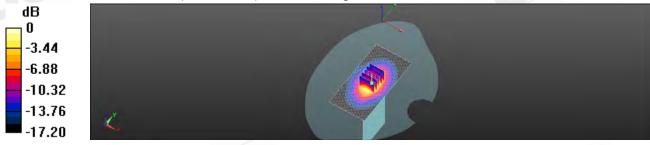
- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 1.52 W/kg

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

dy=8mm, dz=5mm Reference Value = 30.43 V/m; Power Drift = -0.12 dB Peak SAR (extrapolated) = 1.78 W/kg SAR(1 g) = 1.06 W/kg; SAR(10 g) = 0.582 W/kg Maximum value of SAR (measured) = 1.46 W/kg



0 dB = 1.46 W/kg = 1.63 dBW/kg

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Date: 2017/7/8

WCDMA Band II_Head_Re Cheek_CH 9262

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

DASY5 Configuration:

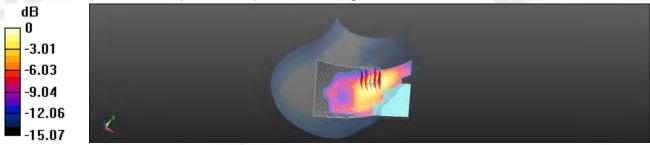
- Probe: EX3DV4 SN3923; ConvF(8.9, 8.9, 8.9); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Head/Area Scan (71x111x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.203 W/kg

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

dy=8mm, dz=5mm Reference Value = 4.966 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 0.244 W/kg SAR(1 g) = 0.164 W/kg; SAR(10 g) = 0.104 W/kg Maximum value of SAR (measured) = 0.197 W/kg



0 dB = 0.197 W/kg = -7.06 dBW/kg

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Date: 2017/6/29

WCDMA Band V Head Le Cheek CH 4233

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

DASY5 Configuration:

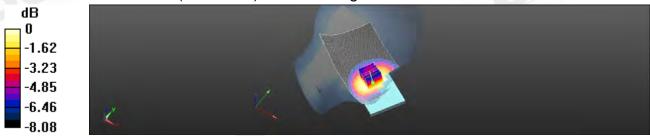
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.246 W/kg

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

dy=8mm, dz=5mm Reference Value = 4.029 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.262 W/kg SAR(1 g) = 0.218 W/kg; SAR(10 g) = 0.173 W/kg Maximum value of SAR (measured) = 0.242 W/kg



0 dB = 0.242 W/kg = -6.16 dBW/kg

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Date: 2017/7/3

WCDMA Band V Hotspot Front side CH 4233 10mm

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

DASY5 Configuration:

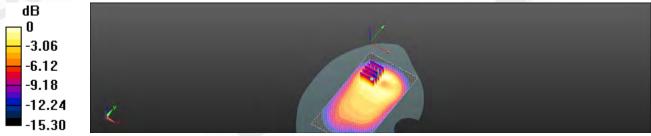
- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

dy=8mm, dz=5mm Reference Value = 15.41 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 0.633 W/kg SAR(1 g) = 0.386 W/kg; SAR(10 g) = 0.244 W/ka Maximum value of SAR (measured) = 0.497 W/kg



0 dB = 0.497 W/kg = -3.04 dBW/kg

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WCDMA Band V Head Le Cheek CH 4233

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

DASY5 Configuration:

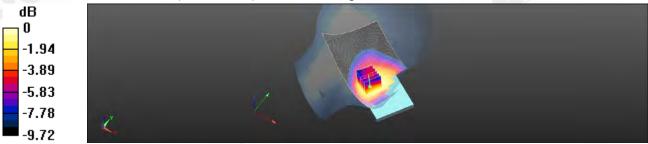
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.347 W/kg

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

dy=8mm, dz=5mm Reference Value = 7.381 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 0.368 W/kg SAR(1 g) = 0.300 W/kg; SAR(10 g) = 0.230 W/kg Maximum value of SAR (measured) = 0.339 W/kg



0 dB = 0.339 W/kg = -4.70 dBW/kg

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Date: 2017/6/29

LTE Band 5 (10MHz) Head Le Cheek CH 20600 QPSK 1-25

Communication System: LTE; Frequency: 844 MHz; Duty Cycle: 1:1 Medium parameters used: f = 844 MHz; σ = 0.882 S/m; ϵ_r = 42.011; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 23.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

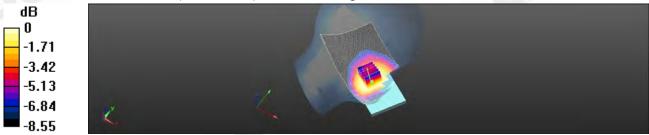
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.213 W/kg

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

dy=8mm, dz=5mm Reference Value = 6.116 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 0.232 W/kg SAR(1 g) = 0.190 W/kg; SAR(10 g) = 0.151 W/ka Maximum value of SAR (measured) = 0.212 W/kg



0 dB = 0.212 W/kg = -6.74 dBW/kg

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Date: 2017/7/3

LTE Band 5 (10MHz) Hotspot Front side CH 20600 QPSK 1-25 10mm

Communication System: LTE; Frequency: 844 MHz; Duty Cycle: 1:1 Medium parameters used: f = 844 MHz; σ = 1.016 S/m; ϵ_r = 53.2; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.9°C

DASY5 Configuration:

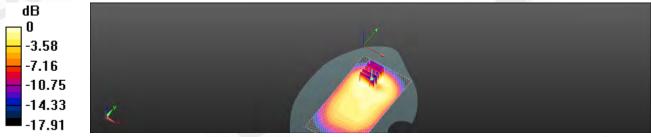
- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.415 W/kg

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

dy=8mm, dz=5mm Reference Value = 16.02 V/m; Power Drift = -0.10 dB Peak SAR (extrapolated) = 0.537 W/kg SAR(1 g) = 0.314 W/kg; SAR(10 g) = 0.194 W/ka Maximum value of SAR (measured) = 0.422 W/kg



0 dB = 0.422 W/kg = -3.75 dBW/kg

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Date: 2017/6/29

LTE Band 5 (10MHz) Head Le Cheek CH 20600 QPSK 1-25

Communication System: LTE; Frequency: 844 MHz; Duty Cycle: 1:1 Medium parameters used: f = 844 MHz; σ = 0.882 S/m; ϵ_r = 42.011; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 23.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

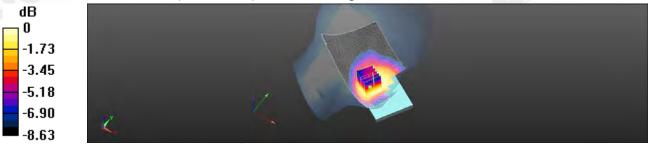
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.299 W/kg

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

dy=8mm, dz=5mm Reference Value = 7.165 V/m; Power Drift = -0.19 dB Peak SAR (extrapolated) = 0.301 W/kg SAR(1 g) = 0.256 W/kg; SAR(10 g) = 0.199 W/kg Maximum value of SAR (measured) = 0.283 W/kg



0 dB = 0.283 W/kg = -5.49 dBW/kg

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Date: 2017/7/11

LTE Band 7 (20MHz) Head Le Cheek CH 21350 QPSK 1-50

Communication System: LTE; Frequency: 2560 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2560 MHz; σ = 1.989 S/m; ϵ_r = 40.593; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.2°C; Liquid temperature: 22.4°C

DASY5 Configuration:

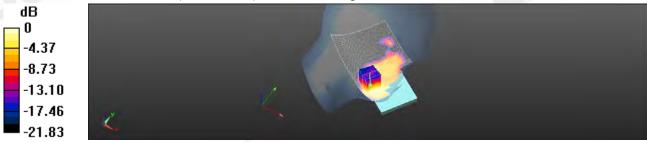
- Probe: EX3DV4 SN3923; ConvF(7.77, 7.77, 7.77); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.205 W/kg

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

dy=5mm, dz=5mm Reference Value = 1.880 V/m; Power Drift = 0.16 dB Peak SAR (extrapolated) = 0.254 W/kg SAR(1 g) = 0.132 W/kg; SAR(10 g) = 0.067 W/kg Maximum value of SAR (measured) = 0.193 W/kg



0 dB = 0.193 W/kg = -7.15 dBW/kg

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Date: 2017/7/5

LTE Band 7 (20MHz) Body-worn Front side CH 21350 QPSK 1-50 15mm

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

DASY5 Configuration:

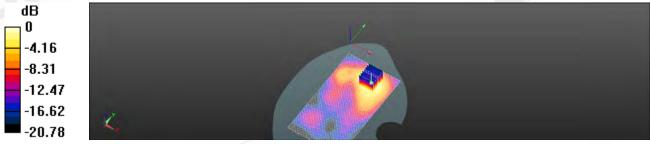
- Probe: EX3DV4 SN3923; ConvF(7.84, 7.84, 7.84); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.456 W/kg

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

dy=5mm, dz=5mm Reference Value = 2.776 V/m; Power Drift = 0.09 dB Peak SAR (extrapolated) = 0.637 W/kg SAR(1 g) = 0.283 W/kg; SAR(10 g) = 0.164 W/ka Maximum value of SAR (measured) = 0.467 W/kg



0 dB = 0.467 W/kg = -3.31 dBW/kg

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Date: 2017/7/5

LTE Band 7 (20MHz) Hotspot Bottom side CH 20850 QPSK 1-50 10mm

Communication System: LTE; Frequency: 2510 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2510 MHz; σ = 2.082 S/m; ϵ_r = 51.594; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 22.0°C

DASY5 Configuration:

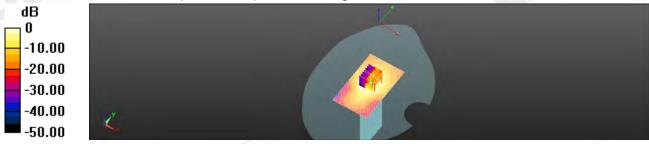
- Probe: EX3DV4 SN3923; ConvF(7.84, 7.84, 7.84); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 1.51 W/kg

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

dy=5mm, dz=5mm Reference Value = 22.31 V/m; Power Drift = -0.10 dB Peak SAR (extrapolated) = 3.58 W/kg SAR(1 g) = 1.02 W/kg; SAR(10 g) = 0.346 W/ka Maximum value of SAR (measured) = 1.43 W/kg



0 dB = 1.43 W/kg = 1.56 dBW/kg

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Date: 2017/7/11

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

Communication System: LTE; Frequency: 2595 MHz; Duty Cycle: 1:0.633 Medium parameters used: f = 2595 MHz; σ = 2.029 S/m; ϵ_r = 40.553; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.2°C; Liquid temperature: 22.4°C

DASY5 Configuration:

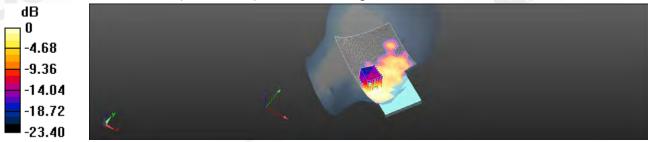
- Probe: EX3DV4 SN3923; ConvF(7.77, 7.77, 7.77); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.0850 W/kg

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

dy=5mm, dz=5mm Reference Value = 0.7220 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 0.115 W/kg SAR(1 g) = 0.061 W/kg; SAR(10 g) = 0.030 W/kg Maximum value of SAR (measured) = 0.0870 W/kg



0 dB = 0.0870 W/kg = -10.61 dBW/kg

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Date: 2017/7/5

LTE Band 38 (20MHz) Hotspot Bottom side CH 38000 QPSK 1-0 10mm

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

DASY5 Configuration:

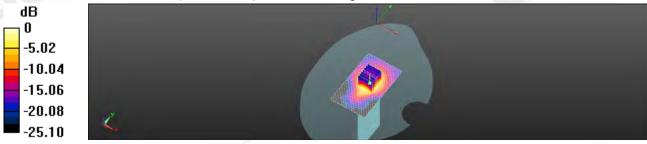
- Probe: EX3DV4 SN3923; ConvF(7.84, 7.84, 7.84); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.881 W/kg

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

dy=5mm, dz=5mm Reference Value = 17.78 V/m; Power Drift = -0.08 dB Peak SAR (extrapolated) = 1.19 W/kg SAR(1 g) = 0.578 W/kg; SAR(10 g) = 0.273 W/ka Maximum value of SAR (measured) = 0.863 W/kg



0 dB = 0.863 W/kg = -0.64 dBW/kg

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Date: 2017/7/4

WLAN 802.11b Head Re Cheek CH 1

Communication System: WLAN(2.45G); Frequency: 2412 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2412 MHz; σ = 1.787 S/m; ϵ_r = 38.208; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.3°C; Liquid temperature: 22.1°C

DASY5 Configuration:

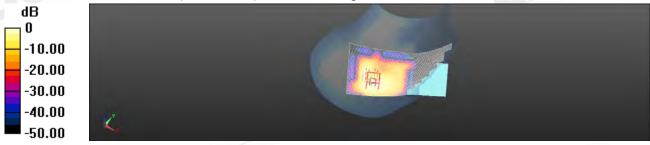
- Probe: EX3DV4 SN3923; ConvF(7.95, 7.95, 7.95); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 0.428 W/kg

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

dy=5mm, dz=5mm Reference Value = 5.287 V/m; Power Drift = -0.09 dB Peak SAR (extrapolated) = 0.689 W/kg SAR(1 g) = 0.315 W/kg; SAR(10 g) = 0.133 W/ka Maximum value of SAR (measured) = 0.474 W/kg



0 dB = 0.474 W/kg = -3.24 dBW/kg

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Date: 2017/7/5

WLAN 802.11b_Hotspot_Back side_CH 1_10mm

Communication System: WLAN 2.45G; Frequency: 2412 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2412 MHz; σ = 1.907 S/m; ϵ_r = 52.415; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.6°C; Liquid temperature: 21.9°C

DASY5 Configuration:

