

# SAR TEST REPORT

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

Equipment Under Test	7-inch Rugged Tablet
Brand Name	Pioneerpos
Model No.	DASH7E1
Company Name	Pioneer POS Solution, Inc.
Company Address	238 Benton Ct., City of Industry, CA 91789
Standards	IEEE /ANSI C95.1 , C95.3, IEEE 1528 2003,
	KDB248227D01v02r01, KDB616217D04v01r01,
	KDB865664D01v01r03, KDB865664D02v01r01,
	KDB941225D01v03,KDB941225D05v02r03,
	KDB447498D01v05r02
FCC ID	CPOD7E1-LTE
Date of Receipt	Apr. 01, 2015
Date of Test(s)	Jun. 15, 2015 ~ Jun. 22, 2015
Date of Issue	Aug. 04, 2015
In the configuration tested, the E	EUT complied with the standards specified above.

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

#### Remarks:

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

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### Signed on behalf of SGS

Sr. Engineer

s Chen

Afu Chen Date: Aug. 04, 2015 Sr. Engineer

John Teh

John Yeh Date: Aug. 04, 2015

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# Version

Report Number	Revision	Date	Memo
EN/2015/40004	00	2015/7/20	Initial creation of test report.
EN/2015/40004	01	2015/8/4	1 <sup>st</sup> modification

This test report contains a reference to the previous version test report that it replaces.

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## 1. General Information

## **1.1 Testing Laboratory**

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Internet	http://www.tw.sgs.com/			

### **1.2 Details of Applicant**

Company Name	Pioneer POS Solution, Inc.
Company Address	238 Benton Ct., City of Industry, CA 91789

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## **1.3 Description of EUT**

quipment Under Test 7-inch Rugged Tablet							
Brand Name	Pioneerpos						
Model No.	DASH7E1						
FCC ID	CPOD7E1-LTE						
Mode of Operation	GPRS EDGE WCDMA HSDPA HSUPA LTE CDMA 1xRTT CDMA 1x EVDO Rev.0/ Rev.A WLAN802.11 a/b/g/n(20M/40M) Bluetooth						
	GPRS	1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)					
	EDGE	1/2 (1Dn4UP) 1/2.76 (1Dn3UP) 1/4.1 (1Dn2UP) 1/8.3 (1Dn1UP)					
Duty Cycle	WCDMA	1					
	LTE	1					
	CDMA 1xRTT/ EVDO Rev.0/ Rev. A	1					
	WLAN802.11 a/b/g/n(20M/40M)	1					
	Bluetooth	1					

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	GPRS850	824.2	 848.8
	GPRS1900	1850.2	 1909.8
	WCDMA Band II	1852.4	 1907.6
	WCDMA Band IV	1712.4	 1752.6
	WCDMA Band V	826.4	 846.6
	LTE FDD Band II	1850	 1910
	LTE FDD Band IV	1710	 1755
	LTE FDD Band V	824	 849
	LTE FDD Band XIII	777	 787
	LTE FDD Band XVII	704	 716
	LTE FDD Band XXV	1850	 1915
	CDMA (BCO)	824.7	 848.31
TX Frequency Range (MHz)	CDMA (BC1)	1851.25	 1908.75
	CDMA (BC10)	817.9	 823.1
	WLAN802.11 b/g/n(20M)	2412	 2462
	WLAN802.11 n(40M)	2422	 2452
	WLAN802.11 a/n(20M)	5180	 5240
	WLAN802.11 n(40M)	5190	 5230
	WLAN802.11 a/n(20M)	5260	 5320
	WLAN802.11 n(40M)	5270	 5310
	WLAN802.11 a/n(20M)	5500	 5700
	WLAN802.11 n(40M)	5510	 5670
	WLAN802.11 a/n(20M)	5745	 5825
	WLAN802.11 n(40M)	5710	 5795
	Bluetooth	2402	 2480
L			

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GPRS1900       512       -       81         WCDMA Band II       9262       -       953         WCDMA Band IV       1312       -       151         WCDMA Band V       4132       -       423         LTE FDD Band II       18607       -       191         LTE FDD Band IV       19957       -       203         LTE FDD Band V       20407       -       206         LTE FDD Band XIII       23205       -       232	~
WCDMA Band IV       1312       —       151         WCDMA Band V       4132       —       423         LTE FDD Band II       18607       —       191         LTE FDD Band IV       19957       —       203         LTE FDD Band V       20407       —       206	0
WCDMA Band V       4132        423         LTE FDD Band II       18607        191         LTE FDD Band IV       19957        203         LTE FDD Band V       20407        206	38
LTE FDD Band II       18607       191         LTE FDD Band IV       19957       203         LTE FDD Band V       20407       206	13
LTE FDD Band IV         19957         203           LTE FDD Band V         20407         206	33
LTE FDD Band V 20407 - 206	93
	93
LTE FDD Band XIII 23205 - 232	43
	55
LTE FDD Band XVII 23755 - 238	25
LTE FDD Band XXV 26047 — 266	83
Channel Number CDMA (BC0) 1013 - 77	7
(ARFCN) CDMA (BC1) 25 — 117	75
CDMA (BC10) 476 — 68	4
WLAN802.11 b/g/n(20M) 1 - 11	I
WLAN802.11 n(40M) 3 - 9	
WLAN802.11 a/n(20M) 36 - 48	}
WLAN802.11 n(40M) 38 - 46	Ś
WLAN802.11 a/n(20M) 52 - 64	
WLAN802.11 n(40M) 54 - 62	1
WLAN802.11 a/n(20M) 100 - 14	
WLAN802.11 n(40M) 102 - 13	2
WLAN802.11 a/n(20M) 149 — 16	2 0
WLAN802.11 n(40M) 142 — 15	2 0 4
Bluetooth 0 - 78	2 0 4 5

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Max. SAR (1 g) (Unit: W/Kg)						
Band	Measured	Reported	Channel	Position		
GPRS 850	0.991	0.991	251	Left side		
GRPS 1900	1.26	1.335	512	Back side_Curve		
WCDMA Band II	1.160	1.160	9262	Back side_Curve		
WCDMA Band IV	1.07	1.131	1513	Back side_Curve		
WCDMA Band V	0.565	0.615	4183	Left side		
LTE FDD Band II	0.983	1.090	19100	Top side		
LTE FDD Band IV	1.150	1.193	20175	Back side		
LTE FDD Band V	0.419	0.601	20600	Left side		
LTE FDD Band XIII	0.583	0.837	23230	Left side		
LTE FDD Band XVII	0.312	0.438	23780	Left side		
LTE FDD Band XXV	1.140	1.159	26590	Top side		
CDMA (BC0)	0.72	0.771	1013	Left side		
CDMA (BC1)	1.00	1.009	1175	Back side		
CDMA (BC10)	0.659	0.723	560	Left side		

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	Max. SAR (1 g) (Unit: W/Kg)							
Antenna	Band	Measured	Reported	Channel	Position			
	WLAN802.11 b	0.825	1.010	11	Right side			
	WLAN802.11 a 5.2G	0.383	0.441	40	Right side			
	WLAN802.11 n(40M) 5.2G	0.303	0.372	46	Right side			
	WLAN802.11 n(20M) 5.3G	0.261	0.303	60	Right side			
Main	WLAN802.11 n(40M) 5.3G	0.27	0.319	54	Right side			
	WLAN802.11 n(20M) 5.6G	0.276	0.327	104	Right side			
	WLAN802.11 n(20M) 5.6G	0.313	0.372	120	Right side			
	WLAN802.11 n(20M) 5.6G	0.324	0.401	140	Right side			
	WLAN802.11 n(40M) 5.8G	0.349	0.513	159	Right side			
	WLAN802.11 b	0.83	0.842	6	Top side			
	WLAN802.11 a 5.2G	0.792	0.928	36	Top side			
	WLAN802.11 n(40M) 5.2G	0.775	0.810	46	Top side			
Aux	WLAN802.11 n(20M) 5.3G	0.69	0.855	60	Top side			
	WLAN802.11 n(40M) 5.3G	0.793	0.919	54	Top side			
	WLAN802.11 n(20M) 5.6G	0.654	0.821	120	Top side			
	WLAN802.11 n(40M) 5.8G	0.586	0.877	159	Top side			

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#### **GPRS/EDGE** conducted power table:

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			33	30.8		
			1Dn1UP	1Dn2UP		
EUT mode	Frequency (MHz)	СН	Avg. (dBm)	Avg. (dBm)		
	824.2	128	31.70	30.78		
GPRS 850	836.6	190	31.70	30.74		
	848.8	251	32.10	30.80		
	Source-bas	sed tim	e average powe	r		
	824.2	128	22.67	24.76		
GPRS 850	836.6	190	22.67	24.72		
	848.8	848.8 251 23.07		24.78		
The division factor compared to the number of TX time slot						
Div	1 TX time slot -9.03	2 TX time slot -6.02				

Burst average power						
Max. Rated Avg. Power + Max. Tolerance (dBm)			28	28	28	28
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	СН	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE 850	824.2	128	26.50	26.30	26.20	26.20
	836.6	190	26.50	26.30	26.20	26.20
(MCS5)	848.8	251	26.50	26.30	26.20	26.20
		S	ource-based tim	e average powe	er 🛛	
EDGE 850	824.2	128	17.47	20.28	21.94	23.19
(MCS5)	836.6	190	17.47	20.28	21.94	23.19
(101035)	848.8	251	17.47	20.28	21.94	23.19
	The division factor compared to the number of TX time slot					
					4 TX time slot -3.01	

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	Bur	st aver	age power	
	ted Avg. Powe olerance (dBr		30	28.5
			1Dn1UP	1Dn2UP
EUT mode	Frequency (MHz)	СН	Avg. (dBm)	Avg. (dBm)
GPRS	1850.2	512	29.00	28.23
1900	1880	661	29.20	28.33
1900	1909.8	810	29.00	28.29
	Source-bas	sed tim	e average powe	r
GPRS	1850.2	512	19.97	22.21
1900	1880	661	20.17	22.31
1900	1909.8	810	19.97	22.27
The divisi	on factor com	pared	to the number o	of TX time slot
	ision factor		1 TX time slot	2 TX time slot
			-9.03	-6.02

			Burst avera	age power		
	ed Avg. Powe olerance (dBr		27	27	27	27
			1Dn1UP	1Dn2UP	1Dn3UP	1Dn4UP
EUT mode	Frequency (MHz)	СН	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)	Avg. (dBm)
EDGE	1850.2	512	25.30	25.10	25.00	25.00
1900	1880	661	25.30	25.10	25.00	25.00
(MCS5)	1909.8	810	25.20	25.10	25.00	25.00
		S	ource-based tim	e average powe	r	
EDGE	1850.2	512	16.27	19.08	20.74	21.99
1900	1880	661	16.27	19.08	20.74	21.99
(MCS5)	1909.8	810	16.17	19.08	20.74	21.99
	The div	ision fa	actor compared	to the number o	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 / Band V - HSDPA / HSUPA conducted power table:

Dond	Max. Rated Avg. Band CH Power + Rel99			HSDPA mode AV(dBm)			HSUPA mode AV(dBm)					HSPA+ mode AV(dBm)					
Banu	СП	Max. Tolerance (dBm)	AV(dBm)	SUB-1	SUB-2	SUB-3	SUB-4	SUB-1	SUB-2	SUB-3	SUB-4	SUB-5	SUB-1	SUB-2	SUB-3	SUB-4	SUB-5
WCDMA	9262	21.5	21.50	20.99	20.38	20.51	20.58	21.42	19.97	19.98	20.10	20.32	21.43	19.91	20.40	20.02	21.23
Band II	9400	21.5	21.36	20.87	20.22	20.42	20.43	21.34	19.89	19.90	20.02	20.22	21.33	19.81	20.32	19.92	21.18
Rel 7	9538	21.5	21.48	20.92	20.33	20.39	20.51	21.42	19.97	19.98	20.10	20.27	21.43	19.91	20.44	20.02	21.29
WCDMA	1312	22	21.77	21.28	20.65	20.8	20.87	21.69	20.24	20.25	20.37	20.91	21.70	20.18	20.67	20.29	21.50
Band IV	1412	22	21.75	21.31	20.61	20.86	20.87	21.73	20.28	20.29	20.41	20.98	21.72	20.20	20.71	20.31	21.57
Rel 7	1513	22	21.76	21.26	20.61	20.73	20.85	21.70	20.25	20.26	20.38	20.93	21.71	20.19	20.72	20.30	21.57
WCDMA	4132	23	22.55	22.00	21.48	21.54	21.59	22.51	20.57	20.55	20.62	21.27	22.52	20.55	21.50	20.58	22.33
Band V	4183	23	22.63	22.12	21.52	21.64	21.68	22.56	20.64	20.62	20.7	21.61	22.55	20.57	21.55	20.63	22.32
Rel 7	4233	23	22.49	22.03	21.36	21.54	21.6	22.41	20.45	20.49	20.53	21.39	22.40	20.37	21.39	20.43	22.22

#### **HSDPA**

SUB-TEST	β <sub>c</sub>	$\beta_d$	β <sub>d</sub> (SF)	$\beta_c/\beta_d$	β <sub>HS</sub> ( <i>Note1, Note 2</i> )	CM (dB) <i>(Note 3)</i>	MPR (dB) <i>(Note 3)</i>
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

#### HSUPA

SUB-TEST	β <sub>c</sub>	β <sub>d</sub>	β <sub>d</sub> (SF)	β <sub>c</sub> /β <sub>d</sub>	β <sub>HS</sub> (Note1)	$\beta_{ec}$	β <sub>ed</sub> (Note 5) (Note 6)	β <sub>ed</sub> (SF)	β <sub>ed</sub> (Codes)	CM <i>(dB)</i> <i>(Note 2)</i>	MPR (dB) (Note 2)	AG Index (Note 6)	E-TFCI
1	11/15	15/15	64	11/15	22/15	209/225	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β <sub>ed</sub> 1: 47/15 β <sub>ed</sub> 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	2			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed p 3GPP(dB
				1860	18700	21.83	22	0
			0	1880	18900	21.76	22	0
				1900	19100	21.63	22	0
				1860	18700	21.81	22	0
		1 RB	50	1880	18900	21.60	22	0
				1900	19100	21.71	22	0
				1860	18700	21.81	22	0
			99	1880	18900	21.75	22	0
				1900	19100	21.88	22	0
				1860	18700	21.69	22	0-1
	QPSK		0	1880	18900	21.87	22	0-1
				1900	19100	21.53	22	0-1
				1860	18700	21.81	22	0-1
		50 RB	25	1880	18900	21.72	22	0-1
				1900	19100	21.52	22	0-1
			50	1860	18700	21.86	22	0-1
			50	1880	18900	21.81	22	0-1
				1900	19100	21.55	22	0-1
		10	ORB	1860	18700	21.77	22 22	0-1
		Ĩ	JUKD	1880 1900	18900 19100	21.74 21.62	22	0-1 0-1
20				1900	19100	20.70	22	0-1
			0	1880	18900	20.66	22	0-1
			U	1900	19100	20.52	22	0-1
				1860	18700	20.65	22	0-1
		1 RB	50	1880	18900	20.50	22	0-1
				1900	19100	20.63	22	0-1
				1860	18700	20.69	22	0-1
			99	1880	18900	20.65	22	0-1
				1900	19100	20.71	22	0-1
				1860	18700	20.75	22	0-2
	16-QAM		0	1880	18900	20.70	22	0-2
				1900	19100	20.53	22	0-2
				1860	18700	20.75	22	0-2
		50 RB	25	1880	18900	20.68	22	0-2
				1900	19100	20.37	22	0-2
			1860	18700	20.71	22	0-2	
			50	1880	18900	20.79	22	0-2
				1900	19100	20.55	22	0-2
				1860	18700	20.61	22	0-2
		10	ORB	1880	18900	20.65	22	0-2
				1900	19100	20.51	22	0-2

## LTE FDD Band II/ Band IV/ Band V/ Band XIII/ Band XVII / Band XXV power table:

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				FDD Band 2	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	21.77	22	0
			0	1880	18900	21.61	22	0
				1902.5	19125	21.49	22	0
				1857.5	18675	21.67	22	0
		1 RB	36	1880	18900	21.45	22	0
				1902.5	19125	21.61	22	0
				1857.5	18675	21.61	22	0
			74	1880	18900	21.60	22	0
				1902.5	19125	21.75	22	0
				1857.5	18675	21.61	22	0-1
	QPSK		0	1880	18900	21.65	22	0-1
				1902.5	19125	21.48	22	0-1
				1857.5	18675	21.62	22	0-1
		36 RB	18	1880	18900	21.54	22	0-1
				1902.5	19125	21.49	22	0-1
				1857.5	18675	21.68	22	0-1
			37	1880	18900	21.66	22	0-1
				1902.5	19125	21.48	22	0-1
				1857.5	18675	21.64	22	0-1
		75RB		1880	18900	21.57	22	0-1
15				1902.5	19125	21.44	22	0-1
				1857.5	18675	20.54	22	0-1
			0	1880	18900	20.52	22	0-1
				1902.5	19125	20.47	22	0-1
				1857.5	18675	20.56	22	0-1
		1 RB	36	1880	18900	20.39	22	0-1
				1902.5	19125	20.44	22	0-1
				1857.5	18675	20.57	22	0-1
			74	1880	18900	20.55	22	0-1
				1902.5	19125	20.61	22	0-1
	4/ 6			1857.5	18675	20.45	22	0-2
	16-QAM		0	1880	18900	20.61	22	0-2
				1902.5	19125	20.24	22	0-2
		a		1857.5	18675	20.58	22	0-2
		36 RB	18	1880	18900	20.45	22	0-2
				1902.5	19125	20.39	22	0-2
			67	1857.5	18675	20.58	22	0-2
			37	1880	18900	20.51	22	0-2
				1902.5	19125	20.35	22	0-2
				1857.5	18675	20.51	22	0-2
		7	5RB	1880	18900	20.49	22	0-2
				1902.5	19125	20.35	22	0-2

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				FDD Band 2	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	21.62	22	0		
			0	1880	18900	21.60	22	0		
				1905	19150	21.25	22	0		
				1855	18650	21.60	22	0		
		1 RB	25	1880	18900	21.49	22	0		
				1905	19150	21.64	22	0		
				1855	18650	21.55	22	0		
			49	1880	18900	21.37	22	0		
				1905	19150	21.80	22	0		
				1855	18650	21.58	22	0-1		
	QPSK		0	1880	18900	21.69	22	0-1		
				1905	19150	21.42	22	0-1		
				1855	18650	21.61	22	0-1		
		25 RB	12	1880	18900	21.44	22	0-1		
				1905	19150	21.48	22	0-1		
			05	1855	18650	21.64	22	0-1		
			25	1880	18900	21.57	22	0-1		
				1905 1855	19150	21.52	22	0-1		
		E	50RB		18650	21.61	22	0-1		
		50RB		1880 1005	18900	21.41	22	0-1		
10				1905 1855	19150 18650	21.55 20.59	22 22	0-1 0-1		
			0	1880	18000	20.39	22	0-1		
			U	1905	18900	20.48	22	0-1		
				1855	18650	20.47	22	0-1		
		1 RB	25	1880	18900	20.37	22	0-1		
			20	1905	19150	20.60	22	0-1		
				1855	18650	20.67	22	0-1		
			49	1880	18900	20.61	22	0-1		
				1905	19150	20.42	22	0-1		
				1855	18650	20.35	22	0-2		
	16-QAM		0	1880	18900	20.57	22	0-2		
				1905	19150	20.14	22	0-2		
				1855	18650	20.48	22	0-2		
		25 RB	12	1880	18900	20.48	22	0-2		
	23 K			1905	19150	20.34	22	0-2		
				1855	18650	20.48	22	0-2		
			25	1880	18900	20.46	22	0-2		
				1905	19150	20.43	22	0-2		
				1855	18650	20.55	22	0-2		
		5	ORB	1880	18900	20.47	22	0-2		
		30	50	50		1905	19150	20.28	22	0-2

