

Report No. : E5/2018/90012 Page: 1 of 244

SAR TEST REPORT



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

Equipment Under Test	Smart phone
Company Name	Sharp Corporation, Mobile Communication B.U.
Company Address	2-13-1, Hachihonmatsu-Iida, Higashi-hiroshima-shi,Hiroshima 739-0192, Japan
Standards	IEEE/ANSI C95.1-1992, IEEE 1528-2013,
	KDB248227D01v02r02,KDB865664D01v01r04,
	KDB865664D02v01r02,KDB941225D01v03r01,
	KDB941225D06v02r01,KDB447498D01v06,
	KDB648474D04v01r03, KDB941225D05v02r05
FCC ID	APYHRO00263
Date of Receipt	Sep. 18, 2018
Date of Test(s)	Sep. 25, 2018 ~ Oct. 05, 2018
Date of Issue In the configuration tested, the EL Remarks:	Oct. 24, 2018 JT 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

Clerk / Ruby Ou	Engineer / Bond Tsai	Asst. Manager / John Yeh
Kuby Ou	Bonditsai	John Teh
	-	Date: Oct. 24, 2018

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	Highest SAR Summary					
Equipment class	Frequency Band			Product specific 10g-SAR (Separation 0 mm)	Highest Simultaneous Transmission 1g SAR(W/Kg)	
			1g SAR(W/Kg)		10g SAR(W/Kg)	1g SAR(W/Kg)
Licensed	UMTS Band II	0.21	-	-	-	
Licensed	UMTS Band IV	-	0.52	-	-	
Licensed	UMTS Band IV	-	-	0.52	-	0.98
DTS	2.4GHz WLAN	0.48	0.34	0.34	-	0.96
NII	5GHz WLAN	0.38	0.22	-	0.39	
DSS	Bluetooth	0.37	0.07	-	-	
Date	Date of Testing 2018/09/25~2018/10/05					

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Revision History

Report Number	Revision	Description	Issue Date
E5/2018/90012	Rev.00	Initial creation of document	Oct. 24, 2018

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1. General Information

1.1 Testing Laboratory

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

1.2 Details of Applicant

Company Name Sharp Corporation, Mobile Communication B.U.	
Compony Addrood	2-13-1, Hachihonmatsu-Iida, Higashi-hiroshima-shi,Hiroshima 739-0192, Japan

1.2.1 Details of Manufacturer

Company Name	Sharp Corporation
Company Address	1 Takumi-cho, Sakai-ku, Sakai City,Osaka 590-8522,Japan

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1.3 Description of EUT

EUT Name	Smart phone					
FCC ID	APYHRO00263					
Mode of Operation						
	WLAN802.11 a/b/g/n/ac(20M/40	M/80M)	Blue	etooth		
	GSM (DTM multi class B)	1/8.3				
	GPRS 1/2 (1Dn4U (support multi class 12 max) 1/4.1 (1Dn2U 1/8.3 (1Dn1U 1/8.3 (1Dn1U)					
Duty Cycle	LTE FDD		1			
	WCDMA	1				
	WLAN802.11	1				
	a/b/g/n/ac(20M/40M/80M)					
	Bluetooth		1			
	GSM850	824	-	849		
	GSM1900	1850	—	1910		
	WCDMA Band II	1850	—	1910		
	WCDMA Band IV	1710	—	1755		
	LTE FDD Band 2	1850	_	1910		
TX Frequency Range	LTE FDD Band 4	1710	_	1755		
(MHz)	LTE FDD Band 12	699 —		716		
	LTE FDD Band 17	704 —		716		
	WiFi 2.4GHz	2400 — 2		2462		
	WiFi 5GHz	5150	—	5725		
	Bluetooth	2402	_	2480		

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	GSM850	128	_	251
	GSM1900	512	—	810
	WCDMA Band II	9262	—	9538
	WCDMA Band IV	1312	—	1513
Channel Number	LTE FDD Band 2	18607	—	19193
Channel Number (ARFCN)	LTE FDD Band 4	19957	—	20393
	LTE FDD Band 12	23017	—	23173
	LTE FDD Band 17	23755	—	23825
	WiFi 2.4GHz	1	_	11
	WiFi 5GHz	36	_	144
	Bluetooth	0	_	78

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Max. SAR (1-g) (Unit: W/Kg)						
Mode	Band	Measured	Reported	Position / Channel		
	GSM 850	0.07	0.09	Left Right Cheek Tilt <u>190</u> Channel		
	GSM 1900	0.09	0.11	□Left ⊠Right ⊠Cheek □Tilt <u>810</u> Channel		
	WCDMA Band II	0.16	0.21	□Left ⊠Right ⊠Cheek □Tilt <u>9400</u> Channel		
Hood	WCDMA Band IV	0.14	0.19	□Left ⊠Right ⊠Cheek □Tilt <u>1412</u> Channel		
Head -	LTE FDD Band 2	0.13	0.15	□Left ⊠Right ⊠Cheek □Tilt <u>19100</u> Channel		
	LTE FDD Band 4	0.12	0.16	□Left ⊠Right ⊠Cheek □Tilt <u>20300</u> Channel		
	LTE FDD Band 12	0.08	0.10	Left Right Cheek Tilt 23130 Channel		
	LTE FDD Band 17	0.08	0.10	Left Right Cheek Tilt 23780 Channel		

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Max. SAR (1-g) (Unit: W/Kg)						
Mode	Band	Measured	Reported	Position / Channel		
	GSM 850	0.26	0.33	☐Front ⊠Back <u>190</u> Channel		
	GSM 1900	0.22	0.28	☐Front ⊠Back <u>810</u> Channel		
Body-worn	WCDMA Band II	0.38	0.50	☐Front ⊠Back <u>9400</u> Channel		
	WCDMA Band IV	0.39	0.52	☐Front ⊠Back <u>1412</u> Channel		
	LTE FDD Band 2	0.31	0.35	☐Front ⊠Back <u>19100</u> Channel		
	LTE FDD Band 4 LTE FDD Band 12	0.29	0.38	☐Front ⊠Back <u>20300</u> Channel		
		0.18	0.22	☐Front ⊠Back Channel		
	LTE FDD Band 17	0.20	0.26	☐Front ⊠Back <u>23780</u> Channel		

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	Max. SAR (1-g) (Unit: W/Kg)									
Mode	Band	Measured	Reported	Position / Channel						
Hotspot	GPRS 850 (1Dn4UP)	0.29	0.41	☐Front ⊠Back ☐Left ☐Right ☐Bottom <u>128</u> Channel						
	GPRS 1900 (1Dn4UP)	0.21	0.28	☐Front ⊠Back ☐Left ☐Right <u>661</u> Channel						
	WCDMA Band II	0.38	0.50	☐Front ⊠Back ☐Left ☐Right ☐Bottom <u>9400</u> Channel						
	WCDMA Band IV	0.39	0.52	☐Front ⊠Back ☐Left ☐Right ☐Bottom <u>1412</u> Channel						
mode	LTE FDD Band 2	0.31	0.35	☐Front ⊠Back ☐Left ☐Right ☐Bottom <u>19100</u> Channel						
	LTE FDD Band 4	0.29	0.38	☐Front ⊠Back ☐Left ☐Right ☐Bottom <u>20300 Channel</u>						
	LTE FDD Band 12	0.18	0.22	☐Front ⊠Back ☐Left ☐Right ☐Bottom <u>23130</u> Channel						
	LTE FDD Band 17	0.20	0.26	☐Front ⊠Back ☐Left ☐Right ☐Bottom <u>23780</u> Channel						

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	Max. SAR (1-g) (Unit: W/Kg)								
Mode	Antenna	Band	Measured	Reported	Position / Channel				
		WLAN802.11 b	0.48	0.48	Left Right Cheek Tilt <u>11</u> Channel				
		WLAN802.11n(40M)5.2G	0.36	0.36	⊠Left □Right ⊠Cheek □Tilt <u>46</u> Channel				
	Main	WLAN802.11n(40M)5.3G	0.35	0.38	⊠Left □Right ⊠Cheek □Tilt <u>54</u> Channel				
		WLAN802.11ac(80M)5.6G	0.16	0.16	∐Left ☐Right ⊠Cheek ☐Tilt <u>122</u> Channel				
Head		Bluetooth	0.26	0.37	∐Left ☐Right ⊠Cheek ☐Tilt <u>39</u> Channel				
		WLAN802.11 b	0.09	0.09	□Left ⊠Right ⊠Cheek □Tilt <u>11</u> Channel				
	Aux	WLAN802.11n(40M)5.2G	0.20	0.20	□Left ⊠Right ⊠Cheek □Tilt <u>46</u> Channel				
	Aux	WLAN802.11n(40M)5.3G	0.21	0.23	□Left ⊠Right ⊠Cheek □Tilt <u>54</u> Channel				
		WLAN802.11ac(80M)5.6G	0.34	0.37	□Left ⊠Right ⊠Cheek □Tilt <u>122</u> Channel				

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	Max. SAR (1-g) (Unit: W/Kg)									
Mode	Antenna	Band	Measured	Reported	Position / Channel					
		WLAN802.11 b	0.09	0.09	⊠Front □Back <u>11</u> Channel					
		WLAN802.11n(40M)5.2G	0.12	0.12	☐Front ⊠Back <u>46</u> Channel					
	Main	WLAN802.11n(40M)5.3G	0.12	0.13	☐Front ⊠Back <u>54</u> Channel					
		WLAN802.11ac(80M)5.6G	0.21	0.22	☐Front ⊠Back <u>122</u> Channel					
Body- worn		Bluetooth	0.05	0.07	⊠Front □Back <u>39</u> Channel					
		WLAN802.11 b	0.33	0.34	☐Front ⊠Back <u>11</u> Channel					
	Aux	WLAN802.11n(40M)5.2G	0.09	0.09	☐Front ⊠Back <u>46</u> Channel					
	Aux	WLAN802.11n(40M)5.3G	0.09	0.10	☐Front ⊠Back <u>54</u> Channel					
		WLAN802.11ac(80M)5.6G	0.16	0.17	☐Front ⊠Back <u>122</u> Channel					

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	Max. SAR (1-g) (Unit: W/Kg)											
Mode	Antenna	Band	Measured	Reported	Position / Channel							
Hotspot	Main	WLAN802.11 b	0.09	0.09	<pre></pre>							
mode	Aux	WLAN802.11 b	0.33	0.34	☐Front ⊠Back ☐Top ☐Left <u>11 </u> Channel							

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	Max. SAR (10-g) (Unit: W/Kg)										
Mode	Antenna	Band	Measured	Reported	Position / Channel						
		WLAN802.11n(40M)5.2G	0.22	0.22	☐Front ⊠Back ☐Top ☐Right <u>46</u> Channel						
Product	Main	WLAN802.11n(40M)5.3G	0.29	0.32	☐Front ⊠Back ☐Top ☐Right <u>54</u> Channel						
		WLAN802.11ac(80M)5.6G	0.33	0.34	☐Front ⊠Back ☐Top ☐Right <u>122</u> Channel						
specific 10g-SAR	Aux	WLAN802.11n(40M)5.2G	0.21	0.21	☐Front ⊠Back ☐Top ☐Left <u>46</u> Channel						
		WLAN802.11n(40M)5.3G	0.25	0.28	☐Front ⊠Back ☐Top ☐Left <u>54</u> Channel						
		WLAN802.11ac(80M)5.6G		0.39	☐Front ⊠Back ☐Top ☐Left <u>122</u> Channel						

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GSM 850 - conducted power table:

EUT mode	Frequency (MHz)	СН	Max. Rated Avg. Power +	Burst average power	Source-based time average power			
	(10172)		Max.Tolerance (dBm)	Avg. (dBm)	Avg. (dBm)			
0014.050	824.2	128	33.5	32.17	23.14			
GSM 850 (GMSK)	836.6	190	33.5	32.42	23.39			
	848.8	251	33.5	32.34	23.31			
	The division factor compared to the number of TX time slot							
	Divi	sion factor	1 TX time slot					
	DIVI	SIUTIACIUI	-9.03					

GPRS 850 - conducted power table:

	Burst average power									
Max. Rated Avg. Power + Max. Tolerance (dBm)			33.5	31.5	29.8	29				
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP				
EUT mode	EUT mode Frequency CH (MHz)		Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)				
GPRS	824.2	128	32.17	30.08	28.41	27.53				
850	836.6	190	32.42	30.02	28.36	27.40				
050	848.8	251	32.34	30.11	28.40	27.28				
		Sc	ource-based tim	e average powe	er					
GPRS	824.2	128	23.14	24.06	24.15	24.52				
850	836.6	190	23.39	24.00	24.10	24.39				
850	848.8	251	23.31	24.09	24.14	24.27				
	The division factor compared to the number of TX time slot									
Div	ision factor		1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot				
			-9.03	-6.02	-4.26	-3.01				

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GSM 1900 - conducted power table:

EUT mode		СН	Max. Rated Avg. Power +	Burst average power	Source-based time average power			
	(MHz)		Max.Tolerance- (dBm)	Avg. (dBm)	Avg. (dBm)			
	1850.2	512	30.5	29.36	20.33			
GSM1900 (GMSK)	1800	661	30.5	29.48	20.45			
	1909.8	810	30.5	29.50	20.47			
	The division factor compared to the number of TX time slot							
	Divid	sion factor	1 TX ti	me slot				
	DIVIS	SIGNIACION	-9.03					

GPRS 1900 - conducted power table:

	Burst average power									
Max. Rated Avg. Power + Max. Tolerance (dBm)			30.5	28.5	27	26				
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP				
EUT mode	node Frequency CH		Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)				
GPRS	1850.2	512	29.36	27.42	25.75	24.66				
1900	1880	661	29.48	27.50	25.84	24.75				
1900	1909.8	810	29.50	27.50	25.91	24.64				
		Sc	ource-based tim	e average powe	er					
GPRS	1850.2	512	20.33	21.40	21.49	21.65				
1900	1880	661	20.45	21.48	21.58	21.74				
1900	1909.8	810	20.47	21.48	21.65	21.63				
	The division factor compared to the number of TX time slot									
Div	ision factor		1 TX time slot	2 TX time slot	3 TX time slot	4 TX time slot				
			-9.03	-6.02	-4.26	-3.01				

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WCDMA Band II / Band IV - HSDPA / HSUPA Conducted power table (Unit: dBm):

	Band		WCDMA II	
	TX Channel	9262	9400	9538
	Frequency (MHz)	1850.2	1880	1907.6
Max. Rated Ave	g. Power+Max. Tolerance (dBm)		24.20	
3GPP Rel 99	RMC 12.2Kbps	22.82	22.99	22.98
	HSDPA Subtest-1	21.90	22.00	22.02
3GPP Rel 5	HSDPA Subtest-2	21.37	21.50	21.51
JOFF IVE J	HSDPA Subtest-3	21.38	21.52	21.51
	HSDPA Subtest-4	21.40	21.56	21.49
	HSUPA Subtest-1	21.84	21.96	21.99
	HSUPA Subtest-2	20.58	20.70	20.75
3GPP Rel 6	HSUPA Subtest-3	21.18	21.28	21.27
	HSUPA Subtest-4	20.62	20.69	20.71
	HSUPA Subtest-5	21.92	22.03	22.07

	Band		WCDMA I\	/
	1312	1412	1513	
	Frequency (MHz)	1712.4	1732.4	1752.6
Max. Rated Ave	g. Power+Max. Tolerance (dBm)		24.20	
3GPP Rel 99	RMC 12.2Kbps	22.89	22.92	22.85
	HSDPA Subtest-1	21.88	21.91	21.87
3GPP Rel 5	HSDPA Subtest-2	21.37	21.40	21.34
JULE RELD	HSDPA Subtest-3	21.44	21.43	21.37
	HSDPA Subtest-4	21.39	21.43	21.37
	HSUPA Subtest-1	21.88	21.89	21.84
	HSUPA Subtest-2	20.57	20.60	20.58
3GPP Rel 6	HSUPA Subtest-3	21.14	21.27	21.19
	HSUPA Subtest-4	20.63	20.63	20.60
	HSUPA Subtest-5	21.91	21.92	21.88

Subtests for WCDMA Release 5 HSDPA

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

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Subtests for WCDMA Release 6 HSUPA

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

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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	
				1860	18700	22.27	23.2	0
			0	1880	18900	22.29	23.2	0
				1900	19100	22.48	23.2	wer + Max. MIPR olerance (dBm) Allowed per 3GPP(dB) 23.2 0 23.2 0
				1860	18700	22.18	23.2	
		1 RB	50	1880	18900	22.16	23.2	0
				1900	19100	22.64	23.2	0
				1860	18700	22.11	23.2	0
			99	1880	18900	22.05	23.2	0
				1900	19100	22.32	23.2	0
				1860	18700	21.25	.25 22.2 0-1 .38 22.2 0-1 .52 22.2 0-1	
	QPSK		0	1880	18900	21.38	22.2	Impr Allowed per 3GPP(dB)23.2022.20-122.20-221.20-221.20-221.20-221.20-221.20-221.20-221.20
				1900	19100	21.52	22.2	
		50 RB		1860	18700	21.23	22.2	0-1
			25	1880	18900	21.29	22.2	0-1
				1900	19100	21.44	22.2	0-1
				1860	18700	21.21	22.2	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0-1
			50	1880	18900	21.21	22.2	
				1900	19100	21.40	22.2	
1900 19100 21.40 1860 18700 21.24 100RB 1880 18900 21.31	22.2	0-1						
		100	ORB	1880	18900	21.31	22.2	0-1
00				1900	19100	21.54	22.2	0-1
20				1860	18700	21.75	22.2	0-1
			0	1880	18900	21.97	22.2	0-1
				1900	19100	22.08	22.2	0-1
				1860	18700	21.10	22.2	0-1
		1 RB	50	1880	18900	21.35	22.2	Imper Allowed per 3GPP(dB) 0-1 0-2 0-2 0-2
				1900	19100	21.50	22.2	
				1860	18700	21.25	22.2	
			99	1880	18900	21.22	22.2	
				1900	19100	22.01	22.2	0-1
				1860	18700	20.35	21.2	0-2
	16-QAM		0	1880	18900	20.45	21.2	0-2
				1900	19100	20.66	21.2	0-2
				1860	18700	20.30	21.2	0-2
		50 RB	25	1880	18900	20.30	21.2	0-2
				1900	19100	20.58	21.2	0-2
				1860	18700	20.34	21.2	0-2
			50	1880	18900	20.23		0-2
				1900	19100	20.47		
				1860	18700	20.33		
		100	ORB	1880	18900	20.33		
				1900	19100	20.69		

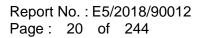
LTE FDD Band 2 / Band 4 / Band 12 / Band 17 - conducted power table:

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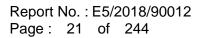
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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1860	18700	20.84	21.2	0-2
			0	1880	18900	21.15	21.2	0-2
				1900	19100	21.08	21.2	0-2
				1860	18700	20.29	21.2	0-2
		1 RB	50	1880	18900	20.49	21.2	0-2
				1900	19100	20.53	21.2	0-2
			1860	18700	20.39	21.2	0-2	
			99	1880	18900	20.53 21.2 0-2 20.39 21.2 0-2 20.27 21.2 0-2 21.01 21.2 0-2		
				1900	19100	21.01	21.2	Allowed per 3GPP(dB) 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2
				1860	18700	Conducted power (dBm)Power + Max. Tolerance (dBm)MIP R Allowed per 3GPP(dB)20.8421.20-221.1521.20-221.0821.20-220.2921.20-220.4921.20-220.3921.20-220.3921.20-220.3921.20-220.3921.20-221.0121.20-221.0121.20-219.3920.20-319.5620.20-319.5020.20-319.5120.20-319.5320.20-319.5420.20-319.5520.20-319.5420.20-319.5520.20-319.5420.20-319.5520.20-319.5420.20-319.5520.20-319.5420.20-319.4820.20-3		
20	64-QAM		0	1880	18900	19.56	20.2	0-3
				1900	19100	19.67	20.2	0-3
				1860	18700	19.50	20.2	0-3
		50 RB	25	1880	18900	19.49	20.2	0-3
				1900	19100	19.58	20.2	0-3
				1860	18700	19.53	20.2	0-3
			50	1880	18900	19.25	20.2	0-3
				1900	19100	19.51	20.2	0-3
			-	1860	18700	19.48	20.2	Allowed per 3GPP(dB) 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2
		100	RB	1880	18900	19.45	20.2	
				1900	19100	19.82	20.2	0-3

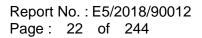
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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1857.5	18675	22.30	23.2	0
			0	1880	18900	22.37	23.2	0
				1902.5	19125	22.60	23.2	0
				1857.5	18675	22.04	23.2	0
		1 RB	36	1880	18900	22.11	23.2	0
				1902.5	19125	22.39	23.2	0
				1857.5	18675	22.18	23.2	0
			74	1880	18900	22.23	23.2	0
				1902.5	19125	22.37	23.2	0
				1857.5	18675	21.25	22.2	0-1
	QPSK		0	1880	18900	21.28	22.2	22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1
				1902.5	19125	21.49		0-1
				1857.5	18675	21.16		Impr Dower + Max. Tolerance (dBm) 23.2 0 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1
		36 RB	18	1880	18900	21.21	22.2	
				1902.5	19125	21.47		
				1857.5	18675	21.24	22.2	Allowed per 3GPP(dB) 0
			37	1880	18900	21.21		
				1902.5	19125	21.47		
				1857.5	18675	21.18		$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
		75	RB	1880	18900	21.20		
15				1902.5	19125	21.44		
			0	1857.5	18675	21.23		
			0	1880	18900	21.60		
				1902.5	19125	21.72		
				1857.5	18675	21.11		
		1 RB	36	1880	18900	21.56		
				1902.5	19125	21.55		
			74	1857.5	18675	21.27	ł	
			74	1880	18900	21.76		
				1902.5	19125	21.96		
	16 0 4 14		0	1857.5	18675	20.24		Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
	16-QAM		0	1880 1902.5	18900 19125	20.32 20.58		
						1		
		36 RB	18	1857.5 1880	18675 18900	20.36 20.28		
		30 KB	10	1902.5	18900	20.28		Allowed per 3GPP(dB) 0
				1902.5	18675	20.32		
			37	1880	18900	20.30		
			57	1902.5	19125	20.31		
				1857.5	18675	20.45		
		75	RB	1880	18900	20.20		
		15		1902.5	19125	20.53		
	1			1302.5	19120	20.00	21.2	0-2

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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1857.5	18675	20.36	21.2	0-2
			0	1880	18900	20.89	21.2	0-2
				1902.5	19125	20.95	21.2	0-2
				1857.5	18675	20.37	21.2	0-2
		1 RB	36	1880	18900	20.85	21.2	0-2
				1902.5	19125	20.73	21.2	0-2
			20.40	21.2	0-2			
			74	1880	18900	(dBm) 3GPP(dB) 20.36 21.2 0-2 20.89 21.2 0-2 20.95 21.2 0-2 20.37 21.2 0-2 20.37 21.2 0-2 20.37 21.2 0-2 20.37 21.2 0-2 20.37 21.2 0-2 20.40 21.2 0-2 21.05 21.2 0-2 21.19 21.2 0-2 19.39 20.2 0-3 19.44 20.2 0-3 19.52 20.2 0-3 19.57 20.2 0-3 19.80 20.2 0-3		
				1902.5	19125	21.19	21.2	Max. nce n) MIPR Allowed per 3GPP(dB) 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-2 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3 2 0-3
				1857.5	7.5 18675 20.40 21.2 0 18900 21.05 21.2 2.5 19125 21.19 21.2 7.5 18675 19.39 20.2 0 18900 19.44 20.2	0-3		
15	64-QAM		0	1880	18900	19.44	20.2	0-3
				1902.5	19125	19.82	20.2	0-3
				1857.5	18675	19.52	20.2	0-3
		36 RB	18	1880	18900	19.57	20.2	0-3
				1902.5	19125	19.80	20.2	0-3
				1857.5	18675	19.41	20.2	0-3
			37	1880	18900	19.53	20.2	0-3
				1902.5	19125	19.69	20.2	0-3
				1857.5	18675	19.46	20.2	0-3
		75	RB	1880	18900	19.48	20.2	0-3
				1902.5	19125	19.77	20.2	0-3

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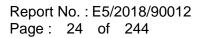
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				FDD Band 2							
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				1855	18650	22.22	23.2	0			
			0	1880	18900	22.22	23.2	0			
				1905	19150	22.61	23.2	0			
				1855	18650	22.09	23.2	0			
		1 RB	25	1880	18900	22.14	23.2	0			
				1905	19150	22.37	23.2	0			
				1855	18650	22.11	23.2	0			
			49	1880	18900	22.15	23.2	0			
				1905	19150	22.35	23.2	0			
				1855	18650	21.10	22.2	0-1			
	QPSK		0	1880	18900	21.27	22.2	0-1			
				1905	19150	21.50	22.2	Allowed per 3GPP(dB) 0			
				1855	18650	21.16	22.2				
		25 RB	12	1880	18900	21.22	22.2				
				1905	19150	21.46	22.2				
				1855	18650	21.10	22.2				
			25	1880	18900	21.12	22.2				
				1905	19150	21.43	22.2	0-1			
				1855	18650	21.18	22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1 22.2 0-1				
		50	RB	1880	18900	21.24	22.2	0 0-1			
10				1905	19150	21.45	22.2	0-1			
10			0	1855	18650	21.85	22.2	0-1			
				1880	18900	21.91	22.2	0-1			
				1905	19150	21.66	22.2	0-1			
				1855	18650	21.68	22.2	0-1			
		1 RB	25	1880	18900	21.60	22.2	0-1			
				1905	19150	21.58	22.2	0-1			
				1855	18650	21.68	22.2	0-1			
			49	1880	18900	21.63	22.2	0-1			
				1905	19150	21.95	22.2				
				1855	18650	20.33	21.2	0-2			
	16-QAM		0	1880	18900	20.29	21.2	0 0 0 0 0 0 0 0 0 0 0 1 0 2 0 0 2 0 0 0 0 0 0 0 0 0 0 0 0 0			
				1905	19150	20.65	21.2	0-2			
				1855	18650	20.29	21.2	0-2			
		25 RB	12	1880	18900	20.34	21.2	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0			
				1905	19150	20.63	21.2	0-2			
				1855	18650	20.23	21.2	0-2			
			25	1880	18900	20.32	21.2				
				1905	19150	20.49	21.2	0-2			
				1855	18650	20.20	21.2				
		50	RB	1880	18900	20.30	21.2				
				1905	19150	20.51	21.2	0-2			

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

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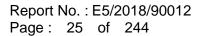




				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1855	18650	21.14	21.2	0-2
			0	1880	18900	21.16	21.2	0-2
				1905	19150	20.88	21.2	0-2
				1855	18650	20.92	21.2	0-2
		1 RB	25	1880	18900	20.82	21.2	0-2
				1905	19150	20.80	21.2	0-2
				1855	55 18650 20.89 21.2 0-2	0-2		
			49	1880	18900	20.82 21.2 0-2 20.80 21.2 0-2 20.89 21.2 0-2 20.80 21.2 0-2 21.2 0-2 0-2 20.80 21.2 0-2 21.20 21.2 0-2 19.63 20.2 0-3		
				1905	19150	21.20	21.2	 Allowed per 3GPP(dB) 0-2
				1855	1915020.8021.20-21865020.8921.20-21890020.8021.20-21915021.2021.20-21865019.6320.20-31890019.4620.20-3	0-3		
10	64-QAM		0	1880	18900	19.46	20.2	0-3
				1905	19150	19.78	20.2	0-3
				1855	18650	19.43	20.2	0-3
		25 RB	12	1880	18900	19.62	20.2	0-3
				1905	19150	19.78	20.2	0-3
				1855	18650	19.33	20.2	0-3
			25	1880	18900	19.56	20.2	0-3
				1905	19150	19.65	20.2	0-3
				1855	18650	19.45	20.2	0-3
		50	RB	1880	18900	19.52	20.2	Allowed per 3GPP(dB) 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-3 0-3 0-3 0-3 0-3 0-3 0-3 0-3 0-3 0-3
				1905	19150	19.76	20.2	0-3

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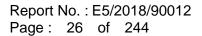




				FDD Band 2						
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1852.5	18625	22.12	23.2	0		
			0	1880	18900	22.23	23.2	0		
				1907.5	19175	22.43	23.2	0		
				1852.5	18625	22.12	23.2	0		
		1 RB	12	1880	18900	22.18	23.2	0		
				1907.5	19175	22.30	23.2	0		
				1852.5	18625	21.97	23.2	0		
			24	1880	18900	22.23	23.2	0		
				1907.5	19175	22.27	23.2	0		
				1852.5	18625	21.21	22.2	 Allowed per 3GPP(dB) 0 		
	QPSK		0	1880	18900	21.14	22.2	0-1		
				1907.5	19175	21.42	22.2	2 0-1 2 0-1 2 0-1 2 0-1		
				1852.5	18625	21.13	22.2	0-1		
		12 RB	6	1880	18900	21.18	22.2	0-1		
				1907.5	19175	21.47	22.2	0-1		
				1852.5	18625	21.17	22.2	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
			13	1880	18900	21.18	22.2			
				1907.5	19175	21.44	22.2			
				1852.5	18625	21.11	22.2	Max. Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0		
		25	RB	1880	18900	21.17	22.2	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0		
5				1907.5	19175	21.38	22.2			
-			0	1852.5	18625	21.48	22.2			
			0	1880	18900	21.79	22.2			
				1907.5	19175	21.58	22.2			
			1.5	1852.5	18625	21.28	22.2			
		1 RB	12	1880	18900	21.74	22.2			
				1907.5	19175	21.63	22.2			
				1852.5	18625	21.25	22.2			
			24	1880	18900	21.45	22.2			
				1907.5	19175	22.02	22.2			
	10.0414		0	1852.5	18625	20.26	21.2	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
	16-QAM		0	1880	18900	20.32	21.2			
				1907.5	19175	20.57	21.2			
		10 00	e	1852.5	18625	20.25	21.2	0-1 0-1 0-1 0-1 0-1 0-1 0-2 0-2 0-2 0-2 0-2 0-2		
		12 RB	6	1880	18900	20.32	21.2			
				1907.5	19175	20.46	21.2	0-1 0-1 0-1 0-1 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2		
			13	1852.5	18625	20.19	21.2			
			13	1880	18900	20.20	21.2			
				1907.5	19175	20.46	21.2			
		05	DD	1852.5	18625	20.26	21.2			
		25	RB	1880	18900	20.41	21.2			
				1907.5	19175	20.52	21.2	0-2		

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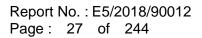
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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted pow er (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allow ed per 3GPP(dB)
				1852.5	18625	20.65	21.2	0-2
			0	1880	18900	20.92	21.2	0-2
				1907.5	19175	20.86	21.2	0-2
				1852.5	18625	20.44	21.2	0-2
		1 RB	12	1880	18900	20.92	21.2	0-2
				1907.5	19175	20.89	21.2	0-2
			24	1852.5	18625	20.45	21.2	0-2
				1880	18900	20.62	21.2	0-2
				1907.5	19175	21.02	Donducted pow er (dBm) Power + Max. MPR Allow ed per 3GPP(dB) 20.65 21.2 0-2 20.92 21.2 0-2 20.44 21.2 0-2 20.89 21.2 0-2 20.44 21.2 0-2 20.89 21.2 0-2 20.89 21.2 0-2 20.45 21.2 0-2 20.45 21.2 0-2	
			1852.5	18625	19.50	20.2	0-3	
5	64-QAM		0	1880	18900	19.52	20.2	Allow ed per 3GPP(dB) 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2
				1907.5	19175	19.81	20.2	0-3
				1852.5	18625	19.48	20.2	0-3
		12 RB	6	1880	18900	19.61	20.2	0-3
				1907.5	19175	19.65	20.2	0-3
				1852.5	18625	19.45	20.2	Allow ed per 3GPP(dB) 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2
			13	1880	18900	19.35	20.2	
				1907.5	19175	19.64	20.2	0-3
				1852.5	18625	19.38	20.2	0-3
		25RB		1880	18900	19.57	20.2	0-3
				1907.5	19175	19.76	20.2	0-3

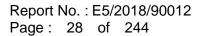
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				FDD Band 2						
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1851.5	18615	22.17	23.2	0		
			0	1880	18900	22.19	23.2	0		
				1908.5	19185	22.41	23.2	0		
				1851.5	18615	22.05	23.2	0		
		1 RB	7	1880	18900	22.27	23.2	0		
				1908.5	19185	22.53	23.2	0		
				1851.5	18615	22.13	23.2	0		
			14	1880	18900	22.03	23.2	0		
				1908.5	19185	22.29	23.2	0		
				1851.5	18615	21.16	22.2	Mirk Mirk Allowed per 3GPP(dB) 23.2 0.1 22.2 0.1 22.2 0.1 22.2 0.1 22.2 0.1 22.2 0.1 22.2 0.1 22.2 0.1 22.2 0.1 22.2 0.1 22.2 0		
	QPSK		0	1880	18900	21.21				
				1908.5	19185	21.41	7 23.2 03 23.2 03 23.2 03 23.2 09 23.2 06 22.2 0-11 22.2 0-11 22.2 0-13 22.2 0-12 22.2 0-14 22.2 0-14 22.2 0-17 22.2 0-11 22.2 0-14 22.2 0-11 22.2 0-14 22.2 0-19 22.2 0-12 22.2 0-12 22.2 0-12 22.2 0-12 22.2 0-12 22.2 0-1	0-1		
				1851.5	18615	21.13				
		8 RB	4	1880	18900	21.22		0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1		
				1908.5	19185	21.34				
			_	1851.5	18615	21.08		Allowed per 3GPP(dB) 0.1 0.2 0.2 0.2 0.2<		
			7	1880	18900	21.14				
				1908.5	19185	21.37				
				1851.5	18615	21.11				
		15	RB	1880	18900	21.14		Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
3				1908.5	19185	21.34				
			0	1851.5	18615	21.69				
			0	1880	18900	21.72				
				1908.5	19185	21.95				
		1 RB	7	1851.5	18615	21.42				
		IKD	7	1880	18900	21.64				
				1908.5	19185 18615	21.74 21.31				
			14	1851.5 1880	18900	21.31	ł	0 0		
			14	1908.5	19185	21.63				
				1851.5	18615	20.34				
	16-QAM		0	1880	18900	20.37				
	10 00/101		Ũ	1908.5	19185	20.52		Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
				1851.5	18615	20.32				
		8 RB	4	1880	18900	20.32				
				1908.5	19185	20.45		Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		
				1851.5	18615	20.40				
			7	1880	18900	20.30				
				1908.5	19185	20.63				
				1851.5	18615	20.18				
		15	RB	1880	18900	20.30				
				1908.5	19185	20.49	21.2			

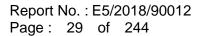
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				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1851.5	18615	20.93	21.2	0-2
			0	1880	18900	20.98	21.2	0-2
				1908.5	19185	21.01	21.2	0-2
				1851.5	18615	20.65	21.2	0-2
		1 RB	7	1880	18900	20.76	21.2	0-2
				1908.5	19185	21.03	21.2	0-2
				1851.5	18615	20.45	21.2	0-2
			14	1880	18900	85 21.03 21.2 0-2 15 20.45 21.2 0-2 00 20.64 21.2 0-2 85 20.79 21.2 0-2	0-2	
				1908.5	19185	20.79	Mirk Mirk Tolerance (dBm) Allowed per 3GPP(dB) 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2 21.2 0-2	
				1851.5 18615 19.54	20.2	0-3		
3	64-QAM		0	1880	18900	19.54	20.2	0-3
				1908.5	19185	19.63	20.2	0-3
				1851.5	18615	19.45	20.2	0-3
		8 RB	4	1880	18900	19.58	20.2	0-3
				1908.5	19185	19.57	20.2	0-3
				1851.5	18615	19.47	20.2	0-3
			7	1880	18900	19.48	20.2	0-3
				1908.5	19185	19.86	20.2	Allowed per 3GPP(dB) 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2 0-2
				1851.5	18615	19.40	20.2	0-3
		15	RB	1880	18900	19.47	20.2	0-3
				1908.5	19185	19.69	20.2	0-3

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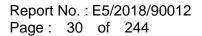




				FDD Band 2				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1850.7	18607	22.12	23.2	0
			0	1880	18900	22.23	23.2	0
				1909.3	19193	22.43	23.2	0
				1850.7	18607	22.12	23.2	0
		1 RB	2	1880	18900	22.18	23.2	0
				1909.3	19193	22.30	23.2	0
				1850.7	18607	21.97	23.2	0
			5	1880	18900	22.23	23.2	0
				1909.3	19193	22.27	23.2	0
				1850.7	18607	21.21	23.2	
	QPSK		0	1880	18900	21.34	23.2	0
				1909.3	19193	21.42	23.2	0
				1850.7	18607	21.43	23.2	0
		3 RB	2	1880	18900	21.38	23.2	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
				1909.3	19193	21.47	23.2	0
				1850.7	18607	21.37	23.2	Allowed per 3GPP(dB) 0
			3	1880	18900	21.48	23.2	
				1909.3	19193	21.44	23.2	0
				1850.7	18607	21.11	22.2	MIPR Allowed per 3GPP(dB) 3.2 0 2.2 0-1
		6F	RB	1880	18900	21.17	22.2	
1.4				1909.3	19193	21.38	22.2	
			0	1850.7	18607	21.85	22.2	
			0	1880	18900	21.91	22.2	
				1909.3	19193	21.66	22.2	
				1850.7	18607	21.68	22.2	
		1 RB	2	1880	18900	21.60	22.2	
				1909.3	19193	21.58	22.2	
			_	1850.7	18607	21.68	22.2	
			5	1880	18900	21.63	22.2	
				1909.3	19193	21.95	22.2	
	10.0114		0	1850.7	18607	20.33	22.2	Allowed per 3GPP(dB) 0 0 0 0 0 0 0 0 0 0 0 0 0
	16-QAM		0	1880	18900	20.29	22.2	
				1909.3	19193	20.65	22.2	
		2 00	<u>_</u>	1850.7	18607	20.29	22.2	0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1 0-1
		3 RB	2	1880	18900	20.34	22.2	
				1909.3	19193	20.63	22.2	
			3	1850.7	18607	20.23	22.2	
			3	1880	18900 19193	20.32	22.2	
				1909.3		20.49	22.2	
		61	RB	1850.7	18607 18900	20.20 20.30		
		Or		1880		1		
				1909.3	19193	20.51	21.2	0-2

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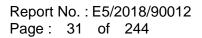
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FDD Band 2									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)	
				1850.7	18607	21.15	21.2	0-2	
			0	1880	18900	21.17	21.2	0-2	
				1909.3	19193	20.87	21.2	0-2	
			2	1850.7	18607	20.86	21.2	0-2	
		1 RB		1880	18900	20.80	21.2	0-2	
	64-QAM			1909.3	19193	20.71	21.2	0-2	
			5	1850.7	18607	20.78	21.2	0-2	
				1880	18900	20.91	21.2	0-2	
				1909.3	19193	21.08	21.2	0-2	
		3 RB	0	1850.7	18607	19.55	21.2	0-2	
1.4				1880	18900	19.40	21.2	0-2	
				1909.3	19193	19.82	21.2	0-2	
				1850.7	18607	19.58	21.2	0-2	
			2	1880	18900	19.55	21.2	0-2	
				1909.3	19193	19.75	21.2	0-2	
				1850.7	18607	19.51	21.2	0-2	
			3	1880	18900	19.53	21.2	0-2	
				1909.3	19193	19.70	21.2	0-2	
				1850.7	18607	19.36	20.2	0-3	
		6F	RB	1880	18900	19.43	20.2	0-3	
				1909.3	19193	19.80	20.2	0-3	

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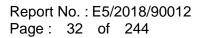




				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1715	20000	21.75	23.2	0
			0	1732.5	20175	21.84	23.2	0
				1750	20350	21.70	23.2	0
				1715	20000	21.60	23.2	0
		1 RB	50	1732.5	20175	21.79	23.2	0
				1750	20350	21.65	23.2	0
				1715	20000	21.67	23.2	0
			99	1732.5	20175	21.71	23.2	0
				1750	20350	21.61	23.2	0
				1715	20000	20.79	22.2	0-1
	QPSK		0	1732.5	20175	20.77	22.2	0-1
				1750	20350	20.80	22.2	0-1
				1715	20000	20.77	22.2	0-1
		50 RB	25	1732.5	20175	20.77	22.2	0-1
				1750	20350	20.71	22.2	0-1
			50	1715	20000	20.74	22.2	0-1
				1732.5	20175	20.73	22.2	0-1
				1750	20350	20.72	22.2	0-1
		100RB		1715	20000	20.81	22.2	0-1
				1732.5	20175	20.85	22.2	0-1
20				1750	20350	20.80	22.2	0-1
		0 1 RB 50 99	0	1715	20000	21.40	22.2	0-1
				1732.5	20175	21.09	22.2	0-1
			1750	20350	21.31	22.2	0-1	
				1715	20000	21.22	22.2	0-1
				1732.5	20175	20.72	22.2	0-1
				1750	20350	21.10	22.2	0-1
				1715	20000	21.33	22.2	0-1
			99	1732.5	20175	20.69	22.2	0-1
			 	1750	20350	21.24	22.2	0-1
	10.0414		0	1715	20000	19.79	21.2	0-2
	16-QAM		0	1732.5	20175	19.93 19.70	21.2	0-2
				1750	20350	1	21.2	0-2
		50 RB	25	1715	20000	19.87	21.2	0-2
		JUKD	20	1732.5	20175	19.85	21.2	0-2
1				1750 1715	20350 20000	19.82 19.87	21.2 21.2	0-2 0-2
			50	1715	20000	19.87	21.2	0-2
			50	1732.5	20175	19.84	21.2	0-2
				1750	20350	19.82	21.2	0-2
		100)RB	1732.5	20000	19.88	21.2	0-2
		100		1752.5	20175	19.88	21.2	0-2
				1750	20300	19.00	21.2	0-2

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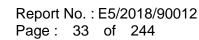
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	FDD Band 4									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1720	20050	20.76	21.2	0-2		
			0	1732.5	20175	20.76	21.2	0-2		
				1745	20300	20.50	21.2	0-2		
				1720	20050	19.97	21.2	0-2		
		1 RB	50	1732.5	20175	20.60	21.2	0-2		
	64-QAM			1745	20300	20.26	21.2	0-2		
			99	1720	20050	20.30	21.2	0-2		
				1732.5	20175	20.01	21.2	0-2		
				1745	20300	20.31	21.2	0-2		
			0	1720	20050	19.18	20.2	0-3		
20				1732.5	20175	19.08	20.2	0-3		
				1745	20300	19.02	20.2	0-3		
				1720	20050	18.97	20.2	0-3		
		50 RB	25	1732.5	20175	19.10	20.2	0-3		
				1745	20300	19.06	20.2	0-3		
				1720	20050	19.09	20.2	0-3		
			50	1732.5	20175	18.99	20.2	0-3		
				1745	20300	18.93	20.2	0-3		
				1720	20050	19.13	20.2	0-3		
		100	RB	1732.5	20175	19.15	20.2	0-3		
					20300	19.11	20.2	0-3		

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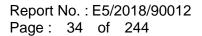


FDD Band 4									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)	
				1717.5	20025	21.88	23.2	0	
			0	1732.5	20175	21.95	23.2	0	
				1747.5	20325	21.93	23.2	0	
				1717.5	20025	21.67	23.2	0	
		1 RB	36	1732.5	20175	21.69	23.2	0	
				1747.5	20325	21.65	23.2	0	
				1717.5	20025	21.64	23.2	0	
			74	1732.5	20175	21.78	23.2	0	
				1747.5	20325	21.72	23.2	0	
				1717.5	20025	20.90	22.2	0-1	
	QPSK		0	1732.5	20175	20.84	22.2	0-1	
				1747.5	20325	20.91	22.2	0-1	
				1717.5	20025	20.74	22.2	0-1	
		36 RB	18	1732.5	20175	20.82	22.2	0-1	
				1747.5	20325	20.69	22.2	0-1	
			37	1717.5	20025	20.72	22.2	0-1	
				1732.5	20175	20.74	22.2	0-1	
				1747.5	20325	20.71	22.2	0-1	
		75RB		1717.5	20025	20.79	22.2	0-1	
				1732.5	20175	20.80	22.2	0-1	
15				1747.5	20325	20.85	22.2	0-1	
		0 1 RB 36		1717.5	20025	21.14	22.2	0-1	
			1732.5	20175	21.16	22.2	0-1		
			1747.5	20325	21.11	22.2	0-1		
			36 74	1717.5	20025	21.30	22.2	0-1	
				1732.5	20175	20.93	22.2	0-1	
				1747.5	20325	21.22	22.2	0-1	
				1717.5	20025	21.31	22.2	0-1	
				1732.5	20175	20.94	22.2	0-1	
				1747.5	20325	20.84	22.2	0-1	
	10.0114		0	1717.5	20025	19.92	21.2	0-2	
	16-QAM		0	1732.5	20175	19.91	21.2	0-2	
				1747.5	20325	19.92	21.2	0-2	
		26 00	10	1717.5	20025	19.85	21.2	0-2	
		36 RB	18	1732.5	20175	19.87	21.2	0-2	
				1747.5	20325	19.78	21.2	0-2	
			37	1717.5	20025	19.86	21.2	0-2	
			37	1732.5	20175	19.90	21.2	0-2	
				1747.5	20325	19.78	21.2	0-2	
		75	RB	1717.5 1732.5	20025	19.85	21.2 21.2	0-2	
		75			20175	19.86		0-2	
				1747.5	20325	19.98	21.2	0-2	