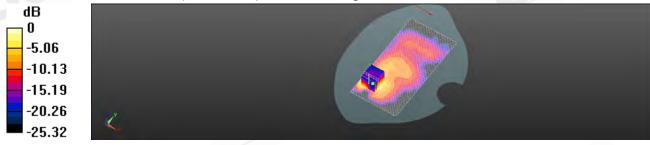
- Probe: EX3DV4 SN3923; ConvF(8.06, 8.06, 8.06); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

dy=5mm, dz=5mm Reference Value = 4.296 V/m; Power Drift = 0.15 dB Peak SAR (extrapolated) = 0.375 W/kg SAR(1 g) = 0.161 W/kg; SAR(10 g) = 0.066 W/kg Maximum value of SAR (measured) = 0.247 W/kg



0 dB = 0.247 W/kg = -6.07 dBW/kg

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6. SAR System Performance Verification

Date: 2017/6/29

Dipole 835 MHz SN:4d063 Head

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.87 S/m; ϵ r = 42.025; ρ = 1000 kg/m³ Phantom section: Flat Section

Ambient temperature: 23.1°C; Liquid temperature: 22.0°C

DASY5 Configuration:

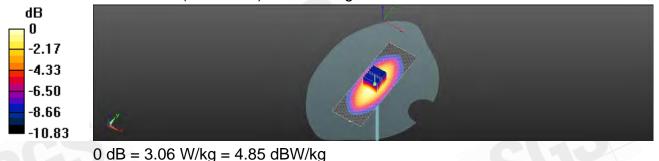
- Probe: EX3DV4 SN3923; ConvF(10.66, 10.66, 10.66); Calibrated: 2016/9/2; •
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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



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Dipole 835 MHz SN:4d063 Body

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

DASY5 Configuration:

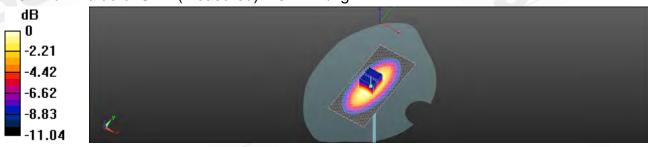
- Probe: EX3DV4 SN3923; ConvF(10.67, 10.67, 10.67); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

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



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

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Dipole 1900 MHz_SN:5d173_Head

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

DASY5 Configuration:

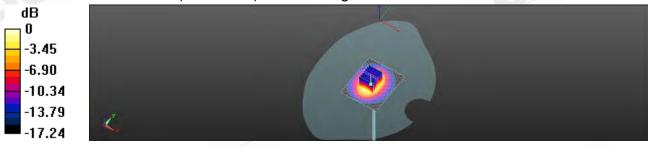
- Probe: EX3DV4 SN3923; ConvF(8.9, 8.9, 8.9); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

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



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

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Dipole 1900 MHz SN:5d173 Body

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

DASY5 Configuration:

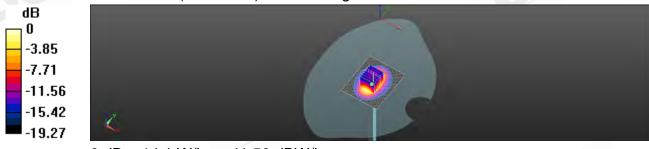
- Probe: EX3DV4 SN3923; ConvF(8.47, 8.47, 8.47); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

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



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

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Dipole 2450 MHz_SN:727_Head

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

DASY5 Configuration:

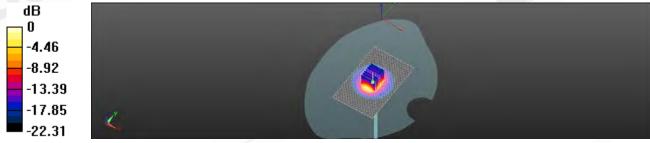
- Probe: EX3DV4 SN3923; ConvF(7.95, 7.95, 7.95); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

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



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

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Dipole 2450 MHz_SN:727_Body

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

DASY5 Configuration:

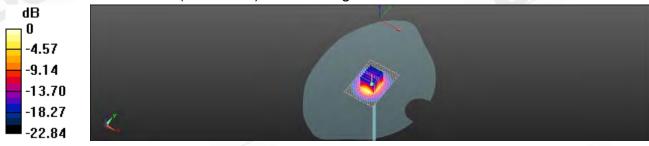
- Probe: EX3DV4 SN3923; ConvF(8.06, 8.06, 8.06); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

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



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

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Dipole 2600 MHz SN:1005 Head

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2600 MHz; σ = 2.036 S/m; ϵ_r = 40.547; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 22.4°C

DASY5 Configuration:

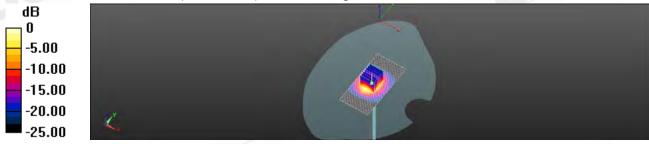
- Probe: EX3DV4 SN3923; ConvF(7.77, 7.77, 7.77); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 104.2 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 30.5 W/kg SAR(1 g) = 13.7 W/kg; SAR(10 g) = 6.12 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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Dipole 2600 MHz_SN:1005_Body

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

DASY5 Configuration:

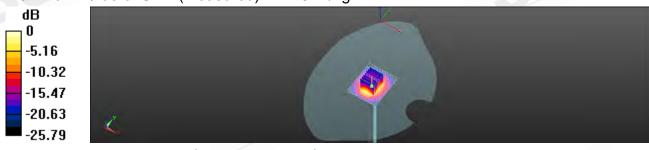
- Probe: EX3DV4 SN3923; ConvF(7.84, 7.84, 7.84); Calibrated: 2016/9/2;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

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

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

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



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

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Dipole 835 MHz SN:4d120 Head

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.907 S/m; ϵ_r = 41.525; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.9°C

DASY5 Configuration:

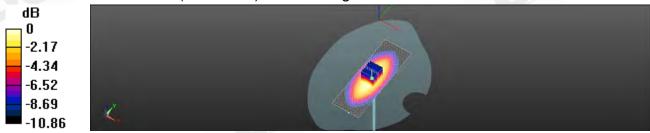
- Probe: EX3DV4 SN3831; ConvF(9.15, 9.15, 9.15); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 2.98 W/kg

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 60.05 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 3.50 W/kg SAR(1 g) = 2.36 W/kg; SAR(10 g) = 1.53 W/kg Maximum value of SAR (measured) = 2.99 W/kg



0 dB = 2.99 W/kg = 4.76 dBW/kg

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Dipole 835 MHz SN:4d120 Body

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.968 S/m; ϵ_r = 53.805; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

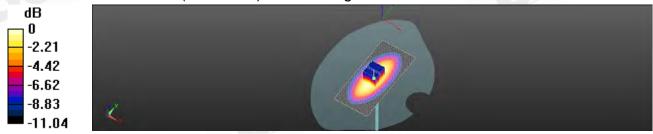
- Probe: EX3DV4 SN3831; ConvF(9.25, 9.25, 9.25); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 3.21 W/kg

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 58.20 V/m; Power Drift = -0.00 dB Peak SAR (extrapolated) = 3.84 W/kg SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.56 W/kg Maximum value of SAR (measured) = 3.26 W/kg



0 dB = 3.26 W/kg = 5.14 dBW/kg

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Dipole 1900 MHz_SN:5d173_Head

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.433 S/m; ϵ_r = 39.607; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 22.3°C

DASY5 Configuration:

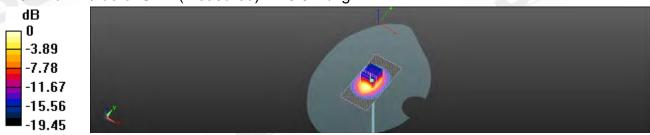
- Probe: EX3DV4 SN3831; ConvF(7.86, 7.86, 7.86); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 14.2 W/kg

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 99.99 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 18.3 W/kg SAR(1 g) = 9.73 W/kg; SAR(10 g) = 5.13 W/kg Maximum value of SAR (measured) = 13.9 W/kg



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

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Dipole 1900 MHz_SN:5d173_Body

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.524 S/m; ϵ_r = 53.12; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 22.2°C

DASY5 Configuration:

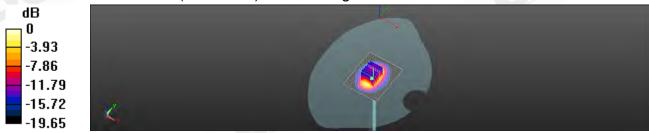
- Probe: EX3DV4 SN3831; ConvF(7.53, 7.53, 7.53); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 15.2 W/kg

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 97.90 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 18.5 W/kg SAR(1 g) = 10 W/kg; SAR(10 g) = 5.15 W/kg Maximum value of SAR (measured) = 14.4 W/kg



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

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Dipole 2450 MHz_SN:727_Head

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz; σ = 1.845 S/m; ϵ_r = 39.785; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 22.5°C

DASY5 Configuration:

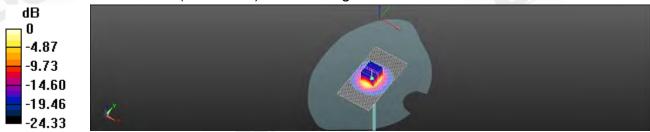
- Probe: EX3DV4 SN3831; ConvF(7.21, 7.21, 7.21); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Configuration/Pin=250mW/Area Scan (61x111x1): Interpolated grid: dx=12 mm, dy=12 mm

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

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 105.6 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 27.8 W/kg SAR(1 g) = 13.1 W/kg; SAR(10 g) = 5.94 W/kg Maximum value of SAR (measured) = 20.0 W/kg



0 dB = 20.0 W/kg = 13.02 dBW/kg

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Date: 2017/9/29

Dipole 2450 MHz_SN:727_Body

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz; σ = 1.944 S/m; ϵ_r = 52.721; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 22.4°C

DASY5 Configuration:

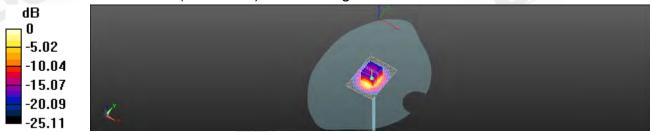
- Probe: EX3DV4 SN3831; ConvF(7.3, 7.3, 7.3); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 21.1 W/kg

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 100.0 V/m; Power Drift = -0.00 dB Peak SAR (extrapolated) = 27.7 W/kg SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.06 W/kg Maximum value of SAR (measured) = 20.4 W/kg



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

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Date: 2017/9/29

Dipole 2600 MHz SN:1005 Head

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2600 MHz; σ = 1.999 S/m; ϵ_r = 39.547; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 22.1°C

DASY5 Configuration:

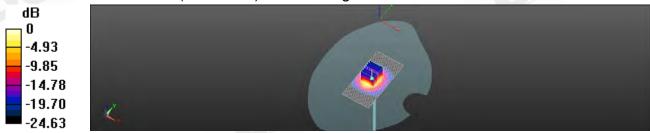
- Probe: EX3DV4 SN3831; ConvF(6.99, 6.99, 6.99); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 22.7 W/kg

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 104.9 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 31.0 W/kg SAR(1 g) = 14.1 W/kg; SAR(10 g) = 6.16 W/kg Maximum value of SAR (measured) = 22.4 W/kg



0 dB = 22.4 W/kg = 13.45 dBW/kg

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Date: 2017/9/29

Dipole 2600 MHz SN:1005 Body

Communication System: CW; Frequency: 2600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2600 MHz; σ = 2.202 S/m; ϵ_r = 51.82; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

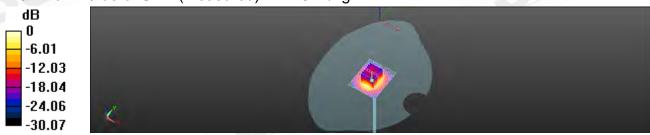
- Probe: EX3DV4 SN3831; ConvF(7.05, 7.05, 7.05); Calibrated: 2017/1/23;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn547; Calibrated: 2017/3/22 •
- Phantom: Head
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

Maximum value of SAR (interpolated) = 22.3 W/kg

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

dx=5mm, dy=5mm, dz=5mm Reference Value = 96.70 V/m; Power Drift = -0.00 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) = 21.6 W/kg