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				FDD Band 2	2					
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance	MPR Allowed per 3GPP(dB)		
				1852.5	18625	21.56	(dBm) 22	0		
			0	1880	18900	21.68	22	0		
				1907.5	19175	21.21	22	0		
		4.55	4.0	1852.5	18625	21.69	22	0		
		1 RB	12	1880	18900	21.49	22	0		
				1907.5	19175	21.70	22	0		
			24	1852.5	18625	21.52	22	0		
			24	1880	18900	21.33	22	0		
				1907.5	19175	21.88	22	0		
	ODCK		0	1852.5	18625	21.63	22	0-1		
	QPSK		0	1880	18900	21.68	22	0-1		
				1907.5	19175	21.44	22	0-1		
		10.00	,	1852.5	18625	21.60	22	0-1		
		12 RB	6	1880	18900	21.37	22	0-1		
				1907.5	19175	21.46	22	0-1		
			10	1852.5	18625	21.59	22	0-1		
			13	1880	18900	21.60	22	0-1		
				1907.5	19175	21.46	22	0-1		
		2		1852.5	18625	21.62	22	0-1		
		25RB		1880	18900	21.44	22	0-1		
5			T	1907.5	19175	21.52	22	0-1		
					0	1852.5	18625	20.66	22	0-1
			0	1880	18900	20.38	22	0-1 0-1		
				1907.5	19175	20.55	22 22	-		
		1 RB	12	1852.5 1880	18625 18900	20.63 20.30	22	0-1 0-1		
		IKD	12	1907.5	18900	20.30	22	0-1		
				1907.5	19175	20.39	22	0-1		
			24	1832.5	18900	20.72	22	0-1		
			24	1907.5	19175	20.01	22	0-1		
				1852.5	18625	20.45	22	0-1		
	16-QAM		0	1880	18900	20.43	22	0-2		
	10 2/10		Ŭ	1907.5	19175	20.23	22	0-2		
				1852.5	18625	20.57	22	0-2		
		12 RB	6	1880	18900	20.58	22	0-2		
	12 RB	12 110	5	1907.5	19175	20.35	22	0-2		
				1852.5	18625	20.53	22	0-2		
			13	1880	18900	20.53	22	0-2		
				1907.5	19175	20.53	22	0-2		
				1852.5	18625	20.52	22	0-2		
		2	5RB	1880	18900	20.32	22	0-2		
		2		1907.5	19175	20.43	22	0-2		
				C.1041	141/2	20.31	22	0-2		

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				FDD Band 2	2												
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance	MPR Allowed per 3GPP(dB)									
				1851.5	18615	21.55	(dBm) 22	0									
			0	1880	18900	21.61	22	0									
			Ŭ	1908.5	19185	21.25	22	0									
				1851.5	18615	21.51	22	0									
		1 RB	7	1880	18900	21.48	22	0									
				1908.5	19185	21.74	22	0									
				1851.5	18615	21.65	22	0									
			14	1880	18900	21.36	22	0									
				1908.5	19185	21.87	22	0									
				1851.5	18615	21.56	22	0-1									
	QPSK		0	1880	18900	21.59	22	0-1									
				1908.5	19185	21.51	22	0-1									
				1851.5	18615	21.52	22	0-1									
		8 RB	4	1880	18900	21.37	22	0-1									
				1908.5	19185	21.44	22	0-1									
				1851.5	18615	21.70	22	0-1									
			7	1880	18900	21.65	22	0-1									
				1908.5	19185	21.58	22	0-1									
				1851.5	18615	21.59	22	0-1									
		15RB		1880	18900	21.34	22	0-1									
3				1908.5	19185	21.54	22	0-1									
													1851.5	18615	20.67	22	0-1
			0	1880	18900	20.48	22	0-1									
				1908.5	19185	20.43	22	0-1									
		1 RB	7	1851.5 1880	18615	20.69	22 22	0-1									
		IKD	1	1908.5	18900 19185	20.43 20.50	22	0-1 0-1									
				1908.5	19185	20.30	22	0-1									
			14	1831.5	18900	20.76	22	0-1									
				1908.5	19185	20.03	22	0-1									
				1851.5	18615	20.43	22	0-2									
	16-QAM		0	1880	18900	20.58	22	0-2									
				1908.5	19185	20.19	22	0-2									
				1851.5	18615	20.57	22	0-2									
		8 RB	4	1880	18900	20.45	22	0-2									
				1908.5	19185	20.39	22	0-2									
				1851.5	18615	20.44	22	0-2									
		7	1880	18900	20.49	22	0-2										
				1908.5	19185	20.49	22	0-2									
				1851.5	18615	20.58	22	0-2									
		1	5RB	1880	18900	20.42	22	0-2									
				1908.5	19185	20.29	22	0-2									

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				FDD Band 2	2							
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance	MPR Allowed per 3GPP(dB)				
				1850.7	18607	21.52	<u>(dBm)</u> 22	0				
			0	1880	18900	21.53	22	0				
				1909.3	19193	21.29	22	0				
				1850.7	18607	21.56	22	0				
		1 RB	2	1880	18900	21.57	22	0				
				1909.3	19193	21.60	22	0				
				1850.7	18607	21.47	22	0				
			5	1880	18900	21.38	22	0				
				1909.3	19193	21.90	22	0				
				1850.7	18607	21.67	22	0-1				
	QPSK		0	1880	18900	21.76	22	0-1				
				1909.3	19193	21.35	22	0-1				
				1850.7	18607	21.60	22	0-1				
		3 RB	2	1880	18900	21.42	22	0-1				
				1909.3	19193	21.48	22	0-1				
				1850.7	18607	21.73	22	0-1				
			3	1880	18900	21.64	22	0-1				
				1909.3	19193	21.46	22	0-1				
			(55		18607	21.65	22	0-1				
		e	SRB	1880	18900	21.32	22	0-1				
1.4			1	1909.3	19193	21.59	22	0-1				
								1850.7	18607	20.54	22	0-1
			0	1880	18900	20.52	22	0-1				
				1909.3	19193	20.48	22	0-1				
				1850.7	18607	20.57	22	0-1				
		1 RB	2	1880	18900	20.35	22	0-1				
				1909.3	19193	20.52	22	0-1				
			_	1850.7	18607	20.73	22	0-1				
			5	1880	18900	20.69	22	0-1				
				1909.3	19193	20.41	22	0-1				
	1/ 0444		6	1850.7	18607	20.26	22	0-2				
	16-QAM		0	1880	18900	20.57	22	0-2				
				1909.3	19193	20.17	22	0-2				
		2.00	0	1850.7	18607	20.53	22	0-2				
		3 RB	2	1880	18900	20.45	22	0-2				
				1909.3	19193	20.33	22	0-2				
			2	1850.7	18607	20.58	22	0-2				
			3	1880	18900	20.40	22	0-2				
				1909.3	19193	20.46	22	0-2				
			חח	1850.7	18607	20.50	22	0-2				
		6	SRB	1880	18900	20.43	22	0-2				
				1909.3	19193	20.26	22	0-2				

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				FDD Band 4	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	21.81	22	0
			0	1732.5	20175	21.84	22	0
				1745	20300	21.85	22	0
				1720	20050	21.90	22	0
		1 RB	50	1732.5	20175	21.80	22	0
				1745	20300	21.91	22	0
				1720	20050	21.86	22	0
			99	1732.5	20175	21.82	22	0
				1745	20300	21.88	22	0
				1720	20050	21.65	22	0-1
	QPSK		0	1732.5	20175	21.75	22	0-1
				1745	20300	21.78	22	0-1
				1720	20050	21.66	22	0-1
	50	50 RB	25	1732.5	20175	21.79	22	0-1
				1745	20300	21.85	22	0-1
				1720	20050	21.75	22	0-1
			50	1732.5	20175	21.78	22	0-1
				1745	20300	21.78	22	0-1
				1720	20050	21.70	22	0-1
		10	ORB	1732.5	20175	21.81	22	0-1
20				1745	20300	21.74	22	0-1
				1720	20050	20.71	22	0-1
			0	1732.5	20175	20.76	22	0-1
				1745	20300	20.79	22	0-1
		4.00	50	1720	20050	20.81	22	0-1
		1 RB	50	1732.5	20175	20.73	22	0-1
				1745	20300	20.81	22	0-1
			99	1720 1732.5	20050	20.83	22	0-1
			77	1732.5	20175	20.81	22 22	0-1
					20300	20.85		0-1 0-2
	16-QAM		0	1720 1732.5	20050 20175	20.63 20.70	22 22	0-2
			0	1732.5	20175	20.70	22	0-2
				1745	20300	20.69	22	0-2
		50 RB	25	1720	20030	20.01	22	0-2
		30 10	23	1732.5	20175	20.70	22	0-2
				1745	20300	20.83	22	0-2
			50	1720	20030	20.09	22	0-2
				1732.5	20175	20.70	22	0-2
			l	1745	20300	20.72	22	0-2
		10	ORB	1732.5	20030	20.78	22	0-2
				1732.5	20300	20.64	22	0-2

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BW(Mhz) Modulation RB Size	RB Offset 0 36 74	Frequency (MHz) 1717.5 1732.5 1747.5 1717.5 1732.5 1747.5	Channel 20025 20175 20325 20025	Conducted power (dBm) 21.77 21.74	Target Power + Max. Tolerance (dBm) 22	MPR Allowed per 3GPP(dB)
QPSK	36	1732.5 1747.5 1717.5 1732.5	20175 20325	21.74		0
QPSK	36	1747.5 1717.5 1732.5	20325		20	
QPSK		1717.5 1732.5			22	0
QPSK		1732.5	20025	21.85	22	0
QPSK			20020	21.85	22	0
	74	17/75	20175	21.73	22	0
	74	1747.0	20325	21.80	22	0
	74	1717.5	20025	21.76	22	0
		1732.5	20175	21.74	22	0
		1747.5	20325	21.87	22	0
		1717.5	20025	21.57	22	0-1
36 RB	0	1732.5	20175	21.75	22	0-1
36 RB		1747.5	20325	21.72	22	0-1
36 RB	18	1717.5	20025	21.57	22	0-1
		1732.5	20175	21.75	22	0-1
		1747.5	20325	21.80	22	0-1
		1717.5	20025	21.67	22	0-1
	37	1732.5	20175	21.69	22	0-1
		1747.5	20325	21.77	22	0-1
		1717.5	20025	21.64	22	0-1
75	ōRB	1732.5	20175	21.80	22	0-1
15		1747.5	20325	21.72	22	0-1
	0	1717.5	20025	20.68	22	0-1
		1732.5	20175	20.72	22	0-1
		1747.5	20325	20.75	22	0-1
		1717.5	20025	20.73	22	0-1
1 RB	36	1732.5	20175	20.70	22	0-1
		1747.5	20325	20.77	22	0-1
	- 4	1717.5	20025	20.77	22	0-1
	74	1732.5	20175	20.76	22	0-1
		1747.5	20325	20.80	22	0-1
14 0 0 0 0	0	1717.5	20025	20.60	22	0-2
16-QAM	0	1732.5	20175	20.62	22	0-2
		1/4/.5	20325	20.68	22	0-2
36 RB	18	1717.5 1732.5	20025	20.58	22 22	0-2
JO RB	10	1732.5	20175 20325	20.62	22	0-2
		1747.5	20325	20.82	22	0-2
	27		20025	20.60 20.62	22	0-2
	37	1732.5 1747.5	20175			
	57	1/47.0			22	1 11-2
75	37			20.65	22	0-2
///////////////////////////////////////	5RB	1717.5 1732.5	20025 20175	20.65 20.62 20.73	22 22 22	0-2 0-2 0-2

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Image: constraint of the state of the sta					FDD Band	4			
10 10 10 10 10 10 10 10 10 10 10 10 10 1	BW(Mhz)	Modulation	RB Size	RB Offset		Channel	power	Power + Max. Tolerance	Allowed per
10 10 1750 20350 21.75 22 0 1780 20350 21.78 22 0 1732.5 20175 21.70 22 0 1732.5 20175 21.70 22 0 1750 20350 21.88 22 0 1750 20350 21.81 22 0 1755 20175 21.72 22 0 1755 20175 21.72 22 0 1755 20175 21.72 22 0 1755 20175 21.72 22 0-1 1750 20350 21.63 22 0-1 1750 20350 21.64 22 0-1 1750 20350 21.74 22 0-1 1750 20350 21.67 22 0-1 1750 20350 20.67 22 0-1 1750 20350 20.64 22 0-1 1750 20350 20.64 22 0-1 1750 20350 20.64 22 0-1 1750 20350 20.70 22 0-1 1750 20350 20.64 22 0-2 1750 20350 20.64 22 0-2 1750 20350 20.70 22 0-1 1750 20350 20.70 22 0-1 1750 20350 20.64 22 0-2 1750 20350 20.64 22 0-2 1750 20350 20.64 22 0-2 1750 20350 20.74 22 0-2 1750 20350 20.54 22 0-2 1750 20350 20.54 22 0-2 1750 20350 20.74 22 0-2 1750 20350 20.74 22 0-2 1750 20350 20.74 22 0-2 1750 20350 20.54 22 0-2 1750 2055 20.54 22 0-2 1750 20.56 22 0-2 1750 20.56					1715	20000	21.75	22	0
10 10           11 RB         1715         20000         21.78         22         0           1732.5         20175         21.70         22         0           1715         20000         21.78         22         0           1715         20000         21.78         22         0           1715         20000         21.78         22         0           1715         20000         21.88         22         0           1715         20000         21.88         22         0           1715         20000         21.55         22         0           1715         20000         21.55         22         0           1715         20000         21.55         22         0           1715         20000         21.53         22         0           1715         20000         21.63         22         0           1715         20000         21.63         22         0           1715         20000         21.63         22         0           1732.5         20175         21.71         22         0           1732.5         20175         21.67         22         0 </td <td></td> <td></td> <td></td> <td>0</td> <td>1732.5</td> <td>20175</td> <td>21.70</td> <td>22</td> <td>0</td>				0	1732.5	20175	21.70	22	0
1 RB         25         1732.5         20175         21.70         22         0           1750         20350         21.78         22         0           1715         20000         21.68         22         0           17132.5         20175         21.69         22         0           17150         20350         21.81         22         0           1750         20350         21.81         22         0           1750         20350         21.81         22         0           1750         20350         21.63         22         0-1           1750         20350         21.63         22         0-1           1750         20350         21.63         22         0-1           1750         20350         21.79         22         0-1           1750         20350         21.60         22         0-1           1750         20350         21.67         22         0-1           1750         20350         21.67         22         0-1           1755         20175         21.67         22         0-1           1732.5         20175         21.67 <td< td=""><td></td><td></td><td></td><td></td><td>1750</td><td>20350</td><td>21.75</td><td>22</td><td>0</td></td<>					1750	20350	21.75	22	0
10 10           Infso         20350         21.78         22         0           49         1715         20000         21.68         22         0           1732.5         20175         21.69         22         0           1750         20350         21.81         22         0           1750         20350         21.81         22         0           1750         20350         21.81         22         0           1715         20000         21.53         22         0-1           1750         20350         21.63         22         0-1           1750         20350         21.53         22         0-1           1715         20000         21.63         22         0-1           1732.5         20175         21.71         22         0-1           1750         20350         21.67         22         0-1           1750         20350         21.67         22         0-1           1750         20350         21.67         22         0-1           1750         20350         21.67         22         0-1           1750         20350         21.67         22					1715	20000	21.78	22	0
10 10 10 10 10 10 10 10 10 10			1 RB	25	1732.5	20175	21.70	22	0
10 OPSK 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0					1750	20350	21.78	22	0
Image: constraint of the system of					1715	20000	21.68		0
OPSK         0         1715         20000         21.55         22         0-1           1732.5         20175         21.72         22         0-1           1750         20350         21.63         22         0-1           1750         20350         21.63         22         0-1           1750         20350         21.71         22         0-1           1750         20350         21.79         22         0-1           1750         20350         21.79         22         0-1           1750         20350         21.79         22         0-1           1750         20350         21.62         22         0-1           1750         20350         21.68         22         0-1           1750         20350         21.67         22         0-1           1750         20350         21.67         22         0-1           1750         20350         21.67         22         0-1           1750         20350         20.67         22         0-1           1750         20350         20.67         22         0-1           1750         20350         20.63				49		20175	21.69		0
OPSK         0         1732.5         20175         21.72         22         0.1           1750         20350         21.63         22         0.1           1750         20350         21.63         22         0.1           1772.5         20175         21.71         22         0.1           1732.5         20175         21.71         22         0.1           1732.5         20175         21.71         22         0.1           1750         20350         21.79         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.68         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.70 <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0</td>									0
10 10 10 10 10 10 10 10 10 10 10 10 10 1					-			22	0-1
10         1715         20000         21.53         22         0.1           12         1732.5         20175         21.71         22         0.1           1750         20350         21.79         22         0.1           1750         20350         21.62         22         0.1           1715         20000         21.62         22         0.1           1715         20175         21.67         22         0.1           1750         20350         21.68         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.72         22         0.1           1750         20350         20.70		QPSK		0					-
10         25 RB         12         1732.5         20175         21.71         22         0.1           1750         20350         21.79         22         0.1           25         1715         20000         21.62         22         0.1           1750         20350         21.79         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.60         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.64         22         0.1           1750         20350         20.70         22         0.1           1750									
$10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\ 10 \\$			25 RB						
10         1715         20000         21.62         22         0.1           1732.5         20175         21.67         22         0.1           1750         20350         21.68         22         0.1           1750         20350         21.68         22         0.1           1750         20350         21.67         22         0.1           1772.5         20175         21.71         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.72         22         0.1           1750         20350         20.70         22         0.1           1750         20350         20.70         22				12					
10         25         1732.5         20175         21.67         22         0.1           1750         20350         21.68         22         0.1           50RB         1715         20000         21.60         22         0.1           1732.5         20175         21.71         22         0.1           1732.5         20175         21.71         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.72         22         0.1           1750         20350         20.70         22         0.1           1750         20350         20.70         22         0.1           1750         20350         20.70         22         0.2           1750         20350									
10         1750         20350         21.68         22         0.1           50RB         1715         20000         21.60         22         0.1           1732.5         20175         21.71         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.72         22         0.1           1750         20350         20.70         22         0.1           1750         20350         20.70         22         0.1           1750         20350         20.70         22         0.2           1750         20350         20.70									
10         1715         2000         21.60         22         0.1           1732.5         20175         21.71         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         21.67         22         0.1           1750         20350         20.69         22         0.1           1715         20000         20.60         22         0.1           1700         20350         20.69         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.69         22         0.1           1750         20350         20.67         22         0.1           1750         20350         20.72         22         0.1           1750         20350         20.70         22         0.1           1750         20350         20.70         22         0.1           1750         20350         20.70         22         0.2           1750         20350         20.70         22				25					-
10 10 1732.5 20175 21.71 22 0.1 1750 20350 21.67 22 0.1 1750 20350 20.60 22 0.1 1750 20350 20.69 22 0.1 1750 20350 20.69 22 0.1 1750 20350 20.69 22 0.1 1750 20350 20.64 22 0.1 1750 20350 20.72 22 0.1 1750 20350 20.72 22 0.1 1750 20350 20.72 22 0.1 1750 20350 20.70 22 0.1 1750 20350 20.63 22 0.2 1750 20350 20.74 22 0.2 1750 20350 20.54 22 0.2 1750 20350 20.74 22 0.2 1750 20350 20.54 22 0.2 1750 20350 20.74 22 0.2 1750 20350 20.74 22 0.2 1750 20350 20.54 22 0.2 1750 20350 20.74 22 0.2 1750 20350 20.74 22 0.2 1750 20350 20.54 22 0.2 1750 20350 20.74 22 0.2 1750 20350 20.54 22 0.2 1750 20350 20.74 22 0.2 1750 20350 20.54 22 0.2 1750 20.54 22 0.2 1750 20.55 20.54 22 0.2 1750 20.56 22 0.2 1750									
10         1750         20350         21.67         22         0-1           10         1715         20000         20.60         22         0-1           1732.5         20175         20.67         22         0-1           1750         20350         20.69         22         0-1           1750         20350         20.69         22         0-1           1750         20350         20.69         22         0-1           1750         20350         20.64         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-2           1750         20350         20.70         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.74									
10         1715         2000         20.60         22         0-1           1732.5         20175         20.67         22         0-1           1750         20350         20.69         22         0-1           1750         20350         20.69         22         0-1           1750         20350         20.69         22         0-1           1750         20350         20.64         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.64         22         0-2           1750         20350         20.74         22			5	ORB	-				-
16-QAM         0         1732.5         20175         20.67         22         0-1           1750         20350         20.69         22         0-1           1750         20000         20.64         22         0-1           1732.5         20175         20.68         22         0-1           1732.5         20175         20.68         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-2           1750         20350         20.70         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.56 <td>10</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	10								
1 RB         1750         2030         20.69         22         0-1           1715         20000         20.64         22         0-1           1715         20000         20.64         22         0-1           1732.5         20175         20.68         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.64         22         0-2           1750         20350         20.74         22				0					
1 RB         1715         20000         20.64         22         0-1           1732.5         20175         20.68         22         0-1           1750         20350         20.72         22         0-1           1750         20350         20.70         22         0-1           1750         20000         20.70         22         0-1           49         1715         20000         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.64         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.56         22         0-2           1750         20350         20.53									
1 RB         25         1732.5         20175         20.68         22         0-1           1750         20350         20.72         22         0-1           49         1715         20000         20.70         22         0-1           1750         20350         20.72         22         0-1           1715         20000         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-2           1750         20350         20.70         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.64         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.53         22         0-2           1750         20350									-
$16-\text{QAM} = \begin{bmatrix} 1,1150 & 20350 & 20.72 & 22 & 0.1 \\ 1750 & 20350 & 20.72 & 22 & 0.1 \\ 1715 & 20000 & 20.70 & 22 & 0.1 \\ 1750 & 20350 & 20.70 & 22 & 0.1 \\ 1750 & 20350 & 20.70 & 22 & 0.1 \\ 1750 & 20350 & 20.70 & 22 & 0.2 \\ 1750 & 20350 & 20.63 & 22 & 0.2 \\ 1750 & 20350 & 20.63 & 22 & 0.2 \\ 1750 & 20350 & 20.63 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.74 & 22 & 0.2 \\ 1750 & 20350 & 20.74 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.74 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.56 & 22 & 0.2 \\ 1750 & 20350 & 20.59 & 22 & 0.2 \\ 1750 & 20350 & 20.59 & 22 & 0.2 \\ 1715 & 20000 & 20.62 & 22 & 0.2 \\ 1715 & 20000 & 20.66 & 20 & 0.2 \\ 1715 & 20000 & 20.66 & 20 & 0.2 \\ 1715 & 20000 & 20.66 & 20 & 0.2 \\ 1715 & 20000 & 20.66 & 20 & 0.2 \\ 1715 & 20000 & 20.66 &$			4.55	05					
16-QAM         1715         20000         20.70         22         0-1           16-QAM         49         1732.5         20175         20.72         22         0-1           16-QAM         1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-1           1750         20350         20.70         22         0-2           1750         20350         20.56         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1732.5         20175         20.53         22         0-2           1732.5         20175         20.53         22         0-2           1732.5         20175         20.53         22         0-2           175			1 RB	25					
49         1732.5         20175         20.72         22         0-1           1750         20350         20.70         22         0-1           16-QAM         1750         20350         20.70         22         0-1           16-QAM         1715         20000         20.53         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.64         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1732.5         20175         20.53         22         0-2           1732.5         20175         20.53         22         0-2           1750         20350         20.59         22         0-2           1750         20350 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>									
16-QAM         1750         20350         20.70         22         0-1           16-QAM         0         1715         20000         20.53         22         0-2           1732.5         20175         20.56         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.56         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1732.5         20175         20.53         22         0-2           1750         20350         20.59         22         0-2           1750         20350         20.59         22         0-2           1750         20350         20.59         22         0-2           1750         20000				40					
16-QAM         1715         20000         20.53         22         0-2           1732.5         20175         20.56         22         0-2           1750         20350         20.63         22         0-2           1750         20350         20.63         22         0-2           1750         20000         20.56         22         0-2           1750         20000         20.56         22         0-2           1750         20000         20.56         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.56         22         0-2           1750         20350         20.53         22         0-2           1750         20350         20.59         22         0-2           1750         20350         20.59         22         0-2           1750         20000         20.62         22         0-2           1750         20000         20.62         22				49					
16-QAM         0         1732.5         20175         20.56         22         0-2           1750         20350         20.63         22         0-2           1750         20000         20.56         22         0-2           1750         20000         20.56         22         0-2           1750         20000         20.56         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1750         20000         20.56         22         0-2           1750         20000         20.56         22         0-2           25         1732.5         20175         20.53         22         0-2           1750         20350         20.59         22         0-2           1750         20350         20.59         22         0-2           1750         20000         20.62         22         0-2           50RB         1732.5         20175         20.66         22         0-2									
1750         20350         20.63         22         0-2           25 RB         12         1715         20000         20.56         22         0-2           1732.5         20175         20.54         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.74         22         0-2           1750         20350         20.56         22         0-2           1750         20350         20.74         22         0-2           25         1715         20000         20.56         22         0-2           25         1732.5         20175         20.53         22         0-2           1750         20350         20.59         22         0-2           1750         20350         20.59         22         0-2           1715         20000         20.62         22         0-2           50RB         1732.5         20175         20.66         22         0-2		16 0 4 14		0					
25 RB         1715         20000         20.56         22         0-2           1732.5         20175         20.54         22         0-2           1750         20350         20.74         22         0-2           1750         20000         20.56         22         0-2           1750         20350         20.74         22         0-2           25         1715         20000         20.56         22         0-2           1750         20350         20.53         22         0-2           1750         20350         20.59         22         0-2           1750         20350         20.59         22         0-2           1750         20350         20.62         22         0-2           50RB         1732.5         20175         20.66         22         0-2		10-QAIVI		U					
25 RB         12         1732.5         20175         20.54         22         0-2           1750         20350         20.74         22         0-2           1715         20000         20.56         22         0-2           25         1732.5         20175         20.53         22         0-2           1750         20350         20.59         22         0-2           1750         20350         20.59         22         0-2           1715         20000         20.62         22         0-2           50RB         1732.5         20175         20.66         22         0-2									
1750         20350         20.74         22         0-2           1715         20000         20.56         22         0-2           25         1732.5         20175         20.53         22         0-2           1750         20350         20.59         22         0-2           1750         20000         20.62         22         0-2           1750         20000         20.62         22         0-2           50RB         1732.5         20175         20.66         22         0-2			25 DR	12	-				
1715         20000         20.56         22         0-2           25         1732.5         20175         20.53         22         0-2           1750         20350         20.59         22         0-2           1715         20000         20.62         22         0-2           1750         20350         20.59         22         0-2           50RB         1732.5         20175         20.66         22         0-2			23 KD	12	-				
25         1732.5         20175         20.53         22         0-2           1750         20350         20.59         22         0-2           1715         20000         20.62         22         0-2           50RB         1732.5         20175         20.66         22         0-2									
1750         20350         20.59         22         0-2           1715         20000         20.62         22         0-2           50RB         1732.5         20175         20.66         22         0-2				25					
1715         20000         20.62         22         0-2           50RB         1732.5         20175         20.66         22         0-2				20					
50RB 1732.5 20175 20.66 22 0-2									
			FOD	OPR					
1750 20350 20.54 22 0-2		50R							