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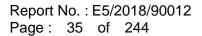




	FDD Band 4									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1717.5	22.51	20.33	21.2	0-2		
			0	1732.5	22.58	20.41	21.2	0-2		
				1747.5	22.77	20.23	21.2	0-2		
				1717.5	22.12	20.52	21.2	0-2		
		1 RB	36	1732.5	22.7	20.13	2 21.2 0-2 3 21.2 0-2 8 21.2 0-2 6 21.2 0-2			
	64-QAM			1747.5	22.44	20.38	21.2	0-2		
			74	1717.5	22.42	20.56	21.2	0-2		
				1732.5	22.7	20.21	21.2	0-2		
				1747.5	22.73	20.10	21.2	0-2		
		36 RB	0	1717.5	21.22	19.08	20.2	0-3		
15				1732.5	21.38	19.11	20.2	0-3		
				1747.5	21.52	19.08	20.2	0-3		
				1717.5	21.24	19.14	20.2	0-3		
			18	1732.5	21.34	19.11	20.2	0-3		
				1747.5	21.41	19.04	20.2	0-3		
				1717.5	21.25	19.04	20.2	0-3		
			37	1732.5	21.29	19.19	20.2	0-3		
				1747.5	21.46	19.11	20.2	0-3		
				1717.5	21.22	19.03	20.2	0-3		
		75	RB	1732.5	21.35	19.13	20.2	0-3		
				1747.5	21.43	19.09	20.2	0-3		

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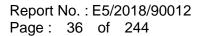
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				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1715	20000	21.75	23.2	0
			0	1732.5	20175	21.84	23.2	0
				1750	20350	21.70	23.2	0
				1715	20000	21.60	23.2	0
		1 RB	25	1732.5	20175	21.79	23.2	0
				1750	20350	21.65	23.2	0
				1715	20000	21.67	23.2	0
			49	1732.5	20175	21.71	23.2	0
				1750	20350	21.61	23.2	0
				1715	20000	20.79	22.2	0-1
	QPSK		0	1732.5	20175	20.77	22.2	0-1
				1750	20350	20.80	22.2	0-1
				1715	20000	20.77	22.2	0-1
		25 RB	12	1732.5	20175	20.77	22.2	0-1
				1750	20350	20.71	22.2	0-1
			25	1715	20000	20.74	22.2	0-1
				1732.5	20175	20.73	22.2	0-1
				1750	20350	20.72	22.2	0-1
		50RB		1715	20000	20.81	22.2	0-1
				1732.5	20175	20.85	22.2	0-1
10				1750	20350	20.80	22.2	0-1
		0 1 RB 25 49	0	1715	20000	21.40	22.2	0-1
				1732.5	20175	21.09	22.2	0-1
			1750	20350	21.31	22.2	0-1	
			25	1715	20000	21.22	22.2	0-1
				1732.5	20175	20.72	22.2	0-1
				1750	20350	21.10	22.2	0-1
				1715	20000	21.33	22.2	0-1
			49	1732.5	20175	20.69	22.2	0-1
				1750	20350	21.24	22.2	0-1
	16 0 4 14		0	1715	20000	19.79	21.2	0-2
	16-QAM		0	1732.5	20175	19.93	21.2	0-2
				1750	20350	19.70	21.2	0-2
		25 RB	12	1715	20000 20175	19.87	21.2	0-2
		20 KD	12	1732.5		19.85	21.2	0-2
1				1750 1715	20350 20000	19.82 19.87	21.2 21.2	0-2 0-2
			25	1715	20000	19.87	21.2	0-2
			∠5	1732.5	20175	19.84	21.2	0-2
				1750	20350	19.82	21.2	0-2
		50	RB	1732.5	20000	19.88	21.2	0-2
		50		1752.5	20175	19.88	21.2	0-2
					20300	19.00	21.2	0-2

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	FDD Band 4									
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1715	20000	20.58	21.2	0-2		
			0	1732.5	20175	20.35	21.2	0-2		
				1750	20350	20.49	21.2	0-2		
				1715	20000	20.48	21.2	0-2		
		1 RB	25	1732.5	20175	19.92	21.2	0-2		
	64-QAM			1750	20350	20.21	21.2	0-2		
			49	1715	20000	20.59	21.2	0-2		
				1732.5	20175	19.82	21.2	0-2		
				1750	20350	20.53	21.2	0-2		
		25 RB	0	1715	20000	19.12	20.2	0-3		
10				1732.5	20175	19.17	20.2	0-3		
				1750	20350	19.20	20.2	0-3		
				1715	20000	19.12	20.2	0-3		
			12	1732.5	20175	19.03	20.2	0-3		
				1750	20350	19.01	20.2	0-3		
				1715	20000	19.12	20.2	0-3		
			25	1732.5	20175	19.03	20.2	0-3		
				1750	20350	19.05	20.2	0-3		
				1715	20000	19.15	20.2	0-3		
		50	RB	1732.5	20175	19.07	20.2	0-3		
				1750	20350	19.14	20.2	0-3		

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FDD Band 4										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1712.5	19975	21.81	23.2	0		
			0	1732.5	20175	21.75	23.2	0		
				1752.5	20375	21.69	23.2	0		
				1712.5	19975	21.68	23.2	0		
		1 RB	12	1732.5	20175	21.59	23.2	0		
				1752.5	20375	21.54	23.2	0		
				1712.5	19975	21.63	23.2	0		
			24	1732.5	20175	21.73	23.2	0		
				1752.5	20375	21.63	23.2	0		
		QPSK	0	1712.5	19975	20.68	22.2	0-1		
	QPSK			1732.5	20175	20.83	22.2	0-1		
				1752.5	20375	20.69	22.2	0-1		
				1712.5	19975	20.71	22.2	0-1		
		12 RB	6	1732.5	20175	20.72	22.2	0-1		
				1752.5	20375	20.67	22.2	0-1		
				1712.5	19975	20.67	22.2	0-1		
			13	1732.5	20175	20.78	22.2	0-1		
				1752.5	20375	20.65	22.2	0-1		
				1712.5	19975	20.74	22.2	0-1		
		25	RB	1732.5	20175	20.76	22.2	0-1		
5			T	1752.5	20375	20.65	22.2	0-1		
Ū			0	1712.5	19975	20.70	22.2	0-1		
				1732.5	20175	20.91	22.2	0-1		
				1752.5	20375	20.84	22.2	0-1		
				1712.5	19975	20.88	22.2	0-1		
		1 RB	12	1732.5	20175	21.15	22.2	0-1		
				1752.5	20375	21.25	22.2	0-1		
				1712.5	19975	21.28	22.2	0-1		
			24	1732.5	20175	20.92	22.2	0-1		
				1752.5	20375	21.22	22.2	0-1		
	40.0			1712.5	19975	19.77	21.2	0-2		
	16-QAM		0	1732.5	20175	19.92	21.2	0-2		
				1752.5	20375	19.82	21.2	0-2		
		40.55		1712.5	19975	19.81	21.2	0-2		
		12 RB	6	1732.5	20175	19.81	21.2	0-2		
				1752.5	20375	19.81	21.2	0-2		
			10	1712.5	19975	19.77	21.2	0-2		
			13	1732.5	20175	19.84	21.2	0-2		
				1752.5	20375	19.69	21.2	0-2		
			חח	1712.5	19975	19.87	21.2	0-2		
	25R	κĎ	1732.5	20175	19.82	21.2	0-2			
				1752.5	20375	19.73	21.2	0-2		

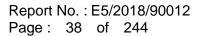
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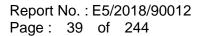
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				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1712.5	19975	19.99	21.2	0-2
			0	1732.5	20175	20.18	21.2	0-2
				1752.5	20375	20.00	21.2	0-2
				1712.5	19975	19.99	21.2	0-2
		1 RB	12	1732.5	20175	20.31	21.2	0-2
				1752.5	20375	20.37	21.2	0-2
				1712.5	19975	20.57	21.2	0-2
			24	1732.5	20175	20.17	21.2	0-2
				1752.5	20375	20.37	21.2	0-2
			0	1712.5	19975	19.04	20.2	0-3
5	64-QAM			1732.5	20175	19.11	20.2	0-3
				1752.5	20375	18.92	20.2	0-3
				1712.5	19975	19.09	20.2	0-3
		12 RB	6	1732.5	20175	19.01	20.2	0-3
				1752.5	20375	19.09	20.2	0-3
				1712.5	19975	19.06	20.2	0-3
			13	1732.5	20175	19.01	20.2	0-3
				1752.5	20375	18.87	20.2	0-3
				1712.5	19975	19.06	20.2	0-3
		25	RB	1732.5	20175	18.97	20.2	0-3
				1752.5	20375	18.91	20.2	0-3

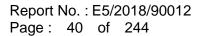
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FDD Band 4										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				1711.5	19965	21.75	23.2	0		
			0	1732.5	20175	21.84	23.2	0		
				1753.5	20385	21.70	23.2	0		
				1711.5	19965	21.60	23.2	0		
		1 RB	7	1732.5	20175	21.79	23.2	0		
				1753.5	20385	21.65	23.2	0		
				1711.5	19965	21.67	23.2	0		
			14	1732.5	20175	21.71	23.2	0		
				1753.5	20385	21.61	23.2	0		
				1711.5	19965	20.79	22.2	0-1		
	QPSK		0	1732.5	20175	20.77	22.2	0-1		
				1753.5	20385	20.80	22.2	0-1		
				1711.5	19965	20.77	22.2	0-1		
		8 RB	4	1732.5	20175	20.77	22.2	0-1		
				1753.5	20385	20.71	22.2	0-1		
				1711.5	19965	20.74	22.2	0-1		
			7	1732.5	20175	20.73	22.2	0-1		
				1753.5	20385	20.72	22.2	0-1		
				1711.5	19965	20.81	22.2	0-1		
		15	RB	1732.5	20175	20.85	22.2	0-1		
3			r	1753.5	20385	20.80	22.2	0-1		
-			0	1711.5	19965	21.14	22.2	0-1		
				1732.5	20175	21.16	22.2	0-1		
				1753.5	20385	21.11	22.2	0-1		
			_	1711.5	19965	21.30	22.2	0-1		
		1 RB	7	1732.5	20175	20.93	22.2	0-1		
				1753.5	20385	21.22	22.2	0-1		
				1711.5	19965	21.31	22.2	0-1		
			14	1732.5	20175	20.94	22.2	0-1		
				1753.5	20385	20.84	22.2	0-1		
	16 0 4 14		0	1711.5	19965	19.92	21.2	0-2		
	16-QAM		0	1732.5	20175	19.91	21.2	0-2		
				1753.5	20385	19.92	21.2	0-2		
		8 RB	4	1711.5	19965	19.85	21.2	0-2		
			4	1732.5 1753.5	20175 20385	19.87 19.78	21.2 21.2	0-2 0-2		
				1753.5	19965	19.78	21.2	0-2		
			7	1711.5	20175	19.00	21.2	0-2		
			1	1753.5	20175	19.90	21.2	0-2		
				1755.5	19965	19.78	21.2	0-2		
		15	RB	1732.5	20175	19.85	21.2	0-2		
	15F			1753.5	20175	19.00	21.2	0-2		
				1700.0	20300	19.90	21.2	0-2		

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				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1711.5	19965	20.29	21.2	0-2
		1 RB	0	1732.5	20175	20.37	21.2	0-2
				1753.5	20385	20.23	21.2	0-2
			7	1711.5	19965	20.47	21.2	0-2
				1732.5	20175	20.08	21.2	0-2
				1753.5	20385	20.50	21.2	0-2
				1711.5	19965	20.48	21.2	0-2
			14	1732.5	20175	20.06	21.2	0-2
				1753.5	20385	20.08	21.2	0-2
			0	1711.5	19965	19.15	20.2	0-3
3	64-QAM			1732.5	20175	19.11	20.2	0-3
				1753.5	20385	19.14	20.2	0-3
				1711.5	19965	18.98	20.2	0-3
		8 RB	4	1732.5	20175	19.04	20.2	0-3
				1753.5	20385	18.96	20.2	0-3
				1711.5	19965	19.05	20.2	0-3
			7	1732.5	20175	19.12	20.2	0-3
				1753.5	20385	19.04	20.2	0-3
				1711.5	19965	18.97	20.2	0-3
	15R		RB	1732.5	20175	19.07	20.2	0-3
				1753.5	20385	19.16	20.2	0-3

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FDD Band 4											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				1710.7	19957	21.75	23.2	0			
			0	1732.5	20175	21.84	23.2	0			
				1754.3	20393	21.70	23.2	0			
				1710.7	19957	21.60	23.2	0			
		1 RB	2	1732.5	20175	21.79	23.2	0			
				1754.3	20393	21.65	23.2	0			
				1710.7	19957	21.67	23.2	0			
			5	1732.5	20175	21.71	23.2	0			
				1754.3	20393	21.61	23.2	0			
				1710.7	19957	21.79	23.2	0			
	QPSK	QPSK	0	1732.5	20175	21.77	23.2	0			
				1754.3	20393	21.80	23.2	0			
				1710.7	19957	21.72	23.2	0			
		3 RB	2	1732.5	20175	21.75	23.2	0			
				1754.3	20393	21.71	23.2	0			
				1710.7	19957	21.74	23.2	0			
			3	1732.5	20175	21.73	23.2	0			
				1754.3	20393	21.72	23.2	0			
				1710.7	19957	20.81	22.2	0-1			
		61	RB	1732.5	20175	20.85	22.2	0-1			
1.4				1754.3	20393	20.80	22.2	0-1			
			0	1710.7	19957	21.60	22.2	0-1			
				1732.5	20175	21.56	22.2	0-1			
				1754.3	20393	21.23	22.2	0-1			
				1710.7	19957	20.74	22.2	0-1			
		1 RB	2	1732.5	20175	21.30	22.2	0-1			
				1754.3	20393	21.05	22.2	0-1			
				1710.7	19957	21.11	22.2	0-1			
			5	1732.5	20175	20.73	22.2	0-1			
				1754.3	20393	21.06	22.2	0-1			
				1710.7	19957	20.99	22.2	0-1			
	16-QAM		0	1732.5	20175	20.97	22.2	0-1			
				1754.3	20393	20.92	22.2	0-1			
				1710.7	19957	20.96	22.2	0-1			
		3 RB	2	1732.5	20175	20.86	22.2	0-1			
				1754.3	20393	20.90	22.2	0-1			
			_	1710.7	19957	20.84	22.2	0-1			
			3	1732.5	20175	20.85	22.2	0-1			
				1754.3	20393	20.73	22.2	0-1			
				1710.7	19957	19.85	21.2	0-2			
	6R		ΚB	1732.5	20175	19.93	21.2	0-2			
				1754.3	20393	19.94	21.2	0-2			

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

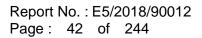
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				FDD Band 4				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1710.7	19957	20.79	21.2	0-2
			0	1732.5	20175	20.82	21.2	0-2
		1 RB		1754.3	20393	20.39	21.2	0-2
				1710.7	19957	19.97	21.2	0-2
			2	1732.5	20175	20.42	21.2	0-2
				1754.3	20393	20.35	21.2	0-2
				1710.7	19957	20.29	21.2	0-2
			5	1732.5	20175	19.92	21.2	0-2
				1754.3	20393	20.33	21.2	0-2
			0	1710.7	19957	20.12	21.2	0-2
1.4	64-QAM			1732.5	20175	20.14	21.2	0-2
				1754.3	20393	20.04	21.2	0-2
				1710.7	19957	20.15	21.2	0-2
		3 RB	2	1732.5	20175	20.05	21.2	0-2
				1754.3	20393	20.04	21.2	0-2
				1710.7	19957	19.98	21.2	0-2
			3	1732.5	20175	20.08	21.2	0-2
				1754.3	20393	19.96	21.2	0-2
			-	1710.7	19957	19.13	20.2	0-3
		6F	RB	1732.5	20175	19.10	20.2	0-3
				1754.3	20393	19.15	20.2	0-3

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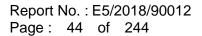
BW(Mhz) Modulation RB Size RB Offset Frequency (MHz) Channel (MHz) Conducted power (dBm) Target rower (dBm) MPR Allowed per (dBm) 1 RB 0 704 23060 22.76 24 0 7111 23130 23.05 24 0 0 711 23130 23.05 24 0 704 23060 22.65 24 0 0 707.5 23095 22.76 24 0 704 23060 22.65 24 0 0 707.5 23095 22.71 24 0 704 23060 22.89 24 0 0 707.5 23095 21.80 23 0-1 711 23130 22.89 24 0 0 707.5 23095 21.80 23 0-1 704 23060 21.90 23 0-1 707.5 23095 21.84 23 0-1 707.5 23095 21.84 <th colspan="12">FDD Band 12</th>	FDD Band 12											
10 10 10 10 10 10 10 10 10 10 10 10 10 1	BW(Mhz)	Modulation	RB Size	RB Offset		Channel		Power + Max. Tolerance	Allowed per			
10 10 10 10 10 10 10 10 10 10 10 10 10 1					704	23060	22.76	24	0			
10 10 1 RB 704 23060 22.65 24 0 707.5 23095 22.69 24 0 704 2300 22.89 24 0 704 2300 22.89 24 0 704 23060 22.82 24 0 704 23060 22.82 24 0 704 23060 22.89 24 0 7014 23080 21.71 23 0-1 704 2300 21.91 23 0-1 7014 23000 21.93 23 0-1 7014 23000 21.93 23 0-1 7014 23030 21.80 23 0-1 707.5 23095 21.81 23 0-1 707.5 23095 21.81 23 0-1 707.5 23095 21.82 23 0-1 707.5 23080 21.81 23 <td< td=""><td></td><td></td><td></td><td>0</td><td>707.5</td><td>23095</td><td>22.70</td><td>24</td><td>0</td></td<>				0	707.5	23095	22.70	24	0			
Instant 25 707.5 23095 22.69 24 0 711 23130 22.76 24 0 704 23060 22.82 24 0 707.5 23095 22.82 24 0 707.5 23095 22.82 24 0 707.5 23095 22.82 24 0 707.5 23095 21.80 23 0-1 707.5 23095 21.80 23 0-1 707.5 23095 21.80 23 0-1 707.5 23095 21.84 23 0-1 707.5 23095 21.80 23 0-1 707.5 23095 21.80 23 0-1 707.5 23095 21.80 23 0-1 704 23060 21.81 23 0-1 704 23065 21.81 23 0-1 707.5 23095 22.82					711	23130	23.05	24	0			
Image: Part of the second se					704	23060	22.65	24	0			
Image: heat of the system of the sy			1 RB	25	707.5	23095	22.69	24	0			
Image: space of the system of the s					711	23130	22.76	24	0			
Image: heat of the second se					704	23060	22.82	24	0			
QPSK 0 704 23060 21.71 23 0-1 707.5 23095 21.80 23 0-1 704 23060 21.93 23 0-1 704 23060 21.93 23 0-1 704 23095 21.84 23 0-1 707.5 23095 21.84 23 0-1 701 23130 21.92 23 0-1 707.5 23095 21.84 23 0-1 704 23060 21.80 23 0-1 704 23060 21.85 23 0-1 704 23060 21.85 23 0-1 704 23060 21.85 23 0-1 704 23060 21.85 23 0-1 704 23060 21.85 23 0-1 704 23060 21.85 23 0-1 704 23060 21.81 23 </td <td></td> <td></td> <td></td> <td>49</td> <td>707.5</td> <td>23095</td> <td>22.71</td> <td>24</td> <td>0</td>				49	707.5	23095	22.71	24	0			
OPSK 0 707.5 23095 21.80 23 0-1 711 23130 21.93 23 0-1 704 23060 21.90 23 0-1 707.5 23095 21.84 23 0-1 707.5 23095 21.84 23 0-1 707.5 23095 21.84 23 0-1 707.5 23095 21.84 23 0-1 707.5 23095 21.84 23 0-1 707.5 23095 21.84 23 0-1 707.5 23095 21.85 23 0-1 707.5 23095 21.85 23 0-1 707.5 23095 21.85 23 0-1 707.5 23095 22.66 23 0-1 704 23060 21.89 23 0-1 704 23060 21.89 23 0-1 7011 23130 21.99					711	23130	22.89	24	0			
$10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\$					704	23060	21.71	23	0-1			
10 704 23060 21.90 23 0.1 12 707.5 23095 21.84 23 0.1 711 23130 21.92 23 0.1 704 23095 21.84 23 0.1 704 23095 21.80 23 0.1 704 23095 21.79 23 0.1 707.5 23095 21.85 23 0.1 704 23060 21.89 23 0.1 704 23060 21.89 23 0.1 704 23060 21.89 23 0.1 704 23060 21.89 23 0.1 704 23060 21.81 23 0.1 704 23060 21.81 23 0.1 704 23060 21.89 23 0.1 707.5 23095 22.03 23 0.1 711 23130 21.99 23 <td></td> <td>QPSK</td> <td rowspan="2">QPSK</td> <td>0</td> <td></td> <td></td> <td>21.80</td> <td></td> <td>0-1</td>		QPSK	QPSK	0			21.80		0-1			
10 25 RB 12 707.5 23095 21.84 23 0-1 711 23130 21.92 23 0-1 25 704 23060 21.80 23 0-1 704 23060 21.80 23 0-1 707.5 23095 21.79 23 0-1 701 23130 21.85 23 0-1 704 23060 21.89 23 0-1 704 23060 21.89 23 0-1 704 23060 21.85 23 0-1 704 23060 21.89 23 0-1 704 23080 21.85 23 0-1 704 23080 21.85 23 0-1 704 23080 21.85 23 0-1 704 23080 21.85 23 0-1 707.5 23095 22.03 23 0-1 701 23130 <td></td> <td rowspan="5"></td> <td></td> <td>711</td> <td>23130</td> <td>21.93</td> <td>23</td> <td>0-1</td>					711	23130	21.93	23	0-1			
10 1010 23130 21.92 23 0.1 25 701 23060 21.80 23 0.1 25 707.5 23095 21.79 23 0.1 704 23060 21.80 23 0.1 707.5 23095 21.79 23 0.1 701 23100 21.85 23 0.1 704 23060 21.89 23 0.1 707.5 23095 21.85 23 0.1 707.5 23095 21.85 23 0.1 704 23060 21.89 23 0.1 707.5 23095 22.26 23 0.1 704 23060 21.89 23 0.1 704 23060 21.89 23 0.1 704 23060 21.89 23 0.1 707.5 23095 22.03 23 0.1 711 23130 2					704	23060	21.90	23	0-1			
$10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\$			25 RB	12					0-1			
10 25 707.5 23095 21.79 23 0.1 50RB 701 23130 21.85 23 0.1 704 23060 21.89 23 0.1 707.5 23095 21.85 23 0.1 707.5 23095 21.85 23 0.1 701 23130 21.83 23 0.1 707.5 23095 21.85 23 0.1 704 23060 21.83 23 0.1 704 23060 21.67 23 0.1 701 23130 21.99 23 0.1 701 23130 21.89 23 0.1 701 23130 21.89 23 0.1 704 23060 21.89 23 0.1 704 23060 21.89 23 0.1 701 23130 21.95 23 0.1 701 2305 20.97					711	23130			0-1			
10 711 23130 21.85 23 0-1 50RB 704 23060 21.89 23 0-1 707.5 23095 21.85 23 0-1 707.5 23095 21.85 23 0-1 707.5 23095 21.85 23 0-1 701 23130 21.83 23 0-1 701 23130 21.83 23 0-1 701 23130 21.83 23 0-1 701 23130 21.83 23 0-1 701 23130 21.89 23 0-1 704 23060 21.89 23 0-1 704 23060 21.89 23 0-1 701 23130 21.99 23 0-1 701 23060 22.43 23 0-1 701 23130 21.90 23 0-1 701 23130 21.90 23<						23060	21.80		0-1			
10 704 23060 21.89 23 0-1 707.5 23095 21.85 23 0-1 711 23130 21.83 23 0-1 711 23130 21.83 23 0-1 711 23130 21.83 23 0-1 711 23130 21.83 23 0-1 704 23060 21.67 23 0-1 707.5 23095 22.26 23 0-1 704 23060 21.89 23 0-1 704 23060 21.89 23 0-1 704 23060 21.89 23 0-1 701 23130 21.99 23 0-1 701 23060 22.43 23 0-1 701 23130 21.90 23 0-1 701 23130 21.90 23 0-1 701 23130 21.90 23 0-1 <td></td> <td></td> <td></td> <td>25</td> <td></td> <td></td> <td></td> <td></td> <td></td>				25								
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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				704	23060	20.87	22	0-2
			0	707.5	23095	21.46	22	0-2
				711	23130	21.27	22	0-2
				704	23060	21.12	22	0-2
		1 RB	25	707.5	23095	21.31	22	0-2
				711	23130	21.19	22	0-2
			49	704	23060	21.55	22	0-2
				707.5	23095	21.10	22	0-2
				711	23130	20.92	22	0-2
			0	704	23060	19.99	21	0-3
10	64-QAM			707.5	23095	20.22	21	0-3
				711	23130	20.19	21	0-3
				704	23060	20.15	21	0-3
		25 RB	12	707.5	23095	20.21	21	0-3
				711	23130	20.06	21	0-3
				704	23060	20.19	21	0-3
			25	707.5	23095	20.17	21	0-3
				711	23130	20.13	21	0-3
				704	23060	20.28	21	0-3
	50	50	RB	707.5	23095	20.17	21	0-3
				711	23130	20.11	21	0-3

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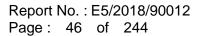
FDD Band 12										
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)		
				701.5	23035	22.64	24	0		
			0	707.5	23095	22.67	24	0		
				713.5	23155	22.72	24	0		
				701.5	23035	22.70	24	0		
		1 RB	12	707.5	23095	22.77	24	0		
				713.5	23155	22.81	24	0		
				701.5	23035	22.72	24	0		
			24	707.5	23095	22.66	24	0		
				713.5	23155	22.68	24	0		
			0	701.5	23035	21.77	23	0-1		
	QPSK	QPSK		707.5	23095	21.80	23	0-1		
				713.5	23155	21.79	23	0-1		
		12 RB		701.5	23035	21.78	23	0-1		
			6	707.5	23095	21.80	23	0-1		
				713.5	23155	21.91	23	0-1		
				701.5	23035	21.81	23	0-1		
			13	707.5	23095	21.80	23	0-1		
				713.5	23155	21.88	23	0-1		
				701.5	23035	21.80	23	0-1		
		25	RB	707.5	23095	21.85	23	0-1		
5			T	713.5	23155	21.74	23	0-1		
-			0	701.5	23035	21.93	23	0-1		
				707.5	23095	22.12	23	0-1		
				713.5	23155	22.08	23	0-1		
				701.5	23035	22.07	23	0-1		
		1 RB	12	707.5	23095	21.97	23	0-1		
				713.5	23155	21.82	23	0-1		
				701.5	23035	22.30	23	0-1		
			24	707.5	23095	21.98	23	0-1		
				713.5	23155	21.95	23	0-1		
			_	701.5	23035	20.92	22	0-2		
	16-QAM		0	707.5	23095	20.99	22	0-2		
				713.5	23155	21.52	22	0-2		
		(a ==	_	701.5	23035	20.77	22	0-2		
		12 RB	6	707.5	23095	20.98	22	0-2		
				713.5	23155	21.08	22	0-2		
			40	701.5	23035	20.88	22	0-2		
			13	707.5	23095	20.94	22	0-2		
				713.5	23155	20.96	22	0-2		
		~-		701.5	23035	20.94	22	0-2		
	25R	КВ	707.5	23095	20.87	22	0-2			
				713.5	23155	20.93	22	0-2		

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				FDD Band 12					
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)	
				701.5	23035	21.14	22	0-2	
			0	707.5	23095	21.28	22	0-2	
				713.5	23155	21.20	22	0-2	
				701.5	23035	21.34	22	0-2	
			1 RB	12	707.5	23095	21.27	22	0-2
				713.5	23155	21.11	22	0-2	
				701.5	23035	21.50	22	0-2	
			24	707.5	23095	21.25	22	0-2	
				713.5	23155	21.15	22	0-2	
				701.5	23035	20.19	21	0-3	
5	64-QAM		0	707.5	23095	20.29	21	0-3	
				713.5	23155	20.73	21	0-3	
				701.5	23035	19.94	21	0-3	
		12 RB	6	707.5	23095	20.17	21	0-3	
				713.5	23155	20.19	21	0-3	
				701.5	23035	19.99	21	0-3	
			13	707.5	23095	20.15	21	0-3	
				713.5	23155	20.07	21	0-3	
				701.5	23035	20.14	21	0-3	
		25	RB	707.5	23095	20.06	21	0-3	
				713.5	23155	20.06	21	0-3	

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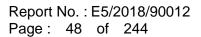


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FDD Band 12											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				700.5	23025	22.71	24	0			
			0	707.5	23095	22.76	24	0			
				714.5	23165	22.75	24	0			
				700.5	23025	22.63	24	0			
		1 RB	7	707.5	23095	22.97	24	0			
				714.5	23165	22.96	24	0			
				700.5	23025	22.74	24	0			
			14	707.5	23095	22.63	24	0			
				714.5	23165	23.02	24	0			
		QPSK	0	700.5	23025	21.69	23	0-1			
	QPSK			707.5	23095	21.79	23	0-1			
				714.5	23165	21.85	23	0-1			
			4	700.5	23025	21.76	23	0-1			
		8 RB		707.5	23095	21.83	23	0-1			
				714.5	23165	21.87	23	0-1			
				700.5	23025	21.78	23	0-1			
			7	707.5	23095	21.85	23	0-1			
				714.5	23165	21.92	23	0-1			
				700.5	23025	21.77	23	0-1			
		15	RB	707.5	23095	21.82	23	0-1			
3			-	714.5	23165	21.86	23	0-1			
U			0	700.5	23025	22.26	23	0-1			
				707.5	23095	22.33	23	0-1			
				714.5	23165	21.95	23	0-1			
				700.5	23025	22.00	23	0-1			
		1 RB	7	707.5	23095	22.54	23	0-1			
				714.5	23165	22.30	23	0-1			
				700.5	23025	22.10	23	0-1			
			14	707.5	23095	21.98	23	0-1			
				714.5	23165	22.38	23	0-1			
				700.5	23025	20.97	22	0-2			
	16-QAM		0	707.5	23095	20.90	22	0-2			
				714.5	23165	21.03	22	0-2			
				700.5	23025	20.82	22	0-2			
		8 RB	4	707.5	23095	21.04	22	0-2			
				714.5	23165	20.93	22	0-2			
				700.5	23025	20.85	22	0-2			
			7	707.5	23095	20.86	22	0-2			
				714.5	23165	21.02	22	0-2			
				700.5	23025	20.93	22	0-2			
		15RB		707.5	23095	20.91	22	0-2			
				714.5	23165	21.00	22	0-2			

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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				700.5	23025	21.44	22	0-2
			0	707.5	23095	21.52	22	0-2
				714.5	23165	21.24	22	0-2
				700.5	23025	21.19	22	0-2
		1 RB	7	707.5	23095	21.66	22	0-2
				714.5	23165	21.49	22	0-2
				700.5	23025	21.27	22	0-2
			14	707.5	23095	21.12	22	0-2
				714.5	23165	21.50	22	0-2
			0	700.5	23025	20.13	21	0-3
3	64-QAM			707.5	23095	20.03	21	0-3
				714.5	23165	20.19	21	0-3
				700.5	23025	19.97	21	0-3
		8 RB	4	707.5	23095	20.14	21	0-3
				714.5	23165	20.11	21	0-3
				700.5	23025	20.00	21	0-3
			7	707.5	23095	20.10	21	0-3
				714.5	23165	20.24	21	0-3
				700.5	23025	20.11	21	0-3
	15	RB	707.5	23095	20.16	21	0-3	
				714.5	23165	20.14	21	0-3

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FDD Band 12											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				699.7	23017	22.17	24	0			
			0	707.5	23095	22.19	24	0			
				715.3	23173	22.41	24	0			
				699.7	23017	22.05	24	0			
		1 RB	2	707.5	23095	22.27	24	0			
				715.3	23173	22.53	24	0			
				699.7	23017	22.13	24	0			
			5	707.5	23095	22.03	24	0			
				715.3	23173	22.29	24	0			
				699.7	23017	22.16	24	0			
	QPSK		0	707.5	23095	22.21	24	0			
				715.3	23173	22.41	24	0			
				699.7	23017	22.13	24	0			
		3 RB	2	707.5	23095	22.22	24	0			
				715.3	23173	22.34	24	0			
			3	699.7	23017	22.08	24	0			
				707.5	23095	22.14	24	0			
				715.3	23173	22.17	24	0			
				699.7	23017	21.11	23	0-1			
		6F	RB	707.5	23095	21.14	23	0-1			
1.4				715.3	23173	21.34	23	0-1			
1.4			0	699.7	23017	21.69	23	0-1			
				707.5	23095	21.72	23	0-1			
				715.3	23173	21.95	23	0-1			
				699.7	23017	21.42	23	0-1			
		1 RB	2	707.5	23095	21.64	23	0-1			
				715.3	23173	21.74	23	0-1			
				699.7	23017	21.31	23	0-1			
			5	707.5	23095	21.36	23	0-1			
				715.3	23173	21.63	23	0-1			
				699.7	23017	21.34	23	0-1			
	16-QAM		0	707.5	23095	21.37	23	0-1			
				715.3	23173	21.52	23	0-1			
				699.7	23017	21.32	23	0-1			
		3 RB	2	707.5	23095	21.35	23	0-1			
				715.3	23173	21.45	23	0-1			
				699.7	23017	21.31	23	0-1			
			3	707.5	23095	21.30	23	0-1			
				715.3	23173	21.63	23	0-1			
				699.7	23017	20.18	22	0-2			
		66	RB	707.5	23095	20.30	22	0-2			
				715.3	23173	20.49	22	0-2			

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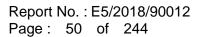
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				FDD Band 12				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				699.7	23017	20.88	22	0-2
			0	707.5	23095	20.87	22	0-2
				715.3	23173	21.22	22	0-2
				699.7	23017	20.71	22	0-2
		1 RB	2	707.5	23095	20.75	22	0-2
				715.3	23173	20.88	22	0-2
				699.7	23017	20.56	22	0-2
			5	707.5	23095	20.62	22	0-2
				715.3	23173	20.76	22	0-2
		-QAM	0	699.7	23017	20.53	22	0-2
1.4	64-QAM			707.5	23095	20.60	22	0-2
				715.3	23173	20.71	22	0-2
				699.7	23017	20.57	22	0-2
		3 RB	2	707.5	23095	20.62	22	0-2
				715.3	23173	20.72	22	0-2
				699.7	23017	20.42	22	0-2
			3	707.5	23095	20.53	22	0-2
				715.3	23173	20.76	22	0-2
				699.7	23017	19.40	21	0-3
		6F	RB	707.5	23095	19.58	21	0-3
				715.3	23173	19.64	21	0-3

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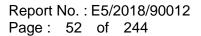
FDD Band 17											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				709	23780	22.62	24	0			
			0	710	23790	22.66	24	0			
				711	23800	22.81	24	0			
				709	23780	22.70	24	0			
		1 RB	25	710	23790	22.67	24	0			
				711	23800	22.65	24	0			
				709	23780	22.89	24	0			
			49	710	23790	22.74	24	0			
				711	23800	22.75	24	0			
				709	23780	21.77	23	0-1			
	QPSK		0	710	23790	21.71	23	0-1			
				711	23800	21.72	23	0-1			
				709	23780	21.76	23	0-1			
		25 RB	12	710	23790	21.73	23	0-1			
				711	23800	21.77	23	0-1			
			25	709	23780	21.74	23	0-1			
				710	23790	21.63	23	0-1			
				711	23800	21.73	23	0-1			
				709	23780	21.74	23	0-1			
		50	RB	710	23790	21.69	23	0-1			
10				711	23800	21.78	23	0-1			
10			0	709	23780	22.27	23	0-1			
				710	23790	22.18	23	0-1			
				711	23800	21.96	23	0-1			
				709	23780	22.29	23	0-1			
		1 RB	25	710	23790	22.12	23	0-1			
				711	23800	21.59	23	0-1			
				709	23780	22.21	23	0-1			
			49	710	23790	21.79	23	0-1			
				711	23800	22.31	23	0-1			
				709	23780	20.87	22	0-2			
	16-QAM		0	710	23790	20.69	22	0-2			
				711	23800	20.86	22	0-2			
				709	23780	20.74	22	0-2			
		25 RB	12	710	23790	20.72	22	0-2			
				711	23800	20.88	22	0-2			
				709	23780	20.81	22	0-2			
			25	710	23790	20.67	22	0-2			
				711	23800	20.75	22	0-2			
				709	23780	20.85	22	0-2			
		50	50RB		23790	20.71	22	0-2			
				711	23800	20.79	22	0-2			

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				FDD Band 17				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				709	23780	21.45	22	0-2
			0	710	23790	21.42	22	0-2
				711	23800	21.23	22	0-2
				709	23780	21.55	22	0-2
		1 RB	25	710	23790	21.36	22	0-2
				711	23800	20.87	22	0-2
			49	709	23780	21.31	22	0-2
				710	23790	21.07	22	0-2
				711	23800	21.53	22	0-2
		-QAM	0	709	23780	20.00	21	0-3
10	64-QAM			710	23790	19.83	21	0-3
				711	23800	19.96	21	0-3
				709	23780	19.88	21	0-3
		25 RB	12	710	23790	19.89	21	0-3
				711	23800	20.15	21	0-3
				709	23780	20.09	21	0-3
			25	710	23790	19.80	21	0-3
				711	23800	20.04	21	0-3
				709	23780	20.01	21	0-3
		50	RB	710	23790	19.97	21	0-3
				711	23800	20.02	21	0-3

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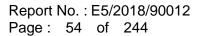
FDD Band 17											
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				706.5	23755	22.74	24	0			
			0	710	23790	22.59	24	0			
				713.5	23825	22.64	24	0			
				706.5	23755	22.79	24	0			
		1 RB	12	710	23790	22.51	24	0			
				713.5	23825	22.69	24	0			
				706.5	23755	22.87	24	0			
			24	710	23790	22.70	24	0			
				713.5	23825	22.83	24	0			
				706.5	23755	21.69	23	0-1			
	QPSK		0	710	23790	21.69	23	0-1			
				713.5	23825	21.70	23	0-1			
				706.5	23755	21.78	23	0-1			
		12 RB	6	710	23790	21.69	23	0-1			
				713.5	23825	21.72	23	0-1			
			13	706.5	23755	21.80	23	0-1			
				710	23790	21.62	23	0-1			
				713.5	23825	21.78	23	0-1			
				706.5	23755	21.79	23	0-1			
		25	RB	710	23790	21.65	23	0-1			
5		I		713.5	23825	21.66	23	0-1			
-			0	706.5	23755	22.01	23	0-1			
				710	23790	21.90	23	0-1			
				713.5	23825	21.69	23	0-1			
				706.5	23755	21.89	23	0-1			
		1 RB	12	710	23790	21.80	23	0-1			
				713.5	23825	22.00	23	0-1			
				706.5	23755	22.34	23	0-1			
			24	710	23790	21.96	23	0-1			
				713.5	23825	21.82	23	0-1			
			_	706.5	23755	20.85	22	0-2			
	16-QAM		0	710	23790	20.75	22	0-2			
				713.5	23825	20.79	22	0-2			
		10.55		706.5	23755	20.83	22	0-2			
		12 RB	6	710	23790	20.66	22	0-2			
				713.5	23825	20.88	22	0-2			
			10	706.5	23755	20.92	22	0-2			
			13	710	23790	20.72	22	0-2			
				713.5	23825	20.94	22	0-2			
		05	חח	706.5	23755	20.97	22	0-2			
		25	RB	710	23790	20.77	22	0-2			
				713.5	23825	20.84	22	0-2			

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				FDD Band 17				
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				706.5	23755	21.20	22	0-2
			0	710	23790	21.17	22	0-2
				713.5	23825	20.90	22	0-2
				706.5	23755	21.13	22	0-2
		1 RB	12	710	23790	21.08	22	0-2
				713.5	23825	21.25	22	0-2
			24	706.5	23755	21.53	22	0-2
				710	23790	21.17	22	0-2
				713.5	23825	20.92	22	0-2
		-QAM	0	706.5	23755	20.04	21	0-3
5	64-QAM			710	23790	19.94	21	0-3
				713.5	23825	19.92	21	0-3
				706.5	23755	20.13	21	0-3
		12 RB	6	710	23790	19.93	21	0-3
				713.5	23825	20.14	21	0-3
				706.5	23755	20.06	21	0-3
			13	710	23790	19.84	21	0-3
				713.5	23825	20.15	21	0-3
				706.5	23755	20.19	21	0-3
		25	RB	710	23790	20.03	21	0-3
				713.5	23825	20.07	21	0-3

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Main Antenna										
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)				
		1	2412		14.30	14.16				
	802.11b	6	2437	1Mbps	14.30	14.13				
		11	2462		14.30	14.27				
		1	2412	6Mbps	14.30	14.17				
	802.11g	6	2437		14.30	14.14				
2450 MHz		11	2462		14.30	14.22				
		1	2412		12.30	12.24				
		2	2417		14.30	14.03				
	802.11n-HT20	6	2437	MCS0	14.30	13.92				
		10	2457		14.30	13.96				
		11	2462		12.30	12.19				

WLAN802.11 a/b/g/n/ac (20M/40M/80M) conducted power table:

Main Antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		36	5180		12.30	12.28			
	802.11a	40	5200	6Mbps	14.30	13.98			
	002.114	44	5220	01010003	14.30	14.29			
		48	5240		14.30	13.96			
		36	5180		12.30	12.24			
	802.11n-HT20	40	5200	MCS0	14.30	14.01			
	002.11111120	44	5220		14.30	14.26			
		48	5240		14.30	13.95			
5.15-5.25 GHz		36	5180		12.30	12.20			
	802.11ac20-VHT0	40	5200	MCS0	14.30	14.12			
	002.118020-01110	44	5220	10000	14.30	14.21			
		48	5240		14.30	13.92			
	802.11n-HT40	38	5190	MCS0	12.30	12.28			
	002.111-11140	46	5230	10000	14.30	14.27			
	802.11ac40-VHT0	38	5190	MCS0	12.30	12.25			
	002.110040-1010	46	5230	10030	14.30	14.24			
	802.11ac80-VHT0	42	5210	MCS0	12.30	11.99			

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Main Antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		52	5260		14.30	13.93			
	802.11a	56	5280	6Mbps	14.30	13.94			
	002.118	60	5300	0101043	14.30	13.98			
		64	5320		12.30	12.11			
		52	5260		14.30	13.92			
	802.11n-HT20	56	5280	MCS0	14.30	13.88			
	002.1111-11120	60	5300		14.30	13.96			
		64	5320		12.30	12.01			
5.25-5.35 GHz		52	5260		14.30	13.86			
	802.11ac20-VHT0	56	5280	MCS0	14.30	13.83			
	002.118020-01110	60	5300	WC00	14.30	13.92			
		64	5320		12.30	11.91			
	802.11n-HT40	54	5270	MCS0	14.30	13.93			
	002.111-11140	62	5310		12.30	12.24			
	802.11ac40-VHT0	54	5270	MCS0	14.30	13.90			
	002.110040-01110	62	5310	10000	12.30	12.19			
	802.11ac80-VHT0	58	5290	MCS0	12.30	12.02			