0 dB = 21.6 W/kg = 13.35 dBW/kg

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7. DAE & Probe Calibration Certificate

		anthree C	
ccredited by the Swiss Accredita he Swiss Accreditation Servic Iultilateral Agreement for the r	e is one of the signatories	to the EA	o.: SCS 0108
lient SGS - TW (Auc	len)	Certificate No:	DAE4-547_Mar17
CALIBRATION O	CERTIFICATE		
Dbject	DAE4 - SD 000 D0	04 BM - SN: 547	
Calibration procedure(s)	QA CAL-06.v29 Calibration proced	lure for the data acquisition electro	onics (DAE)
Calibration date:	March 22, 2017		
The measurements and the unc All calibrations have been condu	ertainties with confidence pro	nal standards, which realize the physical units obsbillity are given on the following pages and a facility: environment temperature $(22 \pm 3)^{\circ}$ C a	are part of the certificate.
The measurements and the unc- All calibrations have been condu Calibration Equipment used (M8	ertainties with confidence pro- cted in the closed laboratory TE critical for calibration)	obability are given on the following pages and , facility: environment temperature (22 ± 3)°C (are part of the certificate. and humidity $< 70\%$.
The measurements and the unc	ertainties with confidence pro	obability are given on the following pages and	are part of the certificate.
The measurements and the uno All calibrations have been condu Calibration Equipment used (M8 Primary Standards Keithley Multimeter Type 2001	ertainties with confidence pro- cted in the closed laboratory TE critical for calibration)	bability are given on the following pages and a facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 09-Sep-16 (No:19065)	are part of the certificate. and humidity < 70%. Scheduled Calibration
The measurements and the unc All calibrations have been condu Calibration Equipment used (M& Primary Standards	etainties with confidence pro- cted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001	obability are given on the following pages and \cdot facility: environment temperature (22 \pm 3)°C (Cal Date (Certificate No.)	are part of the certificate. and humidity < 70%. Scheduled Calibration Sep-17
The measurements and the unc All calibrations have been condu Calibration Equipment used (M8 Primary Standards Keithley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit	etainties with confidence pro- cted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001 SE UWS 053 AA 1002	bability are given on the following pages and a facility: environment temperature (22 ± 3)°C a Cal Date (Certificate No.) 09-Sep-16 (No:19065) Check Date (in house) 05-Jan-17 (in house check)	are part of the certificate. and humidity < 70%. <u>Scheduled Calibration</u> Sep-17 <u>Scheduled Check</u> In house check: Jan-18 In house check: Jan-18
The measurements and the unc All calibrations have been condu Calibration Equipment used (M8 Primary Standards Keithley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit	etainties with confidence pro- cted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001	bability are given on the following pages and i facility: environment temperature (22 ± 3)°C a Cat Date (Certificate No.) 09-Sep-16 (No:19085) Check Date (in house) 05-Jan-17 (in house check) 05-Jan-17 (in house check)	are part of the certificate. and humidity < 70%. Scheduled Calibration Sep-17 Scheduled Check In house check: Jan-18
The measurements and the uno All calibrations have been condu Calibration Equipment used (M& Primary Standards Keithley Multimeter Type 2001 Secondary Standards Auto DAE Calibration Unit Calibrator Box V2.1	etainties with confidence pro- cted in the closed laboratory TE critical for calibration) ID # SN: 0810278 ID # SE UWS 053 AA 1001 SE UWS 006 AA 1002 Name	bability are given on the following pages and a facility: environment temperature (22 ± 3)°C a 09-Sep-16 (No:19065) Check Date (in house) 05-Jan-17 (in house check) 05-Jan-17 (in house check)	are part of the certificate. and humidity < 70%. <u>Scheduled Calibration</u> Sep-17 <u>Scheduled Check</u> In house check: Jan-18 In house check: Jan-18

Certificate No: DAE4-547_Mar17

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

Accredited by the Swiss Accreditation Service (SAS)



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Itation No.: SCS 0108



Glossarv

DAE Connector angle

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

Methods Applied and Interpretation of Parameters

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

- 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.

Certificate No: DAE4-547_Mar17

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DC Voltage Measurement

High Range:	1LSB =	6.111	full range =	-100,_+300 mV
Low Range:	1LSB =	6tnV .	full range =	-1+3mV
DASY measurement	parameters: Au	o Zero Time: 3	sec; Measuring	time: 3 sec

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

Connector Angle

1	Connector Angle to be used in DASY system	91.0°±1°





Certificate No: DAE4-547 Mar17

Page 3 nl 5

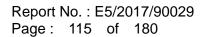
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Appendix (Additional assessments outside the scope of SCS0108)

1. DC Voltage Linearity

High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	200031.23	0.59	0.00
Channel X + Input	20005.44	2,04	0.01
Channel X - Input	-20000.97	4.91	-0.02
Channel Y + Input	200029.80	-1.03	-0.00
Channel Y + Input	20000.30	-3.03	-0.02
Channel Y - Input	-20007.73	-1.72	0.01
Channel Z + Input	200030.21	-0.96	-0.00
Channel Z + Input	20003.13	-0.21	-0,00
Channel Z - Input	-20005.14	0.81	-0.00

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

2. Common mode sensitivity

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

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

3. Channel separation

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

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

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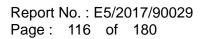


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4. AD-Converter Values with inputs shorted

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

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

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec Input 10MQ

	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: <25/A

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)	-7,6	

9. Power Consumption (Typical values for information)

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

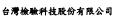


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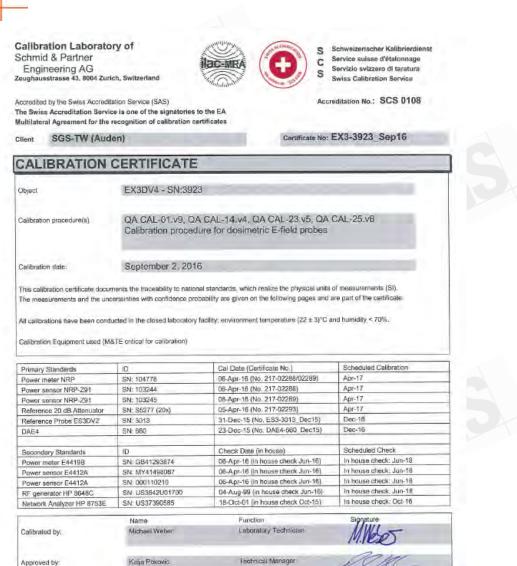


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Issued: September 2, 2016



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Galibration Laboratory of Schmid & Partner Engineering AG aughausstrasse 43, 1004 Zurich, Switzerland



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Multilateral Agreement for the recognition of calibration certificates

Glossary:

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

tissue simulating liquid. sensitivity in free space sensitivity in TSL / NORMx,y,z diode compression point crest factor (1/duty_cycle) of the RF signal modulation dependent linearization parameters o rotation around probe axis 8 rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., 3 = 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 wineless 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 8 GHz)", March 2010 KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz" C)

Methods Applied and Interpretation of Parameters:

- NORMx,y,z: Assessed for E-field polarization $\vartheta = 0$ (f \le 900 MHz in TEM-cell; f \ge 1800 MHz; R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E²-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z * frequency response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep with CW
- signal (no uncertainty required). DCP does not depend on frequency nor media. PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal
- character stics
- 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 (< 800 MHz) and inside waveguide using analytical field distributions based on power Standard for I's dou NHZ, and inside waveguide using analytical read doubloads dated of power measurements for I's dou NHZ. 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 NORMs, y.z.* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MUC. 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 affset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle. The angle is assessed using the information gained by determining the NORMs (no uncertainty required).

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EX3DV4 - SN:3923

September 2, 2016



Probe EX3DV4

SN:3923

Manufactured: Repaired: Calibrated: March 8, 2013 August 30, 2016 September 2, 2016



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



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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 dBõV	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%.

The uncertainties of Norm X,Y,Z do not affect the E^2 -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 field value



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EX3DV4-SN:3923

September 2, 2016

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

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

Calibration Parameter Determined in Head Tissue Simulating Media

⁶ Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity validity can be extended to ± 110 MHz.
⁶ A 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 SR values. At frequencies above 3 GHz, the validity of ilsue parameters (x and a) can be released to ± 10%. If liquid compensation formula is applied to measured SR values. At frequencies above 3 GHz, the validity of ilsue parameters (x and a) is methoded to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicatod target tissue parameters.
⁹ Appla/Depth are determined duing calibration. SPCA warrants that the remaining deviation due to the boundary effect after componentiation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe to diameter from the boundary.



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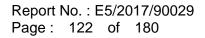
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EX3DV4-SN:3923

September 2, 2016

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

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

¹¹ 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 balibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF essessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity are be extended to ± 110 MHz.
 ¹² All frequencies below 3 GHz. the validity of tissue parameters (a and if) can be relaxed to ± 10% if inquid compensation formula is applied to measured SAR values. After values of values parameters.
 ¹³ Algha/Dapth are determined during calculations. The validity of tissue parameters.
 ¹³ Algha/Dapth are determined during calculations. SRA warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than walt the probe tip dameter from the boundary.



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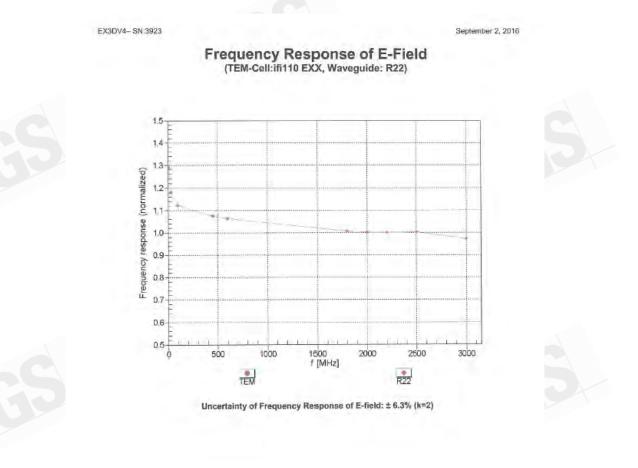
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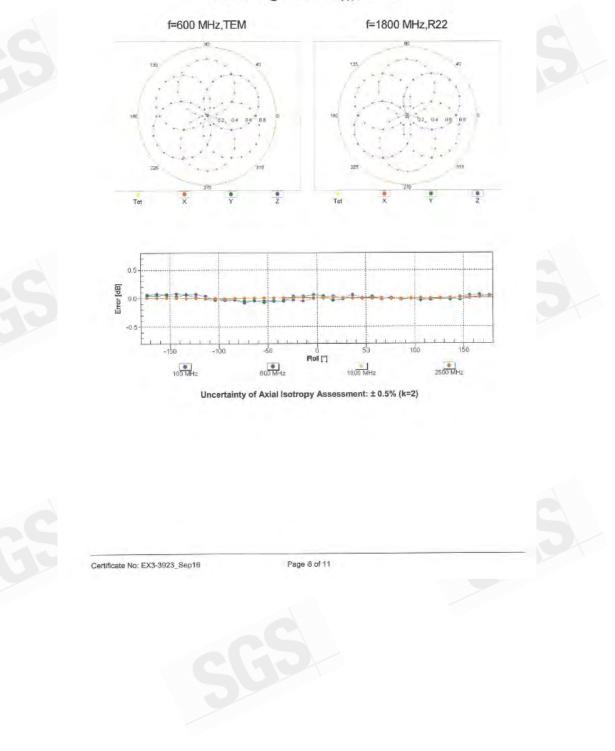
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EX3DV4- SN:3923

September 2, 2016



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

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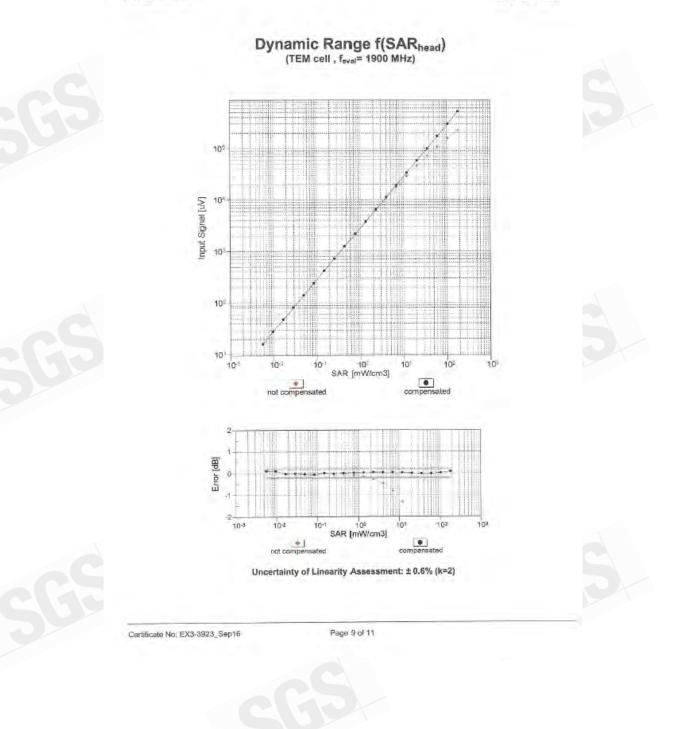
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EX3DV4- SN:3923

September 2, 2016

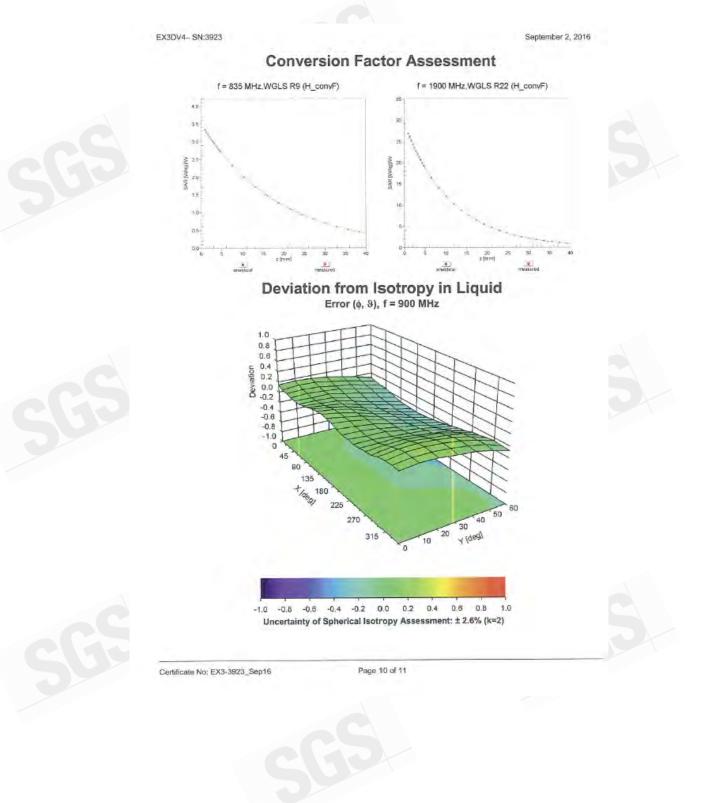


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EX3DV4- SN:3923

September 2, 2016

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

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	26.4
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	mm 9
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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Report No. : E5/2017/90029 Page: 128 of 180

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

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Accreditation No.: SCS 0108

Certificate No: EX3-3831 Jan17

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CALIBRATION CERTIFICATE

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



EX3DV4 - SN:3831

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:

Calibration procedure(s)

Client

Object

January 23, 2017

This calibration certificate documents the tracsability 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%