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)
				1712.5	19975	21.68	22	0
			0	1732.5	20175	21.66	22	0
				1752.5	20375	21.68	22	0
				1712.5	19975	21.70	22	0
		1 RB	12	1732.5	20175	21.67	22	0
				1752.5	20375	21.68	22	0
				1712.5	19975	21.65	22	0
			24	1732.5	20175	21.65	22	0
				1752.5	20375	21.81	22	0
				1712.5	19975	21.48	22	0-1
	QPSK		0	1732.5	20175	21.70	22	0-1
				1752.5	20375	21.59	22	0-1
				1712.5	19975	21.51	22	0-1
	12 RB	6	1732.5	20175	21.63	22	0-1	
			1752.5	20375	21.70	22	0-1	
				1712.5	19975	21.58	22	0-1
			13	1732.5	20175	21.64	22	0-1
				1752.5	20375	21.60	22	0-1
				1712.5	19975	21.58	22	0-1
		25RB		1732.5	20175	21.71	22	0-1
5			-	1752.5	20375	21.64	22	0-1
5			0	1712.5	19975	20.56	22	0-1
				1732.5	20175	20.62	22	0-1
				1752.5	20375	20.62	22	0-1
				1712.5	19975	20.55	22	0-1
		1 RB	12	1732.5	20175	20.67	22	0-1
				1752.5	20375	20.62	22	0-1
				1712.5	19975	20.67	22	0-1
			24	1732.5	20175	20.71	22	0-1
				1752.5	20375	20.69	22	0-1
				1712.5	19975	20.50	22	0-2
	16-QAM		0	1732.5	20175	20.52	22	0-2
				1752.5	20375	20.58	22	0-2
				1712.5	19975	20.55	22	0-2
		12 RB	6	1732.5	20175	20.49	22	0-2
				1752.5	20375	20.71	22	0-2
				1712.5	19975	20.54	22	0-2
			13	1732.5	20175	20.43	22	0-2
			1752.5	20375	20.58	22	0-2	
				1712.5	19975	20.60	22	0-2
		25RB	1732.5	20175	20.63	22	0-2	
				1752.5	20375	20.53	22	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)
				1711.5	19965	21.62	22	0
			0	1732.5	20175	21.65	22	0
				1753.5	20385	21.59	22	0
				1711.5	19965	21.63	22	0
		1 RB	7	1732.5	20175	21.61	22	0
				1753.5	20385	21.68	22	0
				1711.5	19965	21.59	22	0
			14	1732.5	20175	21.56	22	0
				1753.5	20385	21.77	22	0
	0.501/			1711.5	19965	21.42	22	0-1
	QPSK		0	1732.5	20175	21.69	22	0-1
				1753.5	20385	21.50	22	0-1
		8 RB		1711.5	19965	21.43	22	0-1
			4	1732.5	20175	21.55	22	0-1
			1753.5	20385	21.62	22	0-1	
			-	1711.5	19965	21.50	22	0-1
			7	1732.5	20175	21.62	22	0-1
				1753.5	20385	21.57	22	0-1
		1		1711.5	19965	21.56	22	0-1
		1	5RB	1732.5	20175	21.61	22	0-1
3				1753.5	20385	21.55	22	0-1
			0	1711.5	19965	20.53	22	0-1
			0	1732.5	20175	20.54	22	0-1
				1753.5 1711.5	20385	20.61 20.52	22 22	0-1 0-1
		1 RB	7	1711.5	19965 20175	20.52	22	0-1
		IND	/	1732.5	20175	20.65	22	0-1
				1753.5	19965	20.56	22	0-1
			14	1711.5	20175	20.66	22	0-1
				1753.5	20175	20.60	22	0-1
				1733.5	19965	20.00	22	0-1
	16-QAM		0	1711.5	20175	20.40	22	0-2
				1752.5	20175	20.47	22	0-2
				1711.5	19965	20.52	22	0-2
	8 RB	8 RB	4	1732.5	20175	20.43	22	0-2
				1753.5	20385	20.67	22	0-2
				1711.5	19965	20.46	22	0-2
			7	1732.5	20175	20.36	22	0-2
				1753.5	20385	20.56	22	0-2
		15RB		1711.5	19965	20.51	22	0-2
			1732.5	20175	20.57	22	0-2	
			1753.5	20385	20.51	22	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)
				1710.7	19957	21.60	22	0
			0	1732.5	20175	21.61	22	0
				1754.3	20393	21.64	22	0
				1710.7	19957	21.68	22	0
		1 RB	2	1732.5	20175	21.66	22	0
				1754.3	20393	21.61	22	0
				1710.7	19957	21.57	22	0
			5	1732.5	20175	21.64	22	0
				1754.3	20393	21.71	22	0
				1710.7	19957	21.47	22	0-1
	QPSK		0	1732.5	20175	21.61	22	0-1
				1754.3	20393	21.55	22	0-1
			2	1710.7	19957	21.49	22	0-1
		3 RB		1732.5	20175	21.58	22	0-1
				1754.3	20393	21.63	22	0-1
				1710.7	19957	21.52	22	0-1
			3	1732.5	20175	21.60	22	0-1
				1754.3	20393	21.53	22	0-1
				1710.7	19957	21.56	22	0-1
		ť	SRB	1732.5	20175	21.67	22	0-1
1.4				1754.3	20393	21.55	22	0-1
			0	1710.7	19957	20.50	22	0-1
				1732.5	20175	20.58	22	0-1
				1754.3	20393	20.54	22	0-1
				1710.7	19957	20.54	22	0-1
		1 RB	2	1732.5	20175	20.66	22	0-1
				1754.3	20393	20.60	22	0-1
				1710.7	19957	20.67	22	0-1
			5	1732.5	20175	20.67	22	0-1
				1754.3	20393	20.65	22	0-1
	4/ 6/11			1710.7	19957	20.41	22	0-2
	16-QAM		0	1732.5	20175	20.44	22	0-2
				1754.3	20393	20.49	22	0-2
		2.00	<u>_</u>	1710.7	19957	20.47	22	0-2
	3	3 RB	2	1732.5	20175	20.41	22	0-2
				1754.3	20393	20.63	22	0-2
			n	1710.7	19957	20.52	22	0-2
			3	1732.5	20175	20.34	22	0-2
				1754.3	20393	20.49	22	0-2
		6RB	חח	1710.7	19957	20.52	22	0-2
			1732.5 1754.3	20175	20.61	22	0-2	
					20393	20.44	22	0-2

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				FDD Band !	5			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				829	20450	22.44	23	0
			0	836.5	20525	22.21	23	0
				844	20600	22.38	23	0
				829	20450	22.39	23	0
		1 RB	25	836.5	20525	22.36	23	0
				844	20600	22.47	23	0
				829	20450	22.39	23	0
			49	836.5	20525	22.39	23	0
				844	20600	22.55	23	0
			0	829	20450	21.22	23	0-1
	QPSK			836.5	20525	21.39	23	0-1
				844	20600	21.43	23	0-1
				829	20450	21.3	23	0-1
	25 RB	12	836.5	20525	21.44	23	0-1	
				844	20600	21.51	23	0-1
				829	20450	21.34	23	0-1
			25	836.5	20525	21.42	23	0-1
				844	20600	21.48	23	0-1
				829	20450	21.39	23	0-1
		5	ORB	836.5	20525	21.35	23	0-1
10				844	20600	21.43	23	0-1
10			0	829	20450	20.94	22	0-1
				836.5	20525	21.64	22	0-1
				844	20600	21.29	22	0-1
				829	20450	21.00	22	0-1
		1 RB	25	836.5	20525	21.67	22	0-1
				844	20600	21.61	22	0-1
				829	20450	20.97	22	0-1
			49	836.5	20525	21.71	22	0-1
				844	20600	21.84	22	0-1
				829	20450	20.21	22	0-2
	16-QAM		0	836.5	20525	20.37	22	0-2
				844	20600	20.42	22	0-2
				829	20450	20.2	22	0-2
		25 RB	12	836.5	20525	20.31	22	0-2
				844	20600	20.29	22	0-2
				829	20450	20.24	22	0-2
			25	836.5	20525	20.45	22	0-2
				844	20600	20.42	22	0-2
			829	20450	20.09	22	0-2	
		50RB	ORB	836.5	20525	20.36	22	0-2
				844	20600	20.28	22	0-2

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				FDD Band !	5			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				826.5	20425	22.32	23	0
			0	836.5	20525	22.34	23	0
				846.5	20625	22.32	23	0
				826.5	20425	22.13	23	0
		1 RB	12	836.5	20525	22.35	23	0
				846.5	20625	22.50	23	0
				826.5	20425	22.35	23	0
			24	836.5	20525	22.33	23	0
				846.5	20625	22.32	23	0
				826.5	20425	21.26	23	0-1
	QPSK		0	836.5	20525	21.47	23	0-1
				846.5	20625	21.39	23	0-1
			6	826.5	20425	21.32	23	0-1
		12 RB		836.5	20525	21.51	23	0-1
			846.5	20625	21.63	23	0-1	
			826.5	20425	21.24	23	0-1	
			13	836.5	20525	21.44	23	0-1
				846.5	20625	21.47	23	0-1
				826.5	20425	21.27	23	0-1
		25RB		836.5	20525	21.35	23	0-1
5			-	846.5	20625	21.38	23	0-1
5			0	826.5	20425	21.1	22	0-1
				836.5	20525	21.63	22	0-1
				846.5	20625	21.47	22	0-1
				826.5	20425	21.13	22	0-1
		1 RB	12	836.5	20525	21.6	22	0-1
				846.5	20625	21.07	22	0-1
				826.5	20425	21.51	22	0-1
			24	836.5	20525	21.23	22	0-1
				846.5	20625	21.57	22	0-1
			-	826.5	20425	20.32	22	0-2
	16-QAM		0	836.5	20525	20.46	22	0-2
				846.5	20625	20.6	22	0-2
		40.55		826.5	20425	20.24	22	0-2
		12 RB	6	836.5	20525	20.49	22	0-2
				846.5	20625	20.65	22	0-2
			10	826.5	20425	20.4	22	0-2
			13	836.5	20525	20.39	22	0-2
			846.5	20625	20.43	22	0-2	
		25RB		826.5	20425	20.25	22	0-2
			экв	836.5	20525	20.37	22	0-2
				846.5	20625	20.34	22	0-2

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				FDD Band !	5			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				825.5	20415	22.08	23	0
			0	836.5	20525	22.3	23	0
				847.5	20635	22.33	23	0
				825.5	20415	22.21	23	0
		1 RB	7	836.5	20525	22.42	23	0
				847.5	20635	22.4	23	0
				825.5	20415	22.27	23	0
			14	836.5	20525	22.45	23	0
				847.5	20635	22.3	23	0
				825.5	20415	21.35	23	0-1
	QPSK		0	836.5	20525	21.43	23	0-1
				847.5	20635	21.46	23	0-1
				825.5	20415	21.33	23	0-1
		8 RB	4	836.5	20525	21.44	23	0-1
			847.5	20635	21.44	23	0-1	
			825.5	20415	21.28	23	0-1	
			7	836.5	20525	21.42	23	0-1
				847.5	20635	21.42	23	0-1
				825.5	20415	21.34	23	0-1
		1	5RB	836.5	20525	21.44	23	0-1
3				847.5	20635	21.46	23	0-1
			0	825.5	20415	20.91	22	0-1
				836.5	20525	21.01	22	0-1
				847.5	20635	21.21	22	0-1
		1.55	_	825.5	20415	21.46	22	0-1
		1 RB	7	836.5	20525	21.58	22	0-1
				847.5	20635	21.69	22	0-1
				825.5	20415	21.23	22	0-1
			14	836.5	20525	21.59	22	0-1
				847.5	20635	21.29	22	0-1
	14 0 4 14		0	825.5	20415	20.07	22	0-2
	16-QAM		0	836.5	20525	20.22	22	0-2
				847.5	20635	20.37	22	0-2
		0 00	л	825.5	20415	20.32	22	0-2
		8 RB	4	836.5	20525	20.51	22	0-2
				847.5 925.5	20635	20.4	22	0-2
			7	825.5 926 5	20415	20.21	22	0-2
			/	836.5	20525	20.31	22	0-2
			847.5 825.5	20635 20415	20.4 20.22	22 22	0-2 0-2	
		15RB	5PR					0-2
			JILD	836.5 947 5	20525	20.4	22	
				847.5	20635	20.37	22	0-2

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				FDD Band !	5			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				824.7	20407	22.17	23	0
			0	836.5	20525	22.39	23	0
				848.3	20643	22.14	23	0
				824.7	20407	22.44	23	0
		1 RB	2	836.5	20525	22.37	23	0
				848.3	20643	22.38	23	0
				824.7	20407	22.21	23	0
			5	836.5	20525	22.36	23	0
				848.3	20643	22.36	23	0
				824.7	20407	22.46	23	0-1
	QPSK		0	836.5	20525	22.59	23	0-1
				848.3	20643	22.45	23	0-1
			_	824.7	20407	22.25	23	0-1
	3 RB	2	836.5	20525	22.4	23	0-1	
				848.3	20643	22.37	23	0-1
				824.7	20407	22.18	23	0-1
			3	836.5	20525	22.32	23	0-1
				848.3	20643	22.4	23	0-1
		,		824.7	20407	21.44	23	0-1
		Č	RB	836.5	20525	21.41	23	0-1
1.4				848.3	20643	21.45	23	0-1
			0	824.7	20407	21.15	22	0-1
			0	836.5	20525	21.48	22	0-1
				848.3	20643	21.57	22	0-1
		1 00	2	824.7	20407	21.25	22	0-1
		1 RB	2	836.5	20525	21.37	22	0-1
				848.3 824.7	20643 20407	21.45 21.27	22 22	0-1 0-1
			5	824.7	20407	21.27	22	0-1
			5	848.3	20525	21.34	22	0-1
				824.7	20043	21.07	22	0-1
	16-QAM		0	836.5	20407	21.53	22	0-2
			, j	848.3	20525	21.53	22	0-2
				824.7	20043	21.30	22	0-2
		3 RB	2	836.5	20407	21.27	22	0-2
			-	848.3	20525	21.55	22	0-2
				824.7	20407	21.5	22	0-2
			3	836.5	20525	21.55	22	0-2
			J	848.3	20643	21.55	22	0-2
			824.7	20043	20.44	22	0-2	
		ARI	RB	836.5	20525	20.55	22	0-2
	61	-	848.3	20643	20.48	22	0-2	

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				FDD Band 1	3			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
			0	782	23230	22.23	23	0
		1 RB	25	782	23230	22.66	23	0
			49	782	23230	22.18	23	0
	QPSK	25 RB	0	782	23230	21.41	23	0-1
			12	782	23230	21.76	23	0-1
			25	782	23230	21.69	23	0-1
10		50RB		782	23230	21.43	23	0-1
10			0	782	23230	21.37	22	0-1
		1 RB	25	782	23230	21.5	22	0-1
			49	782	23230	21.3	22	0-1
	16-QAM		0	782	23230	20.31	22	0-2
		25 RB	12	782	23230	20.76	22	0-2
			25	782	23230	20.63	22	0-2
		50	ORB	782	23230	20.43	22	0-2