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Main Antenna										
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)				
		100	5500		12.30	12.05				
		116	5580		14.30	13.92				
	802.11a	120	5600	6Mbps	14.30	13.89				
	002.11a	124	5620	olviops	14.30	13.92				
		128	5640		14.30	13.99				
		140	5700		12.30	11.90				
		100	5500		12.30	11.98				
		116	5580		14.30	13.91				
	802.11n-HT20	120	5600	MCS0	14.30	14.03				
	002.1111-1120	124	5620	IVIC SU	14.30	14.07				
		128	5640		14.30	13.95				
		140	5700		12.30	11.87				
	802.1ac20-VHT0	100	5500		12.30	11.95				
		116	5580	MCS0	14.30	13.85				
		120	5600		14.30	13.94				
		124	5620		14.30	13.87				
5600 MHz		128	5640		14.30	13.89				
		140	5700		12.30	11.84				
		144	5720		14.30	13.93				
		102	5510		12.30	12.02				
		110	5550		14.30	14.10				
	802.11n-HT40	118	5590	MCS0	14.30	14.05				
		126	5630		14.30	14.02				
		134	5670		12.30	11.90				
		102	5510		12.30	11.98				
		110	5550		14.30	14.06				
		118	5590	MCS0	14.30	13.87				
	802.11ac40-VHT0	126	5630	NIC SU	14.30	13.92				
		134	5670		12.30	11.85				
		142	5710		14.30	14.02				
		106	5530		12.30	12.14				
	802.11ac80-VHT0	122	5610	MCS0	14.30	14.17				
		138	5690		14.30	14.11				

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Aux Antenna										
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)				
		1	2412		14.30	14.11				
	802.11b	6	2437	1Mbps	14.30	14.04				
		11	2462		14.30	14.17				
		1	2412		14.30	14.00				
	802.11g	6	2437	6Mbps	14.30	13.97				
2450 MHz		11	2462		14.30	14.13				
		1	2412		12.30	12.20				
		2	2417		14.30	14.01				
	802.11n-HT20	6	2437	MCS0	14.30	13.90				
		10	2457		14.30	13.94				
		11	2462		12.30	12.18				

Aux Antenna									
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)			
		36	5180		12.30	12.21			
	802.11a	40	5200	6Mbps	14.30	14.11			
	002.114	44	5220	01010003	14.30	14.28			
		48	5240		14.30	13.92			
		36	5180		12.30	12.17			
	802.11n-HT20	40	5200	MCS0	14.30	13.92			
	002.11111120	44	5220		14.30	14.24			
		48	5240		14.30	13.85			
5.15-5.25 GHz		36	5180		12.30	12.14			
	802.11ac20-VHT0	40	5200	MCS0	14.30	14.10			
		44	5220	WICCO	14.30	14.19			
		48	5240		14.30	13.82			
	802.11n-HT40	38	5190	MCS0	12.30	12.12			
	002.11111140	46	5230	10000	14.30	14.23			
	802.11ac40-VHT0	38	5190	MCS0	12.30	12.09			
	002.11a0 1 0-v1110	46	5230	10000	14.30	14.20			
	802.11ac80-VHT0	42	5210	MCS0	12.30	11.90			

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		Aux A	Antenna			
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)
		52	5260		14.30	13.90
	802.11a	56	5280	6Mhns	14.30	13.81
	002.118	60	5300	0101043	14.30	13.94
		64	5320		Avg. Power Average + Max. power Tolerance (dBm) 14.30 13.90 14.30 13.91 14.30 13.94 12.30 12.02 14.30 13.84 14.30 13.89 14.30 13.89 14.30 13.89 14.30 13.89 14.30 13.89 14.30 13.79 14.30 13.85 14.30 13.89 12.30 11.97 14.30 13.89 12.30 13.89 12.30 13.89 12.30 13.89 12.30 13.88 12.30 12.19 14.30 13.84 12.30 12.15	
	802.11n-HT20	52	5260		14.30	13.89
		56	5280	MCSO	14.30	13.84
	002.1111-11120	60	5300	NICOU	14.30	13.92
		64	5320		Avg. Power Average power + Max. power Tolerance (dBm) (dBm) Mbps 14.30 13.90 14.30 13.90 14.30 13.91 14.30 13.94 12.30 12.02 14.30 13.84 14.30 13.89 14.30 13.89 14.30 13.89 14.30 13.89 14.30 13.89 14.30 13.89 14.30 13.89 14.30 13.89 12.30 11.97 14.30 13.89 12.30 13.89 12.30 13.89 12.30 13.89 12.30 13.88 12.30 13.88 12.30 12.19 MCS0 14.30 13.84 12.30 12.15	
5.25-5.35 GHz		52	5260		14.30	13.79
	802.11ac20-VHT0	56	5280	MCSO	14.30	13.85
	002.118020-01110	60	5300	NICOU	$\begin{array}{c cccccc} & 14.30 & 13.90 \\ \hline 14.30 & 13.81 \\ \hline 14.30 & 13.94 \\ \hline 12.30 & 12.02 \\ \hline 14.30 & 13.89 \\ \hline 14.30 & 13.89 \\ \hline 14.30 & 13.84 \\ \hline 14.30 & 13.92 \\ \hline 12.30 & 11.97 \\ \hline 14.30 & 13.85 \\ \hline 14.30 & 13.85 \\ \hline 14.30 & 13.89 \\ \hline 12.30 & 11.89 \\ \hline 12.30 & 11.89 \\ \hline 12.30 & 12.19 \\ \hline 50 & 14.30 & 13.84 \\ \hline \end{array}$	13.89
		64	5320		12.30	11.89
	802.11n-HT40	54	5270	MCSO	14.30	13.88
	002.111-11140	62	5310		12.30	12.19
	802.11ac40-VHT0	54	5270	MCSO	14.30	13.84
	002.110040-01110	62	5310	10000	12.30	12.15
	802.11ac80-VHT0	58	5290	MCS0	12.30	12.00

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Aux Antenna											
Band	Mode	Channel	Frequency (MHz)	Data Rate	Max. Rated Avg. Power + Max. Tolerance (dBm)	Average power (dBm)					
		100	5500		12.30	11.83					
		116	5580		14.30	13.88					
	802.11a	120	5600	6Mbpc	14.30	13.87					
	002.11a	124	5620	6Mbps	14.30	13.83					
		128	5640		14.30	13.87					
		140	5700		12.30	11.86					
		100	5500		12.30	11.75					
		116	5580		Avg. Power + Max. Tolerance (dBm) 12.30 14.30 14.30 14.30 14.30 14.30 12.30	13.87					
	802.11n-HT20	120	5600	MCS0	14.30	13.91					
	002.111-0120	124	5620	NIC30	14.30	14.00					
		128	5640		Avg. Power Avg. power + Max. power Tolerance (d (dBm) 12.30 14.30 13 14.30 14 14.30 14 14.30 14 14.30 14 14.30 14 14.30 14 14.30 13 14.30 13 14.30	13.79					
		140	5700		12.30	11.85					
		100	5500		12.30	11.72					
		116	5580		14.30	13.82					
		120	5600		14.30	13.82					
	802.1ac20-VHT0	124	5620	MCS0	14.30	13.90					
5600 MHz		128	5640		14.30	13.88					
		140	5700		$\begin{array}{c ccccc} & 14.30 & 1 \\ \hline 14.30 & 1 \\ \hline 14.30 & 1 \\ \hline 12.30 & 1 \\ \hline 12.30 & 1 \\ \hline 14.30 & 1 \\ \hline 14.30 & 1 \\ \hline 14.30 & 1 \\ \hline 12.30 & 1 \\ \hline 14.30 & 1 \\ \hline \end{array}$	11.81					
		144	5720		14.30	13.83					
		102	5510		12.30	11.81					
		110	5550		14.30	14.05					
	802.11n-HT40	118	5590	MCS0	14.30	14.01					
		126	5630		14.30	13.92					
		134	5670		12.30	11.85					
		102	5510		12.30	11.78					
		110	5550		14.30	14.01					
	802.11ac40-VHT0	118	5590	MCS0	14.30	13.82					
	002.114040-1110	126	5630	NIC30	14.30	13.86					
		134	5670		12.30	11.81					
		142	5710		14.30	13.77					
		106	5530		12.30	11.95					
	802.11ac80-VHT0	122	5610	MCS0	14.30	13.99					
		138	5690		14.30	13.85					

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Bluetooth maximum power table:

Mode	Channel	Frequency	Average	Output Pow	ver (dBm)	Max. Rated Avg. Power + Max.
MODE	Channel	(MHz)	1Mbps	2Mbps	3Mbps	Tolerance (dBm)
	CH 00	2402	13.25	10.39	10.40	
BR/EDR	CH 39	2441	13.48	11.61	11.62	15
	CH 78	2480	13.18	9.77	9.66	

Mada	Channel	Frequency	Average Output Power (dBm)	Max. Rated Avg. Power + Max.		
Mode	Channel	(MHz)	GFSK	Tolerance (dBm)		
	CH 00	2402	5.74			
LE	CH 19	2440	6.76	15		
	CH 39	2480	5.18			

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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 (MT8820C), and 1. 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 the 3. 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 mode is determined by the source-based 4. time-averaged output power. The data mode with highest specified time-averaged output power should be tested for SAR compliance.
- 5. The 3G SAR test reduction procedure is applied to HSDPA with 12.2 kbps RMC as the primary mode. Since the maximum output power in a secondary mode (HSDPA) is $\leq \frac{1}{4}$ dB higher than the primary mode (WCDMA), SAR measurement is not required for the secondary mode (HSDPA). The following 4 sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS 34.121. A summary of these setting are illustrated below:

Sub-test	βc	βa	βd (SF)	βc/βa	β _{HS} ⁽¹⁾⁽²⁾	CM ⁽³⁾ (dB)	MPR ⁽³⁾ (dB)			
1	2/15	15/15	64	2/15	4/15	0.0	0.0			
2	12/15 ⁽⁴⁾	15/15 ⁽⁴⁾	64	12/15 ⁽⁴⁾	24/15	1.0	0.0			
3	15/15	8/15	64	15/8	30/15	1.5	0.5			
4	15/15	4/15	64	15/4	30/15	1.5	0.5			
Note 1: Δ _{ACK} , Δ _{NACK} and Δ _{COI} = 30/15 with β _{HS} = 30/15 * β _c . Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ _{ACK} and Δ _{NACK} = 30/15 with β _{HS} = 30/15 * β _c , and Δ _{COI} = 24/15 with β _{HS} = 24/15 * β _c .										
Note 3: CM = 1 for β _o /β _d = 12/15, β _{Hg} /β _c = 24/15. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.										
Note 4: For subte factors for		of 12/15 for the TF C (TF1, TF1) to β _c			TF1, TF0) is achie	ved by setting the	signalled gain			

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with 6. RMC) with 12.2 kbps RMC as the primary mode. Since the maximum output power

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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). The following 5 sub-tests were completed according to Release 6 procedures in section 5.2 of 3GPP TS 34.121. A summary of these setting are illustrated below:

Sub-test	βε	βd	β₄ (SF)	βc / βd	β _{HS} (1)	βes	β_{ed} ⁽⁴⁾⁽⁵⁾	β _{ed} (SF)	β _{ed} (Codes)	CM (2) (dB)	MPR (2)(6) (dB)	AG (5) Index	E-TFCI
1	11/15 (३)	15/15 (3)	64	11/15 (3)	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	βed1:47/15 βed2:47/15	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	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67
Note 2: CM diffe Note 3: For	lote 1: For sub-test 1 to 4, Δ _{ΔCK} , Δ _{NACK} and Δ _{COI} = 30/15 with β _{HS} = 30/15 * β _E . For sub-test 5, Δ _{ΔCK} , Δ _{NACK} and Δ _{COI} = 5/15 with β _{HS} = 5/15 * β _E . lote 2: CM = 1 for β _J β _d = 12/15, β _{HS} β _e = 24/15. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference. lote 3: For subtest 1 the β _J β _d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC												
Note 4: In ca Note 5: βed 0	(TF1, TF1) to β _i e = 10/15 and β _i e = 15/15. ote 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g. ote 5: β _i e can not be set directly; it is set by Absolute Grant Value. ote 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could results in slightly smaller MPR values.												

LTE modes test according to KDB 941225D05v02r05. 7.

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

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

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

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

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

d. Per Section 5.2.4, Higher order modulations

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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 > 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 > $\frac{1}{2}$ 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.

WLAN

802.11b DSSS SAR Test Requirements:

- SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured 8. 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.
- 9. 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:

- 10. SAR is not required for 802.11q/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.
- 11. BT and WLAN Main use the same antenna path and Bluetooth can't transmit with WLAN simultaneously.

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- 12. According to KDB447498D01v06, testing of other required channels is not required when the reported 1-g SAR for the highest output channel is \leq 0.8 W/kg, when the transmission band is \leq 100MHz.
- 13. According to KDB865664D01v01r04, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is \geq 1.45 W/kg (~ 10% from the 1-g SAR limit)

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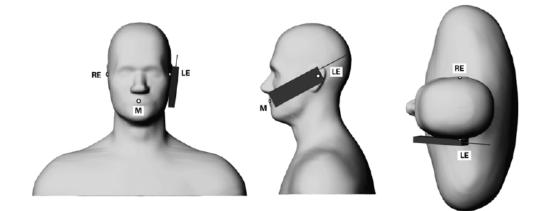
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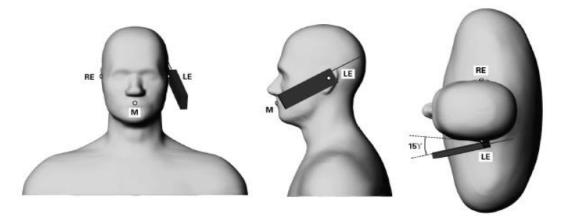
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1.6 Positioning Procedure

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.

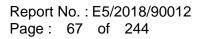
Ear/Tilt Position:

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: 10mm

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 $9 \text{ cm} \times 5 \text{ cm}$,

Test configurations of WWAN:

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

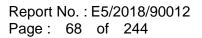
Test configurations of WLAN:

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

Since the device is a phablet (overall diagonal dimension > 16.0 cm), the UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for product specific 10-g SAR. When hotspot mode applies, product specific 10-g SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg. Since the highest reported hotspot SAR for WWAN/WLAN 2.4GHz is less than 1.2, 10-g extremity SAR is not required for them. For WLAN 5.2/5.3/5.6G, product specific 10g-SAR is required since hotspot function is not supported in them.

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4. Based on KDB941225D06v02r01, the hotspot mode and body-worn accessory SAR test configurations may overlap for handsets. When the same wireless mode transmission configurations for voice and data are required for SAR measurements, the more conservative configuration with a smaller separation distance should be tested for the overlapping SAR configurations. For WCDMA /LTE/WLAN, since the maximum power is the same between body-worn and hotspot mode, and the test distance of hotspot mode is the same with that of body-worn mode, hotspot mode SAR is used to support body-worn SAR. For GSM850/1900, since the wireless mode transmission configurations is different between body-worn and hotspot mode, body-worn SAR is performed.

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1.7 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 points between the lowest measured plane and the surface. The next step uses 3D

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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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1.8 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:

1.8.1 Transfer Calibration with Temperature Probes

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

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

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

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

1. The temperature gradient is not directly measurable but must be evaluated from temperature measurements at different time steps. Special precaution is necessary to avoid measurement errors caused by temperature gradients due to energy equalizing effects or convection currents in the liquid. Such effects cannot be completely avoided, as the measured field itself destroys the

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thermal equilibrium in the liquid. With a careful setup these errors can be kept small.

- 2. The measured volume around the temperature probe is not well defined. It is difficult to calculate the energy transfer from a surrounding gradient temperature field into the probe. These effects must be considered, since temperature probes are calibrated in liquid with homogeneous temperatures. There is no traceable standard for temperature rise measurements.
- 3. The calibration depends on the assessment of the specific density, the heat capacity and the conductivity of the medium. While the specific density and heat capacity can be measured accurately with standardized procedures (~ 2% for c; much better for ρ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed ±5%.
- 4. Temperature rise measurements are not very sensitive and therefore are often performed at a higher power level than the E-field measurements. The nonlinearities in the system (e.g., power measurements, different components, etc.) must be considered.

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

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1.8.2 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.

References

- (1) N. Kuster, Q. Balzano, and J.C. Lin, Eds., Mobile Communications Safety, Chapman & Hall, London, 1997.
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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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1.9 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.

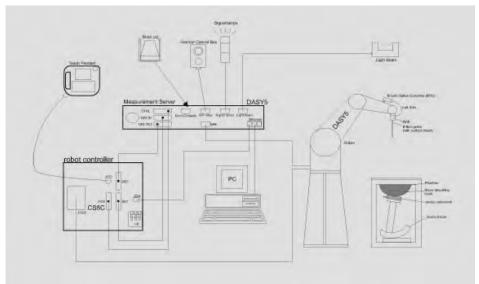


Fig. a A block diagram of the SAR measurement system

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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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1.10 System Components

EX3DV4 E-Field Probe

-											
Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic										
	solvents, e.g., DGBE)										
Calibration	Basic Broad Band Calibration in air										
	Conversion Factors (CF) for										
	HSL750/835/1750/1900/2450/5200/5300/5600										
	MHz Additional CF for other liquids and										
	frequencies upon request										
Frequency	10 MHz to > 6 GHz, Linearity: ± 0.6 dB										
Directivity	± 0.3 dB in HSL (rotation around probe axis)										
	± 0.5 dB in tissue material (rotation normal to probe axis)										
Dynamic	10 μW/g to > 100 mW/g										
Range	Linearity: \pm 0.2 dB (noise: typically < 1 μ W/g)										
Dimensions	Tip diameter: 2.5 mm										
Application	High precision dosimetric measurements in any exposure scenario (e.g., very strong gradient fields). Only probe which enables compliance testing for frequencies up to 6 GHz with precision of better 30%.										

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Phantom	
Model	Twin SAM
Construction	The shell corresponds to the specifications of the Specific Anthropomorphic Mannequin (SAM) phantom defined in IEEE 1528 and IEC 62209. It enables the dosimetric evaluation of left and right hand phone usage as well as body mounted usage at the flat phantom region. A cover prevents evaporation of the liquid. Reference markings on the phantom allow the complete setup of all predefined phantom positions and measurement grids by manually teaching three points with the robot.
Shell Thickness	2 ± 0.2 mm
Filling Volume	Approx. 25 liters
Dimensions	Height: 850 mm; Length: 1000 mm; Width: 500 mm

DEVICE HOLDER

Construction	In combination with the Twin SAM Phantom	1-
	V4.0/V4.0C or Twin SAM, the Mounting	ALC: NO.
	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	and the second se
	be easily and accurately positioned	A STORE
	according to IEC, IEEE, CENELEC, FCC or	
	other specifications. The device holder can	
	be locked at different phantom locations	Device Holder
	(left head, right head, flat phantom).	

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1.11 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 KDB865664D01) from the target SAR values.

These tests were done at 750/835/1750/1900/2450/5200/5300/5600 MHz. The tests were conducted on the same days as the measurement of the DUT. The obtained results from the system accuracy verification are displayed in the table 1. During the tests, the liquid depth above the ear reference points was above 15 cm (≤3G) or 10 cm (>3G) in all the cases. It is seen that the system is operating within its specification, as the results are within acceptable tolerance of the reference values.

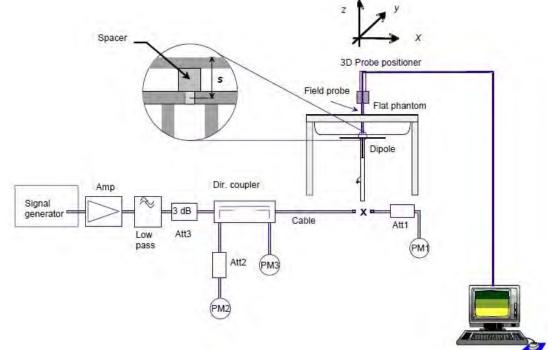


Fig. b The block diagram of system verification

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Validation Kit	S/N	Frequency (MHz)		1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V2	1015	750	Head	8.23	2.06	8.24	0.12%	Sep. 26, 2018
D730V2	1015	750	Body	8.62	2.15	8.60	-0.23%	Sep. 25, 2018
D835V2	4d063	835	Head	9.48	2.41	9.64	1.69%	Sep. 26, 2018
D033V2	40003	000	Body	9.56	2.46	9.84	2.93%	Sep. 25, 2018
D1750V2	1008	1750	Head	36.5	9.02	36.08	-1.15%	Sep. 29, 2018
D1750V2	1000	1750	Body	37.0	9.19	36.76	-0.65%	Sep. 30, 2018
D1900V2	5d173	1900	Head	40.7	9.85	39.40	-3.19%	Sep. 30, 2018
D1900V2	50175	1900	Body	40.9	9.91	39.64	-3.08%	Sep. 30, 2018
D2450V2	727	2450	Head	52.1	13.10	52.40	0.58%	Oct. 04, 2018
D2450V2	121	2430	Body	50.8	13.00	52.00	2.36%	Oct. 05, 2018
		5200	Head	77.3	7.74	77.40	0.13%	Oct. 01, 2018
		5200	Body	70.9	7.14	71.40	0.71%	Oct. 03, 2018
D5GHzV2	1023	5300	Head	80.9	8.07	80.70	-0.25%	Oct. 02, 2018
	1023	5500	Body	72.9	7.39	73.90	1.37%	Oct. 03, 2018
		5600	Head	81.9	8.14	81.40	-0.61%	Oct. 04, 2018
		5000	Body	77.6	7.88	78.80	1.55%	Oct. 04, 2018

Table 1. Results of system validation

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1.12 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)

Head \$\$ Head \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$ \$\$	2.34% 2.14% 2.05% 2.05% 2.00% 2.00% 2.03% 1.49% 1.47%
Head 709 42.155 0.890 42.671 0.872 -1.23% Sep, 26. 2018 710 42.149 0.890 42.666 0.872 -1.23% 711 42.144 0.890 42.654 0.873 -1.21% 750 41.942 0.893 42.436 0.875 -1.18% 824.2 41.556 0.899 42.138 0.886 -1.40% 835 41.500 0.900 42.101 0.887 -1.45% 836.6 41.500 0.902 42.099 0.889 -1.44% 848.8 41.500 0.915 42.093 0.901 -1.43% 1712.4 40.138 1.349 39.725 1.376 1.03% 1720 40.126 1.354 39.713 1.381 1.03% 1732.4 40.107 1.361 39.698 1.387 1.02% 1750 40.075 1.373 39.664 1.399 1.03% 1752.6 40.000 1.400	2.05% 2.05% 2.00% 2.03% 1.49%
Sep, 26. 2018 710 42.149 0.890 42.666 0.872 -1.23% 711 42.144 0.890 42.654 0.873 -1.21% 750 41.942 0.893 42.436 0.875 -1.18% 824.2 41.556 0.899 42.138 0.886 -1.40% 835 41.500 0.900 42.101 0.887 -1.45% 836.6 41.500 0.902 42.099 0.889 -1.44% 848.8 41.500 0.915 42.093 0.901 -1.43% 1712.4 40.138 1.349 39.725 1.376 1.03% 1732.4 40.107 1.361 39.698 1.387 1.02% Sep, 29.2018 1732.5 40.107 1.361 39.694 1.388 1.03% 1750 40.079 1.371 39.664 1.399 1.03% 1752.6 40.075 1.373 39.664 1.399 1.03% 1752.6 40.000 1.40	2.05% 2.00% 2.03% 1.49%
Sep, 26. 2018 711 42.144 0.890 42.654 0.873 -1.21% 750 41.942 0.893 42.436 0.875 -1.18% 824.2 41.556 0.899 42.138 0.886 -1.40% 835 41.500 0.900 42.101 0.887 -1.45% 836.6 41.500 0.902 42.099 0.889 -1.44% 848.8 41.500 0.915 42.093 0.901 -1.43% 1712.4 40.138 1.349 39.725 1.376 1.03% 1720 40.126 1.354 39.713 1.381 1.03% 1732.4 40.107 1.361 39.698 1.387 1.02% 1732.5 40.107 1.361 39.694 1.388 1.03% 1745 40.087 1.368 39.682 1.396 1.01% 1752.6 40.075 1.373 39.664 1.399 1.03% 1752.6 40.000 1.400 39.384	2.00% 2.03% 1.49%
Sep, 26. 2018 750 41.942 0.893 42.436 0.875 -1.18% 824.2 41.556 0.899 42.138 0.886 -1.40% 835 41.500 0.900 42.101 0.887 -1.45% 836.6 41.500 0.902 42.099 0.889 -1.44% 848.8 41.500 0.915 42.093 0.901 -1.43% 1712.4 40.138 1.349 39.725 1.376 1.03% 1720 40.126 1.354 39.713 1.381 1.03% 1732.4 40.107 1.361 39.698 1.387 1.02% 1745 40.087 1.368 39.682 1.396 1.01% 1750 40.079 1.371 39.666 1.398 1.03% 1752.6 40.000 1.400 39.438 1.376 1.40% 1860 40.000 1.400 39.438 1.376 1.40% 1900 40.000 1.400 39.380	2.03% 1.49%
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Head 1745 40.087 1.368 39.682 1.396 1.01% 1750 40.079 1.371 39.666 1.398 1.03% 1752.6 40.075 1.373 39.664 1.399 1.03% 1752.6 40.000 1.400 39.438 1.376 1.40% 1850.2 40.000 1.400 39.438 1.376 1.40% 1860 40.000 1.400 39.438 1.377 1.46% 1880 40.000 1.400 39.384 1.381 1.55% 1900 40.000 1.400 39.380 1.383 1.55% 1900 40.000 1.400 39.372 1.386 1.57% 1909.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	-1.95%
Head 1750 40.079 1.371 39.666 1.398 1.03% 1752.6 40.075 1.373 39.664 1.399 1.03% 1752.6 40.075 1.373 39.664 1.399 1.03% 1850.2 40.000 1.400 39.438 1.376 1.40% 1860 40.000 1.400 39.438 1.377 1.46% 1860 40.000 1.400 39.384 1.381 1.54% 1900 40.000 1.400 39.380 1.383 1.55% 1900 40.000 1.400 39.380 1.383 1.55% 1900 40.000 1.400 39.369 1.386 1.57% 1909.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	-1.99%
Head 1752.6 40.075 1.373 39.664 1.399 1.03% Head 1850.2 40.000 1.400 39.438 1.376 1.40% Sep, 30. 2018 1880 40.000 1.400 39.384 1.377 1.46% 1900 40.000 1.400 39.384 1.381 1.54% 1900 40.000 1.400 39.380 1.383 1.55% 1907.6 40.000 1.400 39.380 1.383 1.55% 1909.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	-2.05%
Head 1850.2 40.000 1.400 39.438 1.376 1.40% Sep, 30. 2018 1860 40.000 1.400 39.416 1.377 1.46% 1880 40.000 1.400 39.384 1.381 1.54% 1900 40.000 1.400 39.380 1.383 1.55% 1907.6 40.000 1.400 39.372 1.386 1.57% 1909.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	-1.97%
Head 1860 40.000 1.400 39.416 1.377 1.46% 1880 40.000 1.400 39.384 1.381 1.54% 1900 40.000 1.400 39.384 1.381 1.55% 1907.6 40.000 1.400 39.372 1.386 1.57% 1907.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	-1.95%
Head Sep, 30. 2018 1880 40.000 1.400 39.384 1.381 1.54% 1900 40.000 1.400 39.380 1.383 1.55% 1907.6 40.000 1.400 39.372 1.386 1.57% 1909.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	1.69%
11023 Sep, 30. 2018 1900 40.000 1.400 39.380 1.383 1.55% 1907.6 40.000 1.400 39.372 1.386 1.57% 1909.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	1.61%
Sep, 30. 2018 1900 40.000 1.400 39.380 1.383 1.55% 1907.6 40.000 1.400 39.372 1.386 1.57% 1909.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	1.36%
1909.8 40.000 1.400 39.369 1.387 1.58% 2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	1.21%
2402 39.285 1.757 39.820 1.788 -1.36% 2412 39.268 1.766 39.802 1.796 -1.36%	1.00%
2412 39.268 1.766 39.802 1.796 -1.36%	0.94%
	-1.72%
	-1.68%
2437 39.223 1.788 39.768 1.820 -1.39%	-1.75%
Oct, 04. 2018 2441 39.216 1.792 39.765 1.822 -1.40%	-1.66%
2450 39.200 1.800 39.764 1.830 -1.44%	-1.66%
2462 39.185 1.813 39.749 1.844 -1.44%	-1.70%
2480 39.162 1.827 39.726 1.857 -1.44%	-1.67%
5190 35.997 4.645 35.366 4.686 1.75%	-0.89%
Oct, 01. 2018 5200 35.986 4.655 35.345 4.708 1.78%	-1.14%
5230 35.951 4.686 35.337 4.711 1.71%	-0.54%
5270 35.906 4.727 35.294 4.795 1.70%	-1.44%
Oct, 02. 2018 5300 35.871 4.758 35.232 4.832 1.78%	-1.56%
5310 35.860 4.768 35.198 4.835 1.85%	-1.41%
5530 35.609 4.993 35.174 5.059 1.22%	
Oct, 04. 2018 5600 35.529 5.065 35.085 5.133 1.25%	-1.32%
5610 35.517 5.075 35.073 5.142 1.25%	-1.32% -1.34%

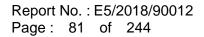
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Tissue Type	Measurement Date	Measured Frequency (MHz)	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev ɛr	% dev σ
		704	55.710	0.960	56.518	0.939	-1.45%	2.17%
		707.5	55.697	0.960	56.489	0.940	-1.42%	2.08%
		709	55.691	0.960	56.487	0.941	-1.43%	2.00%
		710	55.687	0.960	56.484	0.941	-1.43%	1.99%
	Con 05 0040	711	55.683	0.960	56.479	0.942	-1.43%	1.91%
	Sep, 25. 2018	750	55.531	0.963	56.314	0.944	-1.41%	1.98%
		824.2	55.242	0.969	54.690	0.955	1.00%	1.46%
		835	55.200	0.970	54.635	0.958	1.02%	1.20%
		836.6	55.195	0.972	54.632	0.961	1.02%	1.17%
		848.8	55.158	0.987	54.617	0.975	0.98%	1.22%
		1712.4	53.531	1.465	52.722	1.441	1.51%	1.61%
		1720	53.511	1.469	52.708	1.444	1.50%	1.70%
		1732.4	53.478	1.477	52.654	1.453	1.54%	1.63%
		1732.5	53.478	1.477	52.651	1.452	1.55%	1.71%
		1745	53.445	1.485	52.648	1.461	1.49%	1.63%
	Sep, 30. 2018	1750	53.432	1.488	52.636	1.464	1.49%	1.64%
		1752.6	53.425	1.490	52.629	1.465	1.49%	1.71%
		1850.2	53.300	1.520	53.842	1.516	-1.02%	0.24%
		1860	53.300	1.520	53.838	1.518	-1.01%	0.13%
Body		1880	53.300	1.520	53.819	1.524	-0.97%	-0.26%
Doay		1900	53.300	1.520	53.817	1.527	-0.97%	-0.46%
		1907.6	53.300	1.520	53.791	1.530	-0.92%	-0.66%
		1909.8	53.300	1.520	53.822	1.535	-0.98%	-0.99%
		2402	52.764	1.904	51.804	1.858	1.82%	2.43%
		2412	52.751	1.914	51.786	1.869	1.83%	2.36%
		2437	52.717	1.938	51.783	1.891	1.77%	2.41%
	Oct, 05. 2018	2441	52.712	1.941	51.779	1.895	1.77%	2.38%
		2450	52.700	1.950	51.772	1.903	1.76%	2.42%
		2462	52.685	1.967	51.726	1.919	1.82%	2.42%
		2480	52.662	1.993	51.724	1.944	1.78%	2.43%
		5190	49.028	5.288	50.121	5.375	-2.23%	-1.65%
		5200	49.014	5.299	50.068	5.388	-2.15%	-1.68%
		5230	48.974	5.334	50.031	5.426	-2.16%	-1.71%
	Oct, 03. 2018	5270	48.919	5.381	49.986	5.473	-2.18%	-1.71%
		5300	48.879	5.416	49.954	5.509	-2.20%	-1.72%
		5310	48.865	5.428	49.950	5.519	-2.22%	-1.68%
		5530	48.566	5.685	49.271	5.742	-1.45%	-1.00%
	Oct, 04. 2018	5600	48.471	5.766	49.203	5.825	-1.51%	-1.01%
	001, 04. 2010		-					
	Table 0	5610	48.458	5.778	49.170	5.837	-1.47%	-1.02%

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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Fraguenav				Ingre	edient			Total
Frequency (MHz)	Mode	DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	Total amount
750	Head	—	532.98 g	18.3 g	2.4 g	3.2 g	766 g	1.3L(Kg)
750	Body	—	631.68 g	11.72 g	1.2 g	_	600 g	1.0L(Kg)
950	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)
1750	Head	444.52 g	552.42 g	3.06 g	—	_	-	1.0L(Kg)
1750	Body	300.67 g	716.56 g	4.0 g	_		I	1.0L(Kg)
1000	Head	444.52 g	552.42 g	3.06 g	_		I	1.0L(Kg)
1900	Body	300.67 g	716.56 g	4.0 g	_		Ι	1.0L(Kg)
2450	Head	550 g	450 g	_	_			1.0L(Kg)
2450	Body	301.7 g	698.3 g	_	_	_	_	1.0L(Kg)

The composition of the tissue simulating liquid:

Simulating Liquids for 5 GHz, Manufactured by SPEAG:

Ingredients	Water	Esters, Emulsifiers, Inhibitors	Sodium and Salt
(% by weight)	60-80	20-40	0-1.5

Table 3. Recipes for tissue simulating liquid

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1.13 Test Standards and Limits

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

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

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

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

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

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

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

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

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

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

Table 4. RF exposure limits

Notes:

- Uncontrolled environments are defined as locations where there is potential exposure of 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

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1 (W)	SAR over g /kg)	Plot page
								Measured	Reported	
	Re Cheek	-	190	836.6	33.50	32.42	28.23%	0.06	0.08	-
	Re Tilt	-	190	836.6	33.50	32.42	28.23%	0.03	0.04	-
Head	Le Cheek	-	128	824.2	33.50	32.17	35.83%	0.06	0.08	-
(GSM)	Le Cheek	-	190	836.6	33.50	32.42	28.23%	0.07	0.09	113
	Le Cheek	-	251	848.8	33.50	32.34	30.62%	0.06	0.08	-
	Le Tilt	-	190	836.6	33.50	32.42	28.23%	0.03	0.04	-
	Front side	10	190	836.6	33.50	32.42	28.23%	0.20	0.26	-
Body-worn	Back side	10	128	824.2	33.50	32.17	35.83%	0.21	0.29	-
(GSM)	Back side	10	190	836.6	33.50	32.42	28.23%	0.26	0.33	114
	Back side	10	251	848.8	33.50	32.34	30.62%	0.23	0.30	-
	Front side	10	128	824.2	29.00	27.53	40.28%	0.23	0.32	-
	Back side	10	128	824.2	29.00	27.53	40.28%	0.29	0.41	115
Hotspot	Back side	10	190	836.6	29.00	27.40	44.54%	0.25	0.36	-
(GPRS)	Back side	10	251	848.8	29.00	27.28	48.59%	0.27	0.40	-
<1Dn4Up>	Bottom side	10	128	824.2	29.00	27.53	40.28%	0.13	0.18	-
	Right side	10	128	824.2	29.00	27.53	40.28%	0.06	0.08	-
	Left side	10	128	824.2	29.00	27.53	40.28%	0.19	0.27	-

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GSM 1900

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	1 (W/	SAR over g /kg)	Plot page
									Reported	
	Re Cheek	-	512	1850.2	30.50	29.36	30.02%	0.07	0.09	-
	Re Cheek	-	661	1880	30.50	29.48	26.47%	0.07	0.09	-
Head	Re Cheek	-	810	1909.8	30.50	29.50	25.89%	0.09	0.11	116
(GSM)	Re Tilt	-	810	1909.8	30.50	29.50	25.89%	0.04	0.05	-
	Le Cheek	-	810	1909.8	30.50	29.50	25.89%	0.04	0.05	-
	Le Tilt	-	810	1909.8	30.50	29.50	25.89%	0.03	0.04	-
	Front side	10	810	1909.8	30.50	29.50	25.89%	0.12	0.15	-
Body-worn	Back side	10	512	1850.2	30.50	29.36	30.02%	0.20	0.26	-
(GSM)	Back side	10	661	1880	30.50	29.48	26.47%	0.21	0.27	-
	Back side	10	810	1909.8	30.50	29.50	25.89%	0.22	0.28	117
	Front side	10	661	1880	26.00	24.75	33.35%	0.13	0.17	-
	Back side	10	512	1850.2	26.00	24.66	36.14%	0.20	0.27	-
Hotspot	Back side	10	661	1880	26.00	24.75	33.35%	0.21	0.28	118
(GPRS)	Back side	10	810	1909.8	26.00	24.64	36.77%	0.19	0.26	-
<1Dn4Up>	Bottom side	10	661	1880	26.00	24.75	33.35%	0.13	0.17	-
	Right side	10	661	1880	26.00	24.75	33.35%	0.02	0.03	-
	Left side	10	661	1880	26.00	24.75	33.35%	0.08	0.11	-

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WCDMA Band II

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	0		Plot page
								Measured	Reported	
	RE Cheek	-	9262	1850.2	24.2	22.82	37.40%	0.13	0.18	-
	RE Cheek	-	9400	1880	24.2	22.99	32.13%	0.16	0.21	119
R99	RE Cheek	-	9538	1907.6	24.2	22.98	32.43%	0.15	0.20	-
(Head)	RE Tilt	-	9400	1880	24.2	22.99	32.13%	0.07	0.09	-
	LE Cheek	-	9400	1880	24.2	22.99	32.13%	0.08	0.11	-
	LE Tilt	-	9400	1880	24.2	22.99	32.13%	0.06	0.08	-
Body-Worn	Front side	10	9400	1880	24.2	22.99	32.13%	0.22	0.29	-
Body-Wom	Back side	10	9400	1880	24.2	22.99	32.13%	0.38	0.50	-
	Front side	10	9400	1880	24.2	22.99	32.13%	0.22	0.29	-
	Back side	10	9262	1850.2	24.2	22.82	37.40%	0.35	0.48	-
	Back side	10	9400	1880	24.2	22.99	32.13%	0.38	0.50	120
Hotspot	Back side	10	9538	1907.6	24.2	22.98	32.43%	0.36	0.48	-
	Bottom side	10	9400	1880	24.2	22.99	32.13%	0.23	0.30	-
	Right side	10	9400	1880	24.2	22.99	32.13%	0.03	0.04	-
	Left side	10	9400	1880	24.2	22.99	32.13%	0.13	0.17	-

WCDMA Band IV

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged S (W/	•	Plot page
						· · ·		Measured	Reported	
	RE Cheek	-	1312	1712.4	24.2	22.89	35.21%	0.12	0.16	-
	RE Cheek	-	1412	1732.4	24.2	22.92	34.28%	0.14	0.19	121
R99	RE Cheek	-	1513	1752.6	24.2	22.85	36.46%	0.13	0.18	-
(Head)	RE Tilt	-	1412	1732.4	24.2	22.92	34.28%	0.06	0.08	-
	LE Cheek	-	1412	1732.4	24.2	22.92	34.28%	0.07	0.09	-
	LE Tilt	-	1412	1732.4	24.2	22.92	34.28%	0.06	0.08	-
Body-Worn	Front side	10	1412	1732.4	24.2	22.92	34.28%	0.23	0.31	-
Body-woin	Back side	10	1412	1732.4	24.2	22.92	34.28%	0.39	0.52	-
	Front side	10	1412	1732.4	24.2	22.92	34.28%	0.23	0.31	-
	Back side	10	1312	1712.4	24.2	22.89	35.21%	0.38	0.51	-
	Back side	10	1412	1732.4	24.2	22.92	34.28%	0.39	0.52	122
Hotspot	Back side	10	1513	1752.6	24.2	22.85	36.46%	0.37	0.50	-
	Bottom side	10	1412	1732.4	24.2	22.92	34.28%	0.24	0.32	-
	Right side	10	1412	1732.4	24.2	22.92	34.28%	0.03	0.04	-
	Left side	10	1412	1732.4	24.2	22.92	34.28%	0.14	0.19	-

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LTE FDD Band 2

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling		SAR over N/kg)	Plot
	(MHz)					(mm)		(MHz)	Max. Tolerance (dBm)	Power (dBm)	3	Measured	Reported	page
				0	RE Cheek	-	18700	1860	23.2	22.27	23.88%	0.11	0.14	-
				0	RE Cheek	-	18900	1880	23.2	22.29	23.31%	0.10	0.12	-
			1 RB		RE Cheek	-	19100	1900	23.2	22.64	13.76%	0.13	0.15	123
			IKD	50	RE Tilt	-	19100	1900	23.2	22.64	13.76%	0.06	0.07	-
				50	LE Cheek	-	19100	1900	23.2	22.64	13.76%	0.08	0.09	-
					LE Tilt	-	19100	1900	23.2	22.64	13.76%	0.06	0.07	-
Head	20MHz	QPSK			RE Cheek	-	19100	1900	22.2	21.52	16.95%	0.11	0.13	-
	Gron	50 RB	0	RE Tilt	-	19100	1900	22.2	21.52	16.95%	0.05	0.06	-	
		50 KD	0	LE Cheek	-	19100	1900	22.2	21.52	16.95%	0.07	0.08	-	
				LE Tilt	-	19100	1900	22.2	21.52	16.95%	0.05	0.06	-	
				RE Cheek	-	19100	1900	22.2	21.54	16.41%	0.10	0.12	-	
		100	RB	RE Tilt	-	19100	1900	22.2	21.54	16.41%	0.05	0.06	-	
			100	ΝD	LE Cheek	-	19100	1900	22.2	21.54	16.41%	0.06	0.07	-
					LE Tilt	-	19100	1900	22.2	21.54	16.41%	0.05	0.06	-
Body-worn	10MHz	QPSK	1RB	25	Front side	10	19100	1900	23.2	22.64	13.76%	0.18	0.20	-
Douy-woin	TOWITIZ		IIXD	25	Back side	10	19100	1900	23.2	22.64	13.76%	0.31	0.35	-
				0	Back side	10	18700	1860	23.2	22.27	23.88%	0.28	0.35	-
				0	Back side	10	18900	1880	23.2	22.29	23.31%	0.28	0.35	-
					Front side	10	19100	1900	23.2	22.64	13.76%	0.18	0.20	-
			1 RB		Back side	10	19100	1900	23.2	22.64	13.76%	0.31	0.35	124
				50	Bottom side	10	19100	1900	23.2	22.64	13.76%	0.19	0.22	-
					Right side	10	19100	1900	23.2	22.64	13.76%	0.02	0.02	-
					Left side	10	19100	1900	23.2	22.64	13.76%	0.11	0.13	-
					Front side	10	19100	1900	22.2	21.52	16.95%	0.16	0.19	-
Hotspot	10MHz	QPSK			Back side	10	19100	1900	22.2	21.52	16.95%	0.27	0.32	-
			50 RB	0	Bottom side	10	19100	1900	22.2	21.52	16.95%	0.16	0.19	-
					Right side	10	19100	1900	22.2	21.52	16.95%	0.02	0.02	-
					Left side	10	19100	1900	22.2	21.52	16.95%	0.10	0.12	-
					Front side	10	19100	1900	22.2	21.54	16.41%	0.14	0.16	-
				ĺ	Back side	10	19100	1900	22.2	21.54	16.41%	0.24	0.28	-
			100	RB	Bottom side	10	19100	1900	22.2	21.54	16.41%	0.14	0.16	-
					Right side	10	19100	1900	22.2	21.54	16.41%	0.02	0.02	-
			l	Left side	10	19100	1900	22.2	21.54	16.41%	0.08	0.09	-	