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	10	Gal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	06-Apr-16 (No. 217-02288/02289)	Apr-17
Power sensor NRP-291	SN: 103244	05-Apr-16 (No. 217-02288)	Apr-17
Power sensor NRP-Z91	SN: 103245	06-Apr-16 (No. 217-02289)	Apr-17
Reference 20 dB Attenuator	SN: 55277 (20x)	05-Apr-16 (No. 217-02293)	Apr-17
Reference Probe ES30V2	SN. 3013	31-Dec-16 (No. ES3-3015_Dec16)	Dec-17
DAE4	SN 660	7-Dec-16 (No. DAE4-660_Dec16)	Dec-17
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN G841293874	06-Apr-16 (in house check Jun-16)	In house check: Jun-18
Power sensor E4412A	SN MY41498087	06-Apr-16 (in house check Jun-16)	In house check, Jun-18
Power sensor E4412A	SN: 000110210	06-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: U\$37390585	18-Oct-01 (in house check Oct-18)	In house check: Oct-17

	Name	Function	Signature
Calibrated by	Jeton Kastrati	Laboratory Technician	de la
Approved by:	Katja Pokovic	Technical Manager	ally
			Issued: January 24, 2017

Certificate No: EX3-3831_Jan17

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Report No. : E5/2017/90029 Page: 129 of 180

Calibration Laboratory of Schmid & Partner Engineering AG aughausstrasse 43, 8004 Zurich, Switzerlan Zeugha



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Multilateral Agreement for the recognition of calibration cartificates

Glossary:	
TSL	tissue simulating liquid
NORMX, V.Z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y.z.
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A.B.C.D	modulation dependent linearization parameters
Polarization o	o rotation around probe axis
Polarization 8	3 rotation around an axis that is in the plane normal to probe axis (at measurement center).
	i.e., 9 = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Connector Angle

SG:

- Calibration is Performed According to the Following Standards:
 - IEEE Std 1528-2013, 'IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific a) 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 tec 52209-1, "Procedure to measure the Specific Absorption Rate (SAR) for mand-field devices used in Case proximity to the ear (frequency range of 300 MHz to 3 GHz)", "February 2005 IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)". March 2010 KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"
 - c)
 - d)

Methods Applied and Interpretation of Parameters:

- NORMx, y, z: Assessed for E-field polarization 8 = 0 (f < 900 MHz in TEM-cell; f > 1800 MHz; R22 waveguide). NORMx, y, z are only intermediate values, i.e., the uncertainties of NORMx, y, z does not affect the E^{*}-field uncertainty inside TSL (see below *ConvF*).
- $NORM(f)x, y, z = NORMx, y, z * frequency_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.$
- DCPx,y,z: DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media, PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal
- characteristics Ax.y.z; Bx.y.z; Cx.y.z; Dx.y.z; VRx.y.z; A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode.
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer ConvF and Boundary Effect Parameters: Assessed in hat phantom using E-neo (of temperature transfer Standard for f \$ 800 MHz) and inside waveguide using analytical field distributions based of power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx, y, z * ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset: The sensor offset 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 NORM/ (no uncertainty required).

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EX3DV4 - SN:3831

Report No. : E5/2017/90029 Page: 130 of 180

lanuary 23, 2017



Probe EX3DV4

SN:3831

Manufactured: Calibrated:

September 6, 2011 January 23, 2017



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



Certilicate No: EX3-3831_Jan17

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EX3DV4-SN:3831

January 23, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $(\mu V/(V/m)^2)^A$	0.43	0,41	0.42	± 10.1 %
DCP (mV) ^B	101.7	102.0	100.6	-

Modulation Calibration Parameters

מוט	Communication System Name		A dB	B dBõV	C	dB	VR mV	Unc ^c (k=2)
0	CW	X	0.0	0.0	1.0	0.00	149.3	±2.2 %
-		Y	0.0	0.0	1.0		138.4	
		Z	0.0	0.0	1.0		142.6	

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

The uncertainlies of Norm X,Y,Z do not affect the E⁴-field uncertainly inside TSL (see Pages 5 and 6). Numerical linearization parameter: uncertainty not required. Uncertainty is determined using the max, deviation from linear response applying rectangular distribution and is expressed for the square of the **Entri value**



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EX3DV4- SN:3831

January 23, 2017

f (MHz) ^c	Relative Permittivity ^P	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha	Depth [®] (mm)	Unc (k=2)
750	41.9	0.89	9.63	9.63	9.63	0.57	0.80	± 12.0 %
835	41.5	0.90	9,15	9.15	9.15	0.53	D.81	£ 12.0 %
900	41.5	0.97	9.08	9.08	9.08	0.42	0,86	± 12.0 %
1450	40.5	1,20	8.41	8.41	8.41	0.35	0.80	± 12.0 %
1750	40,1	1.37	8.17	8.17	8.17	0.32	0.80	± 12.0 %
1900	40.0	1.40	7.86	7,86	7.86	0.39	0.80	± 12.0 %
2000	40.0	1.40	7,80	7,80	7.80	0.35	0.80	± 12.0 %
2300	39.5	1.67	7,59	7.59	7.59	0.26	1.02	± 12.0 %
2450	39.2	1.80	7.21	7.21	7.21	0,40	0.80	± 12.0 %
2600	39.0	1,96	6.99	6.99	6.99	0,38	0.80	± 12.0 %
3500	37.9	2.91	6.55	6.55	6.55	0.30	1.20	± 13.1 %
5200	36.0	4.66	5.02	5.02	5.02	0.30	1.80	± 13.1 %
5300	35.9	4.76	4.70	4.70	4.70	0.35	1.80	± 13.1 %
5600	35.5	5.07	4.51	4.51	4.51	0.40	1,80	± 13.1 %
5800	35.3	5.27	4.46	4.46	4.46	0.40	1.80	±13.1 %

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

¹² Prequency 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 Conv² 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 Conv² assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
¹⁴ At frequencies below 3 GHz, the validity of lissue parameters (c and e) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of hissue parameters. (c and e) is restricted to ± 5%. The uncertainty is the RSS of the Conv² uncertainty for indicated target tissue parameters.
¹⁵ AlphaDepth are determined during eitherds.
¹⁶ AlphaDepth are determined during eitherds.
¹⁶ AlphaDepth are determined during eitherds.
¹⁶ AlphaDepth are determined during eitherds below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the prote tip diameter from the boundary.

Certificate No: EX3-3831_Jan17

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EX3DV4- SN:3831

January 23, 2017

(MHz) ^C	Relative Permittivity	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^{G.}	Depth ⁰ (mm)	Unc (k=2)
750	55.5	0.96	9.59	9,59	9.59	0.46	0.80	± 12.0 %
835	55.2	0.97	9.25	9,25	9.25	0.48	0.80	±12.0 %
900	65.0	1.05	9.15	9.15	9.15	0.35	0.80	± 12.0 %
1750	53.4	1.49	7.78	7.78	7.78	0.36	0.80	± 12.0 %
1900	53.3	1.52	7.53	7.53	7.53	0.38	0.80	± 12.0 %
2000	53,3	1.52	7.66	7.66	7.66	0.32	0.80	± 12.0 %
2300	52.9	1.81	7.32	7,32	7.32	0.29	1.00	± 12.0 %
2450	52.7	1.95	7.30	7.30	7.30	0.33	0.80	± 12.0 %
2600	52.5	2.16	7.05	7.05	7.05	0.30	0,80	± 12.0 %
5200	49.0	5,30	4.47	4.47	4.47	0,40	1.90	± 13.1 %
5300	48.9	5,42	4.21	4.21	4.21	0,45	1.90	± 13.1 %
5600	48.5	5.77	3.67	3.67	3.67	0.50	1.90	± 13.1 %
5800	48.2	6.00	3.87	3.87	3.87	0.50	1.90	± 13.1 %

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

^C Frequency validity above 900 MHz of ± 100 MHz only applies for DASY v4.4 and nigher (see Page 2), else is is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty of adiatriality is the RSS of the ConvF uncertainty of adiatriality for ConvF seesawerst at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz. The validity of tissue parameters (c and a) can be released to ± 10% If liquid compensation formula is applied to measured SAR values. All frequencies above 3 GHz, the validity of tissue parameters (c and a) can be released to ± 50%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters. ^A AlphaDept are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe type diameter from the boundary.

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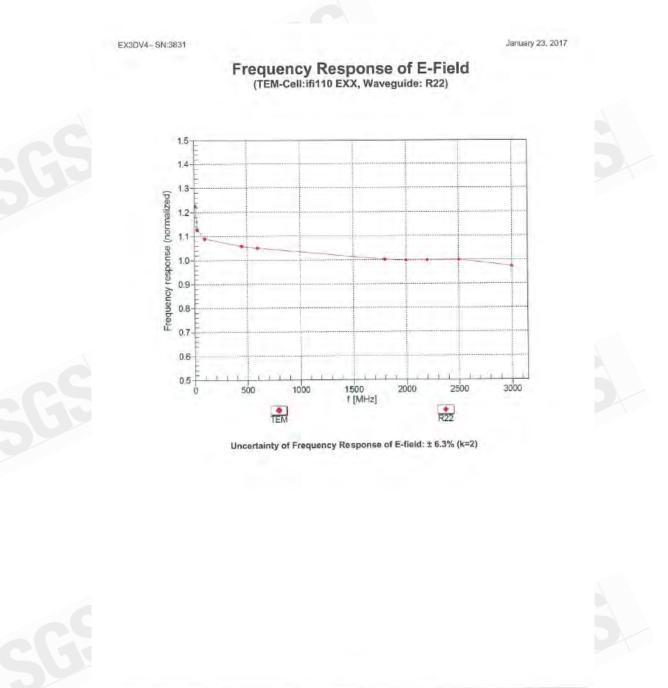
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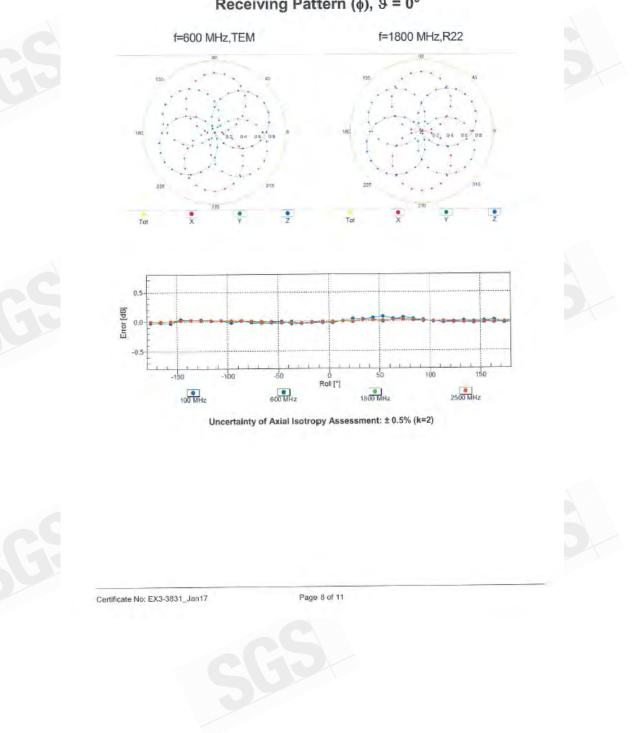
No.134,Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, Taiwan 24803/新北市五股區新北產業園區五工路 134號 SGS Taiwan Ltd. 台灣檢驗科技股份有限公司 t (886-2) 2299-3279 f (886-2) 2298-0488 www.tw.sas.com



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EX3DV4- SN:3831

January 23, 2017



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

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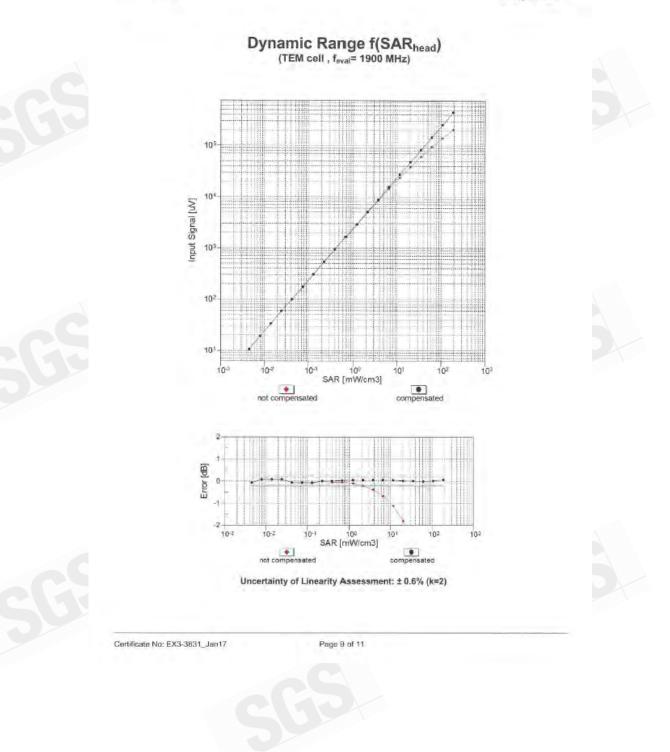
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EX3DV4- SN:3831