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FDD Band 13											
BW (Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)			
				779.5	23205	22.26	23	0			
			0	782	23230	22.56	23	0			
				784.5	23255	22.61	23	0			
				779.5	23205	22.33	23	0			
		1 RB	12	782	23230	22.55	23	0			
				784.5	23255	22.36	23	0			
				779.5	23205	22.53	23	0			
			24	782	23230	22.42	23	0			
				784.5	23255	22.21	23	0			
				779.5	23205	21.43	23	0-1			
	QPSK		0	782	23230	21.47	23	0-1			
				784.5	23255	21.68	23	0-1			
			6	779.5	23205	21.42	23	0-1			
		12 RB		782	23230	21.58	23	0-1			
			784.5	23255	21.47	23	0-1				
				779.5	23205	21.56	23	0-1			
			13	782	23230	21.61	23	0-1			
				784.5	23255	21.27	23	0-1			
				779.5	23205	21.4	23	0-1			
		2	5RB	782	23230	21.61	23	0-1			
5				784.5	23255	21.49	23	0-1			
			0	779.5	23205	21.12	22	0-1			
				782	23230	21.5	22	0-1			
				784.5	23255	21.91	22	0-1			
				779.5	23205	21.31	22	0-1			
		1 RB	12	782	23230	21.55	22	0-1			
				784.5	23255	21.37	22	0-1			
				779.5	23205	21.77	22	0-1			
			24	782	23230	21.22	22	0-1			
				784.5	23255	21.01	22	0-1			
	14 0 0 0		0	779.5	23205	20.41	22	0-2			
	16-QAM		0	782	23230	20.51	22	0-2			
				784.5	23255	20.69	22	0-2			
		10 00	,	779.5	23205	20.35	22	0-2			
		12 RB	6	782	23230	20.62	22	0-2			
				784.5	23255	20.56	22	0-2			
			10	779.5	23205	20.52	22	0-2			
			13	782	23230	20.54	22	0-2			
1			784.5	23255	20.25	22	0-2				
		25RB		779.5	23205	20.39	22	0-2			
			782	23230	20.53	22	0-2				
				784.5	23255	20.54	22	0-2			

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				FDD Band 1	7			
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	22.31	23	0
			0	710	23790	22.3	23	0
				711	23800	22.57	23	0
				709	23780	22.77	23	0
		1 RB	25	710	23790	22.55	23	0
				711	23800	22.87	23	0
				709	23780	22.22	23	0
			49	710	23790	22.46	23	0
				711	23800	22.19	23	0
			0	709	23780	21.61	23	0-1
	QPSK			710	23790	21.62	23	0-1
				711	23800	21.67	23	0-1
				709	23780	21.6	23	0-1
	25 RB	12	710	23790	21.66	23	0-1	
				711	23800	21.52	23	0-1
				709	23780	21.57	23	0-1
			25	710	23790	21.36	23	0-1
				711	23800	21.55	23	0-1
				709	23780	21.53	23	0-1
		51	ORB	710	23790	21.43	23	0-1
10				711	23800	21.43	23	0-1
			0	709	23780	21.35	22	0-1
				710	23790	21.79	22	0-1
				711	23800	21.53	22	0-1
		4.55	05	709	23780	21.69	22	0-1
		1 RB	25	710	23790	21.83	22	0-1
				711	23800	21.63	22	0-1
			49	709	23780	21.32	22	0-1
			49	710 711	23790	20.93	22 22	0-1
				711	23800	21.32 20.67	22	0-1 0-2
	16-QAM		0	709	23780 23790	20.67	22	0-2
			U	710	23790	20.59	22	0-2
				709	23800	20.66	22	0-2
		25 RB	12	709	23780	20.39	22	0-2
		20 10	12	710	23790	20.7	22	0-2
				709	23800	20.47	22	0-2
			25	710	23780	20.04	22	0-2
			20	710	23790	20.20	22	0-2
			l	709	23780	20.51	22	0-2
		50RB	ORB	710	23790	20.31	22	0-2
			710	23800	20.37	22	0-2	

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				FDD Band 1	7			
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	22.04	23	0
			0	710	23790	22.63	23	0
				713.5	23825	22.54	23	0
				706.5	23755	22.51	23	0
		1 RB	12	710	23790	22.88	23	0
				713.5	23825	22.34	23	0
				706.5	23755	22.9	23	0
			24	710	23790	22.38	23	0
				713.5	23825	22.1	23	0
				706.5	23755	21.39	23	0-1
	QPSK		0	710	23790	21.71	23	0-1
				713.5	23825	21.51	23	0-1
				706.5	23755	21.54	23	0-1
		12 RB	6	710	23790	21.79	23	0-1
				713.5	23825	21.51	23	0-1
				706.5	23755	21.73	23	0-1
			13	710	23790	21.66	23	0-1
				713.5	23825	21.28	23	0-1
		25RB		706.5	23755	21.5	23	0-1
				710	23790	21.47	23	0-1
5				713.5	23825	21.36	23	0-1
-				706.5	23755	21.35	22	0-1
			0	710	23790	21.52	22	0-1
				713.5	23825	21.59	22	0-1
		1 RB	12	706.5	23755	21.64	22	0-1
				710	23790	21.21	22	0-1
				713.5	23825	21.11	22	0-1
			_	706.5	23755	21.5	22	0-1
			24	710	23790	21.36	22	0-1
				713.5	23825	21.09	22	0-1
	16-QAM		0	706.5	23755	20.41	22	0-2
				710	23790	20.75	22	0-2
				713.5	23825	20.47	22	0-2
		40.55		706.5	23755	20.52	22	0-2
		12 RB	6	710	23790	20.55	22	0-2
				713.5	23825	20.5	22	0-2
			13	706.5	23755	20.72	22	0-2
				710	23790	20.72	22	0-2
				713.5	23825	20.2	22	0-2
		25RB		706.5	23755	20.53	22	0-2
				710	23790	20.77	22	0-2
				713.5	23825	20.37	22	0-2

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				FDD Band 2	5			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1860	26140	21.92	22	0
			0	1882.5	26365	21.72	22	0
				1905	26590	21.68	22	0
				1860	26140	21.90	22	0
		1 RB	50	1882.5	26365	21.70	22	0
				1905	26590	21.66	22	0
				1860	26140	21.81	22	0
			99	1882.5	26365	21.69	22	0
				1905	26590	21.70	22	0
				1860	26140	21.88	22	0-1
	QPSK		0	1882.5	26365	21.74	22	0-1
				1905	26590	21.62	22	0-1
				1860	26140	21.68	22	0-1
		50 RB	25	1882.5	26365	21.76	22	0-1
				1905	26590	21.72	22	0-1
			50	1860	26140	21.91	22	0-1
				1882.5	26365	21.73	22	0-1
				1905	26590	21.93	22	0-1
		100RB		1860	26140	21.71	22	0-1
				1882.5	26365	21.70	22	0-1
20				1905	26590	21.73	22	0-1
		1 RB		1860	26140	20.88	22	0-1
			0	1882.5	26365	20.63	22	0-1
				1905	26590	20.67	22	0-1
			50	1860	26140	20.81	22	0-1
				1882.5	26365	20.64	22	0-1
			99	1905	26590	20.62	22	0-1
				1860	26140	20.78	22	0-1
				1882.5	26365	20.66	22	0-1
				1905	26590	20.64	22	0-1
	14 0 4 44			1860	26140	20.83	22	0-2
	16-QAM			1882.5	26365	20.68	22	0-2
				1905	26590	20.53	22	0-2
			<u>ר</u>	1860	26140	20.59	22	0-2
		50 RB	25	1882.5	26365	20.74	22	0-2
				1905	26590	20.69	22	0-2
			50	1860	26140	20.90	22	0-2
			50	1882.5	26365	20.64	22	0-2
				1905	26590	20.84	22	0-2
		100RB		1860	26140	20.70	22	0-2
				1882.5	26365	20.66	22	0-2
				1905	26590	20.72	22	0-2

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				FDD Band 2	5			
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	26115	21.88	22	0
			0	1882.5	26365	21.70	22	0
				1907.5	26615	21.62	22	0
				1857.5	26115	21.82	22	0
		1 RB	36	1882.5	26365	21.65	22	0
				1907.5	26615	21.62	22	0
				1857.5	26115	21.79	22	0
			74	1882.5	26365	21.63	22	0
				1907.5	26615	21.63	22	0
				1857.5	26115	21.79	22	0-1
	QPSK		0	1882.5	26365	21.65	22	0-1
				1907.5	26615	21.57	22	0-1
				1857.5	26115	21.65	22	0-1
		36 RB	18	1882.5	26365	21.70	22	0-1
				1907.5	26615	21.68	22	0-1
			37	1857.5	26115	21.83	22	0-1
				1882.5	26365	21.68	22	0-1
				1907.5	26615	21.84	22	0-1
		75RB		1857.5	26115	21.64	22	0-1
				1882.5	26365	21.66	22	0-1
15				1907.5	26615	21.68	22	0-1
				1857.5	26115	20.80	22	0-1
		1 RB 36 RB	0	1882.5	26365	20.55	22	0-1
				1907.5	26615	20.62	22	0-1
				1857.5	26115	20.78	22	0-1
			36 74	1882.5	26365	20.57	22	0-1
				1907.5	26615	20.55	22	0-1
				1857.5	26115	20.74	22	0-1
				1882.5	26365	20.63	22	0-1
				1907.5	26615	20.61	22	0-1
	14 0 4 44		0	1857.5	26115	20.77	22	0-2
	16-QAM			1882.5	26365	20.63	22	0-2
				1907.5	26615	20.43	22	0-2
			10	1857.5	26115	20.58	22	0-2
			18	1882.5	26365	20.65	22	0-2
				1907.5	26615	20.64	22	0-2
			37	1857.5	26115	20.86	22	0-2
				1882.5	26365	20.63	22	0-2
				1907.5 1857.5	26615	20.76 20.66	22 22	0-2 0-2
		75RB			26115			
				1882.5	26365	20.60	22	0-2
				1907.5	26615	20.65	22	0-2

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				FDD Band 2	5			
BW(Mhz)	Modulation	RB Size	RB Offset	Frequency (MHz)	Channel	Conducted power (dBm)	Target Power + Max. Tolerance (dBm)	MPR Allowed per 3GPP(dB)
				1855	26090	21.88	22	0
			0	1882.5	26365	21.66	22	0
				1910	26640	21.55	22	0
				1855	26090	21.81	22	0
		1 RB	25	1882.5	26365	21.55	22	0
				1910	26640	21.60	22	0
				1855	26090	21.78	22	0
			49	1882.5	26365	21.55	22	0
				1910	26640	21.55	22	0
				1855	26090	21.69	22	0-1
	QPSK		0	1882.5	26365	21.56	22	0-1
				1910	26640	21.54	22	0-1
				1855	26090	21.62	22	0-1
		25 RB	12	1882.5	26365	21.69	22	0-1
				1910	26640	21.59	22	0-1
			25	1855	26090	21.80	22	0-1
				1882.5	26365	21.60	22	0-1
				1910	26640	21.79	22	0-1
		50RB		1855	26090	21.58	22	0-1
				1882.5	26365	21.63	22	0-1
10				1910	26640	21.68	22	0-1
				1855	26090	20.70	22	0-1
		1 RB	0	1882.5	26365	20.52	22	0-1
				1910	26640	20.54	22	0-1
				1855	26090	20.74	22	0-1
			25	1882.5	26365	20.49	22	0-1
			49 0	1910	26640	20.54	22	0-1
				1855	26090	20.68	22	0-1
				1882.5	26365	20.53	22	0-1
				1910	26640	20.54	22	0-1
	14 0 4 44			1855	26090	20.77	22	0-2
	16-QAM			1882.5	26365	20.58	22	0-2
				1910	26640	20.41	22	0-2
		25 00	10	1855	26090	20.51	22	0-2
		25 RB	12	1882.5	26365	20.60	22	0-2
				1910	26640	20.60	22	0-2
			25	1855 1992 F	26090	20.80	22	0-2
				1882.5	26365	20.62	22	0-2
				1910 1855	26640 26090	20.74 20.66	22 22	0-2 0-2
		50RB						
				1882.5	26365	20.50	22	0-2
				1910	26640	20.59	22	0-2

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				FDD Band 2	5			
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	26065	21.81	22	0
			0	1882.5	26365	21.58	22	0
				1912.5	26665	21.50	22	0
				1852.5	26065	21.77	22	0
		1 RB	12	1882.5	26365	21.53	22	0
				1912.5	26665	21.51	22	0
				1852.5	26065	21.71	22	0
			24	1882.5	26365	21.46	22	0
				1912.5	26665	21.46	22	0
				1852.5	26065	21.63	22	0-1
	QPSK		0	1882.5	26365	21.53	22	0-1
				1912.5	26665	21.52	22	0-1
				1852.5	26065	21.60	22	0-1
		12 RB	6	1882.5	26365	21.61	22	0-1
				1912.5	26665	21.53	22	0-1
			13	1852.5	26065	21.76	22	0-1
				1882.5	26365	21.57	22	0-1
				1912.5	26665	21.70	22	0-1
		25RB		1852.5	26065	21.50	22	0-1
				1882.5	26365	21.58	22	0-1
5				1912.5	26665	21.63	22	0-1
5		1 RB		1852.5	26065	20.66	22	0-1
			0	1882.5	26365	20.46	22	0-1
				1912.5	26665	20.46	22	0-1
				1852.5	26065	20.72	22	0-1
			12	1882.5	26365	20.45	22	0-1
				1912.5	26665	20.47	22	0-1
				1852.5	26065	20.63	22	0-1
			24	1882.5	26365	20.45	22	0-1
				1912.5	26665	20.47	22	0-1
				1852.5	26065	20.68	22	0-2
	16-QAM		0	1882.5	26365	20.50	22	0-2
				1912.5	26665	20.32	22	0-2
				1852.5	26065	20.45	22	0-2
		12 RB	6	1882.5	26365	20.59	22	0-2
				1912.5	26665	20.51	22	0-2
				1852.5	26065	20.71	22	0-2
			13	1882.5	26365	20.57	22	0-2
				1912.5	26665	20.66	22	0-2
		25RB		1852.5	26065	20.65	22	0-2
				1882.5	26365	20.48	22	0-2
				1912.5	26665	20.49	22	0-2

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	FDD Band 25							
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	26055	21.80	22	0
			0	1882.5	26365	21.48	22	0
				1913.5	26675	21.48	22	0
				1851.5	26055	21.75	22	0
		1 RB	7	1882.5	26365	21.47	22	0
				1913.5	26675	21.47	22	0
				1851.5	26055	21.63	22	0
			14	1882.5	26365	21.46	22	0
				1913.5	26675	21.46	22	0
				1851.5	26055	21.61	22	0-1
	QPSK		0	1882.5	26365	21.47	22	0-1
				1913.5	26675	21.46	22	0-1
				1851.5	26055	21.60	22	0-1
		8 RB	4	1882.5	26365	21.55	22	0-1
				1913.5	26675	21.48	22	0-1
			7	1851.5	26055	21.71	22	0-1
				1882.5	26365	21.49	22	0-1
				1913.5	26675	21.65	22	0-1
		15RB		1851.5	26055	21.45	22	0-1
				1882.5	26365	21.53	22	0-1
3				1913.5	26675	21.56	22	0-1
-			0	1851.5	26055	20.59	22	0-1
				1882.5	26365	20.39	22	0-1
				1913.5	26675	20.44	22	0-1
		1 RB	7	1851.5	26055	20.66	22	0-1
				1882.5	26365	20.43	22	0-1
				1913.5	26675	20.41	22	0-1
				1851.5	26055	20.62	22	0-1
			14	1882.5	26365	20.42	22	0-1
				1913.5	26675	20.43	22	0-1
	44.6			1851.5	26055	20.59	22	0-2
	16-QAM		0	1882.5	26365	20.45	22	0-2
				1913.5	26675	20.26	22	0-2
		0.00		1851.5	26055	20.37	22	0-2
		8 RB	4	1882.5	26365	20.57	22	0-2
				1913.5	26675	20.49	22	0-2
			_	1851.5	26055	20.62	22	0-2
			7	1882.5	26365	20.51	22	0-2
				1913.5	26675	20.61	22	0-2
				1851.5	26055	20.62	22	0-2
		1	5RB	1882.5	26365	20.42	22	0-2
				1913.5	26675	20.42	22	0-2

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		FDD Band 25						
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	26047	21.75	22	0
			0	1882.5	26365	21.44	22	0
				1914.3	26683	21.48	22	0
				1850.7	26047	21.66	22	0
		1 RB	2	1882.5	26365	21.44	22	0
				1914.3	26683	21.46	22	0
				1850.7	26047	21.58	22	0
			5	1882.5	26365	21.36	22	0
				1914.3	26683	21.43	22	0
				1850.7	26047	21.57	22	0-1
	QPSK		0	1882.5	26365	21.46	22	0-1
				1914.3	26683	21.43	22	0-1
				1850.7	26047	21.58	22	0-1
		3 RB	2	1882.5	26365	21.54	22	0-1
				1914.3	26683	21.46	22	0-1
			3	1850.7	26047	21.70	22	0-1
				1882.5	26365	21.42	22	0-1
				1914.3	26683	21.63	22	0-1
		6RB		1850.7	26047	21.39	22	0-1
				1882.5	26365	21.51	22	0-1
1.4				1914.3	26683	21.48	22	0-1
		1 RB	0	1850.7	26047	20.51	22	0-1
				1882.5	26365	20.34	22	0-1
				1914.3	26683	20.36	22	0-1
			2	1850.7	26047	20.63	22	0-1
				1882.5	26365	20.36	22	0-1
				1914.3	26683	20.38	22	0-1
				1850.7	26047	20.60	22	0-1
			5	1882.5	26365	20.36	22	0-1
				1914.3	26683	20.41	22	0-1
				1850.7	26047	20.55	22	0-2
	16-QAM		0	1882.5	26365	20.44	22	0-2
				1914.3	26683	20.23	22	0-2
			_	1850.7	26047	20.27	22	0-2
		3 RB	2	1882.5	26365	20.51	22	0-2
				1914.3	26683	20.41	22	0-2
				1850.7	26047	20.61	22	0-2
			3	1882.5	26365	20.44	22	0-2
				1914.3	26683	20.56	22	0-2
				1850.7	26047	20.59	22	0-2
		e e	SRB	1882.5	26365	20.39	22	0-2
				1914.3	26683	20.41	22	0-2

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#### CDMA conducted power table:

		-	Target			1xRTT		EV	′DO
Band Chani	Channel	Frequency (MHz)	Power + Max.	SO55	SO55	TDSO/SO32	TDSO/SO32	1x EvDO Rev. 0, FTAP/RTAP	1x EvDO Rev. A, FETAP/RETAP
			Toleranc e (dBm)	RC1	RC3	FCH+SCH	FCH	Subtype 0/1	Subtype 2
00144	1013	824.7	23.00	22.67	22.64	22.58	22.58	22.70	22.60
CDMA (BC0)	384	836.52	23.00	22.76	22.72	22.67	22.73	22.90	22.70
(000)	777	848.31	23.00	22.50	22.45	22.28	22.29	22.60	22.50
00144	25	1851.25	22.00	21.94	21.93	21.91	21.93	21.97	21.94
CDMA (BC1)	600	1880	22.00	21.74	21.72	21.70	21.70	21.78	21.77
(001)	1175	1908.75	22.00	21.92	21.87	21.84	21.84	21.96	21.95
00144	476	817.9	23.00	22.57	22.55	22.48	22.51	22.60	22.50
CDMA (BC10)	560	820	23.00	22.57	22.57	22.50	22.52	22.60	22.50
(0010)	684	823.1	23.00	22.61	22.63	22.57	22.59	22.70	22.60

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

Antenna	SI	SO	MIMO
Band	Chain 0	Chain 1	Chain0+1
WLAN802.11b	V	V	
WLAN802.11g	V	V	
WLAN802.11n(20M)	V	V	V
WLAN802.11n(40M)	V	V	V
WLAN802.11a	V	V	
WLAN802.11n(20M) 5G	V	V	V
WLAN802.11n(40M) 5G	V	V	V

## Main Antenna (CH0)

8	02.11 b	Max. Rated Avg.	Average Power Output (dBm)
CU	Frequency		Data Rate (Mbps)
СН	Frequency (MHz)		1
1	2412	13.5	13.50
6	2437	13.5	13.00
11	2462	13.5	12.62

8	02.11 g	Max. Rated Avg.	Average Power Output (dBm)
CU	Frequency (MHz)	Davisar Mari	Data Rate (Mbps)
СН			6
1	2412	6.77	6.04
6	2437	13	12.60
11	2462	6	5.83

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## Main Antenna (CH0)

802	.11 n(20M)	Max. Rated Avg.	Average Power Output (dBm)	
CU	CH Frequency (MHz)	Power + Max. Tolerance (dBm)	Data Rate (Mbps)	
СП			6.5	
1	2412	10	9.49	
6	2437	10	9.30	
11	2462	10	8.71	

802	.11 n(40M)	Max. Rated Avg.	Average Power Output (dBm)	
СЦ	CH Frequency (MHz)	Power + Max.	Data Rate (Mbps)	
СП		Tolerance (dBm)	13.5	
3	2422	8	7.50	
6	2437	9.5	8.65	
9	2452	8	7.52	