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LTE FDD Band 4

Mode	Bandwidth	Modulatior	RB Size	RB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling		SAR over V/kg)	Plot
Wode	(MHz)	vioudiation	110 0120	ND Start	1 USHOT	(mm)	Ö	(MHz)	Max. Tolerance (dBm)	Power (dBm)	ocaning	Measured	Reported	page
					RE Cheek	-	20050	1720	23.2	21.99	32.13%	0.09	0.12	-
					RE Cheek	-	20175	1732.5	23.2	22.00	31.83%	0.11	0.15	-
			1 RB	0	RE Cheek	-	20300	1745	23.2	22.02	31.22%	0.12	0.16	125
			IND	0	RE Tilt	-	20300	1745	23.2	22.02	31.22%	0.05	0.07	-
					LE Cheek	-	20300	1745	23.2	22.02	31.22%	0.06	0.08	-
					LE Tilt	-	20300	1745	23.2	22.02	31.22%	0.05	0.07	-
Head	20MHz	QPSK			RE Cheek	-	20300	1745	22.2	20.93	33.97%	0.10	0.13	-
Tieau	2011112	Gron	50 RB	0	RE Tilt	-	20300	1745	22.2	20.93	33.97%	0.04	0.05	-
		30 10	0	LE Cheek	-	20300	1745	22.2	20.93	33.97%	0.05	0.07	-	
				LE Tilt	-	20300	1745	22.2	20.93	33.97%	0.04	0.05	-	
				RE Cheek	-	20050	1720	22.2	20.86	36.14%	0.09	0.12	-	
			100	RB	RE Tilt	-	20050	1720	22.2	20.86	36.14%	0.04	0.05	-
			100	ΝD	LE Cheek	-	20050	1720	22.2	20.86	36.14%	0.04	0.05	-
					LE Tilt	-	20050	1720	22.2	20.86	36.14%	0.04	0.05	-
Body-worn	10MHz	QPSK	1RB	25	Front side	10	20300	1745	23.2	22.02	31.22%	0.17	0.22	-
Douy-worn	TOWITIZ	Gron	IND	25	Back side	10	20300	1745	23.2	22.02	31.22%	0.29	0.38	-
					Front side	10	20300	1745	23.2	22.02	31.22%	0.17	0.22	-
					Back side	10	20050	1720	23.2	21.99	32.13%	0.27	0.36	-
					Back side	10	20175	1732.5	23.2	22.00	31.83%	0.26	0.34	-
			1 RB	0	Back side	10	20300	1745	23.2	22.02	31.22%	0.29	0.38	126
					Bottom side	10	20300	1745	23.2	22.02	31.22%	0.18	0.24	-
					Right side	10	20300	1745	23.2	22.02	31.22%	0.02	0.03	-
					Left side	10	20300	1745	23.2	22.02	31.22%	0.11	0.14	-
					Front side	10	20300	1745	22.2	20.93	33.97%	0.15	0.20	-
Hotspot	20MHz	QPSK			Back side	10	20300	1745	22.2	20.93	33.97%	0.25	0.33	-
			50 RB	0	Bottom side	10	20300	1745	22.2	20.93	33.97%	0.15	0.20	-
					Right side	10	20300	1745	22.2	20.93	33.97%	0.02	0.03	-
					Left side	10	20300	1745	22.2	20.93	33.97%	0.09	0.12	-
					Front side	10	20050	1720	22.2	20.86	36.14%	0.13	0.18	-
					Back side	10	20050	1720	22.2	20.86	36.14%	0.22	0.30	-
			100	RB	Bottom side	10	20050	1720	22.2	20.86	36.14%	0.13	0.18	-
					Right side	10	20050	1720	22.2	20.86	36.14%	0.02	0.03	-
					Left side	10	20050	1720	22.2	20.86	36.14%	0.08	0.11	-

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LTE FDD Band 12

Mode	Bandwidth	Modulatior	PB Sizo	PR start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling		SAR over V/kg)	Plot
Wode	(MHz)	vioudiation	ND 0120	ND Start	rosition	(mm)	Ö	(MHz)	Max. Tolerance (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					RE Cheek	-	23130	711	24	23.05	24.45%	0.04	0.05	-
				0	RE Tilt	-	23130	711	24	23.05	24.45%	0.02	0.02	-
			1 RB	0	LE Cheek	-	23130	711	24	23.05	24.45%	0.08	0.10	127
			IND		LE Tilt	-	23130	711	24	23.05	24.45%	0.03	0.04	-
				49	LE Cheek	-	23060	704	24	22.82	31.22%	0.06	0.08	-
				49	LE Cheek	-	23095	707.5	24	22.71	34.59%	0.07	0.09	-
Head	10MHz	QPSK			RE Cheek	-	23130	711	23	21.93	27.94%	0.04	0.05	-
пеац		QPSK	25 RB	0	RE Tilt	-	23130	711	23	21.93	27.94%	0.02	0.03	-
		20 KD	0	LE Cheek	-	23130	711	23	21.93	27.94%	0.07	0.09	-	
				LE Tilt	-	23130	711	23	21.93	27.94%	0.02	0.03	-	
				RE Cheek	-	23060	704	23	21.89	29.12%	0.04	0.05	-	
			50	חח	RE Tilt	-	23060	704	23	21.89	29.12%	0.02	0.03	-
			50	KD .	LE Cheek	-	23060	704	23	21.89	29.12%	0.06	0.08	-
					LE Tilt	-	23060	704	23	21.89	29.12%	0.02	0.03	-
Bady warn	10MHz	QPSK	1RB	25	Front side	10	23130	711	24	23.05	24.45%	0.16	0.20	-
Body-worn		QPSK	IKD	25	Back side	10	23130	711	24	23.05	24.45%	0.18	0.22	-
					Front side	10	23130	711	24	23.05	24.45%	0.16	0.20	-
					Back side	10	23130	711	24	23.05	24.45%	0.18	0.22	128
				0	Bottom side	10	23130	711	24	23.05	24.45%	0.08	0.10	-
			1 RB		Right side	10	23130	711	24	23.05	24.45%	0.03	0.04	-
					Left side	10	23130	711	24	23.05	24.45%	0.10	0.12	-
				49	Back side	10	23060	704	24	22.82	31.22%	0.15	0.20	-
				49	Back side	10	23095	707.5	24	22.71	34.59%	0.16	0.22	-
					Front side	10	23130	711	23	21.93	27.94%	0.14	0.18	-
Hotspot	10MHz	QPSK			Back side	10	23130	711	23	21.93	27.94%	0.15	0.19	-
			25 RB	0	Bottom side	10	23130	711	23	21.93	27.94%	0.08	0.10	-
					Right side	10	23130	711	23	21.93	27.94%	0.03	0.04	-
					Left side	10	23130	711	23	21.93	27.94%	0.09	0.12	-
					Front side	10	23060	704	23	21.89	29.12%	0.15	0.19	-
					Back side	10	23060	704	23	21.89	29.12%	0.16	0.21	-
			50	RB	Bottom side	10	23060	704	23	21.89	29.12%	0.08	0.10	-
				ĺ	Right side	10	23060	704	23	21.89	29.12%	0.04	0.05	-
				Left side	10	23060	704	23	21.89	29.12%	0.09	0.12	-	

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LTE FDD Band 17

	Bandwidth	Modulatior	PB Sizo	PB start	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling		SAR over V/kg)	Plot
Wode	(MHz)	violutation	ND SIZE	ND Start	T USILION	(mm)	GIT	(MHz)	Max. Tolerance (dBm)	Power (dBm)	Scaling	Measured	Reported	page
				0	LE Cheek	-	23800	711	24	22.81	31.52%	0.07	0.09	-
					RE Cheek	-	23780	709	24	22.89	29.12%	0.05	0.06	-
			1 RB		RE Tilt	-	23780	709	24	22.89	29.12%	0.03	0.04	-
				49	LE Cheek	-	23780	709	24	22.89	29.12%	0.08	0.10	129
					LE Cheek	-	23790	710	24	22.74	33.66%	0.06	0.08	-
					LE Tilt	-	23780	709	24	22.89	29.12%	0.03	0.04	-
					RE Cheek	-	23780	709	23	21.77	32.74%	0.04	0.05	-
				0	RE Tilt	-	23780	709	23	21.77	32.74%	0.02	0.03	-
Head	10MHz	QPSK		-	LE Cheek	-	23780	709	23	21.77	32.74%	0.07	0.09	-
	-		25 RB		LE Tilt	-	23780	709	23	21.77	32.74%	0.02	0.03	-
			-		RE Cheek	-	23800	711	23	21.77	32.74%	0.04	0.05	-
				12	RE Tilt	-	23800	711	23	21.77	32.74%	0.02	0.03	-
			LE Cheek	-	23800	711	23	21.77	32.74%	0.06	0.08	-		
				LE Tilt	-	23800	711	23	21.77	32.74%	0.02	0.03	-	
				RE Cheek	-	23800	711	23	21.78	32.43%	0.04	0.05	-	
			50	RB	RE Tilt	-	23800	711	23	21.78	32.43%	0.02	0.03	-
					LE Cheek	-	23800	711	23	21.78	32.43%	0.06	0.08	-
					LE Tilt	-	23800	711	23	21.78	32.43%	0.02	0.03	-
Body-worn	10MHz	QPSK	1RB	25	Front side	10	23780	709	24	22.89	29.12%	0.18	0.23	-
					Back side	10	23780	709	24	22.89	29.12%	0.20	0.26	-
				0	Back side	10	23800	711 709	24	22.81	31.52%	0.19	0.25	-
					Front side	10	23780		24	22.89	29.12%	0.18	0.23	
			1 RB		Back side	10	23780	709 710	24	22.89	29.12%	0.20	0.26	130
			IKD	49	Back side	10 10	23790 23780	710	24 24	22.74 22.89	33.66% 29.12%	0.18	0.24	-
					Bottom side	10	23780	709	24	22.89	29.12%	0.11	0.14	-
					Right side Left side	10	23780	709	24	22.89	29.12%	0.05	0.06	-
					Front side	10	23780	709	24	22.69	32.74%	0.13	0.17	-
					Back side	10	23780	709	23	21.77	32.74%	0.16	0.21	-
				0	Bottom side	10	23780	709	23	21.77	32.74%	0.17	0.23	-
				0	Right side	10	23780	709	23	21.77	32.74%	0.09	0.12	-
Hotspot	10MHz	QPSK			Left side	10	23780	709	23	21.77	32.74%	0.05	0.07	-
			25 RB		Front side	10	23780	709	23	21.77	32.74%	0.12	0.10	-
					Back side	10	23800	711	23	21.77	32.74%	0.10	0.21	-
				12	Bottom side	10	23800	711	23	21.77	32.74%	0.09	0.23	-
				12	Right side	10	23800	711	23	21.77	32.74%	0.09	0.12	-
					Left side	10	23800	711	23	21.77	32.74%	0.03	0.07	-
					Front side	10	23800	711	23	21.77	32.43%	0.17	0.13	-
					Back side	10	23800	711	23	21.78	32.43%	0.17	0.25	-
			50	RB	Bottom side	10	23800	711	23	21.78	32.43%	0.10	0.13	-
		50 R	-	Right side	10	23800	711	23	21.78	32.43%	0.05	0.07	-	
					Left side	10	23800	711	23	21.78	32.43%	0.00	0.16	-

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WLAN Main Antenna

WLAN 802.11b

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged S (W/	-	Plot page
					Tolerance (ubiii)	(ubiii)		Measured	Reported	
	RE Cheek	-	11	2462	14.3	14.27	0.69%	0.28	0.28	-
	RE Tilt	-	11	2462	14.3	14.27	0.69%	0.18	0.18	-
Head	LE Cheek	-	1	2412	14.3	14.16	3.28%	0.41	0.42	-
neau	LE Cheek	-	6	2437	14.3	14.13	3.99%	0.43	0.45	-
	LE Cheek	-	11	2462	14.3	14.27	0.69%	0.48	0.48	131
	LE Tilt	-	11	2462	14.3	14.27	0.69%	0.29	0.29	-
Body-	Front side	10	11	2462	14.3	14.27	0.69%	0.09	0.09	-
worn	Back side	10	11	2462	14.3	14.27	0.69%	0.07	0.07	-
	Front side	10	1	2412	14.3	14.16	3.28%	0.08	0.08	-
	Front side	10	6	2437	14.3	14.13	3.99%	0.08	0.08	-
Hotspot	Front side	10	11	2462	14.3	14.27	0.69%	0.09	0.09	132
riotspot	Back side	10	11	2462	14.3	14.27	0.69%	0.07	0.07	-
	Top side	10	11	2462	14.3	14.27	0.69%	0.03	0.03	-
	Right side	10	11	2462	14.3	14.27	0.69%	0.05	0.05	-

Bluetooth

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power	Scaling	Averaged S (W/	-	Plot page
				· · ·	Tolerance (dBill)	(dBm)		Measured	Reported	
	RE Cheek	-	39	2441	15	13.48	41.91%	0.14	0.20	-
	RE Tilt	-	39	2441	15	13.48	41.91%	0.08	0.11	-
Head	LE Cheek	-	0	2402	15	13.25	49.62%	0.23	0.34	-
Tieau	LE Cheek	-	39	2441	15	13.48	41.91%	0.26	0.37	133
	LE Cheek	-	78	2480	15	13.18	52.05%	0.22	0.33	-
	LE Tilt	-	39	2441	15	13.48	41.91%	0.14	0.20	-
	Front side	10	0	2402	15	13.25	49.62%	0.03	0.04	-
Body-	Front side	10	39	2441	15	13.48	41.91%	0.05	0.07	134
worn	Front side	10	78	2480	15	13.18	52.05%	0.03	0.05	-
	Back side	10	39	2441	15	13.48	41.91%	0.03	0.04	-

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WLAN 802.11n(40M) 5.2G

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged S (W/		Plot page
					Tolerance (ubiii)	(ubili)		Measured	Reported	
	RE Cheek	-	46	5230	14.3	14.27	0.72%	0.09	0.09	-
	RE Tilt	-	46	5230	14.3	14.27	0.72%	0.07	0.07	-
Head	LE Cheek	-	38	5190	12.3	12.28	0.49%	0.33	0.33	-
	LE Cheek	-	46	5230	14.3	14.27	0.72%	0.36	0.36	135
	LE Tilt	-	46	5230	14.3	14.27	0.72%	0.18	0.18	-
Dealu	Front side	10	46	5230	14.3	14.27	0.72%	0.04	0.04	-
Body- worn	Back side	10	38	5190	12.3	12.28	0.49%	0.11	0.11	-
Wom	Back side	10	46	5230	14.3	14.27	0.72%	0.12	0.12	136
Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged S/ (W/	•	Plot page
					Tolefance (dbiff)	(ubiii)		Measured	Reported	
	Front side	0	46	5230	14.3	14.27	0.72%	0.11	0.11	-
Product specific	Back side	0	46	5230	14.3	14.27	0.72%	0.22	0.22	137
10g-SAR	Top side	0	46	5230	14.3	14.27	0.72%	0.07	0.07	-
Ĵ	Right side	0	46	5230	14.3	14.27	0.72%	0.06	0.06	-

WLAN 802.11n(40M) 5.3G

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged S (W/		Plot page
						(dBIII)		Measured	Reported	
	RE Cheek	-	54	5270	14.3	13.93	8.93%	0.07	0.08	-
	RE Tilt	-	54	5270	14.3	13.93	8.93%	0.06	0.07	-
Head	LE Cheek	-	54	5270	14.3	13.93	8.93%	0.35	0.38	138
	LE Cheek	-	62	5310	12.3	12.24	1.42%	0.32	0.32	-
	LE Tilt	-	54	5270	14.3	13.93	8.93%	0.19	0.21	-
Dealu	Front side	10	54	5270	14.3	13.93	8.93%	0.04	0.04	-
Body- worn	Back side	10	54	5270	14.3	13.93	8.93%	0.12	0.13	139
Wonn	Back side	10	62	5310	12.3	12.24	1.42%	0.09	0.09	-
Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged 1((W/)g	Plot page
					Tolerance (ubiii)	(ubili)		Measured	Reported	
	Front side	0	54	5270	14.3	13.93	8.93%	0.14	0.15	-
Product specific	Back side	0	54	5270	14.3	13.93	8.93%	0.29	0.32	140
10g-SAR	Top side	0	54	5270	14.3	13.93	8.93%	0.08	0.09	-
- 3 - 1	Right side	0	54	5270	14.3	13.93	8.93%	0.07	0.08	-

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WLAN 802.11ac(80M) 5.6G

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged S (W/	-	Plot page
					Tolerance (ubiii)	(ubiii)		Measured	Reported	
	RE Cheek	-	122	5610	14.3	14.17	3.04%	0.03	0.03	-
	RE Tilt	-	122	5610	14.3	14.17	3.04%	0.02	0.02	-
Head	LE Cheek	-	106	5530	12.3	12.14	3.75%	0.14	0.15	-
	LE Cheek	-	122	5610	14.3	14.17	3.04%	0.16	0.16	141
	LE Tilt	-	122	5610	14.3	14.17	3.04%	0.07	0.07	-
Dealer	Front side	10	122	5610	14.3	14.17	3.04%	0.09	0.09	-
Body- worn	Back side	10	106	5530	12.3	12.14	3.75%	0.18	0.19	-
Wonn	Back side	10	122	5610	14.3	14.17	3.04%	0.21	0.22	142
Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged 10 (W/)g	Plot page
					Tolerance (ubiii)	(ubiii)		Measured	Reported	
	Front side	0	122	5610	14.3	14.17	3.04%	0.18	0.19	-
Product specific	Back side	0	122	5610	14.3	14.17	3.04%	0.33	0.34	143
10g-SAR	Top side	0	122	5610	14.3	14.17	3.04%	0.09	0.09	-
J -	Right side	0	122	5610	14.3	14.17	3.04%	0.08	0.08	-

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WLAN Aux Antenna

WLAN 802.11b

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged S (W/	-	Plot page
					Tolerance (ubiii)	(ubiii)		Measured	Reported	
	RE Cheek	-	1	2412	14.3	14.11	4.47%	0.08	0.08	-
	RE Cheek	-	6	2437	14.3	14.04	6.17%	0.07	0.07	-
Head	RE Cheek	-	11	2462	14.3	14.17	3.04%	0.09	0.09	144
Tieau	RE Tilt	-	11	2462	14.3	14.17	3.04%	0.05	0.05	-
	LE Cheek	-	11	2462	14.3	14.17	3.04%	0.03	0.03	-
	LE Tilt	-	11	2462	14.3	14.17	3.04%	0.02	0.02	-
Body-	Front side	10	11	2462	14.3	14.17	3.04%	0.04	0.04	-
worn	Back side	10	11	2462	14.3	14.17	3.04%	0.33	0.34	-
	Front side	10	11	2462	14.3	14.17	3.04%	0.04	0.04	-
	Back side	10	1	2412	14.3	14.11	4.47%	0.28	0.29	-
Hotspot	Back side	10	6	2437	14.3	14.04	6.17%	0.27	0.29	-
noispoi	Back side	10	11	2462	14.3	14.17	3.04%	0.33	0.34	145
	Top side	10	11	2462	14.3	14.17	3.04%	0.01	0.01	-
	Left side	10	11	2462	14.3	14.17	3.04%	0.09	0.09	-

WLAN 802.11n(40M) 5.2G

Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged S (W/	•	Plot page
					Tolerance (ubiii)	(ubiii)		Measured	Reported	
	RE Cheek	-	38	5190	12.3	12.12	4.26%	0.18	0.19	-
	RE Cheek	-	46	5230	14.3	14.23	1.66%	0.20	0.20	46
Head	RE Tilt	-	46	5230	14.3	14.23	1.66%	0.04	0.04	-
	LE Cheek	-	46	5230	14.3	14.23	1.66%	0.06	0.06	-
	LE Tilt	-	46	5230	14.3	14.23	1.66%	0.02	0.02	-
Dealu	Front side	10	46	5230	14.3	14.23	1.66%	0.04	0.04	-
Body- worn	Back side	10	38	5190	12.3	12.12	4.26%	0.08	0.08	-
Wolff	Back side	10	46	5230	14.3	14.23	1.66%	0.09	0.09	147
Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged 1((W/)g	Plot page
				. ,	Tolerance (dBin)	(UDIII)		Measured	Reported	
	Front side	0	46	5230	14.3	14.23	1.66%	0.06	0.06	-
Product specific	Back side	0	46	5230	14.3	14.23	1.66%	0.21	0.21	148
10g-SAR	Top side	0	46	5230	14.3	14.23	1.66%	0.03	0.03	-
- 3	Left side	0	46	5230	14.3	14.23	1.66%	0.10	0.10	-

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WLAN 802.11n(40M) 5.3G

Mode Position		sition Distance (mm)		CH Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
					Tolerance (dBm)	(ubiii)		Measured	Reported	
	RE Cheek	-	54	5270	14.3	13.88	10.19%	0.21	0.23	149
	RE Cheek	-	62	5310	12.3	12.19	2.60%	0.18	0.18	-
Head	RE Tilt	-	54	5270	14.3	13.88	10.19%	0.04	0.04	-
	LE Cheek	-	54	5270	14.3	13.88	10.19%	0.07	0.08	-
	LE Tilt	-	54	5270	14.3	13.88	10.19%	0.03	0.03	-
Dealu	Front side	10	54	5270	14.3	13.88	10.19%	0.04	0.04	-
Body- worn	Back side	10	54	5270	14.3	13.88	10.19%	0.09	0.10	150
Wom	Back side	10	62	5310	12.3	12.19	2.60%	0.08	0.08	-
Mode	Position	Position Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged 10 (W/)g	Plot page
					Tolerance (ubiii)	(ubiii)		Measured	Reported	
	Front side	0	54	5270	14.3	13.88	10.19%	0.07	0.08	-
Product	Back side	0	54	5270	14.3	13.88	10.19%	0.25	0.28	151
specific 10g-SAR	Top side	0	54	5270	14.3	13.88	10.19%	0.03	0.03	-
- 3	Left side	0	54	5270	14.3	13.88	10.19%	0.10	0.11	-

WLAN 802.11ac(80M) 5.6G

Mode	Position	Position Distance (mm)		Freq. (MHz)	Max. Rated Avg. Power + Max. Tolerance (dBm)	Measured Avg. Power (dBm)	Scaling	Averaged SAR over 1g (W/kg)		Plot page
				. ,		(dBIII)		Measured	Reported	
	RE Cheek	-	106	5530	12.3	11.95	8.39%	0.31	0.34	-
	RE Cheek	-	122	5610	14.3	13.99	7.40%	0.34	0.37	152
Head	RE Tilt	-	122	5610	14.3	13.99	7.40%	0.09	0.10	-
	LE Cheek	-	122	5610	14.3	13.99	7.40%	0.11	0.12	-
	LE Tilt	-	122	5610	14.3	13.99	7.40%	0.04	0.04	-
Dealer	Front side	10	122	5610	14.3	13.99	7.40%	0.08	0.09	-
Body- worn	Back side	10	106	5530	12.3	11.95	8.39%	0.14	0.15	-
Wolff	Back side	10	122	5610	14.3	13.99	7.40%	0.16	0.17	153
Mode	Position	Position Distance	СН	Freq. Max. Rated Avg. Measured (MHz) Power + Max. Avg. Power Scaling		Averaged 1((W/)g	Plot page		
				. ,	Tolerance (dBm)	(dBm)		Measured	Reported	
	Front side	0	122	5610	14.3	13.99	7.40%	0.09	0.10	-
Product specific	Back side	0	122	5610	14.3	13.99	7.40%	0.36	0.39	154
10g-SAR	Top side	0	122	5610	14.3	13.99	7.40%	0.04	0.04	-
- 3	Left side	0	122	5610	14.3	13.99	7.40%	0.12	0.13	-

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Note: Scaling = $\frac{\text{reported SAR}}{\text{measured SAR}} = \frac{P2(mW)}{P1(mW)} = 10^{\left(\frac{P_2-P_1}{10}\right)(dBm)}$ Reported SAR = measured SAR * (scaling)

Where P2 is maximum specified power, P1 is measured conducted power

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3. Simultaneous Transmission Analysis Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Head	Body-Worn	Hotspot	Product specific 10-g SAR
GSM + 2.4GHz Wi-Fi MIMO	Yes	Yes	No	No
GPRS + 2.4GHz Wi-Fi MIMO	No	No	Yes	No
WCDMA + 2.4GHz Wi-Fi MIMO	Yes	Yes	Yes	No
LTE + 2.4GHz Wi-Fi MIMO	Yes	Yes	Yes	No
GSM + 2.4GHz Wi-Fi Main + 5GHz WiFi Aux	Yes	Yes	No	No
GPRS + 2.4GHz Wi-Fi Main + 5GHz WiFi Aux	No	No	No	No
WCDMA + 2.4GHz Wi-Fi Main + 5GHz WiFi Aux	Yes	Yes	No	No
LTE + 2.4GHz Wi-Fi Main + 5GHz WiFi Aux	Yes	Yes	No	No
GSM + 5GHz Wi-Fi MIMO	Yes	Yes	No	No
GPRS + 5GHz Wi-Fi MIMO	No	Yes	No	No
WCDMA + 5GHz Wi-Fi MIMO	Yes	Yes	No	No
LTE + 5GHz Wi-Fi MIMO	Yes	Yes	No	No
GSM + BT + 5GHz WiFi Aux	Yes	Yes	No	No
GPRS + BT+ 5GHz WiFi Aux	No	Yes	No	No
WCDMA + BT+ 5GHz WiFi Aux	Yes	Yes	No	No
LTE + BT + 5GHz WiFi Aux	Yes	Yes	No	No
GSM + BT + 5GHz WiFi MIMO	Yes	Yes	No	No
GPRS + BT + 5GHz WiFi MIMO	No	Yes	No	No
WCDMA + BT + 5GHz Wi-Fi MIMO	Yes	Yes	No	No
LTE + BT + 5GHz Wi-Fi MIMO	Yes	Yes	No	No

Note:

1. 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. 2. 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.

3: Based on KDB 648474 D04v01r03 note 6, simultaneous transmission SAR for 10-g extremity SAR requires consideration only when standalone 10-g SAR is required.

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3.1 Estimated SAR calculation

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

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

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

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.

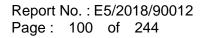
The ratio is determined by (SAR1 + SAR2)^1.5/Ri, rounded to two decimal digits, and must be \leq 0.04 for all antenna pairs in the configuration to qualify for 1-g SAR test exclusion.

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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rep	reported SAR WWAN and WLAN 2.4GHz MIMO, ΣSAR evaluation									
Frequency			rep	reported SAR / W/kg						
band	Position		WWAN	Main	Aux	<1.6W/kg				
		Right cheek	0.08	0.28	0.09	0.45				
GSM 850	Heed	Right tilt	0.04	0.18	0.05	0.27				
G21VI 020	Head	Left cheek	0.09	0.48	0.03	0.60				
		Left tilt	0.04	0.29	0.02	0.35				
		Front side	0.32	0.09	0.04	0.45				
		Back side	0.41	0.07	0.34	0.82				
GPRS 850	Hotspot	Top side	-	0.03	0.01	-				
(1Dn4UP)	Ποιδροι	Bottom side	0.18	-	-	-				
		Right side	0.08	0.05	-	-				
		Left side	0.27	-	0.09	-				
		Right cheek	0.11	0.28	0.09	0.48				
GSM 1900	Head	Right tilt	0.05	0.18	0.05	0.28				
G2W 1900	Ticad	Left cheek	0.05	0.48	0.03	0.56				
		Left tilt	0.04	0.29	0.02	0.35				
	Hotspot	Front side	0.17	0.09	0.04	0.30				
		Back side	0.28	0.07	0.34	0.69				
GPRS 1900		Top side	-	0.03	0.01	-				
(1Dn4UP)		Bottom side	0.17	-	-	-				
		Right side	0.03	0.05	-	-				
		Left side	0.11	-	0.09	-				
		Right cheek	0.21	0.28	0.09	0.58				
	Head	Right tilt	0.09	0.18	0.05	0.32				
	neau	Left cheek	0.11	0.48	0.03	0.62				
		Left tilt	0.08	0.29	0.02	0.39				
WCDMA		Front side	0.29	0.09	0.04	0.42				
Band II		Back side	0.50	0.07	0.34	0.91				
	Hotspot	Top side	-	0.03	0.01	-				
	Πυιδρυί	Bottom side	0.30	-	-	-				
		Right side	0.04	0.05	-	-				
		Left side	0.17	-	0.09	-				

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rep	reported SAR WWAN and WLAN 2.4GHz MIMO, ΣSAR evaluation									
Frequency			re	reported SAR / W/kg						
band	P	Position		Main	Aux	<1.6W/kg				
		Right cheek	0.19	0.28	0.09	0.56				
	11	Right tilt	0.08	0.18	0.05	0.31				
	Head	Left cheek	0.09	0.48	0.03	0.60				
		Left tilt	0.08	0.29	0.02	0.39				
WCDMA		Front side	0.31	0.09	0.04	0.44				
Band IV		Back side	0.52	0.07	0.34	0.93				
	Listanat	Top side	-	0.03	0.01	-				
	Hotspot	Bottom side	0.32	-	-	-				
		Right side	0.04	0.05	-	-				
		Left side	0.19	-	0.09	-				
		Right cheek	0.15	0.28	0.09	0.52				
	Head	Right tilt	0.07	0.18	0.05	0.30				
	Head	Left cheek	0.09	0.48	0.03	0.60				
		Left tilt	0.07	0.29	0.02	0.38				
LTE FDD	Hotspot	Front side	0.20	0.09	0.04	0.33				
Band 2		Back side	0.35	0.07	0.34	0.76				
		Top side	-	0.03	0.01	-				
		Bottom side	0.22	-	-	-				
		Right side	0.02	0.05	-	-				
		Left side	0.13	-	0.09	-				
		Right cheek	0.16	0.28	0.09	0.53				
	Head	Right tilt	0.07	0.18	0.05	0.30				
	пеац	Left cheek	0.08	0.48	0.03	0.59				
		Left tilt	0.07	0.29	0.02	0.38				
LTE FDD		Front side	0.22	0.09	0.04	0.35				
Band 4		Back side	0.38	0.07	0.34	0.79				
	Hotspot	Top side	-	0.03	0.01	-				
	HUISPUL	Bottom side	0.24	-	-	-				
		Right side	0.03	0.05	-	-				
		Left side	0.14	-	0.09	-				

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reported SAR WWAN and WLAN 2.4GHz MIMO, ΣSAR evaluation									
Frequency	D	osition	re	ported SAR / V	V/kg	ΣSAR			
band	F	USILION	WWAN	Main	Aux	<1.6W/kg			
		Right cheek	0.05	0.28	0.09	0.42			
	Head	Right tilt	0.03	0.18	0.05	0.26			
	Tieau	Left cheek	0.10	0.48	0.03	0.61			
		Left tilt	0.04	0.29	0.02	0.35			
LTE FDD		Front side	0.20	0.09	0.04	0.33			
Band 12		Back side	0.22	0.07	0.34	0.63			
	Hotspot	Top side	-	0.03	0.01	-			
		Bottom side	0.10	-	-	-			
		Right side	0.05	0.05	-	-			
		Left side	0.12	-	0.09	-			
	Head	Right cheek	0.06	0.28	0.09	0.43			
		Right tilt	0.04	0.18	0.05	0.27			
	Tieau	Left cheek	0.10	0.48	0.03	0.61			
		Left tilt	0.04	0.29	0.02	0.35			
LTE FDD		Front side	0.23	0.09	0.04	0.36			
Band 17		Back side	0.26	0.07	0.34	0.67			
	Hotspot	Top side	-	0.03	0.01	-			
	riotspot	Bottom side	0.14	-	-	-			
		Right side	0.07	0.05	-	-			
		Left side	0.17	-	0.09	-			

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reported SAR WWAN and WLAN 2.4GHz MIMO, Σ SAR evaluation									
Frequency	Р	opition	repo	reported SAR / W/kg					
band	P	osition	WWAN	Main	Aux	<1.6W/kg			
GSM 850	body-	Front side	0.26	0.09	0.04	0.39			
63101 830	worn	Back side	0.33	0.07	0.34	0.74			
GSM 1900	body-	Front side	0.15	0.09	0.04	0.28			
GSIVI 1900	worn	Back side	0.28	0.07	0.34	0.69			
WCDMA Band II	body-	Front side	0.29	0.09	0.04	0.42			
	worn	Back side	0.50	0.07	0.34	0.91			
WCDMA Band IV	body- worn	Front side	0.31	0.09	0.04	0.44			
		Back side	0.52	0.07	0.34	0.93			
LTE FDD Band 2	body-	Front side	0.20	0.09	0.04	0.33			
LTE FDD Banu 2	worn	Back side	0.35	0.07	0.34	0.76			
LTE FDD Band 4	body-	Front side	0.22	0.09	0.04	0.35			
LTE FDD Banu 4	worn	Back side	0.38	0.07	0.34	0.79			
LTE FDD Band 12	body-	Front side	0.20	0.09	0.04	0.33			
	worn	Back side	0.22	0.07	0.34	0.63			
LTE FDD Band 17	body-	Front side	0.23	0.09	0.04	0.36			
	worn	Back side	0.26	0.07	0.34	0.67			

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reported SAR	WWAN	and WLAN 2.4	GHz Main a	ind 5GHz Au	ıx, ΣSAR ev	aluation
Frequency			repo	ΣSAR		
band	Position		WWAN	Main	Aux	<1.6W/kg
		Right cheek	0.08	0.28	0.37	0.73
	Llaged	Right tilt	0.04	0.18	0.10	0.32
C C M 950	Head	Left cheek	0.09	0.48	0.12	0.69
GSM 850		Left tilt	0.04	0.29	0.04	0.37
	body-	Front side	0.26	0.09	0.09	0.44
	worn	Back side	0.33	0.07	0.17	0.57
		Right cheek	0.11	0.28	0.37	0.76
	Head	Right tilt	0.05	0.18	0.10	0.33
GSM 1900	пеаа	Left cheek	0.05	0.48	0.12	0.65
G2W 1900		Left tilt	0.04	0.29	0.04	0.37
	body-	Front side	0.15	0.09	0.09	0.33
	worn	Back side	0.28	0.07	0.17	0.52
		Right cheek	0.21	0.28	0.37	0.86
	Head	Right tilt	0.09	0.18	0.10	0.37
		Left cheek	0.11	0.48	0.12	0.71
WCDMA Band II		Left tilt	0.08	0.29	0.04	0.41
	body-	Front side	0.29	0.09	0.09	0.47
	worn	Back side	0.50	0.07	0.17	0.74
	Head	Right cheek	0.19	0.28	0.37	0.84
		Right tilt	0.08	0.18	0.10	0.36
WCDMA Band IV		Left cheek	0.09	0.48	0.12	0.69
		Left tilt	0.08	0.29	0.04	0.41
	body-	Front side	0.31	0.09	0.09	0.49
	worn	Back side	0.52	0.07	0.17	0.76
		Right cheek	0.15	0.28	0.37	0.80
	Head	Right tilt	0.07	0.18	0.10	0.35
I TE EDD Bond 2	пеац	Left cheek	0.09	0.48	0.12	0.69
LTE FDD Band 2		Left tilt	0.07	0.29	0.04	0.40
	body-	Front side	0.20	0.09	0.09	0.38
	worn	Back side	0.35	0.07	0.17	0.59
		Right cheek	0.16	0.28	0.37	0.81
	Used	Right tilt	0.07	0.18	0.10	0.35
I TE EDD Bood 4	Head	Left cheek	0.08	0.48	0.12	0.68
LTE FDD Band 4		Left tilt	0.07	0.29	0.04	0.40
	body-	Front side	0.22	0.09	0.09	0.40
	worn	Back side	0.38	0.07	0.17	0.62

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reported SAR WWAN and WLAN 2.4GHz Main and 5GHz Aux, Σ SAR evaluation									
Frequency			repo	orted SAR / V	V/kg	ΣSAR			
band	P	osition	WWAN	Main	Aux	<1.6W/kg			
		Right cheek	0.05	0.28	0.37	0.70			
	Head	Right tilt	0.03	0.18	0.10	0.31			
LTE FDD Band 12		Left cheek	0.10	0.48	0.12	0.70			
LTET DD Banu 12		Left tilt	0.04	0.29	0.04	0.37			
	body-	Front side	0.20	0.09	0.09	0.38			
	worn	Back side	0.22	0.07		0.46			
		Right cheek	0.06	0.28	0.37	0.71			
	Head	Right tilt	0.04	0.18	0.10	0.32			
LTE FDD Band 17	neau	Left cheek	0.10	0.48	0.12	0.70			
LIE FUU Band 17		Left tilt	0.04	0.29	0.04	0.37			
	body- worn	Front side	0.23	0.09	0.09	0.41			
		Back side	0.26	0.07	0.17	0.50			

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repor	ted SAR	WWAN and W	LAN 5GHz I	MIMO, ΣSAR	evaluation	I
Frequency			reported SAR / W/kg			ΣSAR
band	Position		WWAN	Main	Aux	<1.6W/kg
		Right cheek	0.08	0.09	0.37	0.54
	Head	Right tilt	0.04	0.07	0.10	0.21
0000050	пеай	Left cheek	0.09	0.38	0.12	0.59
GSM 850		Left tilt	0.04	0.21	0.04	0.29
	body-	Front side	0.26	0.09	0.09	0.44
	worn	Back side	0.33	0.22	0.17	0.72
		Right cheek	0.11	0.09	0.37	0.57
	Llaad	Right tilt	0.05	0.07	0.10	0.22
C SM 1000	Head	Left cheek	0.05	0.38	0.12	0.55
GSM 1900		Left tilt	0.04	0.21	0.04	0.29
	body-	Front side	0.15	0.09	0.09	0.33
	worn	Back side	0.28	0.22	0.17	0.67
		Right cheek	0.21	0.09	0.37	0.67
	Head	Right tilt	0.09	0.07	0.10	0.26
		Left cheek	0.11	0.38	0.12	0.61
WCDMA Band II		Left tilt	0.08	0.21	0.04	0.33
	body-	Front side	0.29	0.09	0.09	0.47
	worn	Back side	0.50	0.22	0.17	0.89
	Head	Right cheek	0.19	0.09	0.37	0.65
		Right tilt	0.08	0.07	0.10	0.25
WCDMA Band IV		Left cheek	0.09	0.38	0.12	0.59
		Left tilt	0.08	0.21	0.04	0.33
	body-	Front side	0.31	0.09	0.09	0.49
	worn	Back side	0.52	0.22	0.17	0.91
		Right cheek	0.15	0.09	0.37	0.61
	Head	Right tilt	0.07	0.07	0.10	0.24
LTE FDD Band 2	Head	Left cheek	0.09	0.38	0.12	0.59
LTE FDD Banu 2		Left tilt	0.07	0.21	0.04	0.32
	body-	Front side	0.20	0.09	0.09	0.38
	worn	Back side	0.35	0.22	0.17	0.74
		Right cheek	0.16	0.09	0.37	0.62
	Used	Right tilt	0.07	0.07	0.10	0.24
I TE EDD Bood 4	Head	Left cheek	0.08	0.38	0.12	0.58
LTE FDD Band 4		Left tilt	0.07	0.21	0.04	0.32
	body-	Front side	0.22	0.09	0.09	0.40
	worn	Back side	0.38	0.22	0.17	0.77

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reported SAR WWAN and WLAN 5GHz MIMO, ΣSAR evaluation								
Frequency		osition	repo	orted SAR / V	V/kg	ΣSAR		
band	P	osition	WWAN	Main	Aux	<1.6W/kg		
		Right cheek	0.05	0.09	0.37	0.51		
	Head	Right tilt	0.03	0.07	0.10	0.20		
LTE FDD Band 12		Left cheek	0.10	0.38	0.12	0.60		
LTE FDD Banu 12		Left tilt	0.04	0.21	0.04	0.29		
	body-	Front side	0.20	0.09	0.09	0.38		
	worn	Back side	0.22	0.22	0.17	0.61		
		Right cheek	0.06	0.09	0.37	0.52		
	Head	Right tilt	0.04	0.07	0.10	0.21		
LTE FDD Band 17	Heau	Left cheek	0.10	0.38	0.12	0.60		
LTE FUU Band Tr		Left tilt	0.04	0.21	0.04	0.29		
	body- worn	Front side	0.23	0.09	0.09	0.41		
		Back side	0.26	0.22	0.17	0.65		

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reported SAR WWAN and WLAN 5GHz MIMO and Bluetooth, ΣSAR evaluation							
Frequency	Position		reported SAR / W/kg				ΣSAR
band			WWAN	Main	Aux	BT	<1.6W/kg
GSM 850	Head	Right cheek	0.08	0.09	0.37	0.20	0.74
		Right tilt	0.04	0.07	0.10	0.11	0.32
		Left cheek	0.09	0.38	0.12	0.37	0.96
		Left tilt	0.04	0.21	0.04	0.20	0.49
	body- worn	Front side	0.26	0.09	0.09	0.07	0.51
		Back side	0.33	0.22	0.17	0.04	0.76
GSM 1900	Head	Right cheek	0.11	0.09	0.37	0.20	0.77
		Right tilt	0.05	0.07	0.10	0.11	0.33
		Left cheek	0.05	0.38	0.12	0.37	0.92
		Left tilt	0.04	0.21	0.04	0.20	0.49
	body- worn	Front side	0.15	0.09	0.09	0.07	0.40
		Back side	0.28	0.22	0.17	0.04	0.71
WCDMA Band II	Head	Right cheek	0.21	0.09	0.37	0.20	0.87
		Right tilt	0.09	0.07	0.10	0.11	0.37
		Left cheek	0.11	0.38	0.12	0.37	0.98
		Left tilt	0.08	0.21	0.04	0.20	0.53
	body- worn	Front side	0.29	0.09	0.09	0.07	0.54
		Back side	0.50	0.22	0.17	0.04	0.93
WCDMA Band IV	Head	Right cheek	0.19	0.09	0.37	0.20	0.85
		Right tilt	0.08	0.07	0.10	0.11	0.36
		Left cheek	0.09	0.38	0.12	0.37	0.96
		Left tilt	0.08	0.21	0.04	0.20	0.53
	body- worn	Front side	0.31	0.09	0.09	0.07	0.56
		Back side	0.52	0.22	0.17	0.04	0.95

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reported SAR WWAN and WLAM 5GHz MIMO and Bluetooth, Σ SAR evaluation							
Frequency		aaitian		ΣSAR			
band	Position		WWAN	Main	Aux	BT	<1.6W/kg
LTE FDD Band 2	Head	Right cheek	0.15	0.09	0.37	0.20	0.81
		Right tilt	0.07	0.07	0.10	0.11	0.35
		Left cheek	0.09	0.38	0.12	0.37	0.96
LTET DD Banu 2		Left tilt	0.07	0.21	0.04	0.20	0.52
	body- worn	Front side	0.20	0.09	0.09	0.07	0.45
		Back side	0.35	0.22	0.17	0.04	0.78
	Head	Right cheek	0.16	0.09	0.37	0.20	0.82
		Right tilt	0.07	0.07	0.10	0.11	0.35
LTE FDD Band 4		Left cheek	0.08	0.38	0.12	0.37	0.95
		Left tilt	0.07	0.21	0.04	0.20	0.52
	body- worn	Front side	0.22	0.09	0.09	0.07	0.47
		Back side	0.38	0.22	0.17	0.04	0.81
	Head	Right cheek	0.05	0.09	0.37	0.20	0.71
		Right tilt	0.03	0.07	0.10	0.11	0.31
LTE FDD Band 12		Left cheek	0.10	0.38	0.12	0.37	0.97
LILIDD Danu 12		Left tilt	0.04	0.21	0.04	0.20	0.49
	body-	Front side	0.20	0.09	0.09	0.07	0.45
	worn	Back side	0.22	0.22	0.17	0.04	0.65
	Head	Right cheek	0.06	0.09	0.37	0.20	0.72
		Right tilt	0.04	0.07	0.10	0.11	0.32
LTE FDD Band 17		Left cheek	0.10	0.38	0.12	0.37	0.97
		Left tilt	0.04	0.21	0.04	0.20	0.49
	body- worn	Front side	0.23	0.09	0.09	0.07	0.48
		Back side	0.26	0.22	0.17	0.04	0.69