January 23, 2017

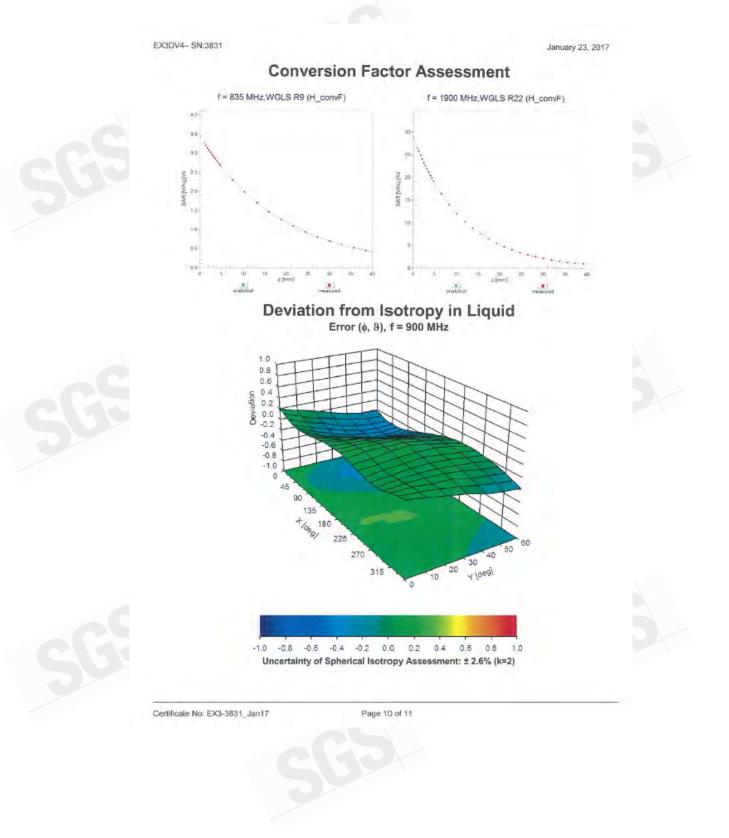


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EX3DV4- SN-3831

January 23, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3831

Other Probe Parameters Sensor Arrangement Triangular Connector Angle (°) -16.3 Mechanical Surface Detection Mode enabled Optical Surface Detection Mode disabled Probe Overall Length 337 mm Probe Body Diameter 10 mm Tip Length 9 mm Tip 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



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8. Uncertainty Budget

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 Vef
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	$\sqrt{3}$	1.732	1	1	2.02%	2.02%	8
lsotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	∞
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%	œ
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 -	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	3.60%	N	1	1	1		3.60%	3.60%	
Uncertainty Drift of output power	5.00%	R	√3	1.732			2.89%	2.89%	~
Bint of output power	0.0070	IX I	γS	1.752			2.0370	2.0070	
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	3.95%	N	1	1	0.64	0.43	2.53%	1.70%	М
Liquid Conductivity (mea.)	4.14%	N	1		0.6	0.49	2.48%	2.03%	М
Combined standard uncertainty		RSS	E.				11.96%	11.71%	
Expant uncertainty (95% confidence							23.91%	23.42%	

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

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9. Phantom Description

Schmid & Panner Engineering AG

Zeugheunstmeen 43, 8004 Zurich, Switzellar Phone +41 1 245 9700, Fax +41 1 245 9779 info@spasg.com, http://www.apeag.com

Certificate of Conformity / First Article Inspection

ttern	SAM Twin Phentom V4.0	-
Type No .	QD 000 P40 C	-
Series No	TP-1150 and higher	-
Manufacturer	SPBAG Zeughausstrasse 43 CH-8004 Zürich Switzerland	

Tests

The series production process used allows the smitation to test of first articles. Complete tests were made on the pre-series Type No. OD 000 P40 AA. Serial No. TP-1001 and on the series first article Type No. OD 000 P40 BA. Serial No. TP-1008. Certain parameters have been released using further series items (called samples) or are tested at each item

Test	Requirement	Details	Units tested
Dimensions	Compliant with the geometry according to the CAD model.	IT'IS CAD File (*)	First article, Samples
Material thickness of shell	Compliant with the requirements according to the standards	2mm +/- 0.2mm in flat and specific areas of head section	First article, Samples, TP-1314 ff,
Material thickness at ERP	Compliant with the requirements according to the standards	6mm +/- 0.2mm at ERP	First article, All items
Material parameters	Dielectric parameters for required frequencies	300 MHz - 0 GHz; Relative permittivity < 5. Loss tangent < 0.05	Material samples
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility.	DEGMBE based simulating liquids	Pre-series, First article, Material samples
Sagging	Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating figuid	< 1% typical < 0.6% if slied with 155mm of HSL900 and without OUT below	Prototypes, Sample testing

Standards

CENELEC EN 50361 IEEE Std 1528-2003 IEC 62209 Part I

- (2) (3) (4)
- The IT'IS CAD file is derived from [2] and is also within the tolerance requirements of the shapes of the other documents.

Conformity

Based on the sample tests above, we certify that this item is in compliance with the uncertainty requirements of SAR measurements specified in standards [1] to [4]

Date Signature / Stamp	07.07.2005	Support & Pagnary Engineering AD Support & Pagnary Engineering AD Strategy and AD Strate
Doc Ho - Mit - QO 000 P40 C - *		Page T(1)

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10. System Validation from Original Equipment Supplier

Multilateral Agreement for the re	ecognition of calibration	certificates	
	1.16		Benefit Lines 1
Client SGS-TW (Aude	HJ)	Cettilicaté No	D835V2-4d063_Aug16
CALIBRATION C	CERTIFICATE		
Otion	D835V2 - SN:4d0	187	
and and	DOORAC - DIVISION	(05a	
Dalibration procedure(c)	DA CAL-05.V9		
and a strength of the	Calibration proce	dure for dipole validation kits abo	ve 700 MHz
Criticeland date	August 25, 2016		
		onel standerds, which realize the physical un robability are given on the toflowing pages an	
The matsurements and me or ce	arenies with comparise b	receipted me Guer or he proved bodies to	CLAPID DRIVE CK OND CONTRACTORS
about the second reason and			
All calibrations have been condu	cled in the closed laborato	γ iscaling, emaintraneous sensitives (22 = 3).	5 and humidity < 70%.
		ry factifily, environment temperature (22 = 3) 1	5 and humility < 70%.
Calibration Equipment isset (M8)	TE entreal for cultivitient		
Calibration Equipment iised (M&	TE entreal for calibration)	Gal Detri (Cerriticalia No.)	Softerfuled Calibration
Calibration Equipment iised (Mé Primary Standards Power moder (NRP	TE emical for calibration)	Cal Detri (Cerriticalia No.) Dei Apri 15 (No. 217-02288/02239)	Scherblued Calibration Apr-17
Calibration Equipment issed (M6 Primary Standards Power moder (NRP Power sensor (NRP-291	TE erineau ter calabitation) ID # SRe 104778 SN: 103244	Gal Dets (Certificatia No.) DS-Apr-15 (No. 217-02288/02259) DS-Api-15 (No. 217-02288)	Scheduled Calibration Apr-17 Apr-17
Calibration Equipment lised (M8 Primary Standards Power mass (N8P Power sensor (N8P-291 Power sensor (N8P-291	TE critical for calibration(ID # SR4 104778 SN: 103244 SN: 103240	Cal Detm (Certificado No.) Dei Apr-15 (No. 217-02288/02289) De-Apr-15 (No. 217-02288) De-Apr-16 (No. 217-02288)	Scherduled Calibration Apr-17 Apr-17 Apr-17
Calibration Equipment isset (M8' Primary Standards Power more (MRP Power sensor MRP-291 Power sensor MRP-291 Reference 20 dB Attenuator	TE critical for calibration) TD # SN: 104778 SN: 103244 SN: 503240 SN: 5058 (20k)	Cal Detri (Cerriticalà No.) Dii Apri 15 (No. 217-02288/02239) Dii Apri 15 (No. 217-02288) 06-Apri 16 (No. 217-02289) 05-Apri 16 (No. 217-02292)	Soltentuled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17
Calibration Equipment isset (M8' Primary Standards Power more (NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuation Type-N mismatch combination	TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103240 SN: 5058 (30k) SN: 5058 (30k)	Cal Datin (Certificatio No.) D6-Apr-15 (No. 217-02288/02289) D6-Apr-16 (No. 217-02288) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02292) (15-Apr-16 (No. 217-02295)	Solierdued Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17
Calibration Equipment isset (M8' Primary Standards Power more (NRP-29) Power sensor NRP-29) Power sensor NRP-29) Reference 20 dB Attenuator	TE critical for calibration) TD # SN: 104778 SN: 103244 SN: 503240 SN: 5058 (20k)	Cal Detri (Cerriticalà No.) Dii Apri 15 (No. 217-02288/02239) Dii Apri 15 (No. 217-02288) 06-Apri 16 (No. 217-02289) 05-Apri 16 (No. 217-02292)	Soltentuled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17
Calibration Equipment isset (M8' Primary Standards Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuetor Type-N mismatch combination Reference Probe EX30V4 DAE1	TE criticali for calibration) ID # SN+ 104778 SN- 103244 SN- 5058 (20k) SN- 5058 (20k)	Cal Detri (Cerriticalà No.) Dei Apr-15 (No. 217-02286/02289) De-Apr-16 (No. 217-02288) D0-Apr-10 (No. 217-02288) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 15-Jun-16 (No. 237-740_Jun16) 30-Dec-15 (No. DAE-4-B01_Dec15)	Scherduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Dec-16
Calibration Equipment isset (M8' Primary Standards Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards	TE critical for calibration) ID # SN: 103244 SN: 103240 SN: 5058 (20k) SN: 5058 (20k) SN	Cal Detri (Cerriticalà No.) Dei Apri 15 (No. 217-02288/02289) De-Apri 15 (No. 217-02288) 00-Apri 16 (No. 217-02289) 05-Apri 16 (No. 217-02292) 05-Apri 16 (No. 217-02292) 05-Apri 16 (No. 217-02292) 15-Juni 16 (No. 217-02295) 15-Juni 16 (No. 217-02295)	Scherduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Dec-16 Beneduled Eheck
Calibration Equipment isset (M6 Primary Standards Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Prote EX30V4 DAE4 Secondary Standards Power meter EPIN-r442A	TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 503840 SN: 5058 (30k) SN: 5058 (30k) SN: 5058 (30k) SN: 5058 (30k) SN: 5058 (30k) SN: 5058 (30k) SN: 501	Cal Detri (Certificatà No.) DS Apr 15 (No. 217-02288/02239) 16-Apr 15 (No. 217-02288/02239) 06-Apr 16 (No. 217-02289) 05-Apr 16 (No. 217-02292) 05-Apr 16 (No. 217-02292) 15-Jan 16 (No. 217-02295) 15-Jan 16 (No. 217-02295) 15-Jan 16 (No. 217-02295) 15-Jan 16 (No. 217-02295) 07-Det 15 (No. 217-02292)	Scherbuled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Jen-16 Benetulen Eheck In house check: Dct-15
Calibration Equipment isset (M6 Primary Standards Power reason NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismaids combination Reference Prote EX30V4 DAE4 Biscondary Standards Power meter EPNI-142A Power sensor HP 5481A	TE critical for calibration(10.4 SPE 104778 SNE 103244 SNE 303240 SNE 303240 SNE 3047 2 / 06327 SNE 501 10.4 SNE 6837480704 SNE 08372992783	Cal Dets (Certificatia No.) DS-Apr-16 (No. 217-02286/02259) DS-Apr-16 (No. 217-02286) 05-Apr-16 (No. 217-02281) 05-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 07-Det-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222)	Schenbuled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Jun-17 Detc-16 Boneculed Efreck In house check: Dct-16 In house check: Dct-16
Calibration Equipment isset (M6 Primary Standards Power reace NRP-201 Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Prote EX30V4 DAE4 Siscondary Standards Power sensor HP 3481A Power sensor HP 3481A	TE chivali (or calibration) ID # SN: 103241 SN: 103240 SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5068 (20k) SN: 5068 (20k) SN: 5068 (20k) SN: 5068 (20k) SN: 6068 (20k) SN: 5088 (20k) SN:	Cal Detri (Cerriticalia No.) Di-Apr-15 (No. 217-02288)(22289) 06-Apr-16 (No. 217-02288) 06-Apr-10 (No. 217-02288) 05-Apr-16 (No. 217-02292) 05-Apr-16 (No. 217-02292) 15-Jun-16 (No. 223-7340_Jun16) 30-Dec-15 (No. 217-0229) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02223)	Scientuled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Jun-17 Dep-16 Benetitien Eheck In house check Dct-16 In house check Dct-16 Hurhouse check Dct-16
Calibration Equipment isset (M6 Primary Standards Power reason NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismaids combination Reference Prote EX30V4 DAE4 Biscondary Standards Power meter EPNI-142A Power sensor HP 5481A	TE critical for calibration(10.4 SPE 104778 SNE 103244 SNE 303240 SNE 303240 SNE 3047 2 / 06327 SNE 501 10.4 SNE 6837480704 SNE 08372992783	Cal Dets (Certificatia No.) DS-Apr-16 (No. 217-02286/02259) DS-Apr-16 (No. 217-02286) 05-Apr-16 (No. 217-02281) 05-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 07-Det-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222)	Schenbuled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Jun-17 Jun-17 Detc-16 Boneculed Efreck In house check: Dct-16 In house check: Dct-16
Calibration Equipment isset (M8 Primary Standards Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuetor Type-N mismatch combination Reference 20 dB Attenuetor Type-N mismatch combination Reference Prote EXS0V4 DAE4 <u>Biscondary Standards</u> Power metro EPNI-r4824 Power sensor HP 5451A Power sensor HP 5451A Power sensor HP 5451A	TE critical for calibration(10.4 SN: 103244 SN: 103244 SN: 5038 (20k) SN: 5058 (20k) SN: 5047 2 / 106327 SN: 504 10.4 SN: 6607 ID.4 SN: 6637480704 SN: 0557252783 SN: MY41002317 SN: 105972 SN: US37380505	Cal Dets (Certificatio No.) D5-Apr-16 (No. 247-02288)(22239) D5-Apr-16 (No. 247-02288) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02299) 05-Apr-16 (No. 217-02299) 15-Apr-16 (No. 217-02291) 15-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02223) 15-Jun-15 (no house check Jun-10) 16-Oct-07 (in house check Jun-10)	Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jum-17 Dec-16 Benschilde Check In house check Dct-18 In house check Dct-16 Hir house check Dct-16 Hir house check Dct-16 Hir house check Dct-16
Calibration Equipment isset (M6 Primary Standards Power reason NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Prote EX30V4 DAE4 Biocondary Standards Power meter EPM-142A Power sensor HP 5481A Power sensor HP 5481A Represensor HP 5451E	TE crivical for calibration/ ID # SPE 104778 SNE 103244 SNE 103240 SNE 303240 SNE 3047 22 / 06327 SNE 501 ID # SNE 601 ID # SNE 601 SNE 601 SNE 60327552783 SNE 106972 SNE 106972	Cal Detri (Cerrificarila No.) DS-Apr-15 (No. 217-02289/02289) 16-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. 217-02295) 15-Jun-16 (No. 237-02295) 15-Jun-16 (No. 237-02295) 07-Oct-15 (No. 217-02229) 07-Oct-15 (No. 217-02229) 07-Oct-15 (No. 217-02229) 07-Oct-15 (No. 217-02229) 07-Oct-15 (No. 217-02229) 15-Jun-16 (No. 217-0229) 15-Jun-16 (No. 217-020) 15-Jun-16 (Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jum-17 Dec-16 Benschilde Check In house check Dct-18 In house check Dct-16 Hir house check Dct-16 Hir house check Dct-16 Hir house check Dct-16
Calibration Equipment isset (M8' Primary Standards Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuetor Type-N mismatch combination Reference Probe EX30V4 DAE4 Standards Power sensor NP 8401A Power sensor NP 9401A Power sensor NP 9401A Power sensor NP 9401A	TE critical for calibration(10.4 SN: 103244 SN: 103244 SN: 5038 (20k) SN: 5058 (20k) SN: 5047 2 / 106327 SN: 504 10.4 SN: 6607 ID.4 SN: 6637480704 SN: 0557252783 SN: MY41002317 SN: 105972 SN: US37380505	Cal Dets (Certificatio No.) D5-Apr-16 (No. 247-02288)(22239) D5-Apr-16 (No. 247-02288) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02299) 05-Apr-16 (No. 217-02299) 15-Apr-16 (No. 217-02291) 15-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 15-Apr-16 (No. 217-02295) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02222) 07-Oct-15 (No. 217-02223) 15-Jun-15 (no house check Jun-10) 16-Oct-07 (in house check Jun-10)	Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jum-17 Dec-16 Benschilde Check In house check Dct-18 In house check Dct-16 Hir house check Dct-16 Hir house check Dct-16 Hir house check Dct-16
Calibration Egupment isset (M8' Primary Standards Power entor NRP-281 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuetion Type-N mismatch combination Reference 20 dB Attenuetion Reference 20 dB Attenuetion Re	TE criveal for calibration) ID # SN+ 104778 SN+ 103240 SN+ 5058 (20k) SN+	Cal Detn (Certificada No.) De Apri 15 (No. 217-02288/02239) (E-Apri 15 (No. 217-02288) 00-Apri 10 (No. 217-02280) 05 Apri 16 (No. 217-02290) 15-Juni 16 (No. 217-02290) 15-Juni 16 (No. 217-02290) 15-Juni 16 (No. 217-02290) 07-Oct: 15 (No. DAE-4-BOT_Doct 5) Check Date (in neuse) 07-Oct: 15 (No. 217-02220) 07-Oct: 16 (No. 217-02220) 07-Oct: 16 (No. 217-02220) 15-Juni 15 (in noise check Juni 10) 18-Oct: 07 (in house check Juni 10)	Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jum-17 Dec-16 Benschilde Check In house check Dct-18 In house check Dct-16 Hir house check Dct-16 Hir house check Dct-16 Hir house check Dct-16
Calibration Equipment isset (M6 Primary Standards Power reason NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Prote EX30V4 DAE4 Biocondary Standards Power meter EPM-142A Power sensor HP 5481A Power sensor HP 5481A Represensor HP 5451E	TE crivical for calibration/ ID # SPE 104778 SNE 103244 SNE 103240 SNE 303240 SNE 3047 22 / 06327 SNE 501 ID # SNE 601 ID # SNE 601 SNE 601 SNE 60327552783 SNE 106972 SNE 106972	Cal Detri (Cerrificarila No.) DS-Apr-15 (No. 217-02289/02289) 16-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02289) 05-Apr-16 (No. 217-02295) 15-Jun-16 (No. 217-02295) 15-Jun-16 (No. 237-02295) 15-Jun-16 (No. 237-02295) 07-Oct-15 (No. 217-02229) 07-Oct-15 (No. 217-02229) 07-Oct-15 (No. 217-02229) 07-Oct-15 (No. 217-02229) 07-Oct-15 (No. 217-02229) 15-Jun-16 (No. 217-0229) 15-Jun-16 (No. 217-020) 15-Jun-16 (Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jum-17 Dec-16 Benschilde Check In house check Dct-18 In house check Dct-16 Hir house check Dct-16 Hir house check Dct-16 Hir house check Dct-16
Calibration Equipment lised (M8 Primary Standards Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuetor Type-N mismatch combination Reference Probe EX3004 DAE4 Standards Power sensor NRP-424 Power sensor Probe EX3004 DAE4 Power sensor Probe EX3004 DAE4 Power sensor Probe EX3004 Reference Probe EX3004 Power sensor Probe Probe Probe Network Analyzer PP 8753E Calibrated by!	TE criveal for calibration) ID # SN+ 104778 SN+ 103240 SN+ 5058 (20k) SN+	Cal Detn (Certificada No.) De Apri 15 (No. 217-02288/02239) (E-Apri 15 (No. 217-02288) 00-Apri 10 (No. 217-02280) 05 Apri 16 (No. 217-02290) 15-Juni 16 (No. 217-02290) 15-Juni 16 (No. 217-02290) 15-Juni 16 (No. 217-02290) 07-Oct: 15 (No. DAE-4-BOT_Doct 5) Check Date (in neuse) 07-Oct: 15 (No. 217-02220) 07-Oct: 16 (No. 217-02220) 07-Oct: 16 (No. 217-02220) 15-Juni 15 (in noise check Juni 10) 18-Oct: 07 (in house check Juni 10)	Scheduled Calibration Apr-17 Apr-17 Apr-17 Apr-17 Apr-17 Jum-17 Dec-16 Benschilde Check In house check Dct-18 In house check Dct-16 Hir house check Dct-16 Hir house check Dct-16 Hir house check Dct-16