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#### Main Antenna (CHO)

802.11 a		Max. Rated	Average Power Output(dBm)
5.2/5.3/5.6/5.8G		Avg. Power + Max.	
СН	Frequency	Tolerance	Data Rate (Mbps)
	(MHz)	(dBm)	6
36	5180	10.5	9.48
40	5200	10.5	9.89
44	5220	10.5	9.81
48	5240	10.5	9.78
52	5260	10.5	9.91
56	5280	10.5	9.94
60	5300	10.5	9.89
64	5320	9	8.54
100	5500	6	5.99
104	5520	10.5	9.23
108	5540	10.5	9.82
112	5560	10.5	9.76
116	5580	10.5	9.79
120	5600	10.5	9.72
124	5620	10.5	9.85
128	5640	10.5	9.93
132	5660	10.5	9.86
136	5680	10.5	9.85
140	5700	8	7.43
149	5745	10.5	9.39
153	5765	10.5	9.52
157	5785	10.5	9.69
161	5805	10.5	9.77
165	5825	10.5	9.87

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#### Main Antenna (CHO)

802.11 n(20M)		Max. Rated	Average Dower Output(dPm)
5.2/5.3/5.6/5.8G		Avg. Power + Max.	Average Power Output(dBm)
СН	Frequency	Tolerance	Data Rate (Mbps)
CIT	(MHz)	(dBm)	6.5
36	5180	10.5	9.98
40	5200	10.5	9.85
44	5220	10.5	9.72
48	5240	10.5	9.65
52	5260	10.5	9.71
56	5280	10.5	9.79
60	5300	10.5	9.85
64	5320	10.5	9.48
100	5500	9.0	8.22
104	5520	10.5	9.77
108	5540	10.5	9.82
112	5560	10.5	9.74
116	5580	10.5	9.73
120	5600	10.5	9.75
124	5620	10.5	9.69
128	5640	10.5	9.85
132	5660	10.5	9.79
136	5680	10.5	9.63
140	5700	10.5	9.57
149	5745	10.5	9.30
153	5765	10.5	9.38
157	5785	10.5	9.47
161	5805	10.5	9.61
165	5825	10.5	9.65

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# Main Antenna (CH0)

802.	.11 n(40M)	Max. Rated	Average Power Output(dBm)	
5.2/5	.3/5.6/5.8G	Avg. Power + Max.	Average Fower Output(ubili)	
СН	Frequency	Tolerance	Data Rate (Mbps)	
CIT	(MHz)	(dBm)	13.5	
38	5190	9.0	8.23	
46	5230	10.5	9.61	
54	5270	10.5	9.77	
62	5310	9.0	7.23	
102	5510	7.0	5.75	
110	5550	10.0	9.58	
118	5590	10.0	9.62	
126	5630	10.0	9.71	
134	5670	10.0	9.64	
151	5755	11.0	9.21	
159	5795	11.0	9.33	

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8	02.11 b	Max. Rated Avg.	Average Power Output (dBm)	
CU	H Frequency (MHz)	Power + Max. Tolerance (dBm)	Data Rate (Mbps)	
Сн			1	
1	2412	11	10.73	
6	2437	11.2	11.14	
11	2462	12	11.59	

8	02.11 g	Max. Rated Avg.	Average Power Output (dBm)	
CU	Frequency	Power + Max.	Data Rate (Mbps)	
СН	Frequency (MHz)	Tolerance (dBm)	6	
1	2412	6	5.79	
6	2437	11	10.97	
11	2462	5	4.94	

802	.11 n(20M)	Max. Rated Avg.	Average Power Output (dBm)
CU	Frequency	Power + Max.	Data Rate (Mbps)
СН	Frequency (MHz)	Tolerance (dBm)	6.5
1	2412	10	9.35
6	2437	10	9.49
11	2462	10	9.41

802	.11 n(40M)	Max. Rated Avg.	Average Power Output (dBm)	
CU	Frequency	Power + Max.	Data Rate (Mbps)	
СН	Frequency (MHz)	Tolerance (dBm)	13.5	
3	2422	8	7.19	
6	2437	9.5	8.63	
9	2452	8	7.81	

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802.11 a		Max. Rated	Average Power Output(dBm)
5.2/5	.3/5.6/5.8G	Avg. Power + Max.	
СН	Frequency	Tolerance	Data Rate (Mbps)
	(MHz)	(dBm)	6
36	5180	10	9.31
40	5200	10	9.37
44	5220	10	9.22
48	5240	10	9.19
52	5260	10	9.16
56	5280	10	9.12
60	5300	10	9.60
64	5320	9	8.99
100	5500	6	5.97
104	5520	10.5	9.39
108	5540	10.5	9.45
112	5560	10.5	9.41
116	5580	10.5	9.39
120	5600	10.5	9.51
124	5620	10.5	9.37
128	5640	10.5	9.44
132	5660	10.5	9.39
136	5680	10.5	9.31
140	5700	8	7.62
149	5745	10	9.32
153	5765	10	9.44
157	5785	10	9.47
161	5805	10	9.52
165	5825	10	9.50

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802	.11 n(20M)	Max. Rated	Average Power Output(dBm)
5.2/5	.3/5.6/5.8G	Avg. Power + Max.	Average Fower Output(dbill)
СН	Frequency	Tolerance	Data Rate (Mbps)
CIT	(MHz)	(dBm)	6.5
36	5180	10.0	9.31
40	5200	10.0	9.36
44	5220	10.0	9.27
48	5240	10.0	9.19
52	5260	10.5	9.13
56	5280	10.5	9.11
60	5300	10.5	9.57
64	5320	10.5	9.49
100	5500	9.0	8.44
104	5520	10.5	9.39
108	5540	10.5	9.41
112	5560	10.5	9.35
116	5580	10.5	9.47
120	5600	10.5	9.51
124	5620	10.5	9.48
128	5640	10.5	9.44
132	5660	10.5	9.33
136	5680	10.5	9.27
140	5700	10.5	9.26
149	5745	10.5	9.25
153	5765	10.5	9.42
157	5785	10.5	9.51
161	5805	10.5	9.49
165	5825	10.5	9.54

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802.	.11 n(40M)	Max. Rated	Average Power Output(dBm)	
5.2/5	.3/5.6/5.8G	Avg.		
СН	Frequency	Power + Max. Tolerance	Data Rate (Mbps)	
СП	(MHz)	(dBm)	13.5	
38	5190	9.00	8.57	
46	5230	10.00	9.81	
54	5270	10.50	9.86	
62	5310	9.00	7.52	
102	5510	7.00	5.75	
110	5550	10.00	9.66	
118	5590	10.00	9.23	
126	5630	10.00	9.62	
134	5670	10.00	9.04	
151	5755	11.00	9.18	
159	5795	11.00	9.25	

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## MIMO (CHO + CH1)

802	2.11 n(20M)	Max. Rated Avg. Power + Max.	Average Power Output (dBm)			
СН	Frequency		Power + Max. Data Rate (Mbps)			
СП	(MHz)	Tolerance (dBm)	CH0	CH1	CH0 + CH1	
1	2412	10	7.09	5.81	9.51	
6	2437	10	7.45	5.25	9.50	
11	2462	10	7.66	4.81	9.48	

802	2.11 n(40M)	Max. Rated Avg.	Average Power Output (dBm)		
СН	Frequency	Power + Max.		Data Rate (Mbp	os)
СП	(MHz)	Tolerance (dBm)	CHO	CH1	CH0 + CH1
3	2422	8	5.29	3.59	7.53
6	2437	9.5	7.11	4.83	9.13
9	2452	8	6.15	2.88	7.83

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MIMO (CH0 + CH1)

802.11 n(20M)			Average Power Output (dBm)		
5.2/5.3/5.6/5.8G		Max. Rated Avg. Power + Max.			
СН	Frequency			Data Rate (Mbp	os)
	(MHz)		CH0	CH1	CH0 + CH1
36	5180	10.5	7.60	7.08	10.36
40	5200	10.5	7.51	6.77	10.17
44	5220	10.5	7.45	6.55	10.03
48	5240	10.5	7.33	6.41	9.90
52	5260	10.5	7.27	6.18	9.77
56	5280	10.5	7.88	7.05	10.50
60	5300	10.5	7.67	6.89	10.31
64	5320	10.5	6.90	6.04	9.50
100	5500	9.0	5.73	5.17	8.47
104	5520	10.5	7.46	7.06	10.27
108	5540	10.5	7.39	6.88	10.15
112	5560	10.5	7.33	6.78	10.07
116	5580	10.5	7.29	6.73	10.03
120	5600	10.5	7.21	6.80	10.02
124	5620	10.5	7.33	6.83	10.10
128	5640	10.5	7.39	6.81	10.12
132	5660	10.5	7.44	6.88	10.18
136	5680	10.5	7.42	6.99	10.22
140	5700	10.5	7.75	7.22	10.50
149	5745	10.5	7.26	6.50	9.91
153	5765	10.5	7.39	6.56	10.01
157	5785	10.5	7.21	6.69	9.97
161	5805	10.5	7.55	6.68	10.15
165	5825	10.5	7.36	6.90	10.15

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## MIMO (CHO + CH1)

802.	.11 n(40M)		Δνοτα	ge Power Outpu	ut (dBm)
5.2/5	.3/5.6/5.8G	Max. Rated Avg. Power + Max.	Avera	ge i ower outpu	
СН	Frequency	Tolerance (dBm)		Data Rate (Mbp	os)
CIT	(MHz)		CHO	CH1	CH0 + CH1
38	5190	9.0	6.33	5.63	9.00
46	5230	10.5	7.87	6.97	10.45
54	5270	10.5	7.73	6.77	10.29
62	5310	9.0	5.59	4.49	8.09
102	5510	7.0	3.93	3.50	6.73
110	5550	10.0	6.93	6.55	9.75
118	5590	10.0	6.81	6.55	9.69
126	5630	10.0	7.06	6.42	9.76
134	5670	10.0	7.13	6.63	9.90
151	5755	11.0	7.66	7.11	10.40
159	5795	11.0	7.80	7.18	10.51

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## #. Bluetooth conducted power table:

Frequency	Data	Avg.		
(MHz)	Rate	dBm	mW	
2402	1	3.51	2.244	
2441	1	2.48	1.770	
2480	1	1.98	1.578	
2402	2	-1.85	0.653	
2441	2	-3.23	0.475	
2480	2	-4.34	0.368	
2402	3	-3.11	0.489	
2441	3	-4.95	0.320	
2480	3	-5.65	0.272	

Frequency	Avg. (dBm)	
(MHz)	BT4.0	
2402	1.48	
2442	0.41	
2480	0.17	

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# **1.4 Test Environment**

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

# **1.5 Operation Description**

# 1. WWAN (GPRS/EDGE/WCDMA/HSDPA/HSPA/CDMA 1xRTT/CDMA EVDO rev.0 & rev.A/LTE):

The EUT is controlled by using Radio Communication Tester(R&S CMU200 and Anritsu MT8820C), and the communication between the EUT and the tester is established by air link. The EUT was tested in the following configurations confirmed via KDB inquiry. (tracking number: 781437)

# Configurations: Back/back\_curve/top/bottom/left/right side\_0mm.

(Testing the left\_curve side is not required since the reported SAR is < 1.2 W/kg based on

KDB inquiry 781437.)

# 2. WLAN (802.11 a/b/g/n):

Use chipset specific software to control the EUT, and makes it transmit in maximum power. The EUT was tested in the following configurations confirmed via KDB inquiry. (tracking number: 781437)

# Configurations: Back/back\_curve/top/bottom/left/right side\_0mm.

(Testing the right\_curve side is not required since the reported SAR is < 1.2 W/kg based

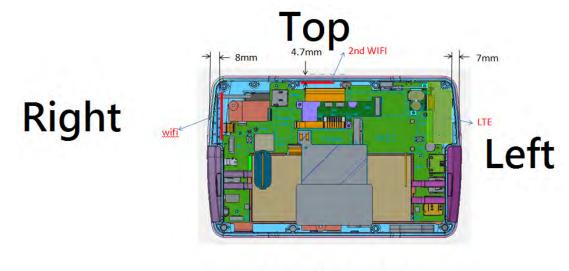
on KDB inquiry 781437.)

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Bottom

# Antenna position plot(back view)

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Note:

- 1. SAR test for GPRS was performed on the maximum sourced-based time-averaged power.
- 2. SAR measurement is not required for HSDPA/HSPA/HSPA+ since its maximum output power is less than 1/4 dB higher than RMC without HSDPA/HSPA/HSPA+.
- 3. Body SAR was measured using Subtype 0/1 Physical Layer configurations for Rev. 0. The 3G SAR test reduction procedure is applied to Rev. A, Subtype 2 Physical layer configuration, with Rev. 0 as the primary mode.
- 4. For this Ev-Do data device that also support 1x RTT data operations, the 3G SAR test reduction procedure is applied to 1x RTT RC3 and RC1 with Ev-Do Rev. 0, Rev. A as the respective primary modes. (Since SAR is not required for Ev-Do Rev. A, only Rev. 0 need consideration as the primary mode.)

# 5. LTE modes test according to FCC KDB 941225 D05v02r03.

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  $\leq 0.8$  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 > ½ dB higher than the same configuration in QPSK or when the reported SAR for the QPSK configuration is > 1.45 W/kg.
- e. Per Section 5.3, other channel bandwidth standalone SAR test requirements
  - For the other channel bandwidths used by the device in a frequency band, apply all the procedures required for the largest channel bandwidth in section 5.2 to determine the channels and RB configurations that need SAR testing and only measure SAR when the highest maximum output power of a configuration requiring testing in the smaller channel bandwidth is > ½ dB higher than the equivalent channel configurations in the largest channel bandwidth configuration or the reported SAR of a configuration for the largest channel bandwidth is > 1.45 W/kg.
  - The equivalent channel configuration for the RB allocation, RB offset and modulation etc. is determined for the smaller channel bandwidth according to the same number of RB allocated in the largest channel bandwidth.

802.11b DSSS SAR Test Requirements:

- 6. SAR is measured for 2.4 GHz 802.11b DSSS mode using the highest measured maximum output power channel, when the reported SAR of the highest measured maximum output power channel for the exposure configuration is  $\leq$  0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.
- 7. 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:

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

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Initial Test Configuration:

- **9.** An initial test configuration is determined for OFDM transmission modes according to the channel bandwidth, modulation and data rate combination(s) with the highest maximum output power specified for production units in each standalone and aggregated frequency band.
- **10.** SAR is measured using the highest measured maximum output power channel. When the reported SAR of the initial test configuration is > 0.8 W/kg, SAR measurement is required for the subsequent next highest measured output power channel(s) in the initial test configuration until the reported SAR is  $\leq$  1.2 W/kg or all required channels are tested.
- **11.** For WLAN Main & Aux antennas, 5.2G a/n(40), 5.3G n(20)/n(40), 5.6G n(20), 5.8G n(40) are chosen to be the initial test configurations.
- **12.** For WLAN Main & Aux antennas, since the highest reported SAR for the initial test configuration is adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power and the adjusted SAR is < 1.2 W/kg, SAR is not required for that subsequent test configuration.
- **13.** BT and WLAN Main use the same antenna path and Bluetooth can't transmit simultaneously with WLAN Main.
- **14.** Based on KDB447498D01, BT SAR measurement for back/top/right/left/bottom sides can be excluded.
  - (1) SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances≤ 50 mm are determined by:

$$\frac{\text{Max.tune up power(mW)}}{\text{Min.test separation distance(mm)}} \times \sqrt{f(\text{GHz})} \leq 3$$

When the minimum test separation distance is < 5mm, 5mm is applied to determine SAR test exclusion.

(2) For test separation distances > 50 mm, and the frequency at 100 MHz to 1500MHz, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B of KDB447498 D01.

[(Threshold at 50mm in step1) + (test separation distance-50mm)x( $\frac{f(MHz)}{150}$ )](mW),

(3) For test separation distances > 50 mm, and the frequency at >1500MHz to 6GHz, the SAR test exclusion threshold is determined according to the following, and as illustrated in Appendix B of KDB447498 D01.

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				Top side		R	ight side			Left side	
Mode	Maximum power(dBm)	Maximum power(mW)	Ant. to surface (mm)	Exclusion threshold	Require SAR testing?	Ant. to surface (mm)	Exclusion threshol d	Require SAR testing?	Ant. to surface (mm)	over SAI	Require SAR testing?
BT	3.51	2.244	15.9	0.222	NO	less than 5	0.707	NO	214.2	yes	NO
			Back / back_curve			Bottom side					
Mode	Maximum power(dBm)	Maximum power(mW)	Ant. to surface (mm)	Exclusion threshold	Require SAR testing?	Ant. to surface (mm)	Exclusion threshol d	Require SAR testing?			
BT	3.51	2.244	less than 5	0.707	NO	82.6	326.07	NO			

- **15.** For 2.4/5.2/5.3/5.6/5.8GHz WLAN Main and Aux antennas, the maximum output power of each antenna during simultaneous transmission (for 802.11n) is much less than that used in standalone transmission (802.11a/b/n), so it is more conservative to use the sum of 1-g SAR provision to exclude the SAR measurement for 802.11n MIMO.
- **16.** According to KDB447498 D01, 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  $\leq$  100 MHz.
- 17. According to KDB865664 D01, SAR measurement variability must be assessed for each frequency band. When the original highest measured SAR is ≥ 0.8 W/kg, repeated that measurement once. Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10% from the 1-g SAR limit).

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# 1.6 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). The model EX3DV4 field probe is used to determine the internal electric fields. The SAR can be obtained from the equation SAR=  $\sigma$  (|Ei|<sup>2</sup>)/  $\rho$  where  $\sigma$  and  $\rho$  are the conductivity and mass density of the tissue-simulant.

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

- A standard high precision 6-axis robot (Staubli RX family) with controller, teach pendant and software. An arm extension is for accommodating the data acquisition electronics (DAE).
- A dosimetric probe, i.e., an isotropic E-field probe optimized and calibrated for usage intissue simulating liquid. The probe is equipped with an optical surface detector system.
- A 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.

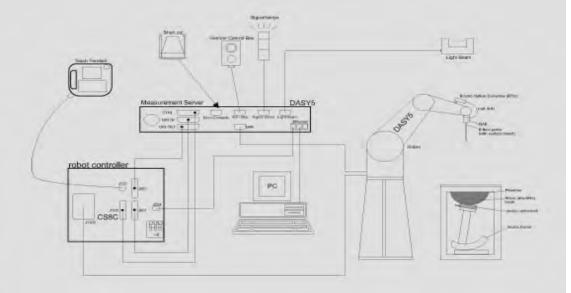


Fig. a The block diagram of SAR system

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- 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.
- 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.
- A probe alignment unit which improves the (absolute) accuracy of the probe positioning.
- A computer operating Windows 7.
- DASY 5 software.
- Remote control with teach pendant and additional circuitry for robot safety such as warning lamps, etc.
- The SAM twin phantom enabling testing left-hand and right-hand usage.
- The device holder for handheld mobile phones.
- Tissue simulating liquid mixed according to the given recipes.
   Validation dipole kits allowing to validate the proper functioning of the system.

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# **1.7 System Components**

## EX3DV4 E-Field Probe

Construction	Symmetrical design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)					
Calibration	Basic Broad Band Calibration in air Conversion Factors (CF) for HSL 750/835/ 1750/1900/2450/5200/5300/5600/5800 MHz Additional CF for other liquids and frequencies upon request					
Frequency	10 MHz to > 6 GHz					
Directivity	<ul> <li>± 0.3 dB in HSL (rotation around probe axis)</li> <li>± 0.5 dB in tissue material (rotation normal to probe axis)</li> </ul>					
Dynamic Range	· · · · ·					
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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## **SAM PHANTOM V4.0C**

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 Filling Volume Dimensions	2 ± 0.2 mm Approx. 25 liters Height: 850 mm; Length: 1000 mm; Width: 500 mm					

## **DEVICE HOLDER**

Construction The device holder (Supporter) for Notebook is made by POM (polyoxymethylene resin ), which is non-metal and non-conductive. The height can be adjusted to fit varies kind of notebooks.	Device Holder

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## **1.8 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% from the target SAR values. These tests were done at 750/835/1750/1900/2450/5200/5300/5600/ 5800MHz. 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 (SAR values are normalized to 1W forward power delivered to the dipole). During the tests, the ambient temperature of the laboratory was 21.7°C, the relative humidity was 62% and the liquid depth above the ear reference points was  $\geq$  15 cm  $\pm$  5 mm (frequency  $\leq$  3 GHz) or  $\geq$  10 cm  $\pm$  5 mm (frequency > 3 G Hz) 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.