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reported SA	R WWAN	and WLAN 5	GHz Aux an	d Bluetooth	, ΣSAR eval	uation
Frequency	Position		repo	5040		
band			WWAN	Aux	BT	ΣSAR
GSM 850		Right cheek	0.08	0.37	0.20	0.65
	llaad	Right tilt	0.04	0.10	0.11	0.25
	Head	Left cheek	0.09	0.12	0.37	0.58
		Left tilt	0.04	0.04	0.20	0.28
	body- worn	Front side	0.26	0.09	0.07	0.42
		Back side	0.33	0.17	0.04	0.54
		Right cheek	0.11	0.37	0.20	0.68
	Llaad	Right tilt	0.05	0.10	0.11	0.26
C CM 1000	Head	Left cheek	0.05	0.12	0.37	0.54
GSM 1900		Left tilt	0.04	0.04	0.20	0.28
	body-	Front side	0.15	0.09	0.07	0.31
	worn	Back side	0.28	0.17	0.04	0.49
		Right cheek	0.21	0.37	0.20	0.78
	Head	Right tilt	0.09	0.10	0.11	0.30
		Left cheek	0.11	0.12	0.37	0.60
WCDMA Band II		Left tilt	0.08	0.04	0.20	0.32
	body-	Front side	0.29	0.09	0.07	0.45
	worn	Back side	0.50	0.17	0.04	0.71
	Head	Right cheek	0.19	0.37	0.20	0.76
		Right tilt	0.08	0.10	0.11	0.29
WCDMA Band IV		Left cheek	0.09	0.12	0.37	0.58
		Left tilt	0.08	0.04	0.20	0.32
	body-	Front side	0.31	0.09	0.07	0.47
	worn	Back side	0.52	0.17	0.04	0.73
	Llaad	Right cheek	0.15	0.37	0.20	0.72
		Right tilt	0.07	0.10	0.11	0.28
LTE FDD Band 2	Head	Left cheek	0.09	0.12	0.37	0.58
		Left tilt	0.07	0.04	0.20	0.31
	body-	Front side	0.20	0.09	0.07	0.36
	worn	Back side	0.35	0.17	0.04	0.56
		Right cheek	0.16	0.37	0.20	0.73
LTE FDD Band 4	Used	Right tilt	0.07	0.10	0.11	0.28
	Head	Left cheek	0.08	0.12	0.37	0.57
		Left tilt	0.07	0.04	0.20	0.31
	body-	Front side	0.22	0.09	0.07	0.38
	worn	Back side	0.38	0.17	0.04	0.59

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reported SAR WWAN and WLAN 5GHz Aux and Bluetooth, Σ SAR evaluation							
Frequency	Position		repo	2040			
band			WWAN	Aux	BT	ΣSAR	
LTE FDD Band 12	Head	Right cheek	0.05	0.37	0.20	0.62	
		Right tilt	0.03	0.10	0.11	0.24	
		Left cheek	0.10	0.12	0.37	0.59	
		Left tilt	0.04	0.04	0.20	0.28	
	body- worn	Front side	0.20	0.09	0.07	0.36	
		Back side	0.22	0.17	0.04	0.43	
LTE FDD Band 17	Head	Right cheek	0.06	0.37	0.20	0.63	
		Right tilt	0.04	0.10	0.11	0.25	
		Left cheek	0.10	0.12	0.37	0.59	
		Left tilt	0.04	0.04	0.20	0.28	
	body- worn	Front side	0.23	0.09	0.07	0.39	
		Back side	0.26	0.17	0.04	0.47	

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4. Instruments List

Manufacturer	Device	Туре	Serial number	Date of last calibration	Date of next calibration
SPEAG	Dosimetric E-Field Probe	EX3DV4	7351	Dec.21,2017	Dec.20,2018
SPEAG		D750V3	1015	Aug.23,2018	Aug.22,2019
	System Validation Dipole	D835V2	4d063	Aug.23,2018	Aug.22,2019
		D1750V2	1008	Aug.30,2018	Aug.29,2019
		D1900V2	5d173	Apr.25,2018	Apr.25,2019
		D2450V2	727	Apr.24,2018	Apr.23,2019
		D5GHzV2	1023	Jan.25,2018	Jan.24,2019
SPEAG	Data acquisition Electronics	DAE4	1336	Mar.21,2018	Mar.20,2019
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
Network Analyzer	Agilent	E5071C	MY46107530	Feb.26,2018	
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilent	Dual-directional	772D	MY52180142	Jul.04,2018	Jul.03,2019
Agnerit	coupler	778D	MY52180302	Jul.05,2018	Jul.04,2019
Agilent	RF Signal Generator	N5181A	MY50144143	Mar.14,2018	Mar.13,2019
Agilent	Power Meter	E4417A	MY52240003	Dec.21,2017	Dec.20,2018
Agilent	Power Sensor	E9301H	MY52200003	Dec.21,2017	Dec.20,2018
Aglient			MY52200004	Dec.21,2017	Dec.20,2018
TECPEL	Digital thermometer	DTM-303A	TP130077	Mar.09,2018	Mar.08,2019
Anritsu	Radio Communication Test	MT8820C	6201061049	Apr.08,2018	Apr.07,2019

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5. Measurements

Date: 2018/9/26

GSM 850 Head Le Cheek CH 190

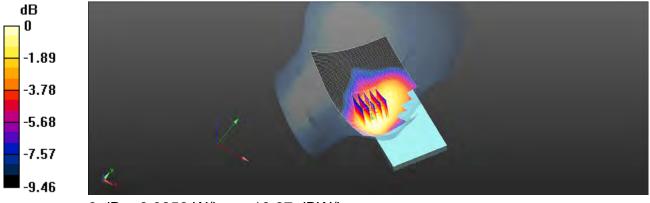
Communication System: GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.30042 Medium parameters used: f = 836.6 MHz; σ = 0.889 S/m; ϵ_r = 42.099; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.6, 10.6, 10.6); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 0.0885 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 2.892 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.0970 W/kg SAR(1 g) = 0.074 W/kg; SAR(10 g) = 0.056 W/kgMaximum value of SAR (measured) = 0.0856 W/kg



0 dB = 0.0856 W/kg = -10.67 dBW/kg

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Date: 2018/9/25

GSM 850_Body-worn_Back side_CH 190_10mm

Communication System: GSM; Frequency: 836.6 MHz; Duty Cycle: 1:8.30042 Medium parameters used: f = 836.6 MHz; σ = 0.961 S/m; ϵ_r = 54.632; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.39, 10.39, 10.39); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

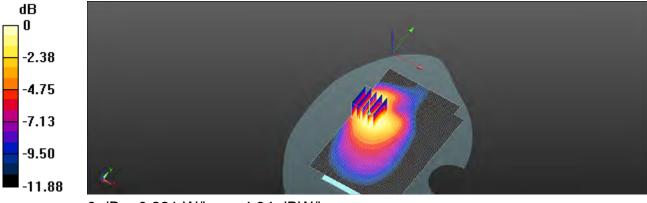
Area Scan (81x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.336 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 10.16 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 0.374 W/kg

SAR(1 g) = 0.256 W/kg; SAR(10 g) = 0.170 W/kg

Maximum value of SAR (measured) = 0.321 W/kg



0 dB = 0.321 W/kg = -4.94 dBW/kg

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Date: 2018/9/25

GPRS 850 Hotspot Back side CH 128 10mm

Communication System: GPRS (1Dn4Up); Frequency: 824.2 MHz; Duty Cycle: 1:1.99986 Medium parameters used: f = 824.2 MHz; σ = 0.955 S/m; ϵ_r = 54.69; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.39, 10.39, 10.39); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

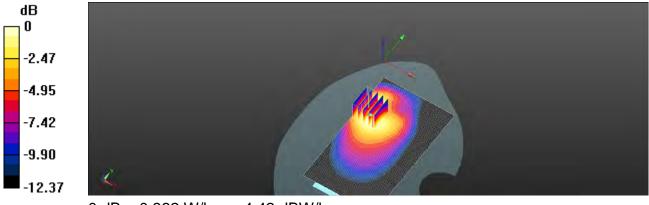
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.371 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 9.381 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 0.434 W/kg

SAR(1 g) = 0.293 W/kg; SAR(10 g) = 0.192 W/kg

Maximum value of SAR (measured) = 0.362 W/kg



0 dB = 0.362 W/kg = -4.42 dBW/kg

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Report No. : E5/2018/90012 Page: 116 of 244

Date: 2018/9/30

GSM 1900 Head Re Cheek CH 810

Communication System: GSM; Frequency: 1909.8 MHz; Duty Cycle: 1:8.30042 Medium parameters used: f = 1909.8 MHz; σ = 1.387 S/m; ϵ_r = 39.369; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.5, 8.5, 8.5); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

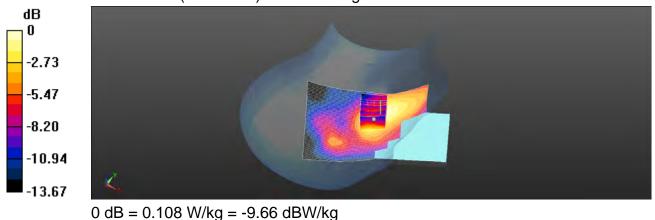
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0999 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 3.720 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 0.123 W/kg

SAR(1 g) = 0.087 W/kg; SAR(10 g) = 0.058 W/kg

Maximum value of SAR (measured) = 0.108 W/kg



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Date: 2018/9/30

GSM 1900 Body-worn Back side CH 810

Communication System: GSM; Frequency: 1909.8 MHz; Duty Cycle: 1:8.30042 Medium parameters used: f = 1909.8 MHz; σ = 1.535 S/m; ϵ_r = 53.822; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.22, 8.22, 8.22); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

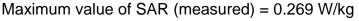
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

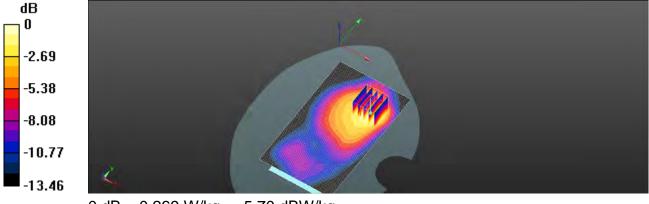
Maximum value of SAR (interpolated) = 0.272 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 6.027 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 0.344 W/kg

SAR(1 g) = 0.219 W/kg; SAR(10 g) = 0.128 W/kg





0 dB = 0.269 W/kg = -5.70 dBW/kg

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Date: 2018/9/30

GPRS 1900 Hotspot Back side CH 661

Communication System: GPRS (1Dn4Up); Frequency: 1880 MHz; Duty Cycle: 1:1.99986 Medium parameters used: f = 1880 MHz; σ = 1.524 S/m; ϵ_r = 53.819; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.22, 8.22, 8.22); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

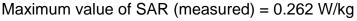
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

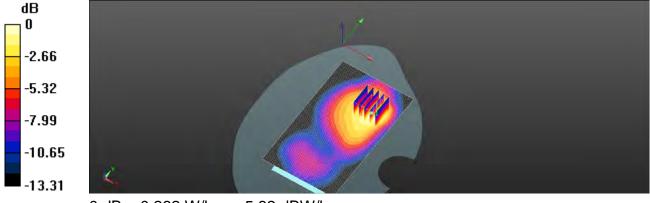
Maximum value of SAR (interpolated) = 0.279 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 5.457 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 0.332 W/kg

SAR(1 g) = 0.213 W/kg; SAR(10 g) = 0.127 W/kg





0 dB = 0.262 W/kg = -5.82 dBW/kg

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Date: 2018/9/30

WCDMA Band II Head Re Cheek CH 9400

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1880 MHz; σ = 1.381 S/m; ϵ_r = 39.384; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.5, 8.5, 8.5); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

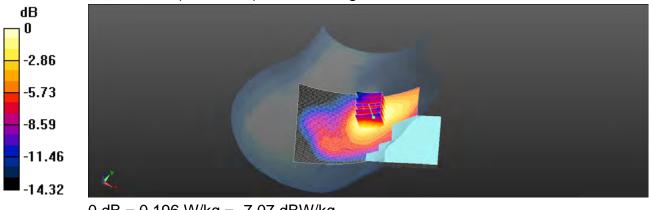
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

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

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 4.880 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.228 W/kg

SAR(1 g) = 0.161 W/kg; SAR(10 g) = 0.105 W/kg

Maximum value of SAR (measured) = 0.196 W/kg



0 dB = 0.196 W/kg = -7.07 dBW/kg

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Date: 2018/9/30

WCDMA Band II Hotspot Back side CH 9400 10mm

Communication System: WCDMA; Frequency: 1880 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1880 MHz; σ = 1.524 S/m; ϵ_r = 53.819; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.22, 8.22, 8.22); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

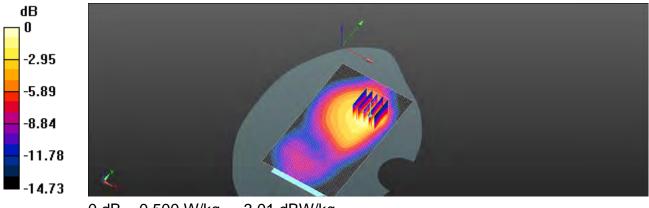
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.530 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 8.642 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.595 W/kg

SAR(1 g) = 0.377 W/kg; SAR(10 g) = 0.221 W/kg

Maximum value of SAR (measured) = 0.500 W/kg



0 dB = 0.500 W/kg = -3.01 dBW/kg

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Date: 2018/9/29

WCDMA Band IV Head Re Cheek CH 1412

Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1732.4 MHz; σ = 1.387 S/m; ϵ_r = 39.698; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.78, 8.78, 8.78); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

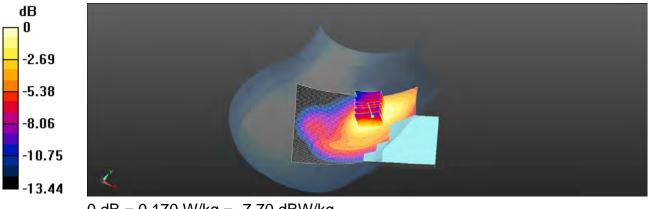
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.178 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 4.942 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.192 W/kg

SAR(1 g) = 0.139 W/kg; SAR(10 g) = 0.095 W/kg

Maximum value of SAR (measured) = 0.170 W/kg



0 dB = 0.170 W/kg = -7.70 dBW/kg

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Date: 2018/9/30

WCDMA Band IV Hotspot Back side CH 1412 10mm

Communication System: WCDMA; Frequency: 1732.4 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1732.4 MHz; σ = 1.453 S/m; ϵ_r = 52.654; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.58, 8.58, 8.58); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

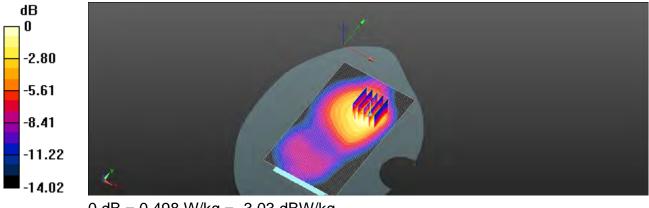
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.523 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 7.872 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 0.584 W/kg

SAR(1 g) = 0.385 W/kg; SAR(10 g) = 0.237 W/kg

Maximum value of SAR (measured) = 0.498 W/kg



0 dB = 0.498 W/kg = -3.03 dBW/kg

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Date: 2018/9/30

LTE Band 2 (20MHz) Head Re Cheek CH 19100 QPSK 1-50

Communication System: LTE; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.383 S/m; ϵ_r = 39.38; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.5, 8.5, 8.5); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

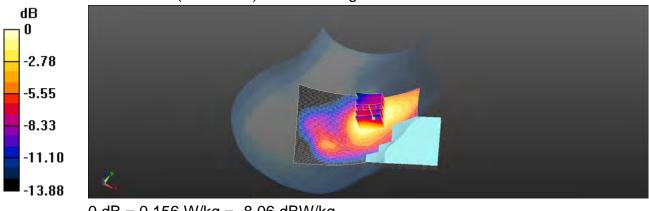
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.164 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 4.659 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 0.182 W/kg

SAR(1 g) = 0.129 W/kg; SAR(10 g) = 0.085 W/kg

Maximum value of SAR (measured) = 0.156 W/kg



0 dB = 0.156 W/kg = -8.06 dBW/kg

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Date: 2018/9/30

LTE Band 2 (20MHz) Hotspot Back side CH 19100 QPSK 1-50 10mm

Communication System: LTE; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.527 S/m; ϵ_r = 53.817; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.22, 8.22, 8.22); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

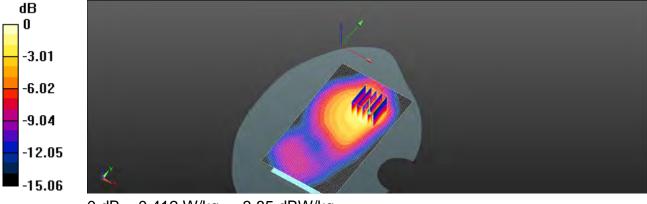
Maximum value of SAR (interpolated) = 0.436 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 7.674 V/m; Power Drift = -0.01 dB

Peak SAR (extrapolated) = 0.496 W/kg

SAR(1 g) = 0.314 W/kg; SAR(10 g) = 0.182 W/kg

Maximum value of SAR (measured) = 0.412 W/kg



0 dB = 0.412 W/kg = -3.85 dBW/kg

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Date: 2018/9/29

LTE Band 4 (20MHz) Head Re Cheek CH 20300 QPSK 1-0

Communication System: LTE; Frequency: 1745 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1745 MHz; σ = 1.396 S/m; ϵ_r = 39.682; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.78, 8.78, 8.78); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

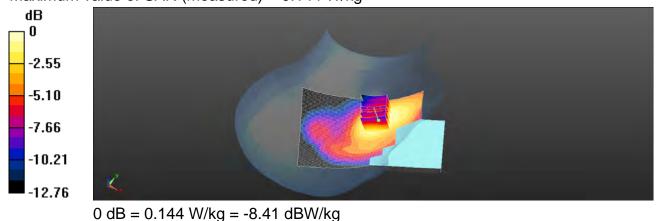
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.149 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 4.851 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 0.163 W/kg

SAR(1 g) = 0.118 W/kg; SAR(10 g) = 0.080 W/kg

Maximum value of SAR (measured) = 0.144 W/kg



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Date: 2018/9/30

LTE Band 4 (20MHz) Hotspot Back side CH 20300 QPSK 1-0 10mm

Communication System: LTE; Frequency: 1745 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1745 MHz; σ = 1.461 S/m; ϵ_r = 52.648; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.58, 8.58, 8.58); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

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

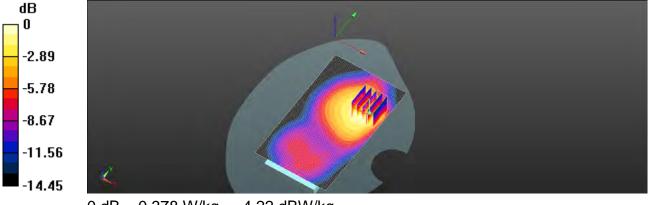
Maximum value of SAR (interpolated) = 0.366 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 6.935 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.446 W/kg

SAR(1 g) = 0.294 W/kg; SAR(10 g) = 0.185 W/kg

Maximum value of SAR (measured) = 0.378 W/kg



0 dB = 0.378 W/kg = -4.22 dBW/kg

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Date: 2018/9/26

LTE Band 12 (10MHz)_Head_Le Cheek_CH 23130_QPSK_1-0

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1 Medium parameters used: f = 711 MHz; σ = 0.873 S/m; ϵ_r = 42.654; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.1°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.92, 10.92, 10.92); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

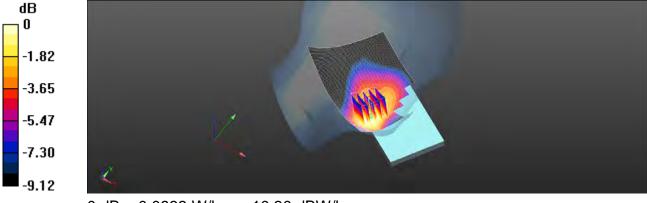
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0942 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 3.926 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 0.107 W/kg

SAR(1 g) = 0.077 W/kg; SAR(10 g) = 0.056 W/kg

Maximum value of SAR (measured) = 0.0933 W/kg



0 dB = 0.0933 W/kg = -10.30 dBW/kg

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Date: 2018/9/25

LTE Band 12 (10MHz)_Hotspot_Back side_CH 23130_QPSK_1-0_10mm

Communication System: LTE; Frequency: 711 MHz; Duty Cycle: 1:1 Medium parameters used: f = 711 MHz; σ = 0.942 S/m; ϵ_r = 56.479; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.0°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.81, 10.81, 10.81); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

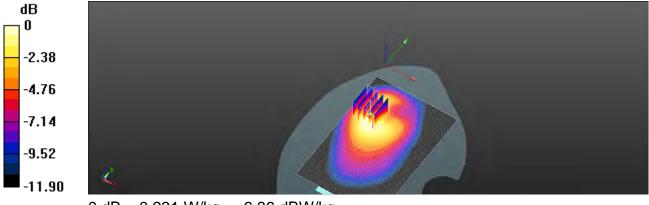
Area Scan (81x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.222 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 7.865 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 0.269 W/kg

SAR(1 g) = 0.180 W/kg; SAR(10 g) = 0.120 W/kg

Maximum value of SAR (measured) = 0.231 W/kg



0 dB = 0.231 W/kg = -6.36 dBW/kg

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Date: 2018/9/26

LTE Band 17 (10MHz)_Head_Le Cheek_CH 23780_QPSK_1-49

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1 Medium parameters used: f = 709 MHz; σ = 0.872 S/m; ϵ_r = 42.671; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.1°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.92, 10.92, 10.92); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

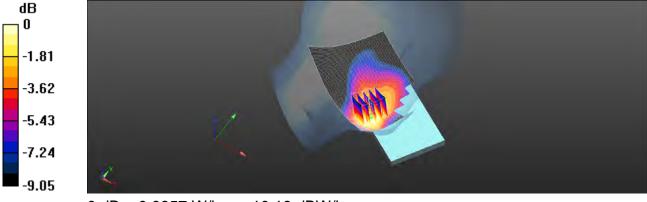
Area Scan (71x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.0965 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 4.785 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 0.109 W/kg

SAR(1 g) = 0.079 W/kg; SAR(10 g) = 0.057 W/kg

Maximum value of SAR (measured) = 0.0957 W/kg



0 dB = 0.0957 W/kg = -10.19 dBW/kg

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Date: 2018/9/25

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

Communication System: LTE; Frequency: 709 MHz; Duty Cycle: 1:1 Medium parameters used: f = 709 MHz; σ = 0.941 S/m; ϵ_r = 56.487; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.0°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.81, 10.81, 10.81); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

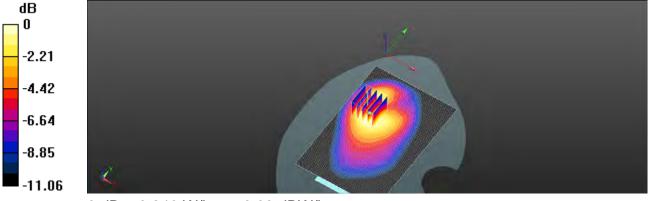
Area Scan (81x121x1): Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.256 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm Reference Value = 8.784 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 0.296 W/kg

SAR(1 g) = 0.199 W/kg; SAR(10 g) = 0.133 W/kg

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



0 dB = 0.246 W/kg = -6.08 dBW/kg

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Date: 2018/10/4

WLAN 802.11b Head_Le Cheek_CH 11_Main

Communication System: WLAN 2.45G; Frequency: 2462 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2462 MHz; σ = 1.844 S/m; ϵ_r = 39.749; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

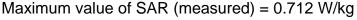
- Probe: EX3DV4 SN7351; ConvF(7.74, 7.74, 7.74); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

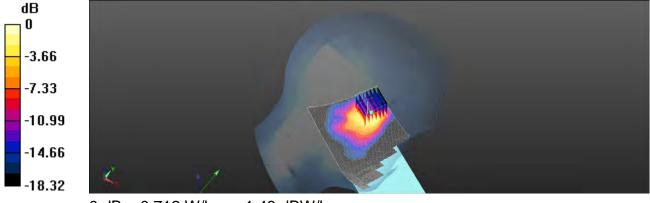
Area Scan (81x151x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.719 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 7.635 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 0.972 W/kg

SAR(1 g) = 0.480 W/kg; SAR(10 g) = 0.227 W/kg





0 dB = 0.712 W/kg = -1.48 dBW/kg

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Date: 2018/10/5

WLAN 802.11b Hotspot Front side CH 11 10mm Main

Communication System: WLAN 2.45G; Frequency: 2462 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2462 MHz; σ = 1.919 S/m; ϵ_r = 51.726; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(7.82, 7.82, 7.82); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

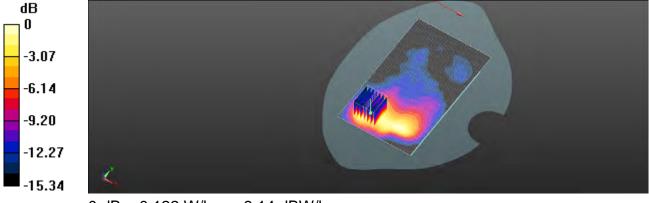
Area Scan (91x151x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.141 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 1.762 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 0.160 W/kg

SAR(1 g) = 0.086 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.122 W/kg



0 dB = 0.122 W/kg = -9.14 dBW/kg

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Date: 2018/10/4

Bluetooth(GFSK) Head Le Cheek CH 39

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2441 MHz; σ = 1.822 S/m; ϵ_r = 39.765; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(7.74, 7.74, 7.74); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

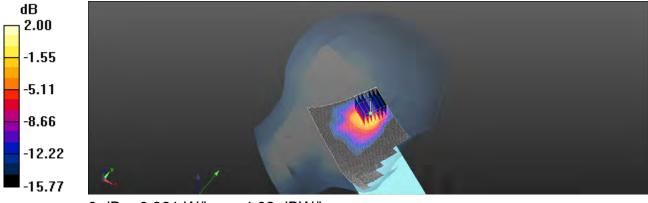
Area Scan (81x151x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.377 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 5.662 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.549 W/kg

SAR(1 g) = 0.257 W/kg; SAR(10 g) = 0.133 W/kg

Maximum value of SAR (measured) = 0.361 W/kg



0 dB = 0.361 W/kg = -4.02 dBW/kg

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Date: 2018/10/5

Bluetooth(GFSK) Body-worn-Front side CH 39 10mm

Communication System: Bluetooth; Frequency: 2441 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2441 MHz; σ = 1.895 S/m; ϵ_r = 51.779; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(7.82, 7.82, 7.82); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

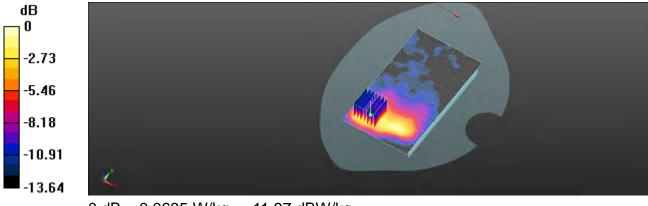
Area Scan (81x141x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.0632 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 1.559 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 0.0830 W/kg

SAR(1 g) = 0.045 W/kg; SAR(10 g) = 0.024 W/kg

Maximum value of SAR (measured) = 0.0635 W/kg



0 dB = 0.0635 W/kg = -11.97 dBW/kg

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Date: 2018/10/1

WLAN 802.11n(40M) 5.2G Head Le Cheek CH 46 Main

Communication System: WLAN 5G; Frequency: 5230 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5230 MHz; σ = 4.711 S/m; ϵ_r = 35.337; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(5.49, 5.49, 5.49); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

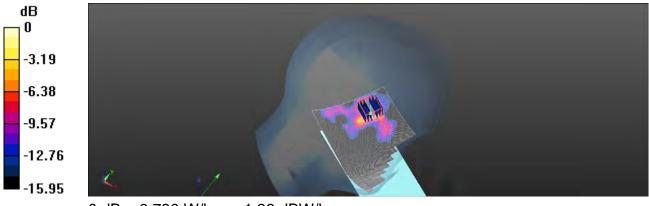
Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.585 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.268 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 1.85 W/kg

SAR(1 g) = 0.360 W/kg; SAR(10 g) = 0.115 W/kg

Maximum value of SAR (measured) = 0.730 W/kg



0 dB = 0.730 W/kg = -1.36 dBW/kg

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Date: 2018/10/3

WLAN 802.11n(40M) 5.2G Body-worn Back side CH 46 10mm Main

Communication System: WLAN 5G; Frequency: 5230 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5230 MHz; σ = 5.426 S/m; ϵ_r = 50.031; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.0°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.6, 4.6, 4.6); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

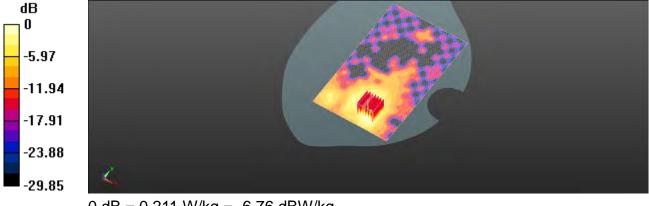
Area Scan (111x181x1): Interpolated grid: dx=10 mm, dy=10 mm

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

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.365 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 0.407 W/kg

SAR(1 g) = 0.115 W/kg; SAR(10 g) = 0.044 W/kg

Maximum value of SAR (measured) = 0.211 W/kg



0 dB = 0.211 W/kg = -6.76 dBW/kg

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Date: 2018/10/3

WLAN 802.11n(40M) 5.2G_Product specific 10g-SAR_Back side_CH 46_0mm_Main

Communication System: WLAN 5G; Frequency: 5230 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5230 MHz; σ = 5.426 S/m; ϵ_r = 50.031; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.0°C

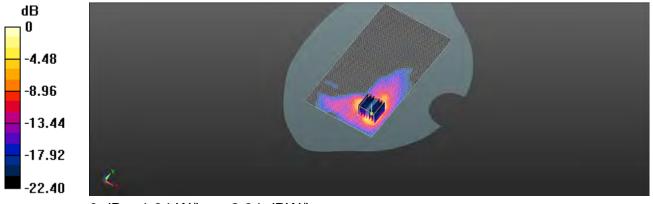
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.6, 4.6, 4.6); Calibrated: 2017/12/21; •
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.84 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.134 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 4.20 W/kg SAR(1 g) = 0.804 W/kg; SAR(10 g) = 0.215 W/kg Maximum value of SAR (measured) = 1.84 W/kg



0 dB = 1.84 W/kg = 2.64 dBW/kg

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Date: 2018/10/2

WLAN 802.11n(40M) 5.3G Head Le Cheek CH 54 Main

Communication System: WLAN 5G; Frequency: 5270 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5270 MHz; σ = 4.795 S/m; ϵ_r = 35.294; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(5.15, 5.15, 5.15); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

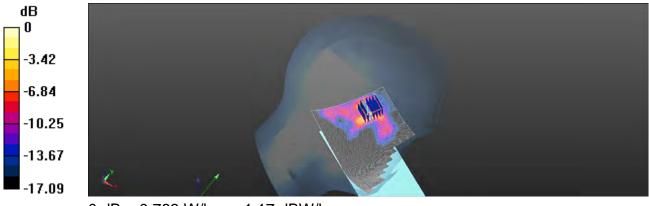
Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.559 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 3.034 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 1.88 W/kg

SAR(1 g) = 0.350 W/kg; SAR(10 g) = 0.108 W/kg

Maximum value of SAR (measured) = 0.763 W/kg



0 dB = 0.763 W/kg = -1.17 dBW/kg

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Date: 2018/10/3

WLAN 802.11n(40M) 5.3G Body-worn Back side CH 54 10mm Main

Communication System: WLAN 5G; Frequency: 5270 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5270 MHz; σ = 5.473 S/m; ϵ_r = 49.986; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

DASY5 Configuration:

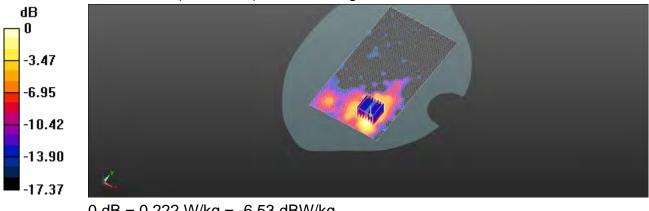
- Probe: EX3DV4 SN7351; ConvF(4.56, 4.56, 4.56); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

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

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 0.7780 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 0.440 W/kg

SAR(1 g) = 0.123 W/kg; SAR(10 g) = 0.049 W/kg Maximum value of SAR (measured) = 0.222 W/kg



0 dB = 0.222 W/kg = -6.53 dBW/kg

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Date: 2018/10/3

WLAN 802.11n(40M) 5.3G_Product specific 10g-SAR_Back side_CH 54_0mm_Main

Communication System: WLAN 5G; Frequency: 5270 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5270 MHz; σ = 5.473 S/m; ϵ_r = 49.986; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

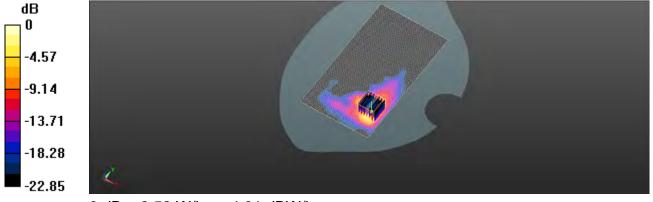
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.56, 4.56, 4.56); Calibrated: 2017/12/21; •
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.64 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 0.9980 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 6.00 W/kg SAR(1 g) = 1.08 W/kg; SAR(10 g) = 0.287 W/kg Maximum value of SAR (measured) = 2.52 W/kg



0 dB = 2.52 W/kg = 4.01 dBW/kg

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Date: 2018/10/4

WLAN 802.11ac(80M) 5.6G_Head_Le Cheek_CH 122_Main

Communication System: WLAN 5G; Frequency: 5610 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5610 MHz; σ = 5.142 S/m; ϵ_r = 35.073; ρ = 1000 kg/m³ Phantom section: Left Section Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.81, 4.81, 4.81); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

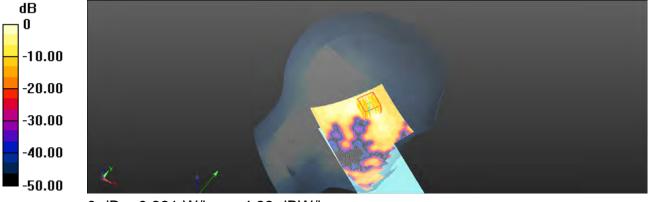
Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.328 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 3.496 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 0.709 W/kg

SAR(1 g) = 0.156 W/kg; SAR(10 g) = 0.067 W/kg

Maximum value of SAR (measured) = 0.321 W/kg



0 dB = 0.321 W/kg = -4.93 dBW/kg

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Date: 2018/10/4

WLAN 802.11ac(80M) 5.6G_Body-worn_Back side_CH 122_10mm_Main

Communication System: WLAN 5G; Frequency: 5610 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5610 MHz; σ = 5.837 S/m; ϵ_r = 49.17; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(3.98, 3.98, 3.98); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

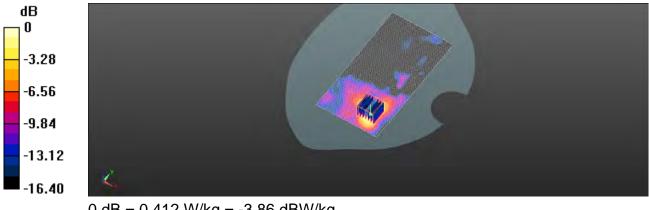
Area Scan (91x171x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.429 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.391 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 0.855 W/kg

SAR(1 g) = 0.212 W/kg; SAR(10 g) = 0.082 W/kg

Maximum value of SAR (measured) = 0.412 W/kg



0 dB = 0.412 W/kg = -3.86 dBW/kg

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Date: 2018/10/3

WLAN 802.11ac(80M) 5.6G_Product specific 10g-SAR_Back side_CH 122 0mm Main

Communication System: WLAN 5G; Frequency: 5610 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5610 MHz; σ = 5.837 S/m; ϵ_r = 49.17; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.7°C

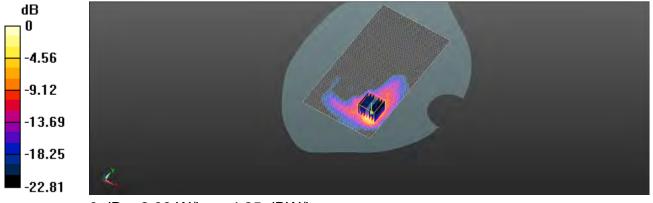
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(3.98, 3.98, 3.98); Calibrated: 2017/12/21; •
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 2.06 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.380 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 6.57 W/kg SAR(1 g) = 1.19 W/kg; SAR(10 g) = 0.325 W/kg Maximum value of SAR (measured) = 2.66 W/kg



0 dB = 2.66 W/kg = 4.25 dBW/kg

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Date: 2018/10/4

WLAN 802.11b Head Re Cheek CH 11 Aux

Communication System: WLAN 2.45G; Frequency: 2462 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2462 MHz; σ = 1.844 S/m; ϵ_r = 39.749; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(7.74, 7.74, 7.74); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

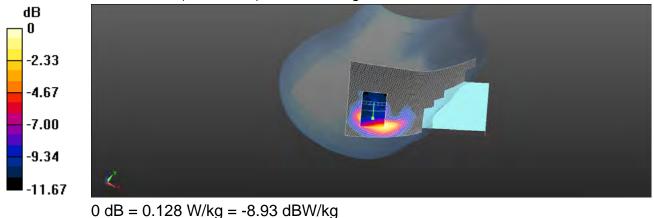
Area Scan (91x151x1): Interpolated grid: dx=12 mm, dy=12 mm

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

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 2.527 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.176 W/kg

SAR(1 g) = 0.088 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.128 W/kg



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Date: 2018/10/5

WLAN 802.11b Hotspot Back side CH 11 10mm Aux

Communication System: WLAN 2.45G; Frequency: 2462 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2462 MHz; σ = 1.919 S/m; ϵ_r = 51.726; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(7.82, 7.82, 7.82); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

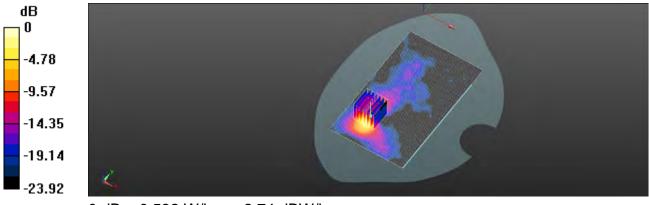
Area Scan (91x151x1): Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 0.685 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 1.731 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 0.755 W/kg

SAR(1 g) = 0.330 W/kg; SAR(10 g) = 0.130 W/kg

Maximum value of SAR (measured) = 0.532 W/kg



0 dB = 0.532 W/kg = -2.74 dBW/kg

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Date: 2018/10/1

WLAN 802.11n(40M) 5.2G Head Re Cheek CH 46 Aux

Communication System: WLAN 5G; Frequency: 5230 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5230 MHz; σ = 4.711 S/m; ϵ_r = 35.337; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(5.49, 5.49, 5.49); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (101x171x1): Interpolated grid: dx=10 mm, dy=10 mm

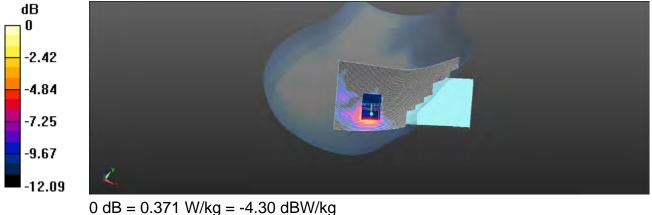
Maximum value of SAR (interpolated) = 0.336 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.840 V/m; Power Drift = 0.05 dB

Peak SAR (extrapolated) = 0.777 W/kg

SAR(1 g) = 0.199 W/kg; SAR(10 g) = 0.085 W/kg

Maximum value of SAR (measured) = 0.371 W/kg



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Date: 2018/10/3

WLAN 802.11n(40M) 5.2G Body-worn Back side CH 46 10mm Aux

Communication System: WLAN 5G; Frequency: 5230 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5230 MHz; σ = 5.426 S/m; ϵ_r = 50.031; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.0°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.6, 4.6, 4.6); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

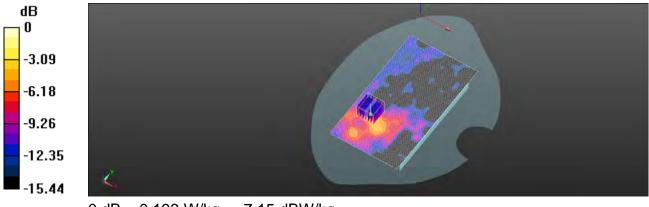
Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.152 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.467 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 0.403 W/kg

SAR(1 g) = 0.091 W/kg; SAR(10 g) = 0.031 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: 2018/10/3

WLAN 802.11n(40M) 5.2G_Product specific 10g-SAR_Back side_CH 46_0mm_Aux

Communication System: WLAN 5G; Frequency: 5230 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5230 MHz; σ = 5.426 S/m; ϵ_r = 50.031; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.0°C

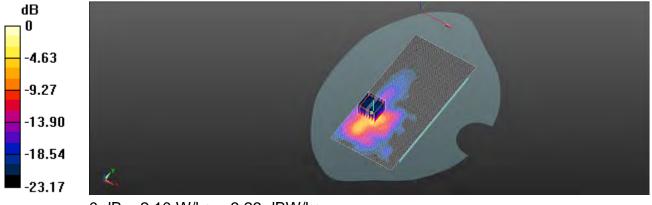
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.6, 4.6, 4.6); Calibrated: 2017/12/21; •
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (91x191x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 2.10 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.431 V/m; Power Drift = 0.09 dB Peak SAR (extrapolated) = 6.03 W/kg SAR(1 g) = 0.832 W/kg; SAR(10 g) = 0.209 W/kg Maximum value of SAR (measured) = 2.10 W/kg



0 dB = 2.10 W/kg = 3.23 dBW/kg

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Date: 2018/10/2

WLAN 802.11n(40M) 5.3G Head Re Cheek CH 54 Aux

Communication System: WLAN 5G; Frequency: 5270 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5270 MHz; σ = 4.795 S/m; ϵ_r = 35.294; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(5.15, 5.15, 5.15); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (101x171x1): Interpolated grid: dx=10 mm, dy=10 mm

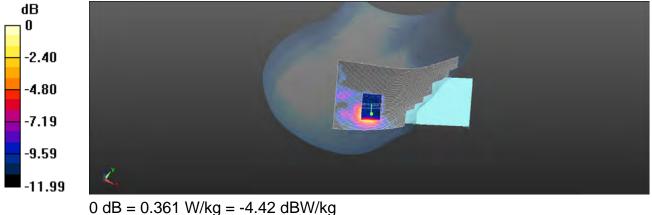
Maximum value of SAR (interpolated) = 0.359 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.989 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.770 W/kg

SAR(1 g) = 0.205 W/kg; SAR(10 g) = 0.085 W/kg

Maximum value of SAR (measured) = 0.361 W/kg



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Report No. : E5/2018/90012 Page: 150 of 244

Date: 2018/10/3

WLAN 802.11n(40M) 5.3G Body-worn Back side CH 54 10mm Aux

Communication System: WLAN 5G; Frequency: 5270 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5270 MHz; σ = 5.473 S/m; ϵ_r = 49.986; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.56, 4.56, 4.56); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

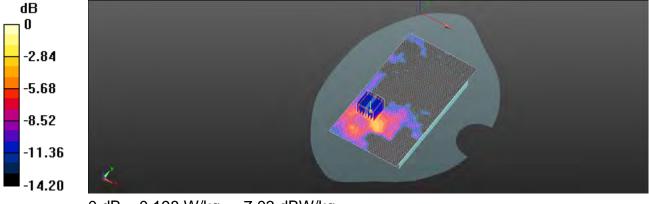
Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.168 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.659 V/m; Power Drift = 0.08 dB Peak SAR (extrapolated) = 0.359 W/kg

SAR(1 g) = 0.089 W/kg; SAR(10 g) = 0.032 W/kg

Maximum value of SAR (measured) = 0.198 W/kg



0 dB = 0.198 W/kg = -7.03 dBW/kg

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Report No. : E5/2018/90012 Page: 151 of 244

Date: 2018/10/3

WLAN 802.11n(40M) 5.3G_Product specific 10g-SAR_Back side_CH 54_0mm_Aux

Communication System: WLAN 5G; Frequency: 5270 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5270 MHz; σ = 5.473 S/m; ϵ_r = 49.986; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