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



- Schweizertacher Kalibriertim Service walkas d'étalonnage Servicio avizzero di taratura Swiss Californation Service

Accreditation No.: SCS 0108



Activities and the Swiss Accessibilition Service (SAS)

The Swise Ascreditation Service is one of the signalaties to the EA Multimeral Agreement for the recognition of calibration certificates Glossary:

TSL	tissue simulating liquid
ConvF	sensitivity in TSL / NORM x,y,z
N/A	not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, TEEE 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
- KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz" d)

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the and of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL. The dipole is mounted with the spacer to position its load 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, Na 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 inpul power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

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

Gertilipate No: Dea5V3-4d063_Aug10

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Measurement Conditions

DASY system con	liguration, as t	ar as not	given on page
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DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL.	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	835 MHz = 1 MHz	

Head TSL parameters

	Temperature	Parmittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	m/orim 06,0
Measured Head TSL parameters	(22.0 ± 0.2) °C	42.1 ± 6 %	0.93 mha/m ± 6 9
Head TSL lemperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.40 W/kg
SAR for nominal Head TSL parameters	W1 of besilemon	9.40 W/kg = 17.0 % (k=2)
sector (set of sector is a sector of the product of the		
	readition	
SAR averaged over 10 cm ² (10 g) of Haad TSL SAR measured	condition 250 mW input/power	1.54 W/kg

Body TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.7 ± 6.%	1.01 mboim = 6 %
Body TSL temperature change during test	< 0,5 °C	-	-

SAR result with Body TSL

SAR averaged over 1 cm ⁷ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.47 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.57 W/kg ± 17.0 % (k=2)
	cinerfilines	
SAR averaged over 10 cm ² (10 g) of Body TSL	clandition	i Bi Wika
	candition 250 mW input power nermalized to 1W	1,81 W/kg 6,28 W/kg ± 16,5 % (k=2)

Certilicate No: D835V2-4d083_Aug16

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.2.0 2.8 jū	
Return Loss	- 30.3 dB	

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
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After long tarm use with 100W rediated power, only a slight warming of the dipola 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 loaided according to the position as explained in the "Messurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

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

Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	November 27, 2006	_

Centilicate No: D535V2-4d003_Aug16

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Report No. : E5/2017/90029 Page : 145 of 180

Date: 25.08.2016

DASY5 Validation Report for Head TSL

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d063

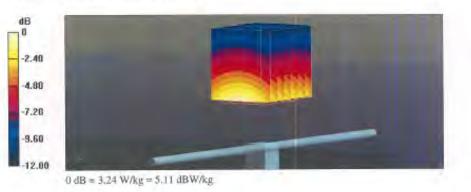
Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz; σ = 0.93 S/m; v_r = 42.1; ρ = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

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(I g) = 2.4 W/kg; SAR(10 g) = 1.54 W/kg Maximum value of SAR (measured) = 3.24 W/kg



Certificate No: D835V2-4d063_Aug16

Page 5 of 8

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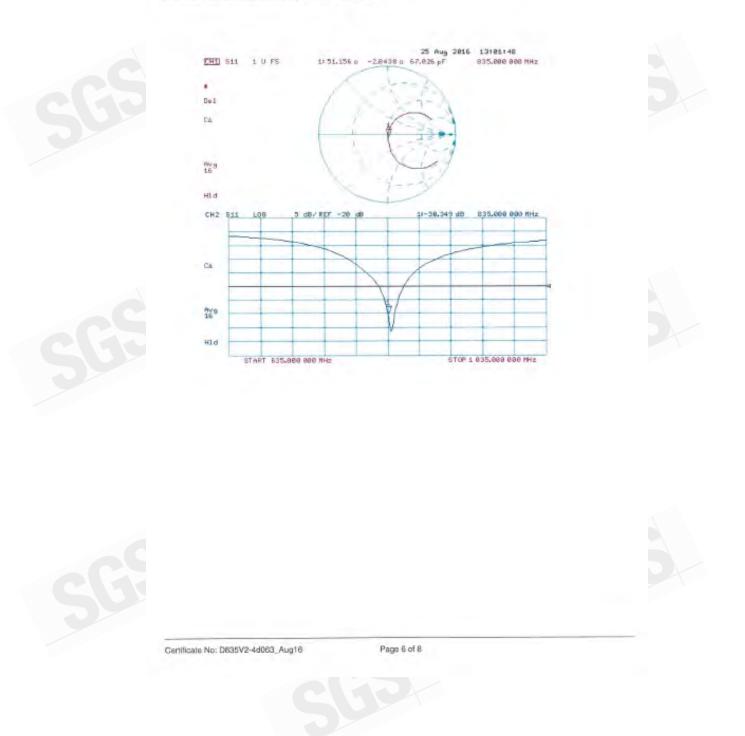
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Impedance Measurement Plot for Head TSL



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Report No. : E5/2017/90029 Page: 147 of 180

Date: 25.08.2016

DASY5 Validation Report for Body TSL

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; o = 1.01 S/m; t= 54.7; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63 19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(9.73, 9.73, 9.73); Calibrated: 15.06.2016;
- Sensor-Surface: L4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 30.12.2015 .
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372)

Dipole Calibration for Body Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 59.83 V/m; Power Drift = -0.00 dB

Peak SAR (extrapolated) = 3.63 W/kg SAR(1 g) = 2.47 W/kg; SAR(10 g) = 1.61 W/kg Maximum value of SAR (measured) = 3.25 W/kg



Certilicate No: DE35V2-4d003_Aug16

Page 7 of B

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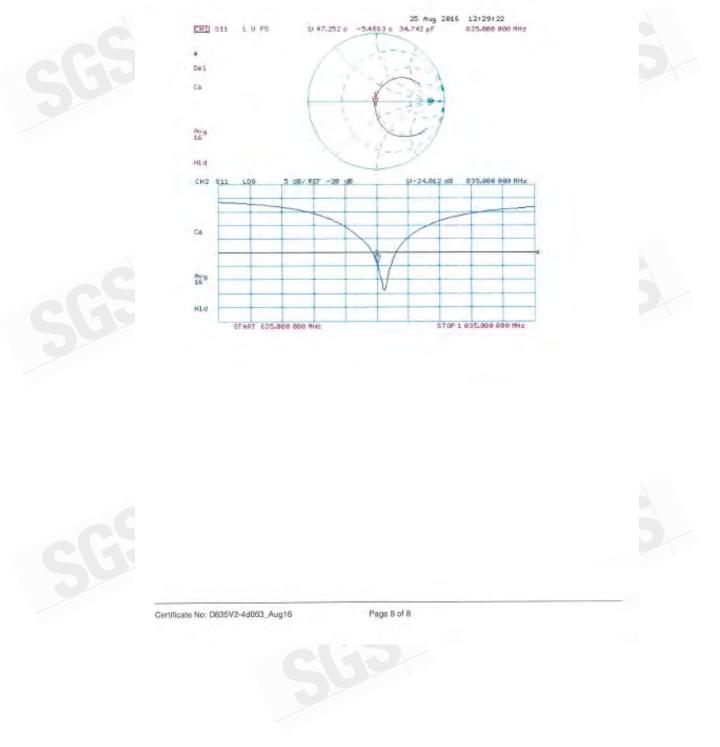
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Report No. : E5/2017/90029 Page : 148 of 180

Impedance Measurement Plot for Body TSL



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Report No. : E5/2017/90029 Page : 149 of 180

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Accretited by the Swiss Accreditation Service (SAS)



S Schweizerischer Kalibrierdienel Service suisse d'étalonnage Servizio svizeero di taratura S Swise Calibration Service

Acceditation No.: SCS 0108

The Swiss Accreditation Service in one of the signatorian to the EA studiusteral Agreement for the recognition of calibration certification Client Auctern