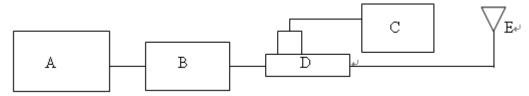


Fig. b The block diagram of system verification

- A. Signal generator
- B. Amplifier
- C. Power meter
- D. Dual directional coupling
- E. Reference dipole antenna



Photograph of the dipole Antenna

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Validation Kit	S/N	Frequ (Mł	-	1W Target SAR-1g (mW/g)	Measured SAR-1g (mW/g)	Measured SAR-1g normalized to 1W (mW/g)	Deviation (%)	Measured Date
D750V2	1015	750	Body	8.75	2.18	8.72	-0.34%	Jun. 15, 2015
D835V2	4d063	835	Body	9.35	2.42	9.68	3.53%	Jun. 16, 2015
D1750V2	1008	1750	Body	37.5	9.43	37.72	0.59%	Jun. 17, 2015
D1900V2	5d027	1900	Body	39.3	9.87	39.48	0.46%	Jun. 18, 2015
D2450V2	727	2450	Body	51	13.8	55.2	8.24%	Jun. 19, 2015
		5200	Body	73.5	7.08	70.8	-3.67%	Jun. 20, 2015
D5GHzV2	1023	5300	Body	74.6	7.49	74.9	0.40%	Jun. 21, 2015
	1023	5600	Body	77.9	7.81	78.1	0.26%	Jun. 22, 2015
		5800	Body	75.6	7.51	75.1	-0.66%	Jun. 22, 2015

Table 1. Results of system validation

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# 1.9 Tissue Simulant Fluid for the Frequency Band

The dielectric properties for this body-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 (30 KHz-6000 MHz).

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  $\geq$  15 cm  $\pm$  5 mm (Frequency  $\leq$  3G) or  $\geq$  10 cm  $\pm$  5 mm (Frequency > 3G) during all tests. (Fig. 2)

Tissue Type	Measured Frequency (MHz)	Target Dielectric Constant, Er	Target Conductivity , σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Measurement Date
	711	55.683	0.960	53.797	0.974	3.39%	-1.42%	
	750	55.531	0.963	53.393	0.981	3.85%	-1.83%	June,15 2015
	782	55.406	0.966	53.042	1.005	4.27%	-4.05%	
	818	55.267	0.969	56.831	0.994	-2.83%	-2.62%	
	820	55.258	0.969	56.806	0.995	-2.80%	-2.70%	
	823.1	55.246	0.969	56.773	0.999	-2.76%	-3.09%	
	824.2	55.242	0.969	56.743	0.999	-2.72%	-3.08%	
	825	55.240	0.969	56.719	1	-2.68%	-3.18%	
	826.4	55.234	0.969	56.7	1	-2.66%	-3.16%	June,16 2015
	835	55.200	0.970	56.648	1.01	-2.62%	-4.12%	50110/10 2010
Body	836.52	55.195	0.972	56.669	1.014	-2.67%	-4.33%	
БОЦУ	836.6	55.195	0.972	56.669	1.014	-2.67%	-4.32%	
	844	55.172	0.981	56.606	1.02	-2.60%	-3.97%	
	848.31	55.159	0.986	56.511	1.025	-2.45%	-3.92%	
	849	55.158	0.987	56.515	1.026	-2.46%	-3.95%	
	1712.4	53.531	1.465	52.882	1.409	1.21%	3.80%	
	1720	53.511	1.469	52.85	1.414	1.23%	3.78%	
	1732.4	53.478	1.477	52.833	1.425	1.21%	3.54%	
	1732.5	53.478	1.477	52.831	1.425	1.21%	3.54%	June,17 2015
	1732.6	53.477	1.477	52.831	1.425	1.21%	3.55%	June, 17 2015
	1745	53.445	1.485	52.822	1.437	1.17%	3.25%	
	1750	53.432	1.488	52.821	1.442	1.14%	3.12%	
	1752.6	53.425	1.490	52.808	1.446	1.15%	2.96%	

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Tissue Type	Measured Frequency (MHz)	Target Dielectric Constant, Er	Target Conductivity , σ (S/m)	Measured Dielectric Constant, Er	Measured Conductivity, σ (S/m)	% dev εr	% dev σ	Measurement Date
	1850.2	53.300	1.520	53.753	1.45	-0.85%	4.61%	
	1851.25	53.300	1.520	53.749	1.453	-0.84%	4.41%	
	1852.4	53.300	1.520	53.75	1.454	-0.84%	4.34%	
	1860	53.300	1.520	53.718	1.459	-0.78%	4.01%	
	1880	53.300	1.520	53.657	1.481	-0.67%	2.57%	
	1882.5	53.300	1.520	53.678	1.482	-0.71%	2.50%	June,18 2015
	1900	53.300	1.520	53.595	1.501	-0.55%	1.25%	
	1905	53.300	1.520	53.572	1.508	-0.51%	0.79%	
	1907.6	53.300	1.520	53.58	1.511	-0.53%	0.59%	
	1908.75	53.300	1.520	53.621	1.513	-0.60%	0.46%	
	1910	53.300	1.520	53.584	1.513	-0.53%	0.46%	
	2412	52.751	1.914	51.436	1.992	2.49%	-4.09%	
	2437	52.717	1.938	51.353	2.019	2.59%	-4.20%	June,19 2015
	2450	52.700	1.950	51.276	2.037	2.70%	-4.46%	Julie, 19 2015
	2462	52.685	1.967	51.248	2.051	2.73%	-4.27%	
Body	5180	49.041	5.276	48.079	5.424	1.96%	-2.81%	
БОЦУ	5190	49.028	5.288	48.005	5.443	2.09%	-2.94%	
	5200	49.014	5.299	47.93	5.462	2.21%	-3.07%	luma 20.2015
	5220	48.987	5.323	47.853	5.492	2.32%	-3.18%	June,20 2015
	5230	48.974	5.334	47.832	5.507	2.33%	-3.24%	
	5240	48.960	5.346	47.811	5.522	2.35%	-3.29%	
	5260	48.933	5.369	47.733	5.552	2.45%	-3.40%	
	5270	48.919	5.381	47.696	5.567	2.50%	-3.46%	
	5300	48.879	5.416	47.56	5.609	2.70%	-3.56%	June,21 2015
	5310	48.865	5.428	47.554	5.618	2.68%	-3.51%	
	5320	48.851	5.439	47.523	5.627	2.72%	-3.45%	
	5520	48.580	5.673	46.795	5.91	3.67%	-4.18%	
	5600	48.471	5.766	46.575	6.004	3.91%	-4.12%	
	5700	48.336	5.883	46.301	6.037	4.21%	-2.61%	luna 22 2015
	5755	48.261	5.947	46.129	6.195	4.42%	-4.16%	June,22 2015
	5795	48.207	5.994	46.024	6.208	4.53%	-3.57%	
	5800	48.200	6.000	46.008	6.21	4.55%	-3.50%	

Table 2. Dielectric Parameters of Tissue Simulant Fluid

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Fraguanay			Total					
Frequency (MHz) Mod	Mode	DGMBE	Water	Salt	Preventol D-7	Cellulose	Sugar	Total amount
750	Body		631.68 g	11.72 g	1.2 g		600 g	1.0L(Kg)
850	Body		631.68 g	11.72 g	1.2 g		600 g	1.0L(Kg)
1750	Body	300.67 g	716.56 g	4.0 g				1.0L(Kg)
1900	Body	300.67 g	716.56 g	4.0 g				1.0L(Kg)
2450	Body	301.7ml	698.3ml					1.0L(Kg)

## The composition of the body 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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# 1.10 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.

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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 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.

## 1.11 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:

# 1.11.1 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.

$$SAR = \frac{\sigma}{\rho} \left| E \right|^2 = C \frac{\delta T}{\delta t}$$

whereby  $\sigma$  is the conductivity,  $\rho$  the density and c the heat capacity of the liquid.

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

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

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- 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.
- 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  $\rho$ ), there is no standard for the measurement of the conductivity. Depending on the method and liquid, the error can well exceed  $\pm 5\%$ .
- 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  $\pm 10\%$  (RSS) [2]. Recently, a setup which is a combination of the waveguide techniques and the thermal measurements was presented in [3]. The estimated uncertainty of the setup is  $\pm 5\%$  (RSS) when the same liquid is used for the calibration and for actual measurements and  $\pm$ 7-9% (RSS) when not, which is in good agreement with the estimates given in [2].

# 1.11.2 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:

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

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

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# 1.12 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.

- Limits for Occupational/Controlled exposure: 0.4 W/kg as averaged over the (1) 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 an 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 (2) 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.
- Limits for General Population/Uncontrolled exposure: 0.08 W/kg as averaged over (3) 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). 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)

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# of this section. (Table 4.)

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

Table 4. RF exposure limits

Notes:

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

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# 2. Summary of Results

# GPRS 850 MHz

Mode	Position	Distanc e	СН	Freq.	Max. Rated Avg.	Measure d Avg.	Scaling	Averaged 1 (W/		Plot
Mode	FUSITION	(mm)	CIT	(MHz)	Power + Max. Tolerance	Power (dBm)	Scaling	Measured	Reported	page
	Back side	0mm	128	824.2	30.8	30.78	0.46%	0.63	0.633	-
	Back side	0mm	190	836.6	30.8	30.74	1.39%	0.731	0.741	-
	Back side	0mm	251	848.8	30.8	30.80	0.00%	0.827	0.827	-
	Back side_Curve	0mm	251	848.8	30.8	30.80	0.00%	0.72	0.720	-
	Top side	0mm	251	848.8	30.8	30.80	0.00%	0.762	0.762	-
GPRS 850 (1D2UP)	Bottom	0mm	251	848.8	30.8	30.80	0.00%	0.0128	0.013	-
	Left side	0mm	128	824.2	30.8	30.78	0.46%	0.942	0.946	-
	Left side	0mm	190	836.6	30.8	30.74	1.39%	0.945	0.958	-
	Left side	0mm	251	848.8	30.8	30.80	0.00%	0.991	0.991	183
	Left side*	0mm	251	848.8	30.8	30.80	0.00%	0.988	0.988	-
	Right side	0mm	251	848.8	30.8	30.80	0.00%	0.002	0.002	-

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

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### GPRS 1900 MHz

Mode	Position	Distanc e	СН	Freq.	Max. Rated Avg.	Measure d	Scaling	Averaged 1 (W/	g	Plot
Mode	POSITION	(mm)	СП	(MHz)	Power + Max. Tolerance	Avg. Power (dBm)	Scaling	Measured	Reported	page
	Back side	0mm	512	1850.2	28.5	28.25	5.93%	1.13	1.197	-
	Back side	0mm	661	1880	28.5	28.33	3.99%	1.12	1.165	-
	Back side	0mm	810	1909.8	28.5	28.29	4.95%	1.11	1.165	-
	Back side_Curve	0mm	512	1850.2	28.5	28.25	5.93%	1.26	1.335	184
	Back side_Curve	0mm	661	1880	28.5	28.33	3.99%	1.14	1.186	-
	Back side_Curve	0mm	810	1909.8	28.5	28.29	4.95%	1.14	1.196	-
GPRS 1900 (1Dn2UP)	Back	0mm	512	1850.2	28.5	28.25	5. <b>93%</b>	1.24	1.313	-
、 <i>、</i> ,	Top side	0mm	512	1850.2	28.5	28.25	5.93%	0.985	1.043	-
	Top side	0mm	661	1880	28.5	28.33	3.99%	1.09	1.134	-
	Top side	0mm	810	1909.8	28.5	28.29	4.95%	1.09	1.144	-
	Bottom	0mm	661	1880	28.5	28.33	3.99%	0.0145	0.015	-
	Left side	0mm	661	1880	28.5	28.33	3.99%	0.287	0.298	-
	Right side	0mm	661	1880	28.5	28.33	3.99%	0.0012	0.001	-

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

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# WCDMA Band II

Mode	Position	Distance	СН	Freq.	Max. Rated Avg.	Measure d Avg.	Scaling	Averaged 1 (W/	g	Plot
mode	1 OSMON	(mm)	011	(MHz)	Power + Max. Tolerance	Power (dBm)	beamig	Measured	Reported	page
	Back side	0mm	9262	1852.4	21.5	21.50	0.00%	0.903	0.903	-
	Back side	0mm	9400	1880	21.5	21.36	3.28%	0.931	0.962	-
	Back side	0mm	9538	1909.8	21.5	21.48	0.46%	0.876	0.880	-
	Back side_Curve	0mm	9262	1852.4	21.5	21.50	0.00%	1.160	1.160	185
	Back side_Curve	0mm	9400	1880	21.5	21.36	3.28%	1.04	1.074	-
	Back side_Curve	0mm	9538	1909.8	21.5	21.48	0.46%	0.956	0.960	-
WCDMA Band 2	Back	0mm	9262	1852.4	21.5	21.50	0.00%	1.02	1.020	-
	Top side	0mm	9262	1852.4	21.5	21.50	0.00%	0.974	0.974	-
	Top side	0mm	9400	1880	21.5	21.36	3.28%	1.00	1.033	-
	Top side	0mm	9538	1909.8	21.5	21.48	0.46%	1.00	1.005	-
	Bottom	0mm	9262	1852.4	21.5	21.50	0.00%	0.0162	0.016	-
	Left side	0mm	9262	1852.4	21.5	21.50	0.00%	0.299	0.299	-
	Right side	0mm	9262	1852.4	21.5	21.50	0.00%	0.0019	0.002	-

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

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# WCDMA Band IV

Mode	Position	Distanc e	СН	Freq.	Max. Rated Avg. Power +	Measure d Avg.	Scaling	Averaged 1 (W/	g	Plot
		(mm)		(MHz)	Max. Tolerance (dBm)	Power (dBm)	g	Measured	Reported	page
	Back side	0mm	1312	1712.4	22	21.77	5.44%	0.947	0.999	-
	Back side	0mm	1412	1732.6	22	21.75	5.93%	0.93	0.985	-
	Back side	0mm	1513	1752.6	22	21.76	5.68%	0.926	0.979	-
	Back side_Curve	0mm	1312	1712.4	22	21.77	5.44%	1.05	1.107	-
	Back side_Curve	0mm	1412	1732.6	22	21.75	5.93%	1.03	1.091	-
	Back side_Curve	0mm	1513	1752.6	22	21.76	5.68%	1.07	1.131	186
WCDMA Band 4	Back side_Curve*	0mm	1513	1752.6	22	21.76	5.68%	1.05	1.110	-
Dana I	Top side	0mm	1312	1712.4	22	21.77	5.44%	0.981	1.034	-
	Top side	0mm	1412	1732.6	22	21.75	5.93%	0.972	1.030	-
	Top side	0mm	1513	1752.6	22	21.76	5.68%	0.993	1.049	-
	Bottom	0mm	1312	1712.4	22	21.77	5.44%	0.0235	0.025	-
	Left side	0mm	1312	1712.4	22	21.77	5.44%	0.532	0.561	-
	Right side	0mm	1312	1712.4	22	21.77	5.44%	0.0042	0.004	-

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

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### WCDMA Band V

					Max.			Averaged	SAR over	
					Rated Avg.	Measured		1	g	
Mode	Position	Distance	СН	Freq.	Power +	Avg.	Scaling	(W/	<u>'kq)</u>	Plot
Mode	10311011	(mm)	OIT	(MHz)	Max.	Power	Scaling			page
					Tolerance	(dBm)		Measured	Reported	
					(dBm)					
	Back side	0mm	4183	836.6	23	22.63	8.89%	0.374	0.407	-
	Back	0mm	4183	836.6	23	22.63	8.89%	0.369	0.402	-
WCDMA	Top side	0mm	4183	836.6	23	22.63	8.89%	0.359	0.391	-
Band 5	Bottom	0mm	4183	836.6	23	22.63	8.89%	0.0321	0.035	-
	Left side	0mm	4183	836.6	23	22.63	8.89%	0.565	0.615	187
	Right side	0mm	4183	836.6	23	22.63	8.89%	0.0028	0.003	-

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# LTE FDD Band II

Mode	Bandwidth	Modulation	RB	RB	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling		SAR over V/kg)	Plot
mode	(MHz)		Size	start		(mm)		(MHz)	Max. Tolerance (dBm)	Power (dBm)	o dan ng	Measured	Reported	page
					Back side	0mm	18700	1860	22	21.83	3.99%	0.822	0.855	-
				0	Back side_Curve	0mm	18700	1860	22	21.83	3.99%	0.743	0.773	-
					Top side	0mm	18700	1860	22	21.83	3.99%	0.921	0.958	-
					Back side	0mm	18900	1880	22	21.76	5.68%	0.790	0.835	-
				0	Back side_Curve	0mm	18900	1880	22	21.76	5.68%	0.682	0.721	-
		1 RB		Top side	0mm	18900	1880	22	21.76	5.68%	0.931	0.984	-	
		1 110		Back side	0mm	19100	1900	22	21.88	2.80%	0.778	0.800	-	
					Back side_Curve	0mm	19100	1900	22	21.88	2.80%	0.963	0.990	-
				99	Top side	0mm	19100	1900	22	21.88	2.80%	0.861	0.885	-
					Bottom side	0mm	19100	1900	22	21.88	2.80%	0.025	0.026	-
					Left side	0mm	19100	1900	22	21.88	2.80%	0.188	0.193	-
LTE	20MHz	QPSK			Right side	0mm	19100	1900	22	21.88	2.80%	0.011	0.011	-
Band 2					Back side	0mm	18900	1880	22	21.87	3.04%	0.905	0.932	-
					Back side_Curve	0mm	18900	1880	22	21.87	3.04%	0.761	0.784	-
				0	Top side	0mm	18900	1880	22	21.87	3.04%	1.000	1.030	-
					Bottom side	0mm	18900	1880	22	21.87	3.04%	0.031	0.032	-
					Left side_Curve	0mm	18900	1880	22	21.87	3.04%	0.339	0.349	-
			50 RB		Right side	0mm	18900	1880	22	21.87	3.04%	0.014	0.014	-
			00115		Back side	0mm	18700	1860	22	21.86	3.28%	0.860	0.888	-
				50	Back side_Curve	0mm	18700	1860	22	21.86	3.28%	0.947	0.978	-
					Top side	0mm	18700	1860	22	21.86	3.28%	0.947	0.978	-
					Back side	0mm	19100	1900	22	21.55	10.92%	0.845	0.937	-
				50	Back side_Curve	0mm	19100	1900	22	21.55	10.92%	0.925	1.026	-
					Top side	0mm	19100	1900	22	21.55	10.92%	0.983	1.090	-

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Mada	Bandwidth (MHz)		RB	RB	Desition	Distance	СН	Freq.	Max. Rated Avg.	Measured Avg.	Cooling	U U	SAR over V/kg)	Plot
Mode	(MHz)	Modulation	Size	start	Position	(mm)	СН	(MHz)	Power + Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					Back side	0mm	18700	1860	22	21.77	5.44%	0.933	0.984	-
				Back side_Curve	0mm	18700	1860	22	21.77	5.44%	1.030	1.086	188	
					Back side_Curve*	0mm	18700	1860	22	21.77	5.44%	0.998	1.052	-
					Top side	0mm	18700	1860	22	21.77	5.44%	0.864	0.911	-
					Bottom side	0mm	18700	1860	22	21.77	5.44%	0.039	0.041	-
LTE					Left side	0mm	18700	1860	22	21.77	5.44%	0.221	0.233	-
Band 2	20MHz	QPSK	100 RB	0	Right side	0mm	18700	1860	22	21.77	5.44%	0.026	0.027	-
Dana 2					Back side	0mm	18900	1900	22	21.74	6.17%	1.000	1.062	-
					Back side_Curve	0mm	18900	1900	22	21.74	6.17%	0.929	0.986	-
					Top side	0mm	18900	1900	22	21.74	6.17%	0.997	1.059	-
					Back side	0mm	19100	1900	22	21.62	9.14%	0.948	1.035	-
					Back side_Curve	0mm	19100	1900	22	21.62	9.14%	0.892	0.974	-
					Top side	0mm	19100	1900	22	21.62	9.14%	0.998	1.089	-

\* - repeated at the highest SAR measurement according to the FCC KDB865664D01v01r03

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# LTE FDD Band IV

Mada	Bandwidt Mode h (MHz)	Modulation	RB	RB	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling	Averag over 1g	ed SAR (W/kg)	Plot
Mode		Modulation	Size	start	POSITION	(mm)	СП	(MHz)	Max. Tolerance (dBm)	Power (dBm)	Ű	Measured	Reported	page
					Back side	0mm	20175	1732.5	22	21.84	3.75%	1.150	1.193	189
			0	Back side*	0mm	20175	1732.5	22	21.84	3.75%	1.090	1.131	-	
			0	Back side_Curve	0mm	20175	1732.5	22	21.84	3.75%	1.070	1.110	-	
					Top side	0mm	20175	1732.5	22	21.84	3.75%	1.030	1.069	-
					Back side	0mm	20050	1720	22	21.90	2.33%	0.862	0.882	-
LTE				50	Back side_Curve	0mm	20050	1720	22	21.90	2.33%	1.050	1.074	-
Band 4	20MHz	QPSK	1 RB		Top side	0mm	20050	1720	22	21.90	2.33%	1.020	1.044	-
Bana					Back side	0mm	20300	1745	22	21.91	2.09%	0.899	0.918	-
					Back side_Curve	0mm	20300	1745	22	21.91	2.09%	1.130	1.154	-
				50	Top side	0mm	20300	1745	22	21.91	2.09%	0.967	0.987	-
				50	Bottom side	0mm	20300	1745	22	21.91	2.09%	0.034	0.035	-
					Left side	0mm	20300	1745	22	21.91	2.09%	0.460	0.470	-
				Right side	0mm	20300	1745	22	21.91	2.09%	0.0065	0.007	-	