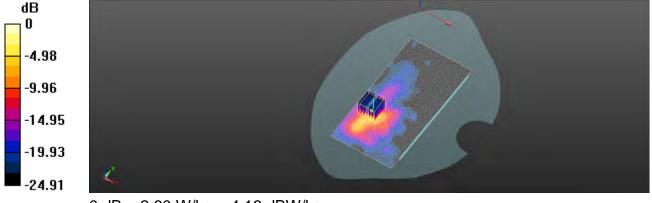
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.56, 4.56, 4.56); Calibrated: 2017/12/21; •
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (91x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 2.50 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.657 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 7.25 W/kg SAR(1 g) = 0.993 W/kg; SAR(10 g) = 0.248 W/kg Maximum value of SAR (measured) = 2.60 W/kg



0 dB = 2.60 W/kg = 4.16 dBW/kg

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Report No. : E5/2018/90012 Page: 152 of 244

Date: 2018/10/4

WLAN 802.11ac(80M) 5.6G_Head_Re Cheek_CH 122_Aux

Communication System: WLAN 5G; Frequency: 5610 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5610 MHz; σ = 5.142 S/m; ϵ_r = 35.073; ρ = 1000 kg/m³ Phantom section: Right Section Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.81, 4.81, 4.81); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (101x171x1): Interpolated grid: dx=10 mm, dy=10 mm

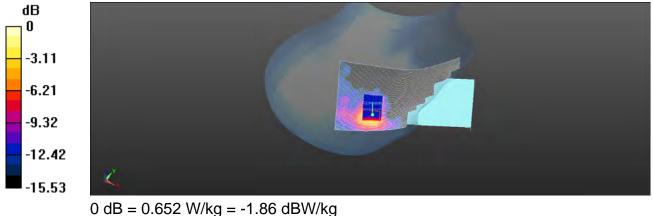
Maximum value of SAR (interpolated) = 0.597 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 2.993 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.47 W/kg

SAR(1 g) = 0.339 W/kg; SAR(10 g) = 0.135 W/kg

Maximum value of SAR (measured) = 0.652 W/kg



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Report No. : E5/2018/90012 Page: 153 of 244

Date: 2018/10/4

WLAN 802.11ac(80M) 5.6G_Body-worn_Back side_CH 122_10mm_Aux

Communication System: WLAN 5G; Frequency: 5610 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5610 MHz; σ = 5.837 S/m; ϵ_r = 49.17; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.7°C

DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(3.98, 3.98, 3.98); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

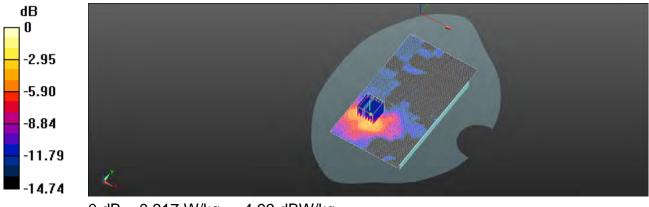
Area Scan (101x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.240 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.711 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 0.877 W/kg

SAR(1 g) = 0.155 W/kg; SAR(10 g) = 0.052 W/kg

Maximum value of SAR (measured) = 0.317 W/kg



0 dB = 0.317 W/kg = -4.99 dBW/kg

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Report No. : E5/2018/90012 Page: 154 of 244

Date: 2018/10/3

WLAN 802.11ac(80M) 5.6G_Product specific 10g-SAR_Back side_CH 122 0mm Aux

Communication System: WLAN 5G; Frequency: 5610 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5610 MHz; σ = 5.837 S/m; ϵ_r = 49.17; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.7°C

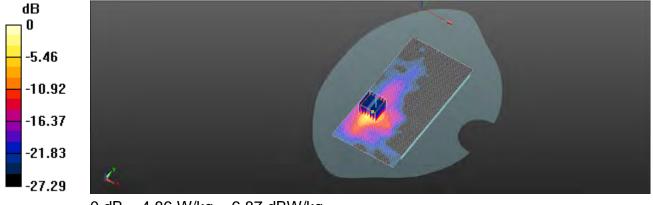
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(3.98, 3.98, 3.98); Calibrated: 2017/12/21; •
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Area Scan (91x181x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 3.42 W/kg

Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 1.514 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 13.3 W/kg SAR(1 g) = 1.46 W/kg; SAR(10 g) = 0.363 W/kg Maximum value of SAR (measured) = 4.86 W/kg



0 dB = 4.86 W/kq = 6.87 dBW/kq

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6. SAR System Performance Verification

Date: 2018/9/26

Dipole 750 MHz SN:1015 Head

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 750 MHz; σ = 0.875 S/m; ϵ_r = 42.436; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.9°C

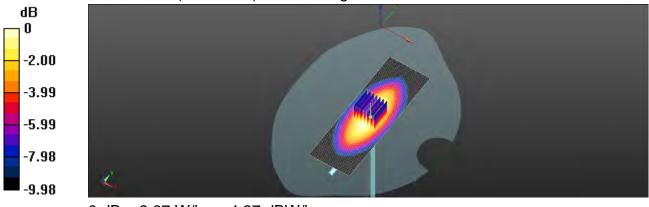
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.92, 10.92, 10.92); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 2.69 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 57.02 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 3.06 W/kg SAR(1 g) = 2.06 W/kg; SAR(10 g) = 1.35 W/kgMaximum value of SAR (measured) = 2.67 W/kg



0 dB = 2.67 W/kg = 4.27 dBW/kg

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Dipole 750 MHz SN:1015

Communication System: CW; Frequency: 750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 750 MHz; σ = 0.944 S/m; ϵ_r = 56.314; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.0°C

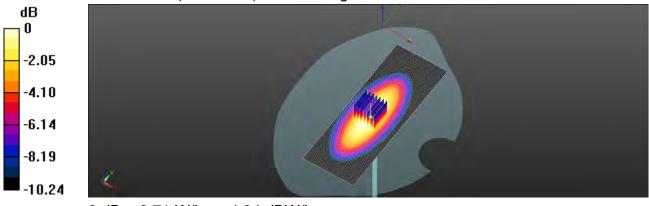
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.81, 10.81, 10.81); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (51x141x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 2.68 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 54.19 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 3.19 W/kg SAR(1 g) = 2.15 W/kg; SAR(10 g) = 1.42 W/kgMaximum value of SAR (measured) = 2.71 W/kg



0 dB = 2.71 W/kg = 4.34 dBW/kg

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Dipole 835 MHz SN:4d063 Head

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.887 S/m; ϵ_r = 42.101; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

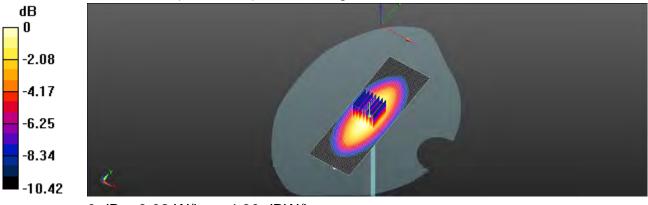
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.6, 10.6, 10.6); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (41x121x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 3.03 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 60.37 V/m: Power Drift = -0.06 dB Peak SAR (extrapolated) = 3.49 W/kg SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.53 W/kgMaximum value of SAR (measured) = 3.02 W/kg



0 dB = 3.02 W/kg = 4.80 dBW/kg

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Dipole 835 MHz SN:4d063

Communication System: CW; Frequency: 835 MHz; Duty Cycle: 1:1 Medium parameters used: f = 835 MHz; σ = 0.958 S/m; ϵ_r = 54.635; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.9°C

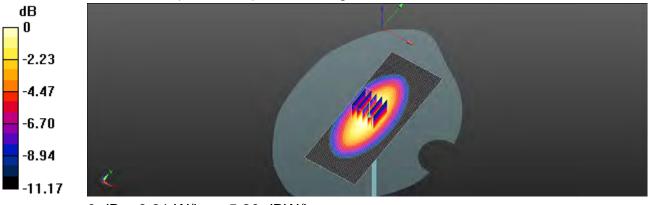
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(10.39, 10.39, 10.39); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (51x131x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 3.30 W/kg

Pin=250mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 57.03 V/m: Power Drift = 0.03 dB Peak SAR (extrapolated) = 3.92 W/kg SAR(1 g) = 2.46 W/kg; SAR(10 g) = 1.59 W/kgMaximum value of SAR (measured) = 3.31 W/kg



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

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Dipole 1750 MHz SN:1008 Head

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1750 MHz; σ = 1.398 S/m; ϵ_r = 39.666; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

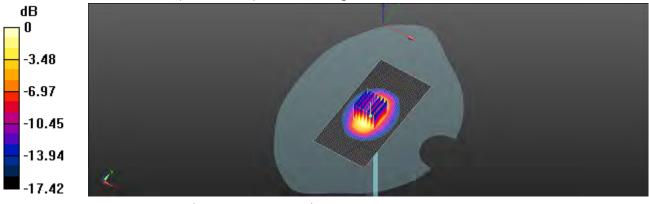
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.78, 8.78, 8.78); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 13.6 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 100.3 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 16.3 W/kg SAR(1 g) = 9.02 W/kg; SAR(10 g) = 4.79 W/kgMaximum value of SAR (measured) = 12.6 W/kg



0 dB = 12.6 W/kg = 11.00 dBW/kg

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Dipole 1750 MHz SN:1008

Communication System: CW; Frequency: 1750 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1750 MHz; σ = 1.464 S/m; ϵ_r = 52.636; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

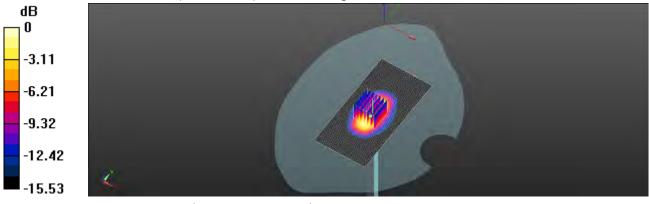
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.58, 8.58, 8.58); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 14.9 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 96.54 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 16.1 W/kg SAR(1 g) = 9.19 W/kg; SAR(10 g) = 4.96 W/kgMaximum value of SAR (measured) = 12.9 W/kg



0 dB = 12.9 W/kg = 11.11 dBW/kg

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Report No. : E5/2018/90012 Page: 161 of 244

Date: 2018/9/30

Dipole 1900 MHz SN:5d173 Head

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.383 S/m; ϵ r = 39.38; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.8°C

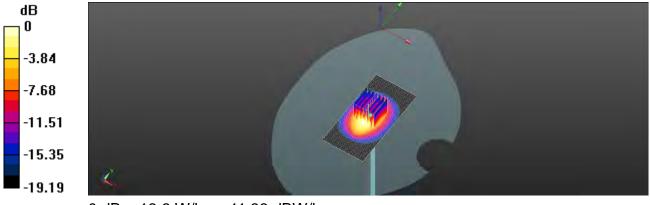
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.5, 8.5, 8.5); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (41x81x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 13.7 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 98.66 V/m: Power Drift = 0.00 dB Peak SAR (extrapolated) = 17.8 W/kg SAR(1 g) = 9.85 W/kg; SAR(10 g) = 5.17 W/kgMaximum value of SAR (measured) = 13.6 W/kg



0 dB = 13.6 W/kg = 11.33 dBW/kg

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Dipole 1900 MHz SN:5d173

Communication System: CW; Frequency: 1900 MHz; Duty Cycle: 1:1 Medium parameters used: f = 1900 MHz; σ = 1.527 S/m; ϵ r = 53.817; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

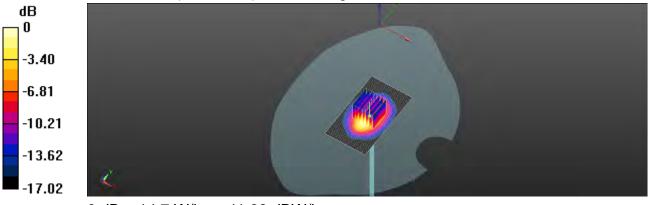
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(8.22, 8.22, 8.22); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (41x71x1): Interpolated grid: dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 15.7 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 97.02 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 18.7 W/kg SAR(1 g) = 9.91 W/kg; SAR(10 g) = 5.28 W/kgMaximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.68 dBW/kg

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Report No. : E5/2018/90012 Page: 163 of 244

Date: 2018/10/4

Dipole 2450 MHz SN:727 Head

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz; σ = 1.83 S/m; ϵ_r = 39.764; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.9°C

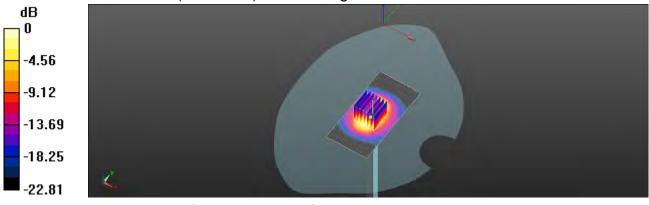
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(7.74, 7.74, 7.74); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm Maximum value of SAR (interpolated) = 20.1 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 105.3 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 26.4 W/kg SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.08 W/kgMaximum value of SAR (measured) = 19.3 W/kg



0 dB = 19.3 W/kg = 12.86 dBW/kg

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Dipole 2450 MHz SN:727

Communication System: CW; Frequency: 2450 MHz; Duty Cycle: 1:1 Medium parameters used: f = 2450 MHz; σ = 1.903 S/m; ϵ_r = 51.772; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.7°C

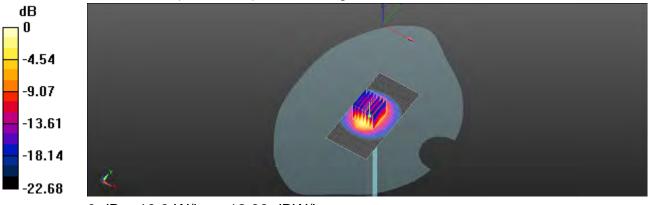
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(7.82, 7.82, 7.82); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=250mW/Area Scan (51x101x1): Interpolated grid: dx=12 mm, dy=12 mm Maximum value of SAR (interpolated) = 20.3 W/kg

Pin=250mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm

Reference Value = 103.3 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 26.8 W/kg SAR(1 g) = 13 W/kg; SAR(10 g) = 5.97 W/kgMaximum value of SAR (measured) = 19.9 W/kg



0 dB = 19.9 W/kg = 12.98 dBW/kg

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Date: 2018/10/1

Dipole 5200 MHz SN:1023 Head

Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5200 MHz; σ = 4.708 S/m; ϵ r = 35.345; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

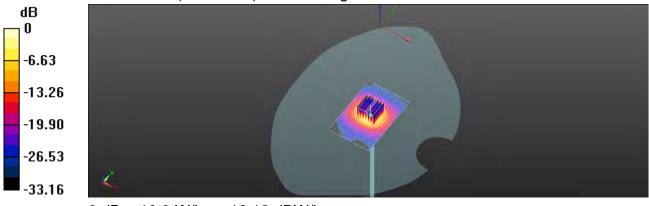
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(5.49, 5.49, 5.49); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (61x91x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 16.4 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 60.47 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 31.9 W/kg SAR(1 g) = 7.74 W/kg; SAR(10 g) = 2.24 W/kgMaximum value of SAR (measured) = 16.3 W/kg



0 dB = 16.3 W/kg = 12.12 dBW/kg

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Dipole 5200 MHz SN:1023

Communication System: CW; Frequency: 5200 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5200 MHz; σ = 5.388 S/m; ϵ_r = 50.068; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.0°C

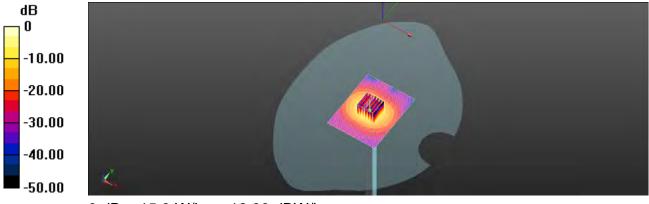
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.6, 4.6, 4.6); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 16.3 W/kg

Pin=100mW/Zoom Scan (7x7x7) (7x7x12)/Cube 0: Measurement grid: dx=4mm,

dy=4mm, dz=2mm Reference Value = 57.91 V/m; Power Drift = 0.02 dB Peak SAR (extrapolated) = 30.5 W/kg SAR(1 g) = 7.14 W/kg; SAR(10 g) = 2.01 W/kgMaximum value of SAR (measured) = 15.9 W/kg



0 dB = 15.9 W/kg = 12.00 dBW/kg

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Dipole 5300 MHz SN:1023 Head

Communication System: CW; Frequency: 5300 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5300 MHz; σ = 4.832 S/m; ϵ_r = 35.232; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.4°C; Liquid temperature: 21.8°C

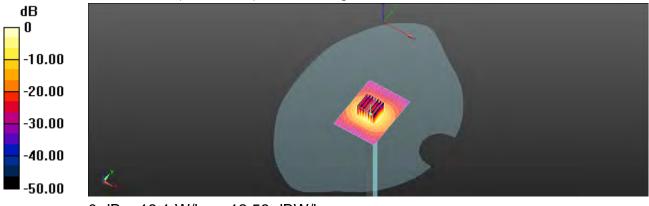
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(5.15, 5.15, 5.15); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 18.3 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 63.24 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 36.3 W/kg SAR(1 g) = 8.07 W/kg; SAR(10 g) = 2.35 W/kgMaximum value of SAR (measured) = 18.1 W/kg



0 dB = 18.1 W/kg = 12.58 dBW/kg

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Dipole 5300 MHz SN:1023

Communication System: CW; Frequency: 5300 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5300 MHz; σ = 5.509 S/m; ϵ_r = 49.954; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.2°C; Liquid temperature: 21.8°C

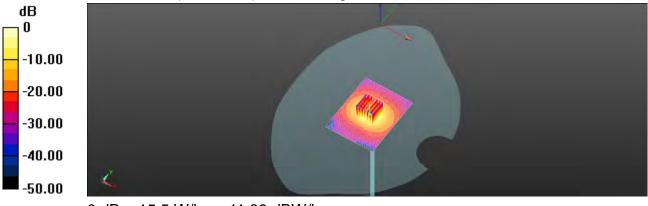
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.56, 4.56, 4.56); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW /Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 15.9 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 56.69 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 28.0 W/kg SAR(1 g) = 7.39 W/kg; SAR(10 g) = 2.09 W/kg Maximum value of SAR (measured) = 15.5 W/kg



0 dB = 15.5 W/kg = 11.89 dBW/kg

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Dipole 5600 MHz SN:1023 Head

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5600 MHz; σ = 5.133 S/m; ϵ_r = 35.085; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.1°C; Liquid temperature: 21.7°C

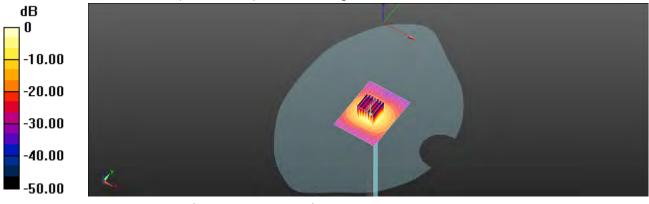
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(4.81, 4.81, 4.81); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (61x81x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 28.5 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 77.74 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 58.6 W/kg SAR(1 g) = 8.14 W/kg; SAR(10 g) = 2.31 W/kgMaximum value of SAR (measured) = 28.2 W/kg



0 dB = 28.2 W/kg = 14.51 dBW/kg

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Dipole 5600 MHz SN:1023

Communication System: CW; Frequency: 5600 MHz; Duty Cycle: 1:1 Medium parameters used: f = 5600 MHz; σ = 5.825 S/m; ϵ_r = 49.203; ρ = 1000 kg/m³ Phantom section: Flat Section Ambient temperature: 22.3°C; Liquid temperature: 21.7°C

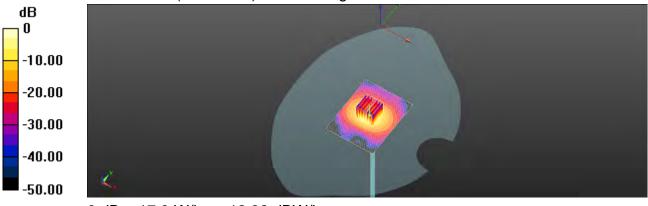
DASY5 Configuration:

- Probe: EX3DV4 SN7351; ConvF(3.98, 3.98, 3.98); Calibrated: 2017/12/21;
- Sensor-Surface: 2mm (Mechanical Surface Detection) •
- Electronics: DAE4 Sn1336; Calibrated: 2018/3/21
- Phantom: SAM
- DASY52 52.8.8(1258); SEMCAD X 14.6.10(7373)

Pin=100mW/Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm Maximum value of SAR (interpolated) = 17.1 W/kg

Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=2mm

Reference Value = 55.04 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 34.0 W/kg SAR(1 g) = 7.88 W/kg; SAR(10 g) = 2.22 W/kgMaximum value of SAR (measured) = 17.0 W/kg



0 dB = 17.0 W/kg = 12.32 dBW/kg

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7. DAE & Probe Calibration Certificate

ccredited by the Swiss Accred he Swiss Accreditation Servi	ice is one of the signato	rics to the EA	m No.: SCS 0108
Initiateral Agreement for the SGS-TW (Auto	recognition of calibrati	on certificates	
CALIBRATION			to: DAE4-1336_Mar18
Dojact		0 D04 BM - SN: 1336	
Calibration procedura(s)	QA CAL-06.v2 Galibration pro	9 sedure for the data acquisition ele	ctronics (DAE)
Calibration date:	March 21, 2018		
The calibration cartificate docu	ments the traceability to r sertainties with confidence	istional standards, which realize the physical u # probability are given on the following pages a	rits of measurements (SI). nd are part of the cettricate.
The measurements and the unit All calibrations have been cond Calibration Equipment used (M	sertainties with confidence ucted in the closed labora STE official for celibration	a probability are given on the following pages a normality: antifunction (22 \pm 3) (nd are part of the centrificata. "C and humidity < 70%.
The measurements and the un All calibrations have been cond Calibration Equipment used (M Primary Standards	pertainties with confidence	a probability are given on the following pages a story lacility: environment temperature (22 ± 3)	nd are part of the certificate.
This missionements and the unit All calibrations have been cond Calibration Equipment used (M Primeiry Standards Kethley Multimater Type 2001	entainlies with confidence ucted in the closed labora STE critical for calibration	e probability are given on the following pages e tory facility: environment temperature (22 ± 3)) Cal Date (Certificate No.) 31-Aug-17 (No.21092)	nd are part of the centrificata. 'C and humidity < 70%. <u>Scheckuled Calibration</u> Aug-18
The measurements and the une All calibrations have been cond Calibration Equipment used (M Primary Standards Keethley Multimater Type 2001 Secondary Standards Auto DAE Calibration Unit	STE critical for cellbration	a probability are given on the following pages a tory lacility: environment temperature (22 ± 3)) Cal Date (Certificate No.) 31-Aug-17 (No:21092) Check Date (m house)	nd are part of the centricata. 'C and humidity < 70%. Scheckuled Calibration
The measurements and the une All calibrations have been cond Calibration Equipment used (M Primary Standards Keethley Multimater Type 2001 Secondary Standards Auto DAE Calibration Unit	STE critical for cellbration	a probability are given on the following pages a tory facility: environment temperature (22 ± 3)) <u>Cal Date (Certificate No.)</u> 31-Aug-17 (No.21092) <u>Check Date (in house)</u> 001 04-Jan-18 (in house check)	nd are part of the certificate. "G and humidity < 70%. <u>Scheckuled Calibration</u> Aug-18 <u>Scheckuled Check</u> In house check: Jan-19
The measurements and the un All calibrations have been cond Calibration Equipment used (Al Primary Standards Keethley Multimater Type 2001 Secondary Standards Auto DAE Calibration Unit Calibrator Box V2.1	entainties with confidence ucted in the closed labora STE critical for calibration ID V SNE 0610278 ID # SE UWS 053 AA 10 SE UWS 005 AA 10	e probeblity are given on the following pages e tory lacility: environment temperature (22 ± 3) (Cal Date (Certificate No.) 31-Aug-17 (No:21092) Check Date (m house) 01 04-Jan-18 (in house check) 02 04-Jan-18 (in house check)	nd are part of the certificate. 'C and humidity < 70%. Scheckuled Calibration Aug-18 Scheckuled Check In house check Jan-19 In house check Jan-19
The measurements and the une	Anne Name	a probability are given on the following pages a trory facility: environment temperature (22 ± 3) Cal Date (Certificate No.) 31-Aug-17 (No.21002) Check Date (in house) 001 04-Jan-18 (in house check) 02 04-Jan-18 (in house check) Function	nd are part of the centrificate. *C and humidity < 70%. Scheckuled Calibration Aug-18 Scheckuled Check In house check Jan-19 In house check Jan-19

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



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Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (BAS) The Swiss Accreditation Service is one of the signaturies to the EA. Multilateral Agreement for the recognition of calibration certificate

Glossary

DAE Connector angle

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

Methods Applied and Interpretation of Parameters

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

Certificate No: DAE4-1338 Marte

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DC Voltage Measurement

High Range:	ILSB =	6.1µV	full range =	-100	+300 mV
Low Range:	1LSB =	BinV.	full range =	-1	-+SmV

Calibration Factors	×	Y	Z
High Range	403.362 ± 0.02% (k=2)	403.664 ± 0.02% (k=2)	403.144±0.02% (k=2)
Low Range	3.95108 ± 1.50% (k=2)	3.98716 ± 1.50% (k=2)	3.99791 ± 1.50% (k=2)

Connector Angle

Connector Angle to be used in DASY system	122.0 "+1 "
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Certificate No: DAE4-1336_Mar18 Page 3 dl 5

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Appendix (Additional assessments outside the scope of SCS0108)

t. DC Voltage Linearity

High Range	Randing (µV)	Difference (µV)	Error (%)
Channel X + Input	200032.51	0,12	0.00
Channel X. + Input	20006.40	1.23	0.01
Channel X - Input	-20003.02	1.97	0.01
Channel Y + Input	200031.85	-0.59	-0.00
Citennel Y + Input	20004.04	-0.97	-0.00
Channel Y - Input	-20005.95	-0.92	0.00
Channel Z + Input	200033.31	0.61	0.00
Channel Z + Input	20003.33	-1.51	-0,01
Channel Z - Input	-20007.20	2.06	0.01

Low Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2001.00	-0.33	-0.02
Channel X + Input	201,62	0.25	0.12
Channel X - Input	-198.41	0.24	-0.12
Channel Y + Input	2001.15	-0.05	-0.00
Channel Y + Input	200.95	-0.35	-0.17
Channel Y - Input	-199.53	-0.77	0.39
Channel Z + Input	2001.57	0.47	0.02
Channel 2 + Input	199.98	-1.22	-0.61
Channel Z - Input	-200.14	-1.28	0,65

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	6.48	4.38
	- 200	+3.75	-4.83
Channel Y	200	-4.18	-3.84
	- 200	1.89	2.38
Channel Z	200	20.84	21.26
	-200	-23.99	24,35

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		5.48	-1.63
Channel Y	200	8.85	1	6.35
Channel Z	200	8.27	6.90	

Certificate No: DAE4-1336_Mari 6

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4. AD-Converter Values with inputs shorled

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

	High Range (LSB)	Low Range (LSB)
Channel X	15667	16592
Channel Y	15909	15806
Channel Z	15857	15707

5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec (nout 10MO)

	Average (µV)	min. Offset (µV)	max. Offset (µV)	Std. Deviation (µV)
Channel X	0.56	-0.27	1.89	0.40
Channel Y	-0,08	+0.95	0.75	0.36
Channel Z	-1.39	-2.93	-0.50	0.41

6. Input Offset Current

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

7. Input Resistance (Typical values for information)

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

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

Typical values	Alarm Lavel (VDC)
Supply (+ Vcc)	17.9
Supply (- Vcc)	-7.6
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	+8	+14	
Supply (- Voc)	-0.01	-8	-9	

Certificate No: DAE4-1336_Mar18

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Accredited by the Swiss Accred The Swiss Accreditation Servi Auftilateral Agreement for the	ice is one of the signalories t	to the EA	reditation No.4 SCS 0108
Sent Auden		Cartificate No:	EX3-7351_Dec17
CALIBRATION	CERTIFICATE	-	
Diplot	EX3DV4 - SN 735	t	
Calibration procedure(s)		CAL-14-v4, QA CAL-23.v5, QA ure for dosimetric E-field probes	CAL-25.v6
Calibration date	December 21, 201	7	
All calenations have been cond	ucted in the closed lationatory	facility environment temperature (22 ± 3)°C a	and humidaty < 70%
		We also the the transmission of the transmission $(22\pm3)^{\circ}{\rm C}$ and	and humicity < 70%
		fectiny environment temperature (22 ± 3)°C a	and trumonty < 70%-
Calibration Equipment used (M Primary Standards	& TE critical for calibration)		
Carbration Equipment used (M Primary Standards Power render NRP Power sensor NRP-291	NTE crinical for calibration)	Cal Date (Centicate No.)	Scheduled Calibration
Calibration Equipment used (M Primary Standards Power render NRP Power sensor NRP-291 Power sensor NRP-291	8 TE emisai for catérolion) ID SN: 104778 SN: 103244 SN: 103245	Eal Date (Centricere No.) 04-Apr-17 (No. 217-02521/02522)	Scheduled Calibration Apr-18
Calibration Equipment used (M Primary Standards Power sensor NRP-291 Power sensor NRP-291 Relevance 20 dB Attenuator	8TE emisai for catibration) SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x)	Ear Date (Centrate No.) D4-Apr-17 (No. 217-02524/02522) D4-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02528)	Scheduled Calibration Apr-18 Apr-18
Calibration Equipment used (M Primary Standards Power moter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Atternator Reference Probe ES30v2	8TE etrisan for catibration) SN: 104776 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 2013	Cal Date (Centicate No.) D4-Apr-17 (No. 217-0252)/(CS22) D4-Apr-17 (No. 217-0252) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02525) 31-Cec-15 (No. ES3-30(3, Dec16)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dac-17
Calibration Equipment used (M Primary Standards Power mener NRP- Power sensor NRP-291 Power sensor NRP-291 Reference 20 dR Attenuator	8TE emisai for catibration) SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20x)	Ear Date (Centrate No.) D4-Apr-17 (No. 217-02524/02522) D4-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02528)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18
Calibration Equipment used (M Primary Standards Powar render NRP Powar sensor NRP-291 Powar sensor NRP-291 Reterince 20 dB Atemator Reference Probe ES3DV2 DAE4	8 TE emisai for catérolion) SN: 104778 SN: 103244 SN: 103245 SN: 55277 (20k) SN: 2013 SN: 564	Car Bate (Centicipte No.) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02528) 31-Cec-16 (No. 533-3013_Dec16) 24-Jul-17 (No. DAE4-034_20(17)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Dec-17 Juli 18
Calibration Equipment used (M Primary Standards Power moter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Atternator Reference Probe ES30v2	8TE etrisan for catibration) SN: 104776 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 2013	Cal Date (Centicele No.) D4-Apr-17 (No. 217-02524/02522) D4-Apr-17 (No. 217-02524) D4-Apr-17 (No. 217-02525) D7-Apr-17 (No. 217-02528) 31-Osc-16 (No. ES3-3013, Dec16) 24-Jul-17 (No. DAE4-054, Jul17) Check Date (in house)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dac-17 Jul-18 Scheduled Chequi
Calibration Equipment used (M Primary Standards Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards	8 TE emisai for catibration) SN: 104778 SN: 103244 SN: 103245 SN: 35277 (20x) SN: 355277 (20x) SN: 355277 (20x) SN: 654 ID	Car Bate (Centicipte No.) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02525) 07-Apr-17 (No. 217-02528) 31-Cec-16 (No. 533-3013_Dec16) 24-Jul-17 (No. DAE4-034_20(17)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Dec-17 Juli 18
Calibration Equipment used (M Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards Power mater E4419B	8 TE emisai for catibration) SN: 104778 SN: 103245 SN: 103245 SN: 55277 (20x) SN: 554 SN: 654 SN: 664 SN: 6041293674	E3 Date (Centicate No.) D4-Apr-17 (No. 217-0252h/02522) D4-Apr-17 (No. 217-0252h) D4-Apr-17 (No. 217-0252) D7-Apr-17 (No. 217-0252) D7-Apr-17 (No. 217-02528) 31-Osc-16 (No. E33-3013, Dec16) 24-Jul-17 (No. DAE4-084, Jul17) Check Date (in house) D5-Apr-16 (in house) deck Jun-16)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Dec-17 Jul-18 Scheduled Check In house pheck: Jun-18
Calibration Equipment used (M Pitmary Standards Power moter NRP Power sensor NRP-291 Power sensor NRP-291 Rolevince 20 dB Atemustor Relevence 20 dB Atemustor Relevence Probe ES3DV2 DAR4 Secondary Standards Power sensor E44198 Power sensor E44198	8 TE crimpal for catibration) SN: 184778 SN: 184778 SN: 103244 SN: 103245 SN: 55277 (20k) SN: 5554 SN: 554 SN: CB41230574 SN: CB41230574 SN: MY41488057	Car Date (Centificate No.) 04-Apr-17 (No. 217-02524/02522) 04-Apr-17 (No. 217-02524) 04-Apr-17 (No. 217-02524) 07-Apr-17 (No. 217-02526) 07-Apr-17 (No. 217-02526) 07-Apr-17 (No. DAE4-034, Juli7) 24-Jul-17 (No. DAE4-034, Juli7) Check Date (in house) 05-Apr-16 (in house check Jun-16) 06-Apr-16 (in house check Jun-16)	Schesuled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Jul-18 Schesuled Check In house pheck Jun-18 In house pheck Jun-18
Calibration Equipment used (M Primary Standards Power sensor NRP- Power sensor NRP-291 Power sensor NRP-291 Reterence 20 db Atemator Reference 20 db Atemator Reference Probe ES3DV2 DAE4 Secondary Standards Power sensor E44156 Power sensor E4415A	8 TE emisai for catérolion) SN: 104778 SN: 103244 SN: 103245 SN: 05277 (20k) SN: 2013 SN: 654 ID SN: 6041220874 SN: 6041220874 SN: 000110210	Car Bate (Centicitie No.) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02523) 07-Apr-17 (No. 217-02523) 31-Orec-16 (No. ES3-3013, Dec16) 24-Jul-17 (No. DAE4-034, Jul/17) Check Date (in house) 05-Apr-16 (in house) check Jun-16) 05-Apr-16 (in house check Jun-16) 05-Apr-16 (in house check Jun-16)	Schesuled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dac-17 Jul-18 Schesuled Check In house check: Jun-18 In house check: Jun-18 In house check: Jun-18
Calibration Equipment used (M Primary Standards Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Relevance 20 dB Attemator Relevance 20 dB Attemator Relevance 20 dB Attemator Relevance Probe ES30V2 DAE4 Secondary Standards Power sensor E4418A Power sensor E4418A RF generator HP 5046C	8 TE emisai for catibration) SN: 104778 SN: 103245 SN: 05245 SN: 05245 SN: 05245 SN: 05245 SN: 05245 SN: 05245 SN: 05241283674 SN: 00110210 SN: US3642001700	Car Date (Centicete No.) D4-Apr-17 (No. 217-02521/02522) D4-Apr-17 (No. 217-02521) D4-Apr-17 (No. 217-02520) D7-Apr-17 (No. 217-02520) 31-Cesc-16 (No. ES3-3013, Dec16) 24-Jul-17 (No. DAE4-034, Jul17) Check Date (in house) D5-Apr-16 (in house check Jun-16) D6-Apr-16 (in house check Jun-16)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dac-17 Jul-18 Scheduled Check In house phase, Jun-18 In house phase, Jun-18 In house phase, Jun-18 In house phase, Jun-18 In house phase, Jun-18
Calibration Equipment used (M Primary Standards Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Relevance 20 dB Attemator Relevance 20 dB Attemator Relevance 20 dB Attemator Relevance Probe ES30V2 DAE4 Secondary Standards Power sensor E4418A Power sensor E4418A RF generator HP 5046C	BTE emisal for calibration; BN: 104778 SN: 103244 SN: 103245 SN: 103245 SN: 103245 SN: 103245 SN: 55277 (20k) SN: 55277 (20k) SN: 654 SN: G041250574 SN: 000110210 SN: US3642001700 CN: UC07590505	Car Bate (Centicitie No.) 94-Apr-17 (No. 217-02521/02522) 94-Apr-17 (No. 217-02521/02522) 94-Apr-17 (No. 217-02523) 97-Apr-17 (No. 217-02528) 91-Oec-16 (No. E33-3013, Dec16) 24-Jul-17 (No. DAE4-034, Jul-17) Check Date (in house) 95-Apr-16 (in house) (No.4, Jul-16) 95-Apr-16 (in house) (No.4, Jul-16) 96-Apr-16 (in house) (No.4, Jul-16) 96-Apr-17 (in house) (No.4, Jul-17)	Schesluled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Jul-18 Schesluled Check In house sheck: Jun-18 In house check: Jun-18
Calibration Equipment used (M Primary Standards Power sensor NRP-291 Power sensor NRP-291 Power sensor NRP-291 Reterence Probe ES3Div2 DAE4 Secondary Standards Power mater E44198 Power sensor E44198 Power sensor E44194 RF generator HP 8646C Nithwenk Analyzor HP 8753C	8 TE emisai for catibration) ID SN: 104778 SN: 103244 SN: 103245 SN: 03245 SN: 0325 SN: 0325 S	Cai Date (Canticele No.) D4-Apr-17 (No. 217-0252)(02522) D4-Apr-17 (No. 217-02523) 07-Apr-17 (No. 217-02523) 07-Apr-17 (No. 217-02523) 31-Dec-15 (No. ES3-3013, Dec16) 24-Jul-17 (No. DAE4-054, Jul-17) Check Date (in house) D5-Apr-16 (in house dheck Jun-16) D5-Apr-16 (in house dheck Jun-16) D5-Apr-16 (in house dheck Jun-16) D6-Apr-16 (in house dheck Jun-16) D4-Aug-39 (in house dheck Jun-16)	Schesluled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Dec-17 Jul-18 Schesluled Check In house sheck: Jun-18 In house check: Jun-18

Certificate No: EX3-7351_Dec17

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Report No. : E5/2018/90012 Page: 177 of 244

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Accreditation No.: SCS 0105

Accepted ov the Swiss Accreditation Service (SAE) The Swiss Accorditation Service is one of the signatories to the EA. Multilineral Agreement for the recognition of ralibration certificates

Glossary:

Giosany	
TSL	lissue simulating figuid.
NORMX/V.2	sensitivity in free space
ConvF	sensitivity in TS_ / NORMx.y.z
DCP	Globe compression point
CF	crest factor (1/duty cycle) of the RF storal
A, B, C, D	modulation dependent imparization parameters
Polarization m	2 fotalion around probe axis
Polarization #	If rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., h = 0 is normal to probe axis.
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices; Measurement
- Techniques", June 2013 IEC 62209-1, ""Measurement procedure for the assessment of Specific Absorption Rate (SAR) from handb)
- held and body-mounted devices used text to the ser (frequency range of 300 MHz to 6 GHz)", July 2016 IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wretexs communication devices. **D**)
- used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)". March 2010 d) KDB 865654. "SAR Measurement Requirements for 100 MHz to 6 GHz!"

Methods Applied and Interpretation of Parameters:

- NORMs 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 = NORM(y,y z * (requency, requency, 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, v.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 for media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal **Derecteristics**
- Ax, V, Z, Bx, V, Z, Cx, V, Z, Dx, V, Z, W, Y, Z, A, B, C, D are numerical inestization parameters assessed based on the state of power sweep for specific modulation signal. The parameters do not depend on frequency nor metha. VR is the maximum calibration range expressed in RMS voltage across the diode. ConvF and Boundary Effect Parameters: Assessed in Rat bitamorn using E-Weld (or Temperature Transfer .
- ConvP and Boundary Effect Parameters: Assessed in real phanom using ensert (or remperature that are Standard for f s B00 MHz) and inside waveguide using analytical field distributions based on power measurements for f = 800 MHz. The same setups are used for assessment of the parameters applied for boundary comparisation (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 and the boundary comparisation (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 the boundary comparison of the boundary. The sensitivity in TSL corresponds and the boundary comparison of the boundary. The sensitivity in TSL corresponds and the boundary comparison of the boundary of the boundary. to ADRAy y.z. "ConvE whereby the uncertainty corresponds to that given for ConvE. A frequency dependent ConvE 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 affset corresponds to the offset of virtual measurement center from the probe lin (on probe axis). No tolerance required
- . Connector Angle: The angle is assessed using the information gained by determining the NORMs (no uncertainty required).