Cartilicate No: D835V2-4d120_Jul17 CALIBRATION CERTIFICATE D835V2 - SN:4d120 Chiect DA CAL-05 V9 Calibration procedure(v) Calibration procedure for dipole validation kits above 700 MHz July 03, 2017 Calibration data This calibration carrilicate incommons his trapatenity to rational dandards, which reside the physical Lintz of mis The measurements and the uncertainties with confidence probability are given on the following pages was into part of the Lettilizate. As contractions have need concluded in the size of lanoraboy facility, environment temperature (32 ± 1470 and humidity < 10%) Calibration Equipment used (M&TE ortical for enhibilitor) Scholand Californ/Kit ID # Cal Date (Certificate No.) Primary Stanzards 5N: 104776 Apr-18 54-Apr-17 (No 217-02121/000529) Prover means NFID Power sensor NIO+ 251 84 103344 Dd-Apr-17 TND 217-021211 Acro 15 Power service NRP-231 BN: 103245 04-Apr-17 (No. 217-08522) 80118 Ap/.18 Reference 20 oB Adamaan 5h, 5068 (204) 07-April 17 (No. 817-02528) EN: S047.2 / 063/7 17-Apr-17 (No. 217-02529) Apr-18 Type-N memalich combevill-ico ST-May 17 (No. EX3-784a_May17) Mity 18 Reference Probe EX3DV4 SN 7549 28-Mas-TT (No. DAE4-651 Mart7) Map-16 DAEA SN BIT Schwdulad Dreck Secondary Standards iD.v Chase Date (in house) Power major EPM+442A SN: GBST/m0704 177-Dig. 15 on Netzwa analyk Dig-181 is have steen. Do-18. In hours check; Ud-18 Power sensor HP B481A 544-L00725027403 07-Ocs-15 in a music shore. Orm 181 In heater sheek. Oct-18. SN MYHIGRATY R7-Det-15 (in house sheet, Dct-16) Financiaensor HF B481A In Image check: Gcl-18 15 Jun 15 in house check Oct-16) **RF center BAS SMT-36** 5N: 100973 In muse check Oct-17 Nativity: Analyzier HIP 8751E 5N US3/500585 18-Det-01 (in house phoce Cirl-18) Function Shrietler Cattaniet by Jetter Kantalli Laboravory Technican Katla Fotore Technical Menager Approvind by laned duly 5 3017 This calibration pertileate enal not be reproduced enough in full eithout written approval of the information

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Report No. : E5/2017/90029 Page: 150 of 180

Calibration Laboratory of Schmid & Partner Engineering AG Zeichmannanse 43, 2014 Zurich, Switzminer



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Glossary:

TSL lissue aimulating liquid sensitivity in TSL / NORM #.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 Winesess 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
- s) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for withites 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 Ind of the certificate. All figures slated in the certificate and valid at the frequency indicated.
- Antenna Parameters with TSL: The clock is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, will the arms aniented parallel to the body axis.
- Fand Point Impedance and Relum 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 faed 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. 1835/2+44120 ULLY

Factor 2 of B

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Measurement Conditions

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

DASY Version	DASY5	¥52.100
Extrapolation	Advanced Extrapolation	
Phantom	Modular Fint Phantom	
Distance Dipole Center - TSL	15 mm	with Space
Zoom Scan Resolution	da, dy, dz — 5 mm	
Frequency	835 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 %	-41.5	0.96 mha/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	4年日±省等	0.93 minorm + 6 %
Head TSL temperature change during test	< 0\5 °C	_	

SAR result with Head TSL

SAR meetinged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	thread fudure With 055	2.44 Wikg
SAR for nominal Head TSL parameters	Wit of berstamon	9.80 W/kg ± 17.0 % (k=2)
SAB averaged over 19 cm ³ (10 g) of Head TSL	condition	
SAB averaged over 19 cm ³ (10 g) of Head TSL. SAR measured	condition 250 wW/ Intel power	1.58 W/kp

Body TSL parameters

and the second se	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	55.0 C	55.2	D.97 mimim
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.7 ± 6 %	1 IBD mhn/m ± 0 %
Body TSL temperature change during test	2 D.6 °C		and the second

SAR result with Body TSL

SAR averaged over 1 cm ⁴ (1 g) of Body TSL	Bandillan	
SAR measured	250 mW input power	2.48 W/kg
SAP for rominal Body TEL parameters	normalized to 1W	9.68 W/kg ± 17.0 % (k=2)
	relificer	
SAR averaged over 10 pm ² (10 g) of Body TSL	condition	
	condition 250 mW input power	1.szł Wikg

Centificate No: D836V2-40120_a017

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance transformant to land point	51之(1-2.3 前)	
Hetum Loss	- 31,7 dB	

Antenna Parameters with Body TSL

Impedance, transformed to field point	48.3 G - 4.7 (G
Return Loss	+ 25 8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.397 nc-
----------------------------------	-----------

After long Nem use with 100W radiated power; only a slight warming of the dipole near the teedpoint can be messured.

The Opple is made of standard seminipid coaxiel bable. The center panductor of the feeding line is directly connected to the second win of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small and burs 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 SARI data are not affected by the change. The overall dipole length is still eccording to the Standard,

No excessive force must be applied to the dipone arms, because they might bend or the socialmid connections near the leedpoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG
Manufacturation	June 29, 2010

Certificate No: DE05V2-40120_0011*

Page 4 22 B

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Report No. : E5/2017/90029 Page: 153 of 180

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

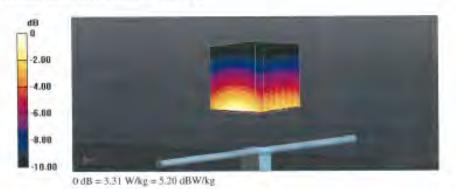
Communication System: UID 0 - CW: Frequency: 835 MHz Medium parameters used: f = 835 MHz; 6 = 0.93 S/m; e_t = 41; p = 1000 kg/m³ Phantom section. Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSLC63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.07, 10.07, 10.07); Calibrated: 31.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 4.9 (front): Type: QD 00L P49 AA; Serial: 1001
- DASY52 52 10.0(1446): SEMCAD X 14.6.10(7417) ÷

Dipole Calibration for Head Tissue/Pin=250 mW, d=15mm/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 62.12 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.77 W/kg SAR(1 g) = 2.44 W/kg; SAR(10 g) = 1.58 W/kg Maximum value of SAR (measured) = 3.31 W/kg



Certificate No: D635V2-4d120 .Jul17

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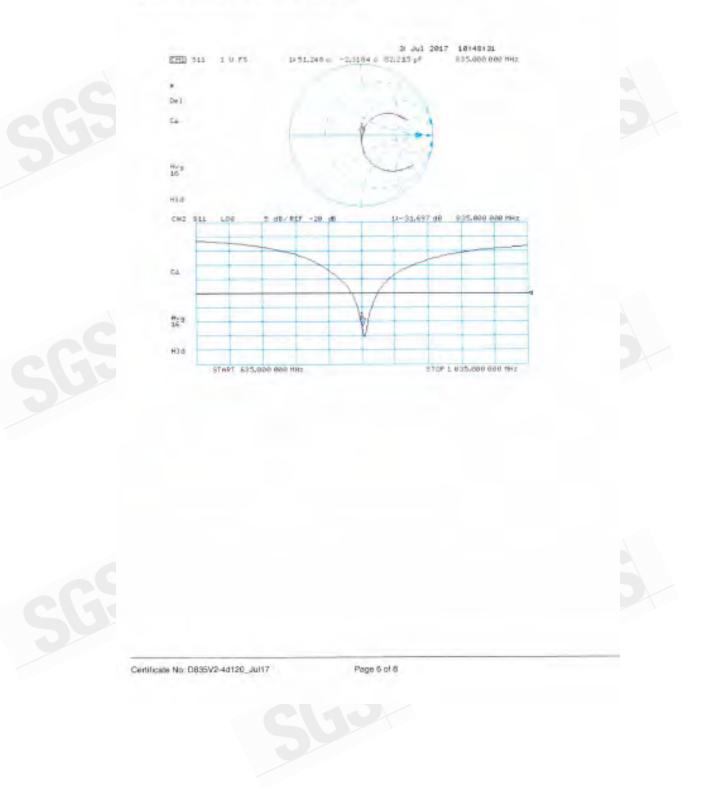
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Report No. : E5/2017/90029 Page: 154 of 180

Impedance Measurement Plot for Head TSL



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Report No. : E5/2017/90029 Page: 155 of 180

Date: 03.07.2017

DASY5 Validation Report for Body TSL

Test Laboratory: SPEAG, Zurich, Switzerland

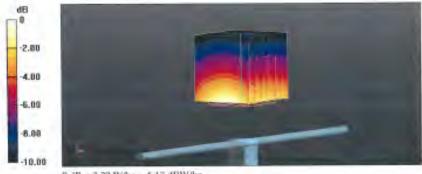
DUT: Dipole 835 MHz; Type: D835V2; Serial: D835V2 - SN:4d120

Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz; d = 1 S/m; e = 54.7; p = 1000 kg/m2 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: L4mm (Mechanical Surface Detection)
- Electronics: DAE4 Su601; 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: 0835V2-4d120_dul17

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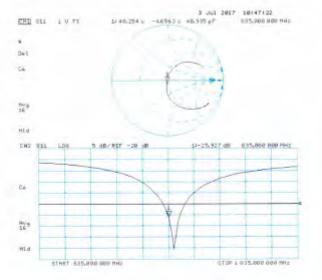
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Report No. : E5/2017/90029 Page : 156 of 180

Impedance Measurement Plot for Body TSL





Certificate No: D835V2-4d120_Jul17

Page 8 of 8

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Report No. : E5/2017/90029 Page: 157 of 180

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Schweizerischer Kallbrierdienst

Service suisse d'étalonnage

Servizio svizzero di taratura

Swiss Calibration Service

Accreditation No.: SCS 0108

26ject	D1900V2 - SN:50	1173		
Calibration procedure(s)	QA CAL-05.v9 Calibration proce	dure for dipole validation kits ab	ove 700 MHz	
Calibration date:	May 31, 2017			
The measurements and the unce	rtainties with confidence p	onel standards, which realize the physical u robability are given on the following pages a	and are part of the certificate.	
All calibrations have been conduc Calibration Equipment used (M&T		ry facility; environment temperature (22 ± 3)	°C and numidity < 70%.	
	10.4	Cal Date (Certificate No.)	Scheduled Calibration	
Primary Standards Power meter NRP Power sensor NRP-Z91 Power sensor NRP-Z91 Reference 20 dB Attenuetor Type-N mismatch combination Reference Probe EX3DV4 DAE4	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. 217-02521/02522) 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. 2N3-7460_May17) 28-Mar-17 (No. DAE4-601_Mar17)	Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 May-18 May-18	
			Scheduled Check	
Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer HP 8753E	ID # SN: G837480704 SN: US37292783 SN: MY41092317 SN: 100972 SN: US37390585	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)	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	
Calibrated by:	Name Jeton Kastrati	Function Laboratory Technician	Signature	
Approved by	Katja Pokovic	Technical Manager	AL-	
		in full without written approval of the laborate	Issued: May 31, 2017	
This calibration certificate shall n	tot be reproduced except	In full without written approval of the laboration	Jiy.	
and the second se	3_May17	Page 1 of 8		

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Report No. : E5/2017/90029 Page: 158 of 180

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

Accreditation No.: SCS 0108

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Glossary: TS

Co N/

SL	tissue simulating liquid
onvF	sensitivity in TSL / NORM x,y,z
/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
- IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless c) communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

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

Certificate No: D1900V2-5d173_May17

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Measurement Conditions

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	41.3±6%	1.40 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.7 W/kg ± 17.0 % (k=2)
FATTERS AND	a construction of the second sec	
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ² (10 g) of Head TSL SAR measured	condition 250 mW input power	5.26 W/kg

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 "C	53.3	1.52 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) "C	54.2 ± 6 %	1.51 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		-

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.98 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	40.2 W/kg ± 17.0 % (k=2)
	And a state of the	
SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
	condition 250 mW input power	5.30 W/kg

Certificate No: D1900V2-5d173_May17

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	51.3 Ω + 4.9 <u>]</u> 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

Electrical Delay (one direction)	1.199 ns
----------------------------------	----------

After long term use with 100W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard seminigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

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

Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	June 08, 2012	



Certificate No: D1900V2-5d173_May17

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Report No. : E5/2017/90029 Page: 161 of 180

DASY5 Validation Report for Head TSL

Date: 31.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

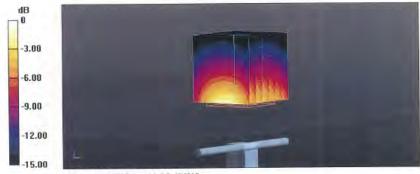
DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d173

Communication System: UID 0 - CW; Frequency: 1900 MHz Medium parameters used: f = 1900 MHz; $\sigma = 1.4 \text{ S/m}$; $\epsilon_r = 41.3$; $\rho = 1000 \text{ kg/m}^3$ 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/kg Maximum value of SAR (measured) = 15.3 W/kg



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

Certificate No: D1900V2-5d173 May17

Page 5 of 8

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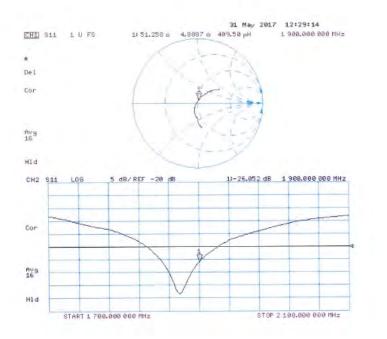
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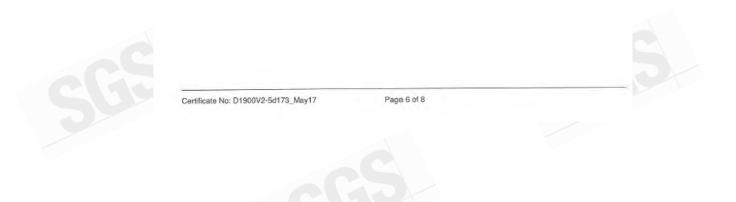


Impedance Measurement Plot for Head TSL









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Report No. : E5/2017/90029 Page : 163 of 180

DASY5 Validation Report for Body TSL

Date: 31.05.2017

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d173

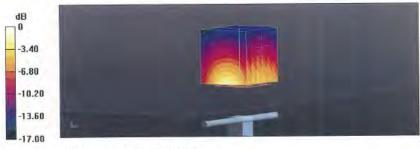
 $\begin{array}{l} \mbox{Communication System: UID 0-CW; Frequency: 1900 MHz} \\ \mbox{Medium parameters used: } f = 1900 MHz; \ \sigma = 1.51 \ S/m; \ \epsilon_r = 54.2; \ \rho = 1000 \ kg/m^3 \\ \mbox{Phantom section: Flat Section} \\ \mbox{Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)} \\ \end{array}$