\* - repeated at the highest SAR measurement according to the FCC KDB865664D01v01r03

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Mode	Bandwidth	Modulation	RB	RB	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling	Averag over 1g	ed SAR (W/kg)	Plot
Mode	(MHz)	Modulation	Size	start	i osition	(mm)		(MHz)	Max. Tolerance (dBm)	Power (dBm)	U	Measured	Reported	page
					Back side	0mm	20175	1732.5	22	21.79	4.95%	0.905	0.950	-
				25	Back side_Curve	0mm	20175	1732.5	22	21.79	4.95%	0.999	1.048	-
					Top side	0mm	20175	1732.5	22	21.79	4.95%	0.888	0.932	-
					Back side	0mm	20300	1745	22	21.85	3.51%	0.912	0.944	-
					Back side_Curve	0mm	20300	1745	22	21.85	3.51%	1.030	1.066	-
			50 RB	50	Top side	0mm	20300	1745	22	21.85	3.51%	0.915	0.947	-
			50 KB	50	Bottom side	0mm	20300	1745	22	21.85	3.51%	0.029	0.030	-
					Left side	0mm	20300	1745	22	21.85	3.51%	0.432	0.447	-
					Right side	0mm	20300	1745	22	21.85	3.51%	0.0051	0.005	-
					Back side	0mm	20050	1720	22	21.75	5.93%	0.891	0.944	-
				50	Back side_Curve	0mm	20050	1720	22	21.75	5.93%	0.982	1.040	-
LTE	20MHz	QPSK			Top side	0mm	20050	1720	22	21.75	5.93%	0.878	0.930	-
Band 4	2010112	QI SIX			Back side	0mm	20050	1720	22	21.70	7.15%	0.938	1.005	-
					Back side_Curve	0mm	20050	1720	22	21.70	7.15%	0.856	0.917	-
					Top side	0mm	20050	1720	22	21.70	7.15%	0.984	1.054	-
					Back side	0mm	20175	1732.5	22	21.81	4.47%	1.060	1.107	-
					Back side_Curve	0mm	20175	1732.5	22	21.81	4.47%	0.852	0.890	-
			100 RB	0	Top side	0mm	20175	1732.5	22	21.81	4.47%	0.953	0.996	-
			100 10	Ū	Bottom side	0mm	20175	1732.5	22	21.81	4.47%	0.042	0.044	-
					Left side	0mm	20175	1732.5	22	21.81	4.47%	0.520	0.543	-
					Right side	0mm	20175	1732.5	22	21.81	4.47%	0.0045	0.005	-
					Back side	0mm	20300	1745	22	21.74	6.17%	0.944	1.002	-
					Back side_Curve	0mm	20300	1745	22	21.74	6.17%	0.847	0.899	-
					Top side	0mm	20300	1745	22	21.74	6.17%	0.960	1.019	-

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# LTE FDD Band V

Mada		Modulation	RB	RB	Position	Distance	СН	Freq.	Max. Rated Avg.	Measure d	Scaling		ed SAR (W/kg)	Plot
Mode	(MHz)	Nouulation	Size	start	POSITION	(mm)	СП	(MHz)	Power + Max. Toleranc e (dBm)	Avg. Power (dBm)	5	Measurec	Reported	page
					Back side	0mm	20600	844	23	22.55	10.92%	0.326	0.362	-
					Back side_Curve	0mm	20600	844	23	22.55	10.92%	0.335	0.372	-
			1 RB	49	Top side	0mm	20600	844	23	22.55	10.92%	0.423	0.469	-
		IKD	49	Bottom side	0mm	20600	844	23	22.55	10.92%	0.068	0.075	-	
					Left side	0mm	20600	844	23	22.55	10.92%	0.432	0.479	190
					Right side	0mm	20600	844	23	22.55	10.92%	0.0054	0.006	-
					Back side	0mm	20600	844	23	21.51	40.93%	0.347	0.489	-
					Back side_Curve	0mm	20600	844	23	21.51	40.93%	0.411	0.579	-
LTE	10MHz	QPSK	25 RB	12	Top side	0mm	20600	844	23	21.51	40.93%	0.342	0.482	-
Band 5	TOIVINZ	UPSK	23 KD	12	Bottom side	0mm	20600	844	23	21.51	40.93%	0.054	0.076	-
					Left side	0mm	20600	844	23	21.51	40.93%	0.371	0.523	-
					Right side	0mm	20600	844	23	21.51	40.93%	0.0068	0.010	-
					Back side	0mm	20600	844	23	21.43	43.55%	0.342	0.491	-
					Back side_Curve	0mm	20600	844	23	21.43	43.55%	0.404	0.580	-
			50 RB	0	Top side	0mm	20600	844	23	21.43	43.55%	0.401	0.576	-
			JU KB	U	Bottom side	0mm	20600	844	23	21.43	43.55%	0.038	0.055	-
					Left side	0mm	20600	844	23	21.43	43.55%	0.419	0.601	-
					Right side	0mm	20600	844	23	21.43	43.55%	0.0095	0.014	-

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# LTE FDD Band XIII

Mode	Bandwidt h	Modulatior	RB	RB	Position	Distance	СН	Freq.	Max. Rated Avg.	Measured Avg.	Cooling	Averag over 1g	ed SAR (W/kg)	Plot
wode	(MHz)	violulation	Size	start	Position	(mm)	Сп	(MHz)	Power + Max. Toleranc e (dBm)	Power (dBm)	Scaling	Measured	Reported	page
					Back side	0mm	23200	782	23	22.66	8.14%	0.433	0.468	-
					Back side_Curve	0mm	23200	782	23	22.66	8.14%	0.449	0.486	-
			1 RB	25	Top side	0mm	23200	782	23	22.66	8.14%	0.508	0.549	-
			TKD	25	Bottom side	0mm	23200	782	23	22.66	8.14%	0.048	0.052	-
				Left side	0mm	23200	782	23	22.66	8.14%	0.594	0.642	191	
					Right side	0mm	23200	782	23	22.66	8.14%	0.0052	0.006	-
					Back side	0mm	23200	782	23	21.76	33.05%	0.317	0.422	-
					Back side_Curve	0mm	23200	782	23	21.76	33.05%	0.341	0.454	-
LTE	10MHz	QPSK	25 RB	12	Top side	0mm	23200	782	23	21.76	33.05%	0.309	0.411	-
Band 13	1010112	QUSIC	23 ND	12	Bottom side	0mm	23200	782	23	21.76	33.05%	0.026	0.035	-
					Left side	0mm	23200	782	23	21.76	33.05%	0.496	0.660	-
					Right side	0mm	23200	782	23	21.76	33.05%	0.0078	0.010	-
					Back side	0mm	23200	782	23	21.43	43.55%	0.293	0.421	-
					Back side_Curve	0mm	23200	782	23	21.43	43.55%	0.309	0.444	-
			50 RB	0	Top side	0mm	23200	782	23	21.43	43.55%	0.308	0.442	-
			30 KD	0	Bottom side	0mm	23200	782	23	21.43	43.55%	0.065	0.093	-
					Left side	0mm	23200	782	23	21.43	43.55%	0.583	0.837	-
				Right side	0mm	23200	782	23	21.43	43.55%	0.0064	0.009	-	

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# LTE FDD Band XVII

Mode	Bandwidt h	Modulation	RB	RB	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling	Averag over 1g	ed SAR (W/kg)	Plot
mode	(MHz)	modulation	Size	start		(mm)	011	(MHz)	Max. Tolerance (dBm)	Power (dBm)	-	Measured	Reported	page
					Back side	0mm	23800	711	23	22.87	3.04%	0.190	0.196	-
					Back side_Curve	0mm	23800	711	23	22.87	3.04%	0.172	0.177	-
			1 RB	25	Top side	0mm	23800	711	23	22.87	3.04%	0.162	0.167	-
			IND	23	Bottom side	0mm	23800	711	23	22.87	3.04%	0.008	0.008	-
					Left side	0mm	23800	711	23	22.87	3.04%	0.397	0.409	192
					Right side	0mm	23800	711	23	22.87	3.04%	0.0018	0.002	-
					Back side	0mm	23800	711	23	21.67	35.83%	0.194	0.264	-
					Back side_Curve	0mm	23800	711	23	21.67	35.83%	0.218	0.296	-
LTE	10MHz	QPSK	25 RB	0	Top side	0mm	23800	711	23	21.67	35.83%	0.164	0.223	-
Band 17	TOWITZ	QF SK	23 KD	0	Bottom side	0mm	23800	711	23	21.67	35.83%	0.005	0.006	-
					Left side	0mm	23800	711	23	21.67	35.83%	0.320	0.435	-
					Right side	0mm	23800	711	23	21.67	35.83%	0.0025	0.003	-
					Back side	0mm	23780	709	23	21.53	40.28%	0.170	0.238	-
					Back side_Curve	0mm	23780	709	23	21.53	40.28%	0.198	0.278	-
			50 RB	0	Top side	0mm	23780	709	23	21.53	40.28%	0.137	0.192	-
			JU KD	0	Bottom side	0mm	23780	709	23	21.53	40.28%	0.006	0.009	-
					Left side	0mm	23780	709	23	21.53	40.28%	0.312	0.438	-
					Right side	0mm	23780	709	23	21.53	40.28%	0.0036	0.005	-

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# LTE FDD Band XXV

Mode	Bandwidth	Modulation	RB	RB	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling	Averaged 1g (V	SAR over V/kg)	Plot
Mode	(MHz)	Modulation	Size	start	POSITION	(mm)		(MHz)	Max. Tolerance (dBm)	Power (dBm)	0	Measured	Reported	page
					Back side	0mm	26140	1860	22	21.92	1.86%	1.130	1.151	-
					Back side_Curve	0mm	26140	1860	22	21.92	1.86%	0.918	0.935	-
				0	Top side	0mm	26140	1860	22	21.92	1.86%	1.070	1.090	-
				0	Bottom side	0mm	26140	1860	22	21.92	1.86%	0.015	0.015	-
					Left side	0mm	26140	1860	22	21.92	1.86%	0.368	0.375	-
LTE	20MHz	QPSK	1 RB		Right side	0mm	26140	1860	22	21.92	1.86%	0.0072	0.007	-
Band 25	2010112	QUOK	I KD		Back side	0mm	26365	1882.5	22	21.72	6.66%	0.968	1.032	-
				50	Back side_Curve	0mm	26365	1882.5	22	21.72	6.66%	0.912	0.973	-
					Top side	0mm	26365	1882.5	22	21.72	6.66%	1.060	1.131	-
					Back side	0mm	26590	1905	22	21.70	7.15%	1.030	1.104	-
				99	Back side_Curve	0mm	26590	1905	22	21.70	7.15%	0.914	0.979	-
					Top side	0mm	26590	1905	22	21.70	7.15%	1.060	1.136	-

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mode	(MHz)	modulation	Size	start	1 USHION	(mm)		(MHz)	Max. Tolerance (dBm)	Power (dBm)	-	Measured	Reported	page
					Back side	0mm	26365	1882.5	22	21.76	5.68%	0.826	0.873	-
				25	Back side_Curve	0mm	26365	1882.5	22	21.76	5.68%	0.888	0.938	-
					Top side	0mm	26365	1882.5	22	21.76	5.68%	1.060	1.120	-
					Back side	0mm	26140	1860	22	21.91	2.09%	0.838	0.856	-
				50	Back side_Curve	0mm	26140	1860	22	21.91	2.09%	0.893	0.912	-
					Top side	0mm	26140	1860	22	21.91	2.09%	1.040	1.062	-
			50 RB		Back side	0mm	26590	1905	22	21.93	1.62%	0.888	0.902	-
					Back side_Curve	0mm	26590	1905	22	21.93	1.62%	0.903	0.918	-
					Top side	0mm	26590	1905	22	21.93	1.62%	1.140	1.159	193
				50	Top side*	0mm	26590	1905	22	21.93	1.62%	0.997	1.013	-
					Bottom side	0mm	26590	1905	22	21.93	1.62%	0.026	0.026	-
LTE					Left side	0mm	26590	1905	22	21.93	1.62%	0.269	0.273	-
Band 25	20MHz	QPSK			Right side	0mm	26590	1905	22	21.93	1.62%	0.0045	0.005	-
Dana 20					Back side	0mm	26140	1860	22	21.71	6.91%	0.904	0.966	-
					Back side_Curve	0mm	26140	1860	22	21.71	6.91%	0.857	0.916	-
					Top side	0mm	26140	1860	22	21.71	6.91%	1.010	1.080	-
					Back side	0mm	26365	1882.5	22	21.70	7.15%	0.878	0.941	-
					Back side_Curve	0mm	26365	1882.5	22	21.70	7.15%	0.830	0.889	-
			100 RB	0	Top side	0mm	26365	1882.5	22	21.70	7.15%	0.990	1.061	-
			100 10	Ŭ	Back side	0mm	26590	1905	22	21.73	6.41%	0.985	1.048	-
			Back side_Curve	0mm	26590	1905	22	21.73	6.41%	0.860	0.915	-		
					Top side	0mm	26590	1905	22	21.73	6.41%	0.975	1.038	-
					Bottom side	0mm	26590	1905	22	21.73	6.41%	0.021	0.022	-
					Left side	0mm	26590	1905	22	21.73	6.41%	0.242	0.258	-
					Right side	0mm	26590	1905	22	21.73	6.41%	0.0056	0.006	-

\* - repeated at the highest SAR measurement according to the FCC KDB865664D01v01r03

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# CDMA / EVDO (BCO)

Mode		Service	Position	Distance	СН	Freq.	Avg.	Measured Avg.	Scaling	1	SAR over g ′kg)	Plot
Mode		Service	POSITION	(mm)	СП	(MHz)	Power + Max. Toleranc e (dBm)	Power (dBm)	0	Measured	Reported	page
			Back side	0mm	384	836.52	23	22.9	2.33%	0.528	0.540	-
			Back side_Curve	0mm	384	836.52	23	22.9	2.33%	0.604	0.618	-
		5	Top side	0mm	384	836.52	23	22.9	2.33%	0.643	0.658	-
CDMA	EVDO	Rev. 0 Subtype	Bottom	0mm	384	836.52	23	22.9	2.33%	0.068	0.070	-
BC 0	EVDO	0/1	Left side	0mm	1013	824.7	23	22.7	7.15%	0.72	0.771	-
			Left side	0mm	384	836.52	23	22.9	2.33%	0.73	0.747	194
			Left side	0mm	777	848.31	23	22.6	9.65%	0.687	0.753	-
			Right side	0mm	384	836.52	23	22.9	2.33%	0.0065	0.007	-

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# CDMA / EVDO (BC1)

Mada		Convice	Desition	Distance	СН	Freq.	Max. Rated Avg.	Measured Avg.		Averaged 1 (W/		Plot
Mode		Service	Position	(mm)	СП	(MHz)	Power + Max. Tolerance (dBm)	Power (dBm)	Scaling	Measured	Reported	page
			Back side	0mm	25	1851.25	22	21.97	0.69%	0.957	0.964	-
			Back side	0mm	600	1880	22	21.78	5.20%	0.942	0.991	-
			Back side	0mm	1175	1908.75	22	21.96	0.93%	1.000	1.009	195
			Back side*	0mm	1175	1908.75	22	21.96	0.93%	0.887	0.895	-
			Back side_Curve	0mm	25	1851.25	22	21.97	0.69%	0.966	0.973	-
		Rev. 0	Back side_Curve	0mm	600	1880	22	21.78	5.20%	0.886	0.932	-
CDMA BC 1	EVDO	Subtype	Back side_Curve	0mm	1175	1908.75	22	21.96	0.93%	0.915	0.923	-
DOT		0/1	Top side	0mm	25	1851.25	22	21.97	0.69%	0.783	0.788	-
			Top side	0mm	600	1880	22	21.78	5.20%	0.834	0.877	-
			Top side	0mm	1175	1908.75	22	21.96	0.93%	0.895	0.903	-
			Botoom side	0mm	25	1851.25	22	21.97	0.69%	0.025	0.025	-
			Left side	0mm	25	1851.25	22	21.97	0.69%	0.339	0.341	-
			Right side	0mm	25	1851.25	22	21.97	0.69%	0.0041	0.004	-

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

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# CDMA / EVDO (BC10)

Mode		Service	Position	Distance	СН	Freq.	Avg.	Measured Avg.	Scaling	1	SAR over g ⁄kg)	Plot
Mode		Service	POSITION	(mm)	CIT	(MHz)	Power + Max. Tolerance (dBm)	Power (dBm)	5	Measured	Reported	page
			Back side	0mm	684	823.1	23	22.7	7.15%	0.513	0.550	-
			Back side_Curve	0mm	684	823.1	23	22.7	7.15%	0.593	0.635	-
			Top side	0mm	684	823.1	23	22.7	7.15%	0.545	0.584	-
CDMA	EVDO	Rev. 0 Subtype	Bottom	0mm	684	823.1	23	22.7	7.15%	0.054	0.058	-
BC 10	EVDO	0/1	Left side	0mm	476	817.9	23	22.6	9.65%	0.65	0.713	-
		0, 1	Left side	0mm	560	820	23	22.6	9.65%	0.659	0.723	-
			Left side	0mm	684	823.1	23	22.7	7.15%	0.668	0.716	196
			Right side	0mm	684	823.1	23	22.7	7.15%	0.0035	0.004	-

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### WLAN802.11 Main Antenna

Antenna	Mode	Position	Distance	СН	Freq.	Max. Rated Avg. Power +	Measured Avg.	Scaling	Averaged 1g (V		Plot
Antenna	Wode	POSITION	(mm)	СП	(MHz)	Max. Tolerance (dBm)	Power (dBm)	Scaling	Measured	Reported	page
		Back side	0	1	2412	13.5	13.50	0.00%	0.261	0.261	-
		Back side_Curve	0	1	2412	13.5	13.50	0.00%	0.356	0.356	-
		Top side	0	1	2412	13.5	13.50	0.00%	0.0527	0.053	-
		Bottom side	0	1	2412	13.5	13.50	0.00%	0.00556	0.006	-
	WLAN802.11 b	Left side	0	1	2412	13.5	13.50	0.00%	0.00616	0.006	-
		Right side	0	1	2412	13.5	13.50	0.00%	0.915	0.915	197
		Right side*	0	1	2412	13.5	13.50	0.00%	0.903	0.903	-
		Right side	0	6	2437	13.5	13.00	12.20%	0.876	0.983	-
		Right side	0	11	2462	13.5	12.62	22.46%	0.825	1.010	-
		Back side	0	40	5200	10.5	9.89	15.08%	0.0501	0.058	-
		Back side_Curve	0	40	5200	10.5	9.89	15.08%	0.0522	0.060	-
	WLAN802.11 a 5.2G	Top side	0	40	5200	10.5	9.89	15.08%	0.0727	0.084	-
	WLAN002.11 & 5.20	Bottom side	0	40	5200	10.5	9.89	15.08%	0.00112	0.001	-
Main		Left side	0	40	5200	10.5	9.89	15.08%	0.00011	0.000	-
		Right side	0	40	5200	10.5	9.89	15.08%	0.383	0.441	198
		Back side	0	46	5230	10.5	9.61	22.74%	0.0431	0.053	-
		Back side_Curve	0	46	5230	10.5	9.61	22.74%	0.0493	0.061	-
	WLAN802.11	Top side	0	46	5230	10.5	9.61	22.74%	0.0723	0.089	-
	n(40M) 5.2G	Bottom side	0	46	5230	10.5	9.61	22.74%	0.00245	0.003	-
		Left side	0	46	5230	10.5	9.61	22.74%	0.0016	0.002	-
		Right side	0	46	5230	10.5	9.61	22.74%	0.303	0.372	199
		Back side	0	60	5300	10.5	9.85	16.14%	0.0457	0.053	-
		Back side_Curve	0	60	5300	10.5	9.85	16.14%	0.0498	0.058	-
	WLAN802.11	Top side	0	60	5300	10.5	9.85	16.14%	0.0628	0.073	-
	n(20M) 5.3G	Bottom side	0	60	5300	10.5	9.85	16.14%	0.0019	0.002	-
		Left side	0	60	5300	10.5	9.85	16.14%	0.00012	0.000	-
		Right side	0	60	5300	10.5	9.85	16.14%	0.261	0.303	200