Certificate No: EX3-7351_Dec17

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EX3DV4 - SN:7351

Report No. : E5/2018/90012 Page: 178 of 244

December 21, 2017

Probe EX3DV4

SN:7351

Manufactured: Calibrated:

October 13, 2014 December 21, 2017

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

Certificate No: EX3-7351_Dec17

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EX3DV4- SN:7351

December 21, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7351

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm $(\mu V/(V/m)^2)^4$	0.47	0.44	0.45	± 10.1 %
DCP (mV) ⁸	97.9	104.3	97.1	

Modulation Calibration Parameters

UID	Communication System Name		A dB	B dBõV	С	D dB	VR mV	Unc ^E (k=2)
0	CW	X	0.0	0.0	1.0	0.00	136.5	±3.8 %
		Y	0.0	0.0	1.0		136.4	
		Z	0.0	0.0	1.0		147.3	

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

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

Certificate No: EX3-7351_Dec17

Page 4 of 11

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

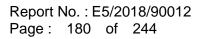
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EX3DV4-SN:7351

December 21, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7351

f (MHz) ^c	Relative Permittivity ^F	Conductivity (S/m)	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	41.9	0.89	10.92	10.92	10.92	0.55	0.80	± 12.0 %
835	41.5	0.90	10.60	10.60	10.60	0.55	0.80	± 12.0 %
900	41.5	0.97	10.31	10.31	10.31	0.40	0.95	± 12.0 %
1750	40.1	1.37	8.78	8.78	8.78	0.28	0.80	± 12.0 %
1900	40.0	1.40	8,50	8.50	8.50	0.29	0.80	± 12.0 %
2000	40.0	1.40	8.41	8.41	8.41	0.30	0.80	± 12.0 %
2300	39.5	1.67	8.03	8.03	8.03	0.31	0.84	± 12.0 %
2450	39.2	1.80	7.74	7.74	7.74	0.34	0.85	± 12.0 %
2600	39.0	1.96	7.51	7.51	7.51	0.36	0.81	± 12.0 %
5200	36.0	4.66	5.49	5.49	5.49	0.35	1.80	± 13.1 %
5300	35.9	4.76	5.15	5.15	5.15	0.40	1.80	± 13.1 %
5500	35.6	4.96	5.04	5.04	5.04	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.81	4.81	4.81	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.90	4.90	4.90	0.40	1.80	± 13.1 %

Calibration Parameter Determined in Head Tissue Simulating Media

⁶ Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), also 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 and be extended to ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity and be extended to ± 105 if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (is and ii) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (is and ii) is restricted to ± 5%. The uncertainty for indicated target issue parameters.
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⁶ At a set 3 (5 for frequencies below 3 GHz a

Certificate No: EX3-7351_Dec17

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EX3DV4- SN:7351

December 21, 2017

f(MHz) ^c	Relative Permittivity"	Conductivity (S/m) ^F	ConvF X	ConvF Y	ConvF Z	Alpha ^G	Depth ^G (mm)	Unc (k=2)
750	55.5	0.96	10.81	10.81	10.81	0.40	0.91	± 12.0 %
835	55.2	0.97	10.39	10.39	10.39	0.47	0.87	± 12.0 9
900	55.0	1.05	10.18	10.18	10.18	0.4B	0.85	± 12.0 %
1750	53.4	1.49	8.58	8.58	8.58	0.37	0.85	± 12.0 %
1900	53.3	1.52	8.22	8.22	8.22	0.43	0.80	± 12.0 9
2000	53.3	1.52	8.40	8.40	8.40	0.31	0.99	± 12.0 9
2300	52.9	1.81	7.98	7.98	7.98	0.40	0.87	± 12.0 %
2450	52.7	1.95	7.82	7.82	7.82	0.37	0.88	± 12.0 %
2600	52.5	2.16	7.56	7.56	7.56	0.32	0.93	± 12.0 %
5200	49.0	5.30	4.60	4.60	4.60	0.40	1.90	± 13.1 %
5300	48.9	5.42	4.56	4.56	4.56	0.40	1.90	± 13.1 9
5500	48.6	5.65	4.09	4.09	4.09	0.45	1.90	± 13.1 %
5600	48.5	5.77	3.98	3.98	3.98	0.45	1.90	± 13.1 %
5800	48.2	6.00	4.21	4.21	4.21	0.45	1.90	± 13.1 9

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7351

^C Frequency validity above 300 MHz of ± 100 MHz only applias 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 above 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 ± 100 MHz.

measured SAR values. Af the quencies above 3 GHz, the validity of tissue parameters (i, and or) senses (i, and or) is restricted to ± 0%. The uncertainty is the RSS of the Con-F uncertainty for indicated target tissue parameters. • AlphalOpeth are determined during california. SPEAR 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 tip distance larger than the boundary tip distance larger than the boundary tip distance larger than the boundary tip distance larger than the tip distance larger than the boundary tip distance larger than the boundary tip distance larger than the tip distance larger the tip distance larger th

diameter from the boundary

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EX30V4- SN/7351

December 21, 2017

(TEM-Cell:ifi110 EXX, Waveguide: R22) 1.5 14 13 (normalized) 1.2 1.1 Frequency response 1.0 0.9 0.8 07 0.6 0.5 ò 500 1000 1500 2000 2500 3000 f [[MHz]] R22 TEM

Frequency Response of E-Field

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

Page 7 of 1"

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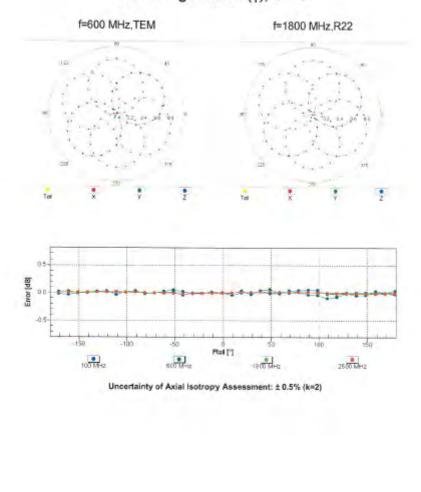
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December 21, 2017



Receiving Pattern (\$), 9 = 0°

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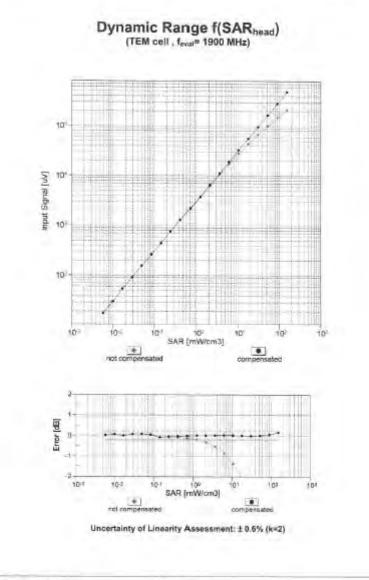
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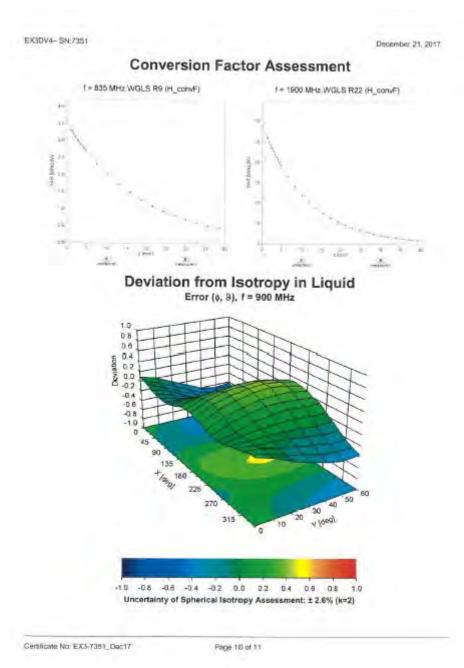
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EX3DV4- SN:7351

December 21, 2017

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7351

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (*)	68.8
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 Veff
Measurement system									
Probe calibration	6.00%	N	1	1	1	1	6.00%	6.00%	∞
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	∞
lsotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
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%	œ
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%	œ
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	∞
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	œ
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%	Ν	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	~
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	∞
Liquid permittivity (mea.)	1.83%	Ν	1	1	0.64	0.43	1.17%	0.79%	М
Liquid Conductivity (mea.)	2.43%	Ν	1	1	0.6	0.49	1.46%	1.19%	М
Combined standard uncertainty		RSS					11.57%	11.50%	
Expant uncertainty (95% confidence							23.14%	22.99%	

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

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Measurement	Uncertainty	evaluation	template	for DUT	SAR to	est (3-6G)
modouronnon	Oncontainty	ovaluation	tompiato		0/ 11 (11	501 (0 00)

A	с	D	е		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probabilit y	Div	Div Value	ci (1g)	ci (10g)	Standard uncertainty	Standard uncertainty	vi, or Veff
Measurement system									
Probe calibration	6.55%	N	1	1	1	1	6.55%	6.55%	00
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	00
lsotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	00
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%	00
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	00
Detection Limits	1.00%	R	√3	1.732	1	1	0.58%	0.58%	00
Readout Electronics	0.30%	N	1	1	1	1	0.30%	0.30%	00
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	00
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	00
Measurement drift (class A evaluation)	1.75%	R	√3	1.732	1	1	1.01%	1.01%	00
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	00
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	œ
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	œ
Probe Positioning with respect to phantom	2.90%	R	√3	1.732	1	1	1.67%	1.67%	œ
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	œ
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	œ
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	œ
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	00
Liquid permittivity (mea.)	2.23%	N	1	1	0.64	0.43	1.43%	0.96%	М
Liquid Conductivity (mea.)	1.72%	N	1	1	0.6	0.49	1.03%	0.84%	М
Combined standard uncertainty		RSS					11.85%	11.78%	
Expant uncertainty (95% confidence							23.70%	23.55%	

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9. Phantom Description

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e s а О

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

Tests

Tests The series production process used allows the imitation to test of first articles. Complete tests were made on the pre-series Type No. QD 000 P40 AA, Serial No. TP-1001 and on the series first article Type No. QD 000 P40 BA, Serial No. TP-1006. Certain parameters have been retested 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 standarda	6mm +/- 0.2mm at ERP	First article, All items
Material parameters	Dielectric parameters for required Mequancies	300 MHz - 0 GHz; Relative permittivity < 5. Loss tangent < 0.05	Material samples
Material resistivity	The material has been tested to be compatible with the liquids defined in the standards if handled and cleaned according to the instructions. Observe technical Note for material compatibility.	DEGMBE based simulating liquids	Pre-secies, First article, Material samples
Sagging	Compliant with the requirements according to the standards. Sagging of the flat section when filled with tissue simulating liquid	< 1% typical < 0.6% if siled with 155mm of HSL900 and without OUT below	Prototypes, Sample testing

- 5tandarda [1] CENELEC EN 50361 [2] IEEE Std 1528-2003 [3] IEC 62209 Part I 1234

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

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

Date	07.07.2005	80689
Signature / Stamp	and a second	Solymetry & Pagning Englinearing AQ (2000) The Solution of All Angle Angle (2000) Angle (2000) Angle A

Doc He Mit - 00 000 P40 C - *

1115 Рарк

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

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10. System Validation from Original Equipment Supplier

childhid by the Swiss Accreditation re Swiss Accreditation Service ultilateral Agreement for the rec	is one of the signatorie	s to the EA	coreditation No.: SCS 0108
SGS-TW (Auder			x D750V3-1015_Aug18
CALIBRATION C	ERTIFICATE		
D6ject	D750V3 - SN:10	15	
Calibration procedure(s)	QA CAL-05.v10		
	Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Calibration date:	August 23, 2018		
This calibration continuing documentation	elo fue inaccontino in pot	onal standards, which realize the physical ur	In all managing manager (CD)
		robability are given on the following pages ar	
		ry facility, and connect temperature (22 \pm 3)*	C and humidity < 70%.
Calibration Equipment used (M&TE		ry faqility, environment temperature (22 ± 3)* Cal Date (Cernificare No.)	C and humidity < 70%. Scheduled Calibration
Calibration Equipment used (M&TE Primary Standards Power meter NRP	L ontical for calibration) ID V SN: 104778	Cal Dise (Cerritiane No.) 04-Apr-18 (No. 217-0267202673)	Scheduled Calibration Apr-19
Calibration Equipment used (M&T) Primary Standards Power meter NRP Power sensor NRP-291	ID # SN: 104778 SN: 104278	Gal Diste (Certificane No.) D4-Apr-18 (No. 217-02672)02673) I44-Apr-18 (No. 217-02672)	Schedwied Galibration Apr-19 Apr-19
Calibration Equipment used (M&T) Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291	ID # SN: 104778 SN: 104244 SN: 103244	Cal Date (Certificare No.) D4-Apr-18 (No. 217-02672)02673) U4-Apr-18 (No. 217-02672) D4-Apr-18 (No. 217-02673)	Scheduled Calibrition Apr-19 Apr-19 Apr-19
Calibration Equipment used (M&T) Primary Standards Power moter NRP Power sensor NRP-281 Reference 20 dB Atteouator	ID # SN: 104778 SN: 104278	Gal Diste (Certificane No.) D4-Apr-18 (No. 217-02672)02673) I44-Apr-18 (No. 217-02672)	Schedwied Galibration Apr-19 Apr-19
Calibration Equipment used (M&T) Primary Standardis Power meter NRP Power sensor NRP-231 Power sensor NRP-201 Reference 20 dB Attonuator Type-N m/Ematch com/Unstiton	E ontical for carevation) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k)	Cal Diste (Cernificare No.) D4-Apr-18 (No. 217-02672)02673) D4-Apr-18 (No. 217-02672) D4-Apr-18 (No. 217-02673) D4-Apr-18 (No. 217-02682)	Scheduled Galibration Apr 19 Apr-19 Apr-19 Apr-19
Calibration Equipment used (M&T) Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N mitematch continetion Reference Probe EX3DV4	smbcal for carbeation) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5064 (20k) SN: 5047.27 (96327)	Cal Date (Certificane No.) 04-Apr-18 (No. 217-0267202673) 18-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) (M-Apr-18 (No. 217-02683)	Scheduled Calibration Apr 19 Apr 19 Apr 19 Apr 19 Apr 19 Apr 19
Calibration Equipment used (M&T) Primary Standards Power mieter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attanuator Type-N mitematch combination Reference Probe EX3DV4 DAE4	L ontical for cartication) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047.27.06327 SN: 7549 SN: 7549 SN: 601	Cal Date (Certificate No.) 04-Apr-18 (No. 217-0257202573) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02683) 06-Apr-18 (No. 217-02683) 30-Dec-17 (No. EX3-7349, Dec17) 25-Oct-17 (No. DAE4-681_Oct17)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Apr-19 Dac-18 Oct-18
Calibration Equipment used (M&TC Primary Standards Power meter NRP Power sensor NRP-231 Power sensor NRP-201 Reference 2 dB Attornator Type-N mitematch combination Reference Probe EX3DV4 DAE4 Secondary Standards	SNE 103244 SNE 103244 SNE 103244 SNE 103244 SNE 103245 SNE 5058 (2014) SNE 5058 (2014) SNE 5058 (2014) SNE 5047 27 (205327) SNE 7549	Gal Diste (Certificane No.) 04-Apr-18 (No. 217-02672)02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 30-Dec-17 (No. EX3-7349, Dec17)	Schedwied Calibration Apr-19 Apr-19 Apr-19 Apr-19 Apr-19 Dac-18
Calibration Equipment used (M&TC Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenuator Type-N infernation comfunation Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A	smbcal for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 508 (204) SN: 508 (204) SN: 508 (204) SN: 7349 SN: 601 ID #	Cal Dise (Certificane No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 94-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02683) 30-Dec-17 (No. EX3-7349, Dec17) 26-Oct-17 (No. DAE-4-601_Oct17) Check Date (in house)	Scheduled Calibration Apr 19 Apr 19 Apr 19 Apr 19 Apr 19 Dac 18 Dac 18 Dac 18 Scheduled Check
Calibration Equipment used (M&TC Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attonuator Type-N mt9match comt0nation Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A	smbcal for calexation) ID # SN: 104778 SN: 103244 SN: 103245 SN: 50472 / 06527 SN: 50472 / 06527 SN: 7548 SN: 601 ID # SN: GB37480704 SN: GB37480705 SN: W141082317	Cal Dise (Cerrificane No.) 04-Apr-18 (No. 217-02672)02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 05-Doc-17 (No. EX5-7349, Dec17) 25-Oct-17 (No. DAE-4-601_Oct17) 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)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Apr-19 Dac-18 Doct-18 Scheduled Check In focuse check: Oct-16 In focuse check: Oct-18
Calibration Equipment used (M&TC Primary Standards Power meter NRP Power sensor NRP-231 Power sensor NRP-201 Reference 208 Attonuator Pype-N mitematch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power meter HP 3481A Revent sensor HP 3481A RE generator RES SMT-06	smbcal for calexation) ID # SN: 1042778 SN: 104244 SN: 102245 SN: 5064 (2004) SN: 601 ID # SN: GB37480704 SN: W37278765 SN: W41062317 SN: 100972	Cal Dise (Cerrificane No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 94-Apr-18 (No. 217-02672) 94-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 05-Dec-17 (No. EXC-7349, Dec17) 25-Oct-17 (No. DAE-4-601_Oct17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-18 (in house check Oct-16)	Scheduled Calibration Apr 19 Apr 19 Apr 19 Apr 19 Apr 19 Apr 19 Dac 18 Dac 18 Dat 18 Scheduled Check In focuse check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Calibration Equipment used (M&TC Primary Standards Power meter NRP Power sensor NRP-231 Power sensor NRP-201 Reference 208 Attornator Pype-N mitematch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPMI-442A Power meter PMI-442A Power sensor HP 8481A RE generator RE SMT-06	smbcal for calexation) ID # SN: 104778 SN: 103244 SN: 103245 SN: 50472 / 06527 SN: 50472 / 06527 SN: 7548 SN: 601 ID # SN: GB37480704 SN: GB37480705 SN: W141082317	Cal Dise (Cerrificane No.) 04-Apr-18 (No. 217-02672)02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 05-Doc-17 (No. EX5-7349, Dec17) 25-Oct-17 (No. DAE-4-601_Oct17) 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)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-19 Apr-19 Dac-18 Doct-18 Scheduled Check In focuse check: Oct-16 In focuse check: Oct-18
Calibration Equipment used (M&TC Primary Standards Power meter NRP Power sensor NRP-231 Power sensor NRP-201 Reference 208 Attornator Pype-N mitematch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meter EPMI-442A Power meter PMI-442A Power sensor HP 8481A RE generator RE SMT-06	smbcal for calexation) ID # SN: 1042778 SN: 104244 SN: 102245 SN: 5064 (2004) SN: 601 ID # SN: GB37480704 SN: W37278765 SN: W41062317 SN: 100972	Cal Dise (Cerrificane No.) 04-Apr-18 (No. 217-02672/02673) 04-Apr-18 (No. 217-02672) 94-Apr-18 (No. 217-02672) 94-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 05-Dec-17 (No. EXC-7349, Dec17) 25-Oct-17 (No. DAE-4-601_Oct17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16) 15-Jun-18 (in house check Oct-16)	Scheduled Calibration Apr 19 Apr 19 Apr 19 Apr 19 Apr 19 Dac 18 Dac 18 Dac 18 Dac 18 Scheduled Greck In fouse check: Oct-18 In fouse check: Oct-18 In house check: Oct-18
Cakbrason Equipment used (M&TC Primary Standards Power motor NRP Power sensor NRP-291 Refarence 20 dB Attanuator Type-N midematch comtination Reference 20 dB Attanuator Type-N midematch comtination Reference 20 dB Attanuator Power sensor NP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Natwork Analyzer Agilant EB358A	SNI 103778 SNI 103244 SNI 103244 SNI 103244 SNI 103245 SNI 5058 (2014) SNI 5058 (2014) SNI 5058 (2014) SNI 5057 (2015) SNI 5057 SNI 0537292765 SNI 0537292765 SNI 00972 SNI 00972 SNI 00977	Call Date (Certificane No.) 04-Apr-18 (No. 217-02672)02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 30-Dec-17 (No. EX3-7349, Dec17) 25-Oct-17 (No. DAE4-601_Oct17) Check Date (in house) 07-Oct-15 (in house check Oct-16) 15-Jum-18 (in house check Oct-16) 31-Man-14 (in house check Oct-17)	Schedwied Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dac-18 Dac-18 Dac-18 Schedwied Check In house check: Od-16 In house check: Od-16 In house check: Od-16 In house check: Od-16 In house check: Od-16
All calibrations have been conclups Calibration Equipment used (M&TC Primary Standards Power motor NRP-231 Power sensor NRP-231 Power sensor NRP-231 Reference 20 dB Arbanuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A RF generator RAS SMT-06 Network Analyzer Agilient EB358A Calibrated by:	smbcal for calexation) ID # SN: 104778 SN: 102244 SN: 102245 SN: 5047 2 / 06527 SN: 5047 2 / 06527 SN: 7548 SN: 601 ID # SN: GB37480704 SN: GB37480705 SN: 053728765 SN: 100972 SN: 100975 SN: 100975 SN: 100975 SN: 100975 SN: 1009	Cal Dise (Cerrificane No.) 04-Apr-18 (No. 217-02672)02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02683) 30-Dac-17 (No. DAE-4-601_Oct17) 25-Oct-17 (No. DAE-4-601_Oct17) Of-oct-15 (In flows of theth Oct-16) 07-Oct-15 (In flows of theth Oct-16) 15-Jun-15 (In flows of theth Oct-16) 15-Jun-15 (In flows of theth Oct-16) 15-Jun-15 (In flows of theth Oct-16) 15-Jun-16 (In flows of theth Oct-17) Function	Scheduled Calibration Apr 19 Apr 19 Apr 19 Apr 19 Apr 19 Dac 18 Dac 18 Dac 18 Scheduled Greck In fouse check: Oct-18 In fouse check: Oct-18 In house check: Oct-18
Calibration Equipment used (M&TC Primary Standards Power meter NRP Power sensor NRP-291 Power sensor NRP-291 Reterence 20 dB Attenuator Type-N millematch comtinetion Reference Probe EX3DV4 DAE4 Secondary Standards Power sensor HP 8481A Power sensor HP 8481A Re generator HP 8481A Re gen	Exritical for carevetion) ID # SN: 1042778 SN: 1042445 SN: 5058 (204) SN: 5058 (204) SN: 5057 2 / 06327 SN: 7349 SN: 601 ID # SN: GB37480704 SN: US37282765 SN: US37282765 SN: US37282765 SN: US37282765 SN: US37282765 SN: US37282765 SN: US37282765 SN: US41060477 Name Michael Weber	Cal Date (Cerrificante No.) 04-Apr-18 (No. 217-026720/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 04-Apr-18 (No. 217-02682) 05-Dec-17 (No. EX2-734B_Dec17) 25-Oct-17 (No. EX2-734B_Dec17) 25-Oct-17 (No. EX2-734B_Dec17) 25-Oct-17 (No. EX2-734B_Dec17) 25-Oct-17 (No. EX2-734B_Dec17) 25-Oct-17 (No. EX2-734B_Dec17) 25-Oct-17 (No. EX2-734B_Dec17) 25-Oct-15 (In house otherk Oct-16) 07-Oct-15 (In house otherk Oct-16) 15-Jun-15 (In house otherk Oct-16) 15-Jun-15 (In house otherk Oct-16) 31-Mar-14 (In house otherk Oct-16) Laboratory Technician	Scheduled Galibration Apr 19 Apr 19 Apr 19 Apr 19 Apr 19 Apr 19 Dec 18 Dec 18 Scheduled Check In fouse check Oct-18 In fouse check Oct-18

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

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Report No. : E5/2018/90012 Page: 191 of 244

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



Schweizerischer Kalibriordienst Service suisse d'diatennage C Servizio avizzoro di Inratura Suiss Calibration Service

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Accreditation No.: SCS 0108

Accredited by the Swise Accreditation Service (SAS)

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

TSL ConvF

N/A

fissue simulating liquid sensitivity in TSL / NORM x,y,z not applicable or not measured

Callbration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless
- Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)', March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 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%

Centilicate No: D760V3 1015 Aug18

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Measurement Conditions

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

DASY Version	DASY5	V52.10,1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phentom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, d2 = 5 mm	
Frequency	750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.9	0.89 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	$40.9 \pm 6 \%$	0.89 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	2.07 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	8.23 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ¹ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	condition 250 mW input power	1.34 W/kg

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55,5	miodm 86.0
Measured Body TSL parameters	(22.0 ± 0.2) °C	55.0±6%	0.96 mho/m ± 8 %
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	2.16 W/lkg
SAR for nominal Body TSL parameters	normalized to 1W	8.62 W/kg = 17.0 % (k=2)
	condition	
SAR averaged over 10 cm ³ (10 g) of Body TSL SAR measured	condition 250 mW input power	1.43 W/kg

Certificate No. D750V3-1015_Aug16

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Imperdance, transformed in fand point	53.4 <i>Ω</i> + 0.0 <i>β</i> Ω
Return Loss	- 29.6 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.2 (7 - 3.6)02
Fleturn Loss	- 27.8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.0.37 ns	

After long term use with H00W radiated power, only a slight warming of the dipole near the feedpoint can be measured.

The dipole is made of standard semirigid poaxed 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 SAFI data are not affected by this change. The overall cipole length is still according to the Standard.

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	March 22, 2010

Certificate No: D756V3-1015 Aug 15

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

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DASY5 Validation Report for Head TSL

Date: 22.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

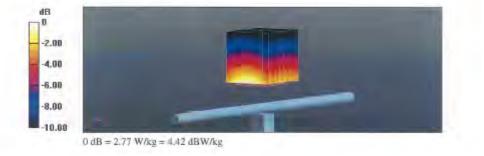
DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1015

Communication System: UID 0 - CW; Frequency: 750 MHz Medium parameters used: f = 750 MHz; $\sigma = 0.89$ S/m; $v_r = 40.9$; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.22, 10.22, 10.22) @ 750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection) *
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- · Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

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 = 59.12 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 3.11 W/kg SAR(1 g) = 2.07 W/kg; SAR(10 g) = 1.34 W/kg Maximum value of SAR (measured) = 2.77 W/kg



Certificate No: D750V3-1015_Aug18

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

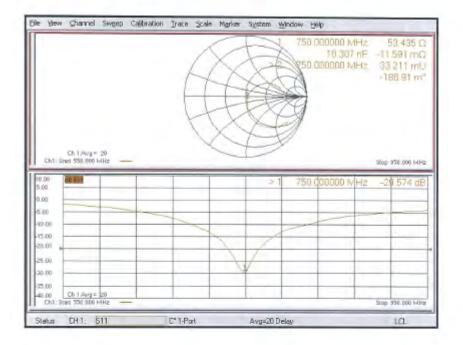
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Impedance Measurement Plot for Head TSL



Certificate No: D750V3-1015 Aug18

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f (886-2) 2298-0488



DASY5 Validation Report for Body TSL

Date: 23.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole 750 MHz; Type: D750V3; Serial: D750V3 - SN:1015

Communication System: UID 0 - CW; Frequency: 750 MHz Medium parameters used: f = 750 MHz; $\sigma = 0.96 \text{ S/m}$; $a_r = 55$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.19, 10.19, 10.19) @ 750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection) ٠
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017 .
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005 .
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439) .

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

Measurement grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 57.93 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 3.17 W/kg SAR(1 g) = 2.16 W/kg; SAR(10 g) = 1.43 W/kg Maximum value of SAR (measured) = 2.85 W/kg



0 dB = 2.85 W/kg = 4.55 dBW/kg

Certificate No: D750V3-1015 Aug18

Page 7 of 8

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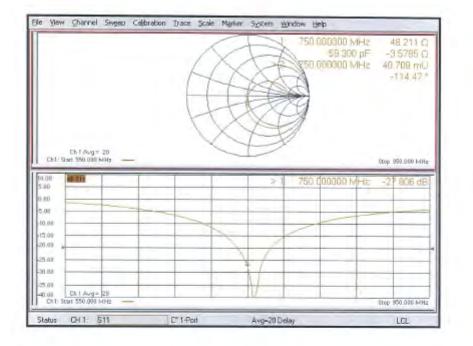
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Impedance Measurement Plot for Body TSL



Certificate No: D750V3-1015_Aug18

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Report No. : E5/2018/90012 Page: 198 of 244

	Switzerland		Service suisse d'étaionnage Servizio svizzero di tarature Swiss Calibration Service
credited by the Swiss Accreditation be Swise Accreditation Service ultilateral Agreement for the rec	is one of the signatorie	s to the EA	correctituation No.: SCS 0108
lient SGS-TW (Auder	1		o: D835V2-4d063_Aug18
CALIBRATION C	ERTIFICATE		
Doject	D835V2 - SN:4d	063	
Calibration procedure(s)	QA CAL-05.v10 Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Calibration date:	August 23, 2018		
		ry facility, environment temperature (22 ± 3)*	C and humidity < 70%.
Calibration Equipment used (M&TE Primary Standards	E critical for cellocation)	Cal Cate (Centricate No.)	C and humidity < 70%. Scheduled Calibration
Calibration Equipment used (M&TE Primary Standards Power meter NRP	E critical for celibration) ID # SN: 104778	Cal Calé (Cemficite No.) 04-Apr-15 (No. 217-02672)02673)	Scheduled Calibration
Calibration Equipment used (M&TE Primary Standards *ower meter NRP *ower sensor NRP-281	E critical for celloration) ID # SN: 104778 SN: 103244	Cal Date (Camforte No.) 04-Apr-18 (No. 217-02872)02673) 04-Apr-18 (No. 217-02672)	Schedured Calibration Apr-19 Apr-10
Calibration Equipment used (M&TE Primary Standards Power meter NRP Power sensor NRP-281 Power sensor NRP-281	E critical for cellocation) ID # SN: 104778 SN: 102244 SN: 103245	Cal Date (Camficete No.) 04-Apr-18 (No. 217-02072)02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673)	Schedured Calibration Apr.19 Apr.10 Apr.19
Calibration Equipment used (M&TE Primary Standards Power meter NRP Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator	E critical for cellocation) ID # SN: 104778 SN: 106244 SN: 106245 SN: 2658 (20k)	Cal Daté (Camficate No.) 04-Apr-15 (No. 217-02672)02673) 04-Apr-15 (No. 217-02672) 04-Apr-15 (No. 217-02673) 04-Apr-16 (No. 217-02602)	Scheduled Calibration Apr-19 Apr-19 Apr-18 Apr-18
Calibration Equipment used (M&TE Primary Standards Power meter NRP Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenuator Type-M misematrin combination	E critical for cellocation) ID # SN: 104778 SN: 102244 SN: 103245 SN: 5068 (20k) SN: 5047.2 / 06327	Cal Caté (Cemficate No.) 04-Apr-18 (No. 217-02072/02073) 04-Apr-18 (No. 217-02072) 04-Apr-18 (No. 217-02072) 04-Apr-18 (No. 217-02012) 04-Apr-18 (No. 217-02082)	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-18 Apr-19
Calibration Equipment used (M&TE Primary Standards Power meter NRP Power sensor NRP-281 Power sensor NRP-281 Reference 20 dB Attenustor Type-N mismatch combination Refatence Probe EX3DV4	E critical for cellocation) ID # SN: 104778 SN: 106244 SN: 106245 SN: 2658 (20k)	Cal Daté (Camficate No.) 04-Apr-15 (No. 217-02672)02673) 04-Apr-15 (No. 217-02672) 04-Apr-15 (No. 217-02673) 04-Apr-16 (No. 217-02602)	Scheduled Calibration April 19 April 10 April 18
Calibration Equipment used (M&TE Primary Standards Power meter NRP-201 Power sensor NRP-201 Power sensor NRP-201 Polerance 20 dB Attenustor Type-N misematch combination Relatence Prote EX3DV4 DAE4 Secundary Standards	E critical for cellocation) ID # SN: 104778 SN: 103245 SN: 2058 (20k) SN: 5058 (20k) SN: 5047.2 / 06327 SN: 7349 SN: 601 ID #	Cal Date (Certificate No.) 04-Apr-18 (No. 217-02872)02673) 04-Apr-18 (No. 217-02872) 04-Apr-18 (No. 217-02803) 04-Apr-18 (No. 217-02802) 04-Apr-18 (No. 217-02803) 30-Dac-17 (No. EXS-7349, Dac-17) 26-Oct-17 (No. DAE+601_Oct17) Check Date (in house)	Schedured Calibration Apr.19 Apr.19 Apr.19 Apr.19 Dec.18 Oct-18 Oct-18 Schedured Check
Calibration Equipment used (Marte Primary Standards Power meter NRP Power sensor NRP-281 Reference 20 dB Attenustor Type-N miseration combination Retainince Probe EX3DV4 DAE4 Securidary Standards Power major EPM-442A	Critical for cellocation) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5047 27 06327 SN: 7349 SN: 601 ID # SN: 6B37480704	Cal Date (Cardforte No.) 04-Apr-18 (No. 217-02872)02673) 04-Apr-18 (No. 217-02872) 04-Apr-18 (No. 217-02873) 04-Apr-18 (No. 217-02802) 04-Apr-18 (No. 217-02802) 04-Apr-18 (No. 217-02802) 30-Dec-17 (No. EX3-7349_Dec-17) 28-Oct-17 (No. DAE4-601_Oct17) Check Date (in house) 07-Oct-15 (in house check Oct-16)	Schedured Calibration Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Dec-18 Dec-16 Schedured Check In house check: Oct-18
Calibration Equipment used (Marte Primary Standards Power meter NRP Power sensor NRP-281 Power sensor NRP-281 Reterance 20 dB Attenuator Type-N mismatch combination Retaining Proba EX30V4 DAE4 Secundary Standards Power major EPM-442A Power major EPM-442A Power sensor HP S481A	Critical for celibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5047.2 (20) SN: 5047.2 (20) SN: 5047.2 (20) SN: 5047.2 (20) SN: 5047.2 (20) SN: 5047.2 (20) SN: 601 ID # SN: 6B37480704 SN: US37292783	Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672)/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 2167-02683) 30-Dac-17 (No. 2167-02683) 30-Dac-17 (No. 2167-02683) 26-Oct-17 (No. 2467-02683) 26-Oct-17 (No. 2467-02683) 20-Oct-15 (in house) 07-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16)	Schedured Calibration Apr-19 Apr-10 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Dec-18 Schedured Check In Insuse Check: Oct-18 in Insuse Check: Oct-18
Calibration Equipment used (Marte Primary Standards Power meter NRP Power sensor NRP-281 Power sensor NRP-281 Reference 20 dB Attenuator Type-N mismatich combination Relatence Probe EX3DV4 DAE4 Secundary Standards Power meter EPM-442A Power sensor HP S481A Power sensor HP S481A	Entical for celibration) ID # SN: 104778 SN: 102444 SN: 103245 SN: 5047.27 (8087) SN: 5047.27 (8087) SN: 5047.27 (8087) SN: 5047.27 (8087) SN: 601 ID # SN: 6B37480704 SN: U\$37292783 SN: MY41082317	Cal Daté (Camilicate No.) 04-Apr-18 (No. 217-02872/02673) 04-Apr-18 (No. 217-02872) 04-Apr-18 (No. 217-02873) 04-Apr-18 (No. 217-02883) 30-Dac-17 (No. 217-02883) 30-Dac-17 (No. 2167-02883) 30-Dac-17 (No. 2167-02883) 30	Scheduled Calibration Apr-19 Apr-19 Apr-19 Apr-18 Apr-19 Deb-18 Oct-18 Oct-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Calibration Equipment used (M&TE Primary Standards Power meter NRP-201 Power sensor NRP-201 Power sensor NRP-201 Reference 20 dB Attenustor Type-N misematch combination Reterence Probe EX3DV4 DAE4 Securidary Standards Power meter EPM4-442A Power meter EPM4-442A Power sensor HP 3401A RF generator P&S SMT-06	Critical for celibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5047.2 (20) SN: 5047.2 (20) SN: 5047.2 (20) SN: 5047.2 (20) SN: 5047.2 (20) SN: 5047.2 (20) SN: 601 ID # SN: 6B37480704 SN: US37292783	Cal Date (Certificate No.) 04-Apr-18 (No. 217-02672)/02673) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 2167-02683) 30-Dac-17 (No. 2167-02683) 30-Dac-17 (No. 2167-02683) 26-Oct-17 (No. 2467-02683) 26-Oct-17 (No. 2467-02683) 27-Oct-15 (in house check Oct-16) 07-Oct-15 (in house check Oct-16)	Schedured Calibration Apr-19 Apr-10 Apr-18 Apr-18 Apr-19 Dec-18 Dec-18 Oct-16 Schedured Check In house check: Oct-18 in house check: Oct-18
Calibration Equipment used (Marte Primary Standards Power meter NRP Power sensor NRP-201 Power sensor NRP-201 Power sensor NRP-201 Neterince 20 dB Attenuator Type-N mismatch combination Relationce Photo EX30V4 DAE4 Secundary Standards Power meter EPM-442A Power sensor HP S401A Power sensor HP S401A Power sensor HP S401A RF ganarator R&B SMT-06 National Analyzai Agitent ER3584	E critical for odibration) ID # SN: 104778 SN: 102244 SN: 103245 SN: 5066 (20k) SN: 5067 (27) 06327 SN: 7349 SN: 601 ID # SN: 6637480704 SN: 0637290783 SN: Mr4 (082317 SN: 10541080477 Name	Cal Date (Centificate No.) 04-Apr-18 (No. 217-02672) 02573) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 217-02683) 00-Oct 15 (in house dhot. Oct-16) 07-Oct-15 (in house dhot. Oct-16) 07-Oct-15 (in house dhot. Oct-16) 15-Jun-15 (in house dhot. Oct-16) 15-Jun-15 (in house dhot. Oct-16) 15-Jun-15 (in house dhot. Oct-16) 15-Jun-16 (in house dhot. Oct-16) 15-Jun-16 (in house dhot. Oct-17) Function	Schedured Calibration Apr.19 Apr.19 Apr.19 Apr.19 Dec.18 Oct-18 Schedured Check In focuse check: Oct-18 In focuse check: Oct-18
Calibration Equipment used (Marte Primary Standards Power meter NRP Power sensor NRP-201 Power sensor NRP-201 Reterence 20 dB Attenuator Type-N mismatch combination Retaining Probe EX30V4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP S401A Power sensor HP S401A RF ganarator R&B SMT-06 Natecak Analyzar Agilent ER35R4	Critical for cellocation) ID # SN: 104778 SN: 102244 SN: 103245 SN: 2058 (20k) SN: 2047 27 06327 SN: 2059 (20k) SN: 2047 27 06327 SN: 06972 SN: 105972 SN: 105972 SN: 105972	Cal Date (Certificate No.) 04-Apr-18 (No. 217-02872/02673) 04-Apr-18 (No. 217-02872) 04-Apr-18 (No. 217-02873) 04-Apr-18 (No. 217-02802) 04-Apr-18 (No. 217-02802) 04-Apr-18 (No. 217-02883) 30-Dac-17 (No. EXS-7349_Dec-17) 28-Oct-17 (No. EXS-7349_Dec-17) 28-Oct-17 (No. DAE+601_Oct-17) 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) 31-Mae-14 (in house check Oct-17)	Scheduled Calibration Apr:19 Apr:19 Apr:19 Apr:18 Apr:18 Deb:18 Deb:18 Oct-18 Scheduled Check III house check: Oct-18 III house check: Oct-18
Calibration Equipment used (M&TE Primary Standards Power meter NRP Power sensor NRP-281 Power sensor NRP-281 Reference 20 dB Attenuator	E critical for odibration) ID # SN: 104778 SN: 102244 SN: 103245 SN: 5066 (20k) SN: 5067 (27) 06327 SN: 7349 SN: 601 ID # SN: 6637480704 SN: 0637290783 SN: Mr4 (082317 SN: 10541080477 Name	Cal Date (Centificate No.) 04-Apr-18 (No. 217-02672) 02573) 04-Apr-18 (No. 217-02672) 04-Apr-18 (No. 217-02673) 04-Apr-18 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 217-02683) 30-Dac-17 (No. 217-02683) 00-Oct 15 (in house dhot. Oct-16) 07-Oct-15 (in house dhot. Oct-16) 07-Oct-15 (in house dhot. Oct-16) 15-Jun-15 (in house dhot. Oct-16) 15-Jun-15 (in house dhot. Oct-16) 15-Jun-15 (in house dhot. Oct-16) 15-Jun-16 (in house dhot. Oct-16) 15-Jun-16 (in house dhot. Oct-17) Function	Scheduled Calibration Apr:19 Apr:19 Apr:19 Apr:18 Apr:18 Deb:18 Deb:18 Oct-18 Scheduled Check III house check: Oct-18 III house check: Oct-18

Certificate No: D835V2-4d063_Aug18

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



Schweizerischer Kalibrierdienst S Service suisse d'Melonnage C Servizio svizzero di lorabine S Stries Calibration Service

Accreditation No.: SCS 0108

According by the Swiss Accredit/itim Service (SAS)

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Glossary: TSL ConvF

N/A

Ilssue simulating liquid sensitivity in TSL / NORM x,y,z not applicable or not measured

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) In the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1. "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
- 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%.

Gertificate No: D635V2-4d063 Aug18

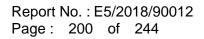
Patter 2 of II

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Measurement Conditions

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

DASY Version	DASY5	V52.10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantóm	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz, = 5 mm	
Frequency	835 MHz = 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	mortin 06.0
Measured Head TSL parameters	(22.0 ± 0.2) °C	40.7 ± 6 %	0.92 mho/m ± 8 %
Head TSL temperature change during test	< 0.5 °C	_	1000

SAR result with Head TSL

SAR averaged over 1 cm ¹ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.42 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.48 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ² (10 g) of Head TSL	condition	
SAR averaged over 10 cm ² (10 g) of Head TSL SAR measured	condition 250 mW input power	1.55 W/kg

Body TSL parameters

The following parameters and calculations were applied

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	65.2	0.97 mholm
Measured Body TSL parameters	(22.0 ± 0.2) °C	54.9±6%	0.99 mho/m + 6 %
Body TSL temperature change during test	< 0.5 °C		

SAR result with Body TSL

SAR averaged over 1 cm ⁰ (1 g) of Body TSL	Condition	
SAR measured	250 mW input pawer	2.43 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.56 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR averaged over 10 cm ⁵ (10 g) of Body TSL SAR measured	condition 250 mW input power	1.59 W/kg

Certificate No. DB35V2-4d063_Aug18

Page ä of B

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Prpedapce, transformed to feed point	51.3 Ω - 1.8 jΩ	
Relum Losa	- 33.3 dB	

Antenna Parameters with Body TSL

impedance, transformed to feed point	47.7 Ω - 4.4 jΩ
Return Loss	- 25,8 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.393 ns

After long term use with 100W radiated power, only a slight warming of the cipole 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 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	November 27, 2006

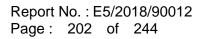
Certificate No: D835V2-4d063_Aug18

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Date: 22.08.2018

DASY5 Validation Report for Head TSL

SG

Test Laboratory: SPEAG, Zurich, Switzerland

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

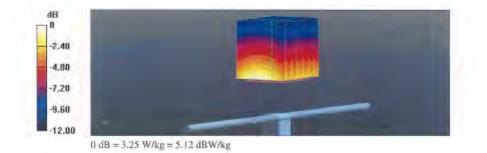
Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz; $\sigma = 0.92$ S/m; $\varepsilon = 40.7$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(9.9, 9.9, 9.9) @ 835 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (front); Type: QD 00L P49 AA; Serial: 1001
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

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 = 62.96 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 3.70 W/kg SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.55 W/kg Maximum value of SAR (measured) = 3.25 W/kg



Certificate No: D835V2-4d063 Aug18

Page 5 of 8

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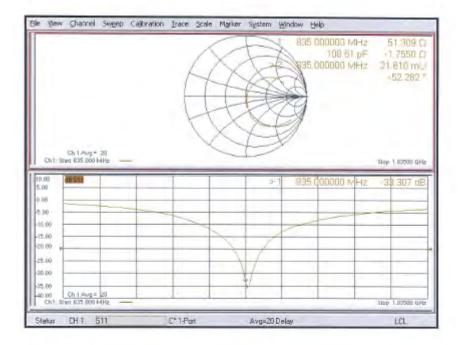
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Impedance Measurement Plot for Head TSL



Certificate No: D635V2-4d063_Aug18

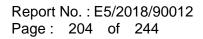
Page 6 of 8

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f (886-2) 2298-0488



Date: 23.08.2018



DASY5 Validation Report for Body TSL

Test Laboratory: SPEAG, Zurich, Switzerland

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

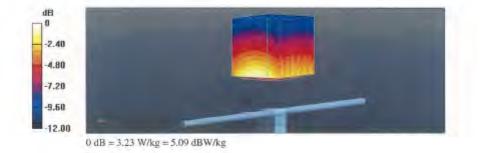
Communication System: UID 0 - CW; Frequency; 835 MHz Medium parameters used: f = 835 MHz; σ = 0.99 S/m; ε = 54.9; p = 1000 kg/m⁴ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(10.05, 10.05, 10.05) @ 835 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 4.9 (Back); Type: QD 00R P49 AA; Serial: 1005
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439) .

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 = 60.67 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 3.61 W/kg SAR(1 g) = 2.43 W/kg; SAR(10 g) = 1.59 W/kg Maximum value of SAR (measured) = 3.23 W/kg



Certificate No: D635V2-4d063_Aug18

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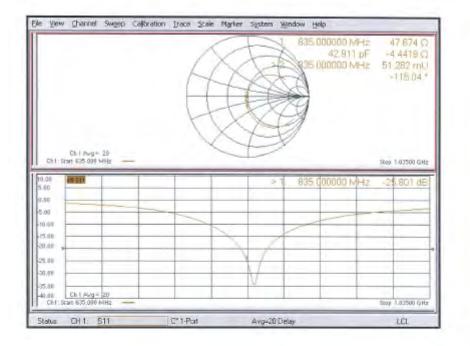
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Impedance Measurement Plot for Body TSL



Certificate No: D835V2-4d063_Aug18

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Report No. : E5/2018/90012 Page: 206 of 244

Schmid & Partner Engineering AG Zeughausstrasse 43, 8004 Zurich,	Switzerland		Schweizerischer Kalibrierdienst Service suisse d'étaionnage Servizie svizzere di terstura Swise Calibration Service
According by the Swiss According to The Swiss Accorditation Service I Multilatoral Agreement for the rec	is one of the signatorie	s to the EA.	ccreditation No.: SCS 0108-
Cilent SGS-TW (Auden	ŋ	Certificate N	o: D1750V2-1008_Aug18
CALIBRATION C	ERTIFICATE		
Object	01750V2 - SN:1	800	
Önlörnicn procedwei(s)	QA CAL-05.v10 Calibration proce	dure for dipole validation kits ab	ove 700 MHz
Calibration date:	August 30, 2018		
Calibration Equipment used (M&TE	Conflication confidention)	ry facility: environment temperature (22 ± 3)*	
Primary Standards	ID #	Ca Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	04-Apr-18 (No: 217-02672/02673)	Apr-19
Power senso: NRP-Z91	SN: 103244	04-Apr-18 (No. 217-02672)	Apr-19
Power sensor NRP-Z91	SN: 103245	04-Apr-18 (No. 217-02673)	Apr-18
Relatence 20 dB Attenuator Type-N mismatch combination	SNE 5058 (20k) BNL 5047.2706327	04-Apr 16 (No. 217-02682) 04-Apr 16 (No. 217-02683)	Apr 19 Apr 19
PACE-IN INDOVIDICES DOBID/PRINCES	SNL 7349	30-Dec-17 (No. EX3-7349_Dec17)	Cec-18
	SN: 601	26-Oct-17 (No. DAE4-601 Oc117)	Oct-18
Reference Probe EX3DV4	1		
Relevence Probe EX3DV4 DAE4	ID #	Check Date (in house)	Scheduled Check
Relevence Probe EX3DV4 DAE4 Secondary Standards	10. The second se	and the second sec	
Nelexence Probe EX30V4 DAE4 Secondary Standards Power meter EPM-442A	SN: GB37480704	07-Dot-15 (in house check Oct-16)	In house check: Oct-18
Neteence Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A	SN: GB37480704 SN: US37292783	97-Dct-15 (in house check Oct-16)	In house check: Oct-18
Nelesence Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A	SN: GB37480704 SN: US37292783 SN: WY41082317	97-Oct-15 (in house check Oct-16) 97-Oct-15 (in house check Oct-16)	In house check: Oct-18 In house check: Oct-18
Nelesence Probe EX3DV4 DAE4 Secondary Standards Power motor EPM-442A Power sensor HP 8481A Rower sensor HP 8481A RF generator R&S SMT-06	SN: GB37480704 SN: US37292783	97-Dct-15 (in house check Oct-16)	In house check: Oct-18
Relevence Probe EX3DV4 DAE4 Secondary Standards Power midlar EPM-442A Power sensor HP 8481A Rower sensor HP 8481A RF generator R&S SMT-06	SN: GB37490704 SN: US37292785 SN: MY41082317 SN: 100972 SN: US41080477	97-Dct-15 (in house check Oct-16) 97-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-18) 31-Mar-14 (in house check Oct-17)	In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Nelesence Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-00 Network Analyzer Agilent E8358A	SN: GB37490704 BN: US37292785 SN: WK41092317 SN: 100972 SN: US41080477 Name	97-Dct-15 (in house check Oct-16) 97-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-18) 31-Mar-14 (in house check Oct-17) Function	In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Relevence Probe EX3DV4	SN: GB37490704 SN: US37292785 SN: MY41082317 SN: 100972 SN: US41080477	97-Dct-15 (in house check Oct-16) 97-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-18) 31-Mar-14 (in house check Oct-17)	In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Relevence Probe EX3DV4 DAE4 Secondary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A RF generator R&S SMT-06 Network Analyzer Agiloni E8358A	SN: GB37490704 BN: US37292785 SN: WK41092317 SN: 100972 SN: US41080477 Name	97-Dct-15 (in house check Oct-16) 97-Oct-15 (in house check Oct-16) 15-Jun-15 (in house check Oct-18) 31-Mar-14 (in house check Oct-17) Function	In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18

Certificate No: D1750V2-1008_Aug18

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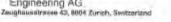
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Report No. : E5/2018/90012 Page: 207 of 244

Calibration Laboratory of Schmid & Partner Engineering AG





Schweizerischer Kalibrierdien 5 Service suissa d'étalonneg Ċ Servizin svizsero di taratura 5 Swiss Calibration Service

Accessitation No.: SCS 0108

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

Glossary:

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of
- 300 MHz to 6 GHz)", July 2016 c) 1EC 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.
- Anlenna 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 leed 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: D1750V2-1008, Aug18

Page 2 of 8

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Measurement Conditions

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

DASY Version	DASY5	V52,10.1
Extrapolation	Advanced Extrapolation	
Phantom	Modular Fiat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacor
Zoom Scan Resolution	dx, dy, dz; = 5 mm	
Frequency	1750 MHz ± 1 MHz	

Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.1	1.37 mbolm
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.9 ± 6 %	1.34 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm ¹ (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.07 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	35.5 W/kg = 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Heed TSL. SAR measured	condition 250 mW input power	-4.81 W/kg

Body TSL parameters

The following parameters and calculations were applied.