DASY52 Configuration:

- Probe: EX3DV4 SN7460; ConvF(7.82, 7.82, 7.82); Calibrated: 19.05.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 102.9 V/m; Power Drift = -0.08 dB Peak SAR (extrapolated) = 17.5 W/kg SAR(1 g) = 9.98 W/kg; SAR(10 g) = 5.3 W/kg Maximum value of SAR (measured) = 14.3 W/kg



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



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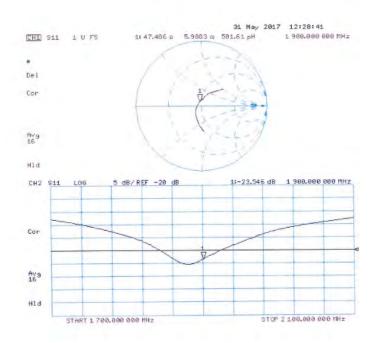
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Impedance Measurement Plot for Body TSL









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Report No. : E5/2017/90029 Page: 165 of 180

Calibration Laboratory of Schmid & Partner Engineering AG rughrusstrasse 43, 0004 Zurich, Switzerla



Service suisse d'étaionnage Servizio svizzero di taratura Swiss Calibration Service

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Accreditation No.: SCS 0108

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

SGS -TW (Auden) Client



Power meter NRP	SN: 104778	04-Apr-17 (No. 217-02521/02522)	Apr-18
Pawer sensor NRP-291	SN: 100244	04-Apr-17 (No 217-02521)	Apr-18
Power sensor NRP-Z91	SN: 103245	D4-Apt-17 (No. 217-02522)	Apr-18
Reference 20 dB Attenueto/	SN: 5058 (20k)	07-Apr-17 (No. 217-02528)	Apr-18
Type-N mismatch combination	SN: 5047.2708327	07-Api-17 (No. 217 02529)	Apr-18
Reference Probe EX30V4	SN: 7349	31-Dec-16 (No. EX3-7349_Dec16)	Dec-17
DAE4	SN: 601	25-Mar-17 (No. DAE4-601_Mar17)	Mar-18
Secondary Standards	JD #	Check Date (in house)	Scheduled Check
Power meter EPM-442A	SN: GB37480704	07-Oct-15 (in house pheck Oct-16)	In house check: Oct-18
Power sensor HP 8481A.	SN. US37292783	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
Power sensor HP 8481A	SN MY41092317	07-Oct-15 (in house check Oct-16)	In house check: Oct-18
RF generator R&S SMT-06	SN: 100972	15-Jun-15 (in house check Ocl-16)	In house check: Oct-18
Notwork Analyzer HP 8753E	SN: U\$37390585	18-Oct-01 (in house check Oct-16)	in house check: Oct-17
	Name	Function	Signahare
Calibrated by:	Michael Weber	Laboratory Technician	Alles
Approved by	Kalja Pokovic	Technical Manager	folds.
		n full without written approval of the laborator	Itsued: April 21, 2017

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Certificate No: D2450V2-727_Apr17

Page 1 ci 8

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Report No. : E5/2017/90029 Page: 166 of 180

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



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 Kallmierdion Service suisse d'étalonnage Servizio gylzzero di taratura Swinn Calibration Serves

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Glossary: TSL

ConvF 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
- IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held b) 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)⁴, March 2010
- d) KDB B65664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

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

Certificate No: D2450V2-727_Apr17

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Measurement Conditions

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

DASY Version	DASY5	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.7 ± 6 %	1.87 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.4 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.2 W/kg ± 17.0 % (k=2)
PAD supremed over 10 am2 (10 a) of Meed TCI	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	condition 250 mW input power	6.18 W/kg

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mbo/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.5 ± 6 %	2.03 mha/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	12.9 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	50.6 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Body TSL SAR measured	condition 250 mW input power	6.01 W/kg



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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	56.3 Ω + 2.1 jΩ
Return Loss	- 24.0 dB

Antenna Parameters with Body TSL

1		
	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 cipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions' paragraph. The SAR data are not affected by this change. The overall dipole length is still according to the Standard.

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	January 09, 2003



Certificate No: D2450V2-727 Apr17

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Report No. : E5/2017/90029 Page: 169 of 180

Date: 21.04.2017

DASY5 Validation Report for Head TSL

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

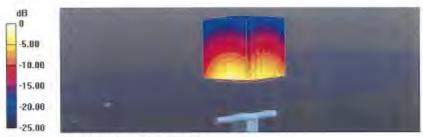
Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz; o = 1.87 S/m; c = 37.7; p = 1000 kg/m3 Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.72, 7.72, 7.72); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection) ÷
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (front): Type: QD 000 P50 AA: Serial: 1001
- DASY52 52,10.0(1442); SEMCAD X 14.6.10(7413)

Dipole Calibration for Head Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 109.8 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 27.3 W/kg SAR(1 g) = 13.4 W/kg; SAR(10 g) = 6.18 W/kg Maximum value of SAR (measured) = 21.1 W/kg







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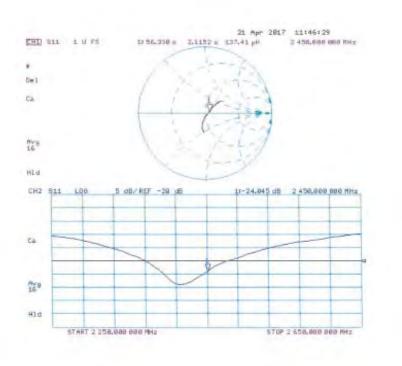
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Impedance Measurement Plot for Head TSL







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Report No. : E5/2017/90029 Page: 171 of 180

Date: 21.04.2017

DASY5 Validation Report for Body TSL

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN: 727

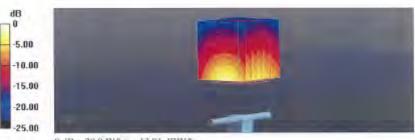
Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz; $\sigma = 2.03 \text{ S/m}$; $\epsilon_i = 52.5$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63,19-2011)

DASY52 Configuration:

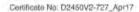
- Probe: EX3DV4 SN7349; ConvF(7.79, 7.79, 7.79); Calibrated: 31.12,2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 28.03.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.0(1442); SEMCAD X 14.6.10(7413)

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



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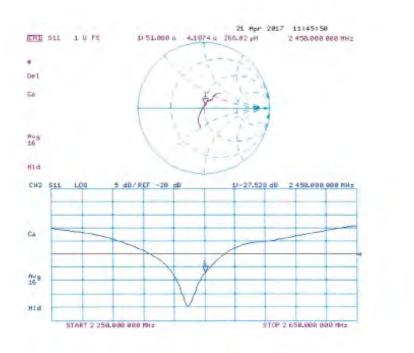
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Impedance Measurement Plot for Body TSL









Certificate No: D2450V2-727_Apr17

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consistent by the Swiss Accreditation Service (SAS) Accreditation Service is one of the signatories to the EA halitateral Agreement for the recognition of calibration certificates Certificate No: D2600V2-1005_Ji SGS-TW (Auden) Certificate No: D2600V2-1005_Ji CALIBRATION CERTIFICATE D2600V2 - SN:1005 Calibration procedure(s) QA CAL-05.V9 Calibration procedure for clipple validation kits above 700 MHz Calevetion rate: January 25, 2017 The calibration certificate documents the increativity 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 pair of the calificate. Accessing to the sector for calibration tertiles with confidence probability are given on the following pages and are pair of the calificate. Accessing to the value (MSTE critice) for pathestion) Privary Stantards ID # Cal Cali (Certificate No.) Schedored Carcing
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/pe-N mismatch combination SN: 5047.2 / 05327 05-Apr-16 (No. 217-02295) Apr-17
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AE4 SN: 801 04-Jan-17 (No. DAE4-601_Jan17) Jan-18
econdary Signifiands D 4 Check Date (in house) Scheduled Check
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Figurarator R&S SMT-06 SNI: 100972 15-Jun-15 (in house check Oct-18) In house check Oct
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Certificate No: D2600V2-1005_Jan17

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Calibration Laboratory of Schmid & Partner Engineering AG Zeighnusstasse 13, 8004 Zurich, Switzerland



- - Schweizenischer Kalibrierdienst Service suisse d'oblonnage Servizie avizzere di Wentura Swies Calibration Service

Acepselitation No.: SCS 0108



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Glossary:

TSL tissue simulating liquid ConvF sensitivity in TSL / NORM x,y,z N/A not applicable or not measured

Calibration is Performed According to the Following Standards:

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

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the certificate. All figures stated in the certificate are valid at the frequency indicated.
- Antenna Parameters with TSL: The dipole is mounted with the spacer to position its feed
 point exactly below the center marking of the flat phantom section, with the arms oriented
 parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole
 positioned under the liquid filled phantom. The impedance stated is transformed from the
 measurement at the SMA connector to the feed point. The Return Loss ensures low
 reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required.
- SAR measured: SAR measured at the stated antenna input power
- SAR normalized: SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

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

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Measurement Conditions

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

DASY Version	DASYS	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phentom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2600 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.0	1.95 mho/m
Measured Head TSL parameters	(22,0 ± 0.2) °C	37.4 ± 6 %	2.05 mha/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	14.3 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	55.5 W/kg = 17.0 % (k=2)

SAH averaged over 10 cmº (10 g) of Head ISL	condition	
SAR measured	250 mW input power	6.32 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	24.8 W/kg ± 16.5 % (k=2)

Body TSL parameters

The following parameters and calculations were applied

	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	(1000)	

SAR result with Body TSL

SAR averaged over 1 cm ⁷ (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.9 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	55.1 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ² (10 g) of Body TSL	condition	
SAR averaged over 10 cm ^S (10 g) of Body TSL SAR measured	condition 250 mW input power	6.20 W/kg

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impediance, transformed to feed point	49,3 Ω - 4.7 JΩ	
Return Loss	- 26.5 dB	

Antenna Parameters with Body TSL

Impedance, transformed to fixed point	44.7 0 - 3.2 j0	
Return Loss	-23,7 dB	

General Antenna Parameters and Design

1.154 ns

After long term use with 100W ratilated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semitigid coaxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipole. The antenna is therefore short-circuited for DC-signals. On some of the dipoles, small and caps are added to the dipole arms in order to improve matching when lisaded 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 atill according to the Standard.

No excessive force must be applied to the dipole arms, because they might bend or the soldered connections near the isodopoint may be damaged.

Additional EUT Data

Manufactured by	SPEAG	
Manufactured on	December 23, 2006	

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Date: 25.01.2017

DASY5 Validation Report for Head TSL

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; $\sigma = 2.05 \text{ S/m}$; $c_e = 37.4$; $p = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.56, 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



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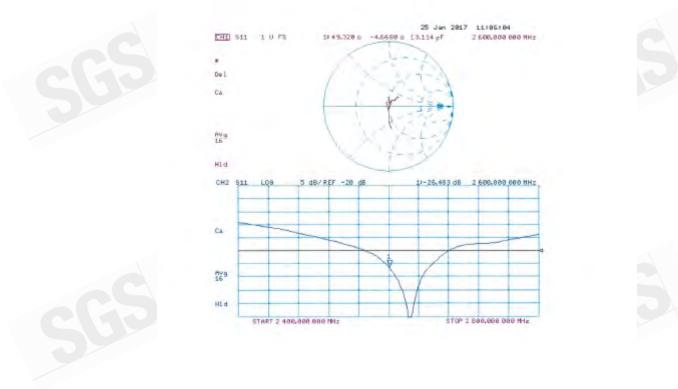
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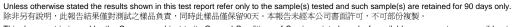
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Impedance Measurement Plot for Head TSL





Certificate No: D2600V2-1005_Jan17 Page 6 of 8



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Report No. : E5/2017/90029 Page: 179 of 180

Date: 18.01.2017

DASY5 Validation Report for Body TSL

Test Laboratory: SPEAG, Zurich, Switzerland

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

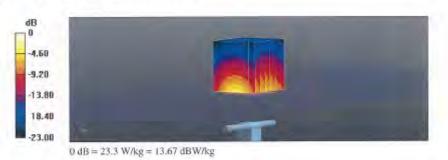
Communication System: UID 0 - CW; Frequency: 2600 MHz Medium parameters used: f = 2600 MHz; σ = 2.2 S/m; z_c = 52.3; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/AN8I C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(7.48, 7.48, 7.48); Calibrated: 31.12.2016;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection) .
- Electronics: DAE4 Sn601; Calibrated: 04.01.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002 .
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7372) .

Dipole Calibration for Body Tissue/Pin=250 mW, d=10mm/Zoom Scan (7x7x7)/Cube 0:

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 108.8 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 28.8 W/kg SAR(1 g) = 13.9 W/kg; SAR(10 g) = 6.2 W/kg Maximum value of SAR (measured) = 23.3 W/kg





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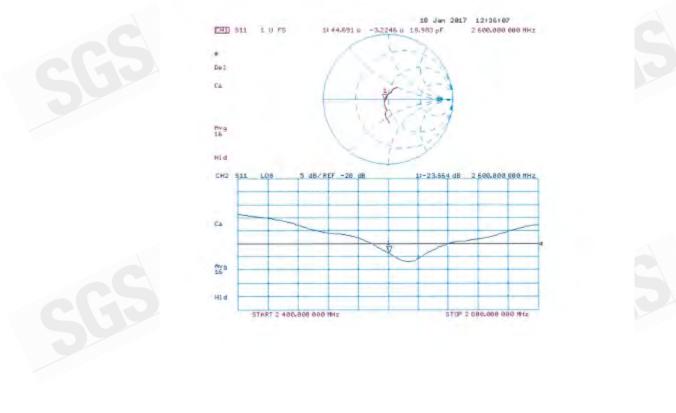
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Impedance Measurement Plot for Body TSL





- End of 1st part of report -

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