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Antenna	Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power + Max.	Measured Avg. Power	Scaling	Averaged 1g (V	//kg)	Plot page
						Tolerance (dBm)	(dBm)		Measured	Reported	
		Back side	0	54	5270	10.5	9.77	18.30%	0.0524	0.062	-
		Back side_Curve	0	54	5270	10.5	9.77	18.30%	0.0525	0.062	-
	WLAN802.11	Top side	0	54	5270	10.5	9.77	18.30%	0.0568	0.067	-
	n(40M) 5.3G	Bottom side	0	54	5270	10.5	9.77	18.30%	0.0018	0.002	-
		Left side	0	54	5270	10.5	9.77	18.30%	0.00042	0.000	-
		Right side	0	54	5270	10.5	9.77	18.30%	0.27	0.319	201
		Back side	0	104	5520	10.5	9.77	18.30%	0.0481	0.057	-
		Back side_Curve	0	104	5520	10.5	9.77	18.30%	0.0525	0.062	-
	WLAN802.11	Top side	0	104	5520	10.5	9.77	18.30%	0.0568	0.067	-
	n(20M) 5.6G	Bottom side	0	104	5520	10.5	9.77	18.30%	0.0018	0.002	-
		Left side	0	104	5520	10.5	9.77	18.30%	0.00042	0.000	-
		Right side	0	104	5520	10.5	9.77	18.30%	0.276	0.327	202
		Back side	0	120	5600	10.5	9.75	18.85%	0.0612	0.073	-
		Back side_Curve	0	120	5600	10.5	9.75	18.85%	0.0655	0.078	-
	WLAN802.11	Top side	0	120	5600	10.5	9.75	18.85%	0.0712	0.085	-
Main	n(20M) 5.6G	Bottom side	0	120	5600	10.5	9.75	18.85%	0.0011	0.001	-
		Left side	0	120	5600	10.5	9.75	18.85%	0.00034	0.000	-
		Right side	0	120	5600	10.5	9.75	18.85%	0.313	0.372	203
		Back side	0	140	5700	10.5	9.57	23.88%	0.0587	0.073	-
		Back side_Curve	0	140	5700	10.5	9.57	23.88%	0.0612	0.076	-
	WLAN802.11	Top side	0	140	5700	10.5	9.57	23.88%	0.0585	0.072	-
	n(20M) 5.6G	Bottom side	0	140	5700	10.5	9.57	23.88%	0.0015	0.002	-
		Left side	0	140	5700	10.5	9.57	23.88%	0.00038	0.000	-
		Right side	0	140	5700	10.5	9.57	23.88%	0.324	0.401	204
		Back side	0	159	5795	11	9.33	46.89%	0.0478	0.070	-
		Back side_Curve	0	159	5795	11	9.33	46.89%	0.0502	0.074	-
	WLAN802.11	Top side	0	159	5795	11	9.33	46.89%	0.0492	0.072	-
	n(40M) 5.8G	Bottom side	0	159	5795	11	9.33	46.89%	0.0017	0.002	-
		Left side	0	159	5795	11	9.33	46.89%	0.00012	0.000	-
		Right side	0	159	5795	11	9.33	46.89%	0.349	0.513	205

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

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### WLAN802.11 Aux Antenna

Antenna	Mode	Position	Distance (mm)	СН	Freq. (MHz)	Max. Rated Avg. Power +	Measure d Avg. Power	Scaling	Averaged 1g (V		Plot page
						Max. Tolerance (dBm)	(dBm)		Measured	Reported	
		Back side	0	11	2462	11.2	11.14	1.39%	0.0909	0.092	-
		Top side	0	1	2412	11	10.73	6.41%	0.712	0.758	-
		Top side	0	6	2437	11.2	11.14	1.39%	0.83	0.842	206
	WLAN802.11 b	Top side	0	11	2462	12	11.59	9.90%	0.744	0.818	-
		Bottom side	0	11	2462	11.2	11.14	1.39%	0.00596	0.006	-
		Left side	0	11	2462	11.2	11.14	1.39%	0.00234	0.002	-
		Right side	0	11	2462	11.2	11.14	1.39%	0.00545	0.006	-
		Back side	0	40	5200	10	9.37	15.61%	0.169	0.195	-
		Top side	0	36	5180	10	9.31	17.22%	0.792	0.928	207
		Top side	0	40 44	5200	10	9.37 9.22	15.61%	0.775	0.896	-
	WLAN802.11 a 5.2G	Top side Top side	0	44	5220 5240	10 10	9.22	19.67% 20.50%	0.702	0.840	-
		Bottom side	0	40	5240	10	9.19	15.61%	0.0012	0.889	-
		Left side	0	40	5200	10	9.37	15.61%	0.0012	0.001	-
		Right side	0	40	5200	10	9.37	15.61%	0.0022	0.003	-
		Back side	0	46	5230	10	9.81	4.47%	0.193	0.202	-
		Top side	0	38	5190	9	8.57	10.41%	0.329	0.363	-
	WLAN802.11 n(40M)	Top side	0	46	5230	10	9.81	4.47%	0.775	0.810	208
	5.2G	Bottom side	0	40	5230	10	9.81	4.47%	0.000965	0.010	- 200
	0120	Left side	0	46	5230	10	9.81	4.47%	0.00335	0.003	-
		Right side	0	46	5230	10	9.81	4.47%	0.0122	0.003	-
		Back side	0	60	5300	10.5	9.57	23.88%	0.157	0.194	-
		Top side	0	52	5260	10.5	9.13	37.09%	0.57	0.781	-
Aux		Top side	0	60	5300	10.5	9.57	23.88%	0.69	0.855	209
/ tax	WLAN802.11 n(20M)	Top side	0	64	5320	10.5	9.49	26.18%	0.642	0.810	-
	5.3G	Bottom side	0	60	5300	10.5	9.57	23.88%	0.0023	0.003	-
		Left side	0	60	5300	10.5	9.57	23.88%	0.00426	0.005	-
		Right side	0	60	5300	10.5	9.57	23.88%	0.0152	0.019	-
		Back side	0	54	5270	10.5	9.86	15.88%	0.162	0.188	-
		Top side	0	54	5270	10.5	9.86	15.88%	0.793	0.919	210
	WLAN802.11 n(40M)	Top side	0	62	5310	9	7.52	40.60%	0.397	0.558	-
	5.3G	Bottom side	0	54	5270	10.5	9.86	15.88%	0.0058	0.007	-
		Left side	0	54	5270	10.5	9.86	15.88%	0.00264	0.003	-
		Right side	0	54	5270	10.5	9.86	15.88%	0.0117	0.014	-
		Back side	0	120	5600	10.5	9.51	25.60%	0.148	0.186	-
		Top side	0	104	5520	10.5	9.39	29.12%	0.434	0.560	-
	M/LANIOOD 11 m(DOM)	Top side	0	120	5600	10.5	9.51	25.60%	0.654	0.821	211
	WLAN802.11 n(20M)	Top side	0	140	5700	10.5	9.26	33.05%	0.408	0.543	-
	5.6G	Bottom side	0	120	5600	10.5	9.51	25.60%	0.0049	0.006	-
		Left side	0	120	5600	10.5	9.51	25.60%	0.00375	0.005	-
		Right side	0	120	5600	10.5	9.51	25.60%	0.0231	0.029	-
		Back side	0	159	5795	11	9.25	49.62%	0.142	0.212	-
		Top side	0	151	5755	11	9.18	52.05%	0.408	0.620	-
	WLAN802.11 n(40M)	Top side	0	159	5795	11	9.25	49.62%	0.586	0.877	212
	5.8G	Bottom side	0	159	5795	11	9.25	49.62%	0.0028	0.004	-
		Left side	0	159	5795	11	9.25	49.62%	0.00428	0.006	-
		Right side	0	159	5795	11	9.25	49.62%	0.0159	0.024	-

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# 3. Simultaneous Transmission Analysis

Simultaneous Transmission Scenarios:

Simultaneous Transmit Configurations	Body
GPRS850/1900 + 2.4/5GHz WLAN Main	Yes
GPRS850/1900 + 2.4/5GHz WLAN Aux	Yes
GPRS850/1900 + 2.4/5GHz WLAN MIMO	Yes
WCDMA B2/4/5 + 2.4/5GHz WLAN Main	Yes
WCDMA B2/4/5 + 2.4/5GHz WLAN Aux	Yes
WCDMA B2/4/5 + 2.4/5GHz WLAN MIMO	Yes
LTE B2/4/5/13/17/25 + 2.4/5GHz WLAN Main	Yes
LTE B2/4/5/13/17/25 + 2.4/5GHz WLAN Aux	Yes
LTE B2/4/5/13/17/25 + 2.4/5GHz WLAN MIMO	Yes
CDMA BC0/BC1/10 + 2.4/5GHz WLAN Main	Yes
CDMA BC0/BC1/10 + 2.4/5GHz WLAN Aux	Yes
CDMA BC0/BC1/10 + 2.4/5GHz WLAN MIMO	Yes
GPRS850/1900 + 2.4/5GHz WLAN Aux + BT	Yes
WCDMA B2/4/5 + 2.4/5GHz WLAN Aux + BT	Yes
LTE B2/4/5/13/17/25 + 2.4/5GHz WLAN Aux + BT	Yes
CDMA BC0/BC1/BC10 + 2.4/5GHz WLAN Aux + BT	Yes

Note:

1. WWAN and WLAN may transmit simultaneously.

2. Bluetooth and WLAN Main share the same antenna path, and BT can't transmit with WLAN Main simultaneously.

3. For 2.4/5GHz WLAN Main and Aux antennas, the maximum output power of each antenna during simultaneous transmission (for 802.11n) is much less than that used in standalone transmission (for 802.11a/b/g/n), so it is more conservative to use the sum of 1-g SAR provision in KDB447498D01 to exclude the SAR measurement for 802.11n MIMO.

4. There are so many combination for simultaneous transmission, we choose the worst cases (all transmitters transmit simultaneously at maximum power) to do the simultaneous transmission analysis to capture the worst cases.

5. Based on KDB447498D01, when standalone BT test exclusion applies, BT SAR is estimated; the peak location is assumed to be at the feed-point or geometric center of the antenna.

For peak SAR location separation distance, we choose the separation distances between WWAN/WLAN Aux antennas and BT antenna to be the worst cases.

Ps. For top side, the separation distance between WWAN and BT antennas is 185.8mm. For top side, the separation distance between WLAN Aux and BT antennas is 79mm.

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# 3.1 Estimated SAR calculation

According to KDB447498 D01v05 – 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:

# Max.tune up power(mW) Min.test separation distance(mm) Estimated SAR =

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-1q.

Mode / Band	frequency (GHz)	Maximum power(dBm)	Test position	test separation distance(mm)	Estimated SAR(W/kg)
BT / 2.4G	2.48	3.51	top	15.9	0.03
BT / 2.4G	2.48	3.51	left / bottom	larger than 50mm	0.4
BT / 2.4G	2.48	3.51	right / back / back_curve	less than 5mm	0.094

# 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-q 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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# GPRS 850 + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.866	0.261	0.111	1.238	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.754	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
1	850	Top side	0	0.762	0.0527	0.842	1.657	Analyzed as below
		Bottom side	0	0.013	0.006	0.007	0.026	ΣSAR<1.6, Not required
		Left side	0	1.038	0.006	0.003	1.047	ΣSAR<1.6, Not required
		Right side	0	0.002	1.01	0.007	1.019	ΣSAR<1.6, Not required

#### WWAN & WLAN Main

Conditions	Position	SAR Value	Cool	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
GPRS 850	Top side	0.762	-0.84	-4.83	-0.70	0.8147	115.4	0.006	SPLSR<0.04,
WLAN Main		0.0527	-0.70	6.24	2.55	0.0147	115.4	0.000	Not required
٣	w	WAN	ļ		LAN-M	lain		7	

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### WWAN & WLAN Aux

Conditions	Position	SAR Value	/alue			ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
GPRS 850	Top side	0.762	-0.84	-4.83	-0.70	1.604	52.4	0.039	SPLSR<0.04,
WLAN Aux	Top Side	0.842	-0.74	0.58	-0.73	1.004	52.4	0.039	Not required
			WAN	(Fi	/LAN-/	AUX			

#### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Coordinates (cm)			ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	· (W/kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.0527	-0.70	6.24	2.55	0.8947	67.1	0.013	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	0.0747	07.1	0.013	Not required
				F	a E	a l	ľ.,		
100		1	WLAN	I-AUX	100	VLAN-N	lain		
S									
P									

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### GPRS 1900 + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.197	0.261	0.111	1.569	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.335	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
2	1900	Top side	0	1.144	0.0527	0.842	2.0387	Analyzed as below
		Bottom side	0	0.0145	0.006	0.007	0.0275	ΣSAR<1.6, Not required
		Left side	0	0.287	0.006	0.003	0.296	ΣSAR<1.6, Not required
		Right side	0	0.0012	1.01	0.007	1.0182	ΣSAR<1.6, Not required

### WWAN & WLAN Main

Conditions			Соо	dinates (	(cm)	ΣSAR · (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	У	z	(00/kg)	Distance (mm)		SAR Test
GPRS 1900	Topido	1.144	-0.54	-8.59	0.45	1 1047	140.0	0.000	SPLSR<0.04,
WLAN Main	Top side	0.0527	-0.70	6.24	2.55	1.1967	149.8	0.009	Not required

WLAN-Main

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### WWAN & WLAN Aux

Conditions	Conditions Position		Coo	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
GPRS 1900	Top sido	1.144	-0.54	-8.59	0.45	1 096	90.7	0.031	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	1.986	90.7	0.031	Not required



# WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR · (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(Wing)	Distance (mm)		SAR Test
WLAN Main	Top side	0.0527	-0.70	6.24	2.55	0.8947	67.1	0.013	SPLSR<0.04,
WLAN Aux	Top side 0.84		-0.74	0.58	-0.73	0.0947	07.1	0.013	Not required
6			WLAN	-AUX	and the second se	d /LAN-M	lain		

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# WCDMA Band II + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.962	0.261	0.111	1.334	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.16	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
3	WCDMA Band 2	Top side	0	1.033	0.0527	0.842	1.9277	Analyzed as below
		Bottom side	0	0.016	0.006	0.007	0.029	ΣSAR<1.6, Not required
		Left side	0	0.299	0.006	0.003	0.308	ΣSAR<1.6, Not required
		Right side	0	0.002	1.01	0.007	1.019	ΣSAR<1.6, Not required

### WWAN & WLAN Main

Conditions	onditions Position Valu		Coo	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
WCDMA B2	Top side	1.033	-1.00	-8.00	0.45	1.0857	144	0.008	SPLSR<0.04,
WLAN Main	TOP SIDE	0.0527	-0.70	6.24	2.55	1.0657	144	0.008	Not required



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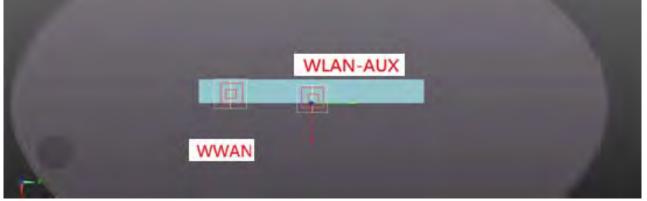
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### WWAN & WLAN Aux

Conditions	Conditions Position Va		Coo	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
WCDMA B2	Top side	1.033	-1.00	-8.00	0.45	1.875	85	0.030	SPLSR<0.04,
WLAN Aux	TOP Side	0.842	-0.74	0.58	-0.73	1.075	00	0.030	Not required



#### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Соо	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(11,119)	Distance (mm)		SAR Test
WLAN Main	Top side	0.0527	-0.70	6.24	2.55	0.8947	67.1	0.013	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	0.0947	07.1	0.013	Not required
					a (	đ			
2		1	WLAI	N-AUX	1.1	VLAN-N	Main		

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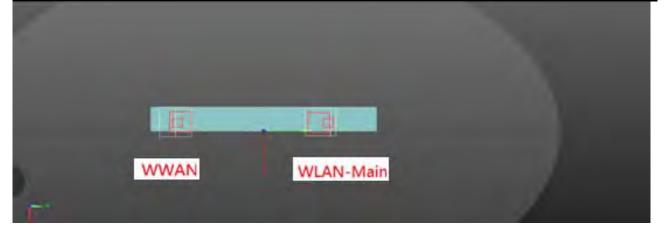


# WCDMA Band IV + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.999	0.261	0.111	1.371	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.131	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
4	WCDMA Band 4	Top side	0	1.049	0.0527	0.842	1.9437	Analyzed as below
		Bottom side	0	0.0235	0.006	0.007	0.0365	ΣSAR<1.6, Not required
		Left side	0	0.532	0.006	0.003	0.541	ΣSAR<1.6, Not required
		Right side	0	0.0042	1.01	0.007	1.0212	ΣSAR<1.6, Not required

## WWAN & WLAN Main

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)		(W/kg)	Distance (mm)		SAR Test		
WCDMA B4	Top side	1.049	-0.84	-8.59	-0.50	1.1017	151.4	0.008	SPLSR<0.04,
WLAN Main	TOP SIDE	0.0527	-0.70	6.24	2.55	1.1017	131.4	0.008	Not required



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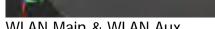
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### WWAN & WLAN Aux

Conditions	Position	osition Value (W/k	ΣSAR	(W/kg) Separation		Simultaneous Transmission			
		(W/kg)	х		(007Kg)	Distance (mm)		SAR Test	
WCDMA B4	Top side	1.049	-0.84	-8.59	-0.50	1.891	00	0.029	SPLSR<0.04,
WLAN Aux	TOP Side	0.842	-0.74	0.58	-0.73	1.091	90	0.029	Not required

WLAN-AUX



WLAN Main &		ил							
Conditions	Conditions Position		Coo	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.0527	-0.70	6.24	2.55	0.8947	67.1	0.013	SPLSR<0.04,
WLAN Aux		0.842	-0.74	0.58	-0.73	0.0747	07.1	0.013	Not required
			WLAN	-AUX	1	D VLAN-N	1ain		
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WWAN

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### WCDMA Band V + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.407	0.261	0.111	0.779	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.402	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
5	WCDMA Band 5	Top side	0	0.391	0.0527	0.842	1.2857	ΣSAR<1.6, Not required
		Bottom side	0	0.035	0.006	0.007	0.048	ΣSAR<1.6, Not required
		Left side	0	0.615	0.006	0.003	0.624	ΣSAR<1.6, Not required
		Right side	0	0.003	1.01	0.007	1.02	ΣSAR<1.6, Not required

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# LTE FDD Band II + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.062	0.261	0.111	1.434	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.086	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
6	LTE Band 2	Top side	0	1.09	0.0527	0.842	1.9847	Analyzed as below
		Bottom side	0	0.041	0.006	0.007	0.054	ΣSAR<1.6, Not required
		Left side	0	0.281	0.006	0.003	0.29	ΣSAR<1.6, Not required
		Right side	0	0.027	1.01	0.007	1.044	ΣSAR<1.6, Not required

# WWAN & WLAN Main

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR	W/kg) Separation		Simultaneous Transmission
		(W/kg)	х	y z (\	(vv/kg)	Distance (mm)		SAR Test	
LTE Band 2	Top side	1.09	-1.30	-8.16	0.45	1.1427	145.6	0.008	SPLSR<0.04,
WLAN Main	TOP Side	0.0527	-0.70	6.24	2.55	1.1427	145.0	0.008	Not required



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### WWAN & WLAN Aux

Conditions	Position	SAR Value	Соо	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(vv/kg)	Distance (mm)		SAR Test
LTE Band 2	Top side	1.09	-1.30	-8.16	0.45	1.932	86.7	0.031	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	1.752	00.7	0.031	Not required
				W	'LAN-/	AUX			

### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	lue				Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.0527	-0.70	6.24	2.55	0 8047	67.1	0.013	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.842	-0.74	0.58	-0.73	0.8947	07.1	0.013	Not required
			-						
					Contraction of the	4	4.4		
			WLAI	N-AUX		NLAN-N	viain		

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**WWAN** 

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# LTE FDD Band IV + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.193	0.261	0.111	1.565	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.154	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
7	LTE Band 4	Top side	0	1.069	0.0527	0.842	1.9637	Analyzed as below
		Bottom side	0	0.044	0.006	0.007	0.057	ΣSAR<1.6, Not required
		Left side	0	0.543	0.006	0.003	0.552	ΣSAR<1.6, Not required
		Right side	0	0.007	1.01	0.007	1.024	ΣSAR<1.6, Not required

### WWAN & WLAN Main

Conditions Position		SAR Coordinates (cm) Value				ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/Kg)	Distance (mm)		SAR Test
LTE Band 4	· Top side	1.069	-1.35	-8.34	-0.48	1.1217	149	0.008	SPLSR<0.04,
WLAN Main		0.0527	-0.70	6.24	2.55	1.1217	147	0.000	Not required
<b>F</b>									
	_								
	W	VAN		WL	AN-Ma	ain			

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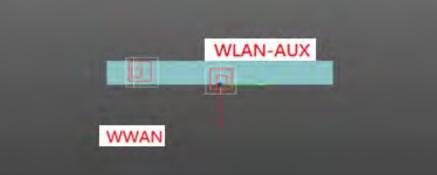
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