	Temperatura	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	53.4	1.49 mino/m
Measured Body TSL parameters	(22.0 ± 0.2) *C	53.4 ± 0 %	1.47 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	9.16 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	37.0 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR everaged over 10 cm ³ (10 g) of Body TSL SAR measured	condition 250 mW input power	4.93 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	52.0 Ω + 1.6 jΩ	
Ratum Loss	+ 32.2 dB	

Antenna Parameters with Body TSL

Impedance, transformed to feed point	=i6.3 Ω + 0.6 jΩ
Ristum Loss	- 34.7 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.207 ns	
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After long terra use with 100W radiated power, only a slight warming of the dipole near the leadpoint 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 aim 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 aims 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	February 11, 2009

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DASY5 Validation Report for Head TSL

Test Laboratory: SPEAG, Zurich, Switzerland

Date: 30.08.2018

DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

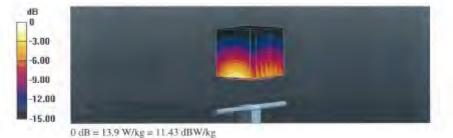
Communication System: UID 0 - CW; Frequency: 1750 MHz Medium parameters used: f = 1750 MHz; $\sigma = 1.34 \text{ S/m}$; $e_r = 38.9$; $p = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.5, 8.5, 8.5) @ 1750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (front); Type: QD 000 P50 AA; Serial: 1001 .
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439)

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 = 107.6 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 16.3 W/kg SAR(1 g) = 9.07 W/kg; SAR(10 g) = 4.81 W/kg Maximum value of SAR (measured) = 13.9 W/kg



Certificate No: D1750V2-1008_Aug18

Page 5 of 8

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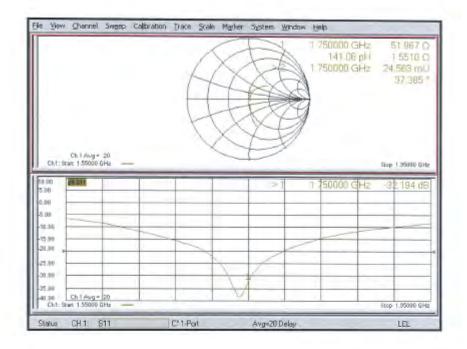
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Impedance Measurement Plot for Head TSL



Certificate No: D1750V2-1008 Aug18

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f (886-2) 2298-0488



DASY5 Validation Report for Body TSL

Date: 30.08.2018

Test Laboratory: SPEAG, Zurich, Switzerland

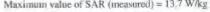
DUT: Dipole 1750 MHz; Type: D1750V2; Serial: D1750V2 - SN:1008

Communication System: UID 0 - CW; Frequency: 1750 MHz Medium parameters used: f = 1750 MHz; $\sigma = 1.47 \text{ S/m}$; $\epsilon_c = 53.4$; $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.35, 8.35, 8.35) @ 1750 MHz; Calibrated: 30.12.2017
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Phantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Serial: 1002
- DASY52 52.10.1(1476); SEMCAD X 14.6.11(7439) ٠

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 = 101.7 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 15.9 W/kg SAR(1 g) = 9.16 W/kg; SAR(10 g) = 4.93 W/kg Maximum value of SAR (measured) = 13.7 W/kg





Certificate No: D1750V2-1008_Aug18

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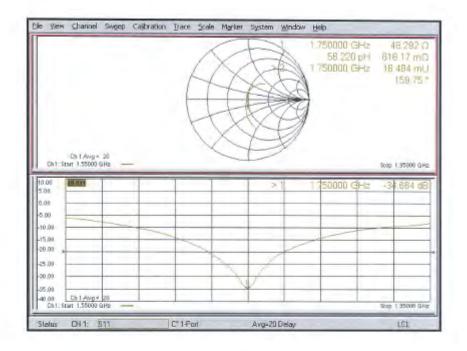
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Impedance Measurement Plot for Body TSL



Certificate No: D1750V2-1008_Aug18

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Report No. : E5/2018/90012 Page: 214 of 244

CALIBRATION CERTIFICATE Deleter D1 900V2 - SN/5d173 Select D1 900V2 - SN/5d173 Selectore D1 900V2 - SN/5d173 Selectore D1 900V2 - SN/5d173 Selectore Selectore Selectore Selectore Selectore Sile 104 celements Participane Sile 10477 Selectore Sile 10477 Si	Engineering AG nughausstrasse 43, 8004 Zuric	ry of		Service suisse d'étalonnage Servizio svizzero di teratura
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Normality SN: 100972 15-Jun-15 (in house check Od-16) In house check: Od-18 Network Analyzer HP 8783E SN: US37290585 18-Od-01 (in house check Od-17) In house check: Od-18 Name Function Function Strington Castorsted hy Claudio Loubler Laboratory Technician Strington	Power sensor NRP-291 Reference 20 dB Alternator Type-N misristich combination Reference Probe EX3DV4 DAE4 Secondary Standards Power motor EPIM-442A	SN 103245 SN: 5058 (20k) SN: 5087 2 / 06327 SN: 7349 SN: 601 ID # SN: GB37460704	D4-Apr-18 (No. 217-02572/02673) D4-Apr-18 (No. 217-02572) D4-Apr-16 (No. 217-02573) D4-Apr-18 (No. 217-02583) D4-Apr-18 (No. 217-02583) 30-Dic-17 (No. EX5-7349, Dec17) 28-Dic-17 (No. DAE4-601_Oc17) Check Dain (in house)-	Apr-19 Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Oct-18 Oct-18 Schedund Check
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Calibrated by Claudio Loubler Laboratory Technician	Power sensor NRP-291 Reference 20 dB Alternator Type-N misristich combination Reference Probe EX3DV4 DAE4 Secondery Standerds Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A PF generator R&S SMT-06	SN 103245 SN: 5068 (20k) SN: 5037.2 / 06327 SN: 7349 SN: 601 ID # SN: GB37490704 SN: GB37490704 SN: US37292783 SN: MV41092317 SN: 100972	D4-Apr-18 (No. 217-02572/02673) D4-Apr-16 (No. 217-02572) D4-Apr-16 (No. 217-02573) D4-Apr-18 (No. 217-02583) D4-Apr-18 (No. 217-02582) D4-Apr-18 (No. 217-02582) 30-Dac-17 (No. DAE-4-601_0-c17) 26-Dat-17 (No. DAE-4-601_0-c17) Check Dain (In house) 07-0at-15 (In house check Oct-16) 07-0at-15 (In house check Oct-16) 15-Jun-15 (In house check Oct-16)	Apr-19 Apr-19 Apr-19 Apr-19 Dec-18 Dec-18 Oci-18 Scheduled Check In house check, Oct-18 In house check, Oct-18 In house check, Oct-18 In house check, Oct-18 In house check; Oct-18
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Approved by Kelija Pokovic Technical Manager	Power sensor NRP-291 Reference 20 dB Attenuator Type-N mismatch combination Relemence Probe EX3DV4 DAE4 Secondary Slanderds Power motor EPM-442A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Ref generator R&S SMT-00 Natival& Analyzer HP 8783E	SN 103245 SN: 5068 (204) SN: 5047 24 SN: 5047 24 SN: 601 SN: 601 SN: 6057480704 SN: 6857480704 SN: 6857480704 SN: 6557582785 SN: MY41092317 SN: 100472 SN: 105729585 Name	D4-Apr-18 (No. 217-08572/02673) D4-Apr-18 (No. 217-02572) D4-Apr-18 (No. 217-02573) D4-Apr-18 (No. 217-02583) 30-Dac-17 (No. 217-02583) 30-Dac-17 (No. DAC4-601_Oct17) 29-Oct-17 (No. DAC4-601_Oct17) Check Dale (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-17) Function	Ap+19 Ap+19 Ap+19 Ap+19 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
1 de Res	Power sensor NRP-291 Power sensor NRP-291 Palerance 20 dB Altenuator Type-N messistich combinistion Relevance Probe EX3DV4 DME4 Secondary Standards Power motor EFN-442A Power sensor HP 4481A Power sensor HP 4481A AF genesisor PAS SMT-00 Network Analyzer HP 8783E Calibrated by	SN 103245 SN: 5068 (204) SN: 5047 24 SN: 5047 24 SN: 601 SN: 601 SN: 6057480704 SN: 6857480704 SN: 6857480704 SN: 6557582785 SN: MY41092317 SN: 100472 SN: 105729585 Name	D4-Apr-18 (No. 217-08572/02673) D4-Apr-18 (No. 217-02572) D4-Apr-18 (No. 217-02573) D4-Apr-18 (No. 217-02583) 30-Dac-17 (No. 217-02583) 30-Dac-17 (No. DAC4-601_Oct17) 29-Oct-17 (No. DAC4-601_Oct17) Check Dale (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-17) Function	Ap+19 Ap+19 Ap+19 Ap+19 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 De-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18

Certificate No: D1900V2-50173_Apr16

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留90天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at <u>www.sgs.com/terms_ad_conditions.htm</u> and for electronic format therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's induced of this document is advised information contained reliefor reliefor the company's induced at the time of its intervention only and within the initial contained information contained reliefor reliefor the company's induced at the time of its relieformer and the induced at the time of its client as a structure of the induced at the time of its client as a structure of the company's induced at the time of its client as a structure of the induced at the time of its client as a structure of the its client as a structure of the company's induced at the time of its client as a structure of the time o prosecuted to the fullest extent of the law.

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.

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Calibration Laboratory of Schmid & Partner

Engineering AG Zeugheusstrasez 43, 8604 Zurich, Switzerland



Schweizerischer Kalibrierdienst S Service suisso d'étalonnage C Servizio sviziero di taratura S Swiss Calibration Service

Accreditation No.: SCS 0108

Accredited by the Swiss Accorditation Service (SAS)

The Swiss Accreditation Service is one of the signatorias to the EA Multilateral Agreement for the recognition of calibration ourtificates

Glossary: TSL

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless
- Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless. communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)*, March 2010
- d) KDB 885664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

- Measurement Conditions: Further details are available from the Validation Report at the end of the cartificate. 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%.

Camilcate No: D1900V2-5d173 April

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

除非另有說明,此報告結果僅對測試之樣品負責,同時此樣品僅保留⁹⁰天。本報告未經本公司書面許可,不可部份複製。 This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <u>www.sgs.com/terms_and_conditions.htm</u> and for electronic format documents, subject to Terms and Conditions for Electronic Documents at www.sqs.com/terms e-document.htm. Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.

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Measurement Conditions

DASY system configuration, as far as not given on page

DASY5	V52.10.0
Advanced Extrapolation	
Modular Fist Phantom	
10 mm	with Spacer
cbi, dyi, dz. – 5 mm	
1900 MHz ± 1 MHz	
	Advanced Extraporation Modular Flat Phantom 10 mm dx, dy, dz = 5 mm

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	411±8%	1.35 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	9.89 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.7 W/kg = 17.0 % (k=2)
SAR averaged over 10 cm ² (10 o) of Head TSL	condition	
SAR averaged over 10 cm ² (10 g) of Head TSL SAR measured	ophdilion 250 mW input powar	5.21 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	65.3 ± 6 %	1.47 mho/m±6 %
Body TSL temperature change during test	£0.5 °C	-	

SAR result with Body TSL

SAR averaged over 1 cm ² (1 g) of Body TSL	Contition	
SAR measured	250 mW input power	9.93 W/kg
SAR for nominal Body TSL parameters	W1 of besilemon	40.9 W/kg ± 17.0 % (k=2)
	The second se	
SAR averaged over 10 cm ² (10 g) of Body TSL	condition	
SAR averaged over 10 cm ² (10 g) of Body TSL SAR measured	condition 250 mW input power	5.30 W/kg

Certificate No: D1900V2-5d173 Auri8

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	514 Q ± 5 1 JQ
Return Loss	- 25.8 dB

Antenna Parameters with Body TSL

Impedance, transformed to feed pully	47.341 + 7.2 10
Return Loss	- 22 1 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1,195 ns	
and the second second second second	1.104 110-	

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

The clipple is made of standard semirigid conxial cable. The center conductor of the feeding line is directly connected to the second arm of the dipola. The antenna is therefore short-circuited for DC-signals, Or nome 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

Centricate No: D1900V2-5d173_Apr1II

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DASY5 Validation Report for Head TSL

Date: 25.04.2018

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; $\sigma = 1.35$ S/m; $\varepsilon = 41.1$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

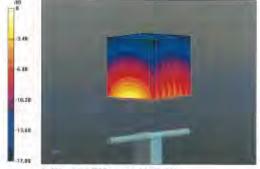
DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.18, 8.18, 8.18); Calibrated; 30,12,2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26,10.2017
- 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 = 110.9 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 18.3 W/kg SAR(1 g) = 9.89 W/kg; SAR(10 g) = 5.21 W/kg

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



0 dB = 15.2 W/kg = 11.82 dBW/kg

Certificate No: D1900V2-5d173_Apr18

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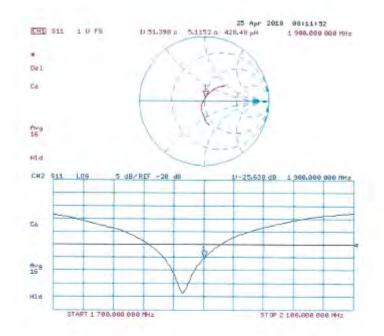
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Impedance Measurement Plot for Head TSL



Certificate No: D1900V2-5d173_Apr18.

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DASY5 Validation Report for Body TSL

Date: 25.04.2018

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; $\sigma = 1.47$ S/m; $\epsilon_f = 55.3$; p = 1000 kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.15, 8.15, 8.15); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- 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 = 104.6 V/m; Power Drift = -0.09 dB Peak SAR (extrapolated) = 17.7 W/kg SAR(1 g) = 9.93 W/kg; SAR(10 g) = 5.3 W/kg Maximum value of SAR (measured) = 14.7 W/kg



0 dB = 14.7 W/kg = 11.67 dBW/kg

Certificate No: D1900V2-5d173_Apr18

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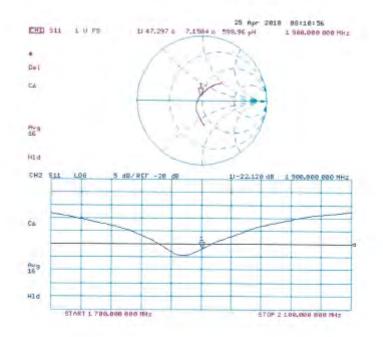
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Impedance Measurement Plot for Body TSL



Certificate No: D1900V2-5d173_Apr18

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Report No. : E5/2018/90012 Page: 223 of 244

Calibration Laboratory of Schmid & Partner Engineering AG astrases 43, 8904 Zurich, Switzerland



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Accreditation No.: SCS 0108

Accredited by the Swiss Accreditation Service (SAS) The Swites Accreditation Service is one of the signatories to the EA

Multilateral Agreement for the recognition of calibration conflicates Glossary:

TSL

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate b) (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 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 SAB result.

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

Certificate No: 02450V2-727_April

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Measurement Conditions

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

DASY Version	DASYS	V52.10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	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	38.3 ± 8 %	1.86 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

SAR result with Head TSL

SAR averaged over 1 cm3 (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.3 W/kg
SAR for nominal Head TSL parameters	Wt of bezilamon	52.1 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm3 (10 g) of Head TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	condition 250 mW input power	6.16 W/kg
		5.16 W/kg 24.3 W/kg ± 16.5 % (k=2

Body TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	52.5 ± 6 %	2.01 mhc/m = 6 %
Body TSL temperature change during test	< 0,5 °C	_	

SAR result with Body TSL

SAR sveraged over 1 cm ¹ (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	50.8 W/kg ± 17,0 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Body TSL	concilion	
SAR averaged over 10 cm ³ (10 g) of Body TSL SAR measured	condition 250 mW input power	6.00 W/kg

Certificale No: D2450V2-727_Apr18

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL

Impedance, transformed to feed point	55.2 Ω + 2.7 JΩ
Return Loss	= 25.1 dB

Antenna Parameters with Body TSL

Impledance, transformed to lead point	51.2 (J + 5.6 (J
Return Loss	- 25.0 dB

General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 ns	
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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 seminoid 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 capsare added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurment 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 emits, because they might bond 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_Apr18

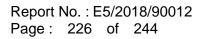
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Date: 24.04.2018

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; $\sigma = 1.86$ S/m; $\epsilon_t = 38.3$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

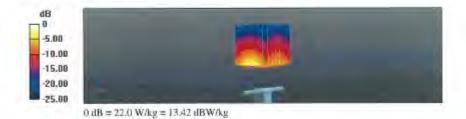
DASY52 Configuration:

SG

- Probe: EX3DV4 SN7349; ConvF(7.88, 7.88, 7.88); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- 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 = 116.0 V/m; Power Drift = -0.06 dB Peak SAR (extrapolated) = 26.7 W/kg SAR(1 g) = 13.3 W/kg; SAR(10 g) = 6.16 W/kg Maximum value of SAR (measured) = 22.0 W/kg



Certificate No: D2450V2-727_Apr18

Page 5 of 8

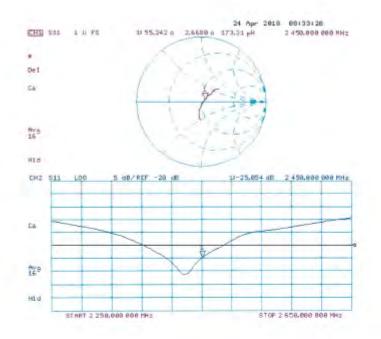
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-727_Apr18

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t (886-2) 2299-3279 台灣檢驗科技股份有限公司

f (886-2) 2298-0488

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DASY5 Validation Report for Body TSL

Date: 24.04.2018

Test Laboratory: SPEAG, Zurich, Switzerland

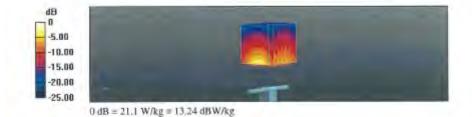
DUT: Dipole 2450 MHz; Type: D2450V2; Serial: D2450V2 - SN:727

Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz; $\sigma = 2.01$ S/m; $v_r = 52.5$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN7349; ConvF(8.01, 8.01, 8.01); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection) .
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- 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 = 108.4 V/m; Power Drift = -0.07 dB Peak SAR (extrapolated) = 25.5 W/kg SAR(1 g) = 12.9 W/kg; SAR(10 g) = 6 W/kg Maximum value of SAR (measured) = 21.1 W/kg



Certificate No: D2450V2-727 April8

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

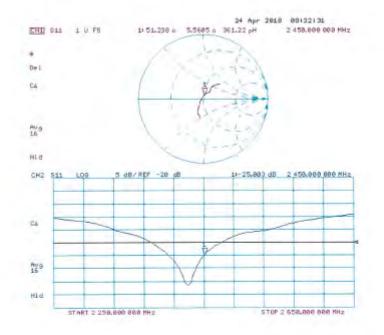
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Impedance Measurement Plot for Body TSL



Certificate No: D2450V2-727_Apr18

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Report No. : E5/2018/90012 Page: 230 of 244

condited by the Swiss Accredita he Swiss Accreditation Service utiliateral Agreement for the re lient SGS-TW (Aude	is one of the signatories cognition of calibration	s to the EA certificates	creditation No.: SCS 0108
SGS-TW (Aude	-		
the second of the first second s	11)	Certificate No	D5GHzV2-1023_Jan18
ALIBRATION	COTICICATE		
SALIBRATION	EATIFICATE		
bjed	D5GHzV2 - SN:1	023	
Celibration procedure(s)	QA CAL-22.v2 Calibration proce	dure for dipole validation kits bet	ween 3-6 GHz
	Line or make	-	
Calibration date:	January 25, 2018		
		ry facility, environment temperatura (22 ± 3)*1	C and humidity < 70%.
Calibration Equipment used (M&		Gal Date (Certificate Na.)	Scheduled Calibration
Calibration Equipment used (M& Primely Standards Power mider NRP	TE critical for calibration) ID # EN: 104778	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521/02522)	Scheduled Calibration Apr-18
Calibration Equipmeni used (M& Primely Standards Power meder NRP Power sensor NRP-201	TE critical for calibration ID # EN: 104778 SN: 105244	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521(02522) 04-Apr-17 (No. 217-02521)	Echeduled Calibration Apr-18 Apr-18
Calibration Equipment used (M& Primery Standards Power midler NRP Power sensor NRP-291 Power sensor NRP-291	TE ortical for calibration(ID # EN: 104778 SN: 103644 SN: 103245	Cal Date (Certificate No.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) D4-Apt-17 (No. 217-02522)	Echeduled Calibration Apr-18 Apr-18 Apr-18
Calibration Equipment used (M& Primery Standards Primer mister NRP Primer sensor NRP-201 Primer sensor NRP-201 Retailance 20 dB Attenuator	TE ontical for calibration) ID # EN: 104778 SN: 105244 SN: 103245 SN: 5058 (20k)	Gal Date (Certificate No.) 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)	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-18
Calibration Equipment used (M6) Primery Standards Primer meter NPP Primer sensor NPP-201 Primer sensor NPP-201 Referance 20 dB Attenuistor Type-N mismatch combination	TE critical for calibration) ID # SN: 104778 SN: 103244 SN: 103245 SN: 5058 (20k) SN: 5058 (20k) SN: 5057 2 / 06327	Cal Date (Certificate No.) 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)	Echectuled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18
Calibration Equipment used (M& Primary Standards Primary Standards Primary Sensor ARP-291 Primary sensor ARP-291 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4	TE ontical for calibration) ID # EN: 104778 SN: 105244 SN: 103245 SN: 5058 (20k)	Gal Date (Certificate No.) 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)	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-18
Calibration Equipment used (M& Primary Standards Priver Inder NRP Priver Inder NRP-291 Priver Isonaur NRP-291 Retaining 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4	TE critical for calibration) ID # BN: 104778 SN: 105244 SN: 105245 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3505	Cal Date (Certificate No.) D4-Apr-17 (No. 217-02521/02522) D4-Apr-17 (No. 217-02521) D4-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 30-Dec-17 (No. 213-0505_Dec17)	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-16 Apr-16 Dec-18
Calibration Equipment used (M& Primery Standards Primer mister NPP Primer sensor NRP-291 Primer sensor NRP-291 Retarance 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DNE4 Secondary Standards	TE entical for calibration(ID # EN: 104778 SN: 103244 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 5047.2 / 06327 SN: 601	Cal Date (Certificate No.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) D4-Apt-17 (No. 217-02521) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 30-Dec-17 (No. 2X3-3503_Dec17) 26-Oct-17 (No. DAE4-601_Oct17)	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-16 Dec-18 Dec-18 Oct-18
Calibration Equipment used (M& Primery Standards Primer meter NRP Primer sensor NRP-291 Power sensor NRP-291 Reference 20 dB Attenustor Type-N mismatch combination Reference Probe EX3DV4	TE entical for calibration(ID # BN: 104778 SN: 103244 SN: 5058 (20k) SN: 5058 (20k) SN: 5047.2 / 06327 SN: 601 ID #	Cal Date (Certificate No.) 04-Apr 17 (No. 217-02521/02522) 04-Apr 17 (No. 217-02521) 04-Apr 17 (No. 217-02521) 07-Apr 17 (No. 217-02528) 07-Apr 17 (No. 217-02528) 07-Apr 17 (No. 217-02528) 30-Dec 17 (No. 2X3-3503_Dec17) 26-Oct 17 (No. DAE4-601_Oct17) Oheok Date (in house)	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-16 Apr-16 Apr-16 Bec-18 Dec-18 Cod-18 Scheduled Dreck
Calibration Equipment used (M6) Primery Standards Primer meter NRP Primer sensor NRP-201 Primer sensor NRP-201 Reference 20 dB Attenuator Type-N mismatich combination Reference Probe EX3DV4 DAE4 Secondary Standards Prower meter EPM-442A	TE entical for calibration) ID # EN: 104778 SN: 105244 SN: 103245 SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 5058 (20k) SN: 601 ID # SN: 6837460704	Cal Date (Certificate No.) 04-Apr-17 (No. 217-02521(02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 09-Dec-17 (No. 217-02529) 30-Dec-17 (No.	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-16 Apr-16 Dec-18 Oct-18 Oct-18 Scheduled Check In house check: Oct-18
Calibration Equipment used (M& Primary Standards Priver meter NRP Priver sensor NRP-291 Priver sensor NRP-291 Retearing 20 dB Attenuistor Type-N mismatich combination Reference Probe EX30V4 DAE4 Becondary Standards Priver meter EPM-442A Priver sensor HP 6481A Priver sensor HP 6481A	TE entical for calibration) ID # SN: 104778 SN: 03244 SN: 103245 SN: 5058 (20k) SN: 5058 (20k) SN: 5057 2 / 06327 SN: 601 ID # SN: 6837460704 SN: US37299783	Cal Date (Certificate Na.) 04-Apr-17 (No. 217-02521(02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02522) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02529) 07-Apr-17 (No. 217-02529) 07-Apr-17 (No. 217-02529) 07-Dpt-17 (No. 217-02529) 07-Dpt-15 (in house) 07-Opt-15 (in house check Cpt-16)	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-16 Dec-18 Decc08 Decc08 Decc08 Decc08 Decc08 Decc08 Decc08 D
Calibration Equipment used (M& Primely Standards Priver Inder NRP Priver Inder NRP, 291 Priver Isansar NRP, 291 Retaining 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Priver meter EPM-442A Priver sensor HP 6461A RF generator RIS SIMT-66	TE entical for calibration(ID # EN: 104778 SN: 103244 SN: 5058 (20k) SN: 5047 2 / 06327 SN: 5047 2 / 06327 SN: 601 ID # SN: G837460704 SN: US32282783 SN: MY41092317	Cal Date (Certificate No.) D4-Apr-17 (No. 217-02521(02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 07-Apr-17 (No. 217-02529) 07-Apr-17 (No. 217-02529) 09-Dec-17 (No. 217-02529) 07-Oct-15 (In house check Oct-16) 07-Oct-15 (In house check Oct-16) 07-Oct-15 (In house check Oct-16)	Scheduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-16 Dec-18 Dec-18 Oct-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Calibration Equipment used (M6) Primery Standards Priver meter NRP- Priver sensor NRP-201 Priver sensor NRP-201 Reference 20 dB Attenuator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Priver meter EPM-442A Priver sensor HP 8481A.	TE entical for calibration(ID 4 EN: 104778 SN: 103244 SN: 5058 (20k) SN: 5058 (20k) SN: 50472 / 06327 SN: 50472 / 06327 SN: 601 ID # SN: 6837460704 SN: US37292783 SN: WY41092317 SN: 100672	Cal Date (Certificate Na.) D4-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. 217-02588) 07-Apr-17 (No. 217-02588) 07-Apr-18 (In thouse check Opt-18) 15-Jun-16 (In thouse check Opt-18) 15-Jun-16 (In thouse check Opt-18) 15-Jun-16 (In thouse check Opt-18) 07-Apr-18 (In thouse check Opt-18) 07-Ap	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Col-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Castration Equipment used (M& Primer Index NRP Priver Index NRP Priver Index NRP-201 Priver sensor NRP-201 Priver sensor NRP-201 Reference 20 dB Attenustor Type-N mismatch combination Reference Prible EX3DV4 DAE4 Secondary Standards Priver Index EPM-442A Priver sensor HP 6481A Priver sensor HP 6481A Priver sensor HP 6461A RF generator RSS SMT-06 Network Analyzer HP 8753E	TE entical for calibration) ID # EN: 104778 SN: 105244 SN: 105244 SN: 5058 (20k) SN: 505	Cal Date (Certificate Na.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-17 (No. 217-02521) 04-Apr-17 (No. 217-02521) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 07-Apr-17 (No. 217-02528) 09-Dec-17 (No.	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-16 Apr-16 Apr-16 Dec-18 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Oct-18 In house check: Oct-18
Calibration Equipment used (M& Primery Standards Power meler NPP Power sensor NRP-291 Retenence 20 db Alternator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power melor EPM-448A Power sensor HP 6461A AF generator RPS SMT-66 Network Analyzer HP 8753E Calibrated by:	TE entical for calibration(ID 4 EN: 104778 SN: 03544 SN: 03544 SN: 5058 (206) SN: 5047.2 / 05327 SN: 601 ID # SN: 6837460704 SN: 05837460704 SN: 05837460704 SN: 05837460704 SN: 05837460704 SN: 0587289783 SN: 105972 SN: 105972 SN: 105972 SN: 105972 SN: 105972	Cal Date (Certificate Na.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-12 (No. 217-02521) 04-Apr-17 (No. 217-02529) 07-Apr-17 (No. 217-02529) 07-Apr-17 (No. 217-02529) 09-Dec-17 (No.	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-16 Apr-16 Apr-16 Dec-18 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Oct-18 In house check: Oct-18
Calibration Equipmeni used (M& Primary Standards Primer meter NRP Primer sensor NRP-291 Primer sensor NRP-291 Reteamore 20 dB Alternator Type-N mismatch combination Reference Probe EX30V4 D/AE4 Secondary Standards Primer meter EPM-442A Primer sensor HP 6461A AF generator RSS SMT-06 Network Analyzer HP 8753E	TE entical for calibration(ID # EN: 104778 SN: 105244 SN: 105244 SN: 5058 (20k) SN: 5058 (20k) SN: 5047 2 / 06327 SN: 601 ID # SN: 6037460704 SN: US37289783 SN: 1053728 SN: 105378 SN: 1053788 SN: 105378 SN: 1053788 SN: 1	Cal Date (Certificate Na.) D4-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. 217-02588) 07-Apr-17 (No. 217-02588) 07-Apr-18 (In thouse check Opt-18) 15-Jun-16 (In thouse check Opt-18) 15-Jun-16 (In thouse check Opt-18) 15-Jun-16 (In thouse check Opt-18) 07-Apr-18 (In thouse check Opt-18) 07-Ap	Echeduled Calibration Apr-18 Apr-18 Apr-18 Apr-16 Apr-16 Apr-16 Dec-18 Dec-18 Dec-18 Dec-18 Scheduled Check In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18 In house check: Oct-18
Calibration Equipmeni used (M& Primery Standards Power meler NPP Power sensor NRP-291 Reterence 20 d5 Alternator Type-N mismatch combination Reference Probe EX3DV4 DAE4 Secondary Standards Power meler EPM-448A Power sensor HIP 6461A AF generator RBS SMT-06 Network Analyzer HIP 8753E Calibrated by:	TE entical for calibration(ID 4 EN: 104778 SN: 03544 SN: 03544 SN: 5058 (206) SN: 5047.2 / 05327 SN: 601 ID # SN: 6837460704 SN: 05837460704 SN: 05837460704 SN: 05837460704 SN: 05837460704 SN: 0587289783 SN: 105972 SN: 105972 SN: 105972 SN: 105972 SN: 105972	Cal Date (Certificate Na.) D4-Apr-17 (No. 217-02521/02522) 04-Apr-12 (No. 217-02521) 04-Apr-17 (No. 217-02529) 07-Apr-17 (No. 217-02529) 07-Apr-17 (No. 217-02529) 09-Dec-17 (No.	Echedules Calibration Apr-18 Apr-18 Apr-18 Apr-18 Apr-18 Dec-18 Dec-18 Oct-18 Scheduled Check In house check: Oct-18 In house check: Oct-18

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Report No. : E5/2018/90012 Page: 231 of 244

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



Schweizerischer Kalibrierdianst Service subse d'ataionnage Servizio evizzero di taratura Swiss Calibration Service

Accreditation No.: SCS 0108

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

Calibration is Performed According to the Following Standards:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
- EC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
- d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Additional Documentation:

e) DASY4/5 System Handbook

Methods Applied and Interpretation of Parameters:

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

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

Certificate No: D5GHzV2-1023 Jan18

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Measurement Conditions

DASY system configuration	as far as not given on page
---------------------------	-----------------------------

DASY Version	DASY5	V52,10.0
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	T0 mm	with Spacer
Zoom Scan Resolution	dx. dy = 4.0 mm, dz = 1,4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5300 MHz ± 1 MHz 5600 MHz ± 1 MHz 5800 MHz ± 1 MHz	

Head TSL parameters at 5200 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22,0 °C	36.0	4.60 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	36.3 ± 6 %	4.50 mha/m ± 8 %
Head TSL temperature change during lest	<0.5 ℃	-	-

SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	7:72 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	77.3 W/kg = 19.9 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	condition 100 mW input power	2.22 W/kg

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Head TSL parameters at 5300 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.9	4.76 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.2 ± 6 %	4.60 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	-	-

SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.09 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	80.9 W / kg ± 19.9 % (k=2)
SAR averaged over 10 cm ³ (10 g) of Head TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Head TSL SAR measured	condition 100 mW input power	2.32 W/kg

Head TSL parameters at 5600 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.5	5.07 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.8 ± 6 %	4.90 mhaim ± 6 %
Head TSL temperature change during test	< 0.5 °C	-	+

SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.19 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	81.9 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm ² (10 g) of Head TSL	condition	
SAR averaged over 10 cm ² (10 g) of Head TSL SAR measured	condition 100 mW input power	2.34 W/kg

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Head TSL parameters at 5800 MHz

The following	paremeters and	calculations v	were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35.3	5.27 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.5±6%	5.11 mho/m ±⊚%
Head TSL temperature change during test	< 0.5 °C	(and	-

SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm ² (1 g) of Head TSL	Condition	
SAR measured	100 mW Input power	7.90 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	79.0 W/kg ± 19.9 % (k=2)
10 1 10 1 10 1 10 1	and the second	
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 100 mW input power	2,25 W/kg

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Body TSL parameters at 5200 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	49.0	5.30 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47.3±6%	5.41 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		-

SAR result with Body TSL at 5200 MHz

SAR averaged over 1 cm ² (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.14 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	70.5 W/kg ± 19.9 % (k+2)
SAR averaged over 10 cm ² (10 g) of Body TSL	condition	
SAR averaged over 10 cm ³ (10 g) of Body TSL SAR measured	condition 100 mW input power	2.00 W/kg

Body TSL parameters at 5300 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	47 1 ± 6 %	5.54 mho/m = 6 %
Body TSL temperature change during test	< 0.5 °C	-	0-0-0

SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW Input power	7.34 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	72.9 W/kg ± 19.9 % (k=2)

SAR averaged over 10 cm ³ (10 g) of Body TSL	condition	
SAR measured	100 mW input power	2.06 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	20.4 W/kg ± 19.5 % (k=2)

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Body TSL parameters at 5600 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.5	5.77 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.6±6%	5.94 mha/m ± 6 %
Body TSL temperature change during test	< 0.5 °C	-mail	

SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm ³ (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.81 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	77.6 W/kg ± 19.9 % (k=2)
the second se		
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 100 mW input power	2.19 W/kg

Body TSL parameters at 5800 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6.00 mhoim
Measured Body TSL parameters	(22.0 ± 0.2) °C	46.2 ± 6 %	6.22 mhaim ± 6 %
Body TSL temperature change during test	< 0.5 °C	-	-

SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm ² (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.46 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	74.1 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm ² (10 g) of Body TSL	condition	
SAR averaged over 10 cm ² (10 g) of Body TSL SAR measured	condition 100 mW input power	2.07 W/kg

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Appendix (Additional assessments outside the scope of SCS 0108)

Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	50.1 Ω - 8.1 jΩ
Return Loss	- 21.9 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to feed point	50.5 Ω - 2.3 βλ
Return Loss	- 32.7 dB

Antenna Parameters with Head TSL at 5600 MHz

Impedance, transformed to feed point	53.9 Ω - 0.7 jΩ	
Return Loss	- 28.4 dB	

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.3 Ω + 2.6 jΩ	
Return Loss	- 25.1 dB	

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	49.8 Ω - 6.9 jΩ.
Return Loss	- 23.2 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to leed point	50.9 Ω - 0.9 jΩ	
Return Loss	- 37.9 dB	

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	56.0 Ω + 0.5 JΩ	
Return Loss	- 24.9 dB	

Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to lead point	56.6 Ω + 2.3 μΩ
Return Loss	- 23.7 dB

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

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

Additional EUT Data

Manufactured by	SPEAG
Manufactured on	February 05, 2004

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DASY5 Validation Report for Head TSL

Date: 25.01.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023

Communication System: UID 0 = CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz Medium parameters used: f = 5200 MHz; σ = 4.5 S/m; ε = 36.3; p = 1000 kg/m³, Medium purameters used: f = 5300 MHz; a = 4.6 S/m; a = 36.2; p = 1000 kg/m Medium parameters used: i = 5600 MHz; v = 4.9 S/m; t, = 35.8; p = 1000 kg/m³ Medium parameters used: f = 5800 MHz; $\sigma = 5.11$ S/m; $e_r = 35.5$; $\rho = 1000$ kg/m² Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(5.75, 5.75, 5.75); Calibrated: 30.12.2017. . ConvF(5.5, 5.5, 5.5); Calibrated: 30.12.2017, ConvF(5.05, 5.05, 5.05); Calibrated: 30.12.2017. ConvF(4.96, 4,96, 4,96); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electromics: DAE4 Sn601; Calibrated: 26.10.2017.
- 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=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 70.47 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 27.5 W/kg SAR(1 g) = 7.72 W/kg; SAR(10 g) = 2.22 W/kg Maximum value of SAR (measured) = 17.7 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm_dz=1.4mm Reference Value = 74.63 V/m; Power Drift = 40.06 dB Peak SAR (extrapolated) = 29.6 W/kg SAR(1 g) = 8.09 W/kg; SAR(10 g) = 2.32 W/kg Maximum value of SAR (measured) = 18.6 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid; dx=4mm, dy=4mm, dz=1.4mm Reference Value = 70.79 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 31.5 W/kg SAR(1 g) = 8.19 W/kg; SAR(10 g) = 2.34 W/kg Maximum value of SAR (measured) = 19.6 W/kg

Certificate No: D5GHzV2-1023 Jan18

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Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 69.22 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 31.2 W/kg SAR(1 g) = 7.9 W/kg; SAR(10 g) = 2.25 W/kg Maximum value of SAR (measured) = 19.0 W/kg



0 dB = 17.7 W/kg = 12.48 dBW/kg



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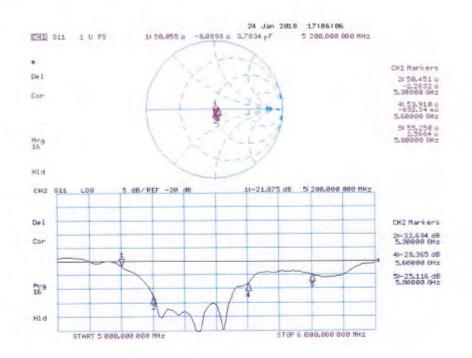
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Impedance Measurement Plot for Head TSL



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DASY5 Validation Report for Body TSL

Date: 23.01.2018

Test Laboratory: SPEAG, Zurich, Switzerland

DUT: Dipole D5GHzV2; Type: D5GHzV2; Serial: D5GHzV2 - SN:1023

Communication System: UID 0 - CW; Frequency: 5200 MHz, Frequency: 5300 MHz, Frequency: 5600 MHz, Frequency: 5800 MHz Medium parameters used: f = 5200 MHz; $\sigma = 5.41 \text{ S/m}$; $\epsilon_i = 47.3$; $\rho = 1000 \text{ kg/m}^3$, Medium parameters used: f = \$300 MHz; o = 5.54 S/m; e_t = 47.1; p = 1000 kg/m³ Medium parameters used: f = 5600 MHz; $\sigma = 5.94 \text{ S/m}$; $\varepsilon_r = 46.6$; $p = 1000 \text{ kg/m}^3$. Medium parameters used: f = 5800 MHz; $\sigma = 6.22$ S/m; $\epsilon_r = 46.2$; $\rho = 1000$ kg/m³ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(5.35, 5.35, 5.35); Calibrated: 30.12.2017. ConvF(5.15, 5.15, 5.15); Calibrased: 30.12.2017, ConvF(4.65, 4.65); Calibrated: 30.12.2017, ConvF(4.53, 4.53, 4.53); Calibrated: 30.12.2017;
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 26.10.2017
- Plantom: Flat Phantom 5.0 (back); Type: QD 000 P50 AA; Senal: 1002
- DASY52 52,10.0(1446); SEMCAD X 14.6.10(7417)

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5200 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 66.00 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 26.4 W/kg SAR(1 g) = 7.14 W/kg; SAR(10 g) = 2 W/kg Maximum value of SAR (measured) = 16.8 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1,4mm Reference Value = 65.19 V/m: Power Drift = -0.06 dB Peak SAR (extrapolated) = 28.4 W/kg SAR(1 g) - 7.34 W/kg; SAR(10 g) = 2.06 W/kg Maximum value of SAR (measured) = 17.6 W/kg

Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5600 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 66.21 V/m; Power Drift = -0.09 dB Peak SAR (extrapolated) = 32.8 W/kg SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.19 W/kg Maximum value of SAR (measured) = 19.1 W/kg

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Dipole Calibration for Body Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 64.05 V/m; Power Drift = -0.05 dB Peak SAR (extrapolated) = 32.3 W/kg SAR(1 g) = 7.46 W/kg; SAR(10 g) = 2.07 W/kg Maximum value of SAR (measured) = 18.8 W/kg



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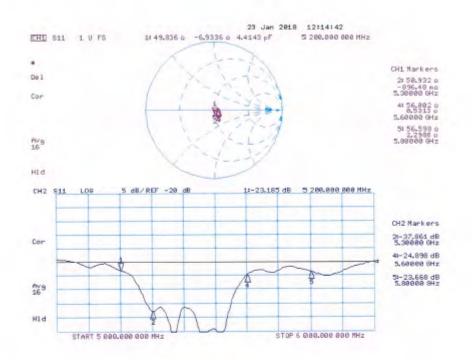
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Impedance Measurement Plot for Body TSL



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- End of report -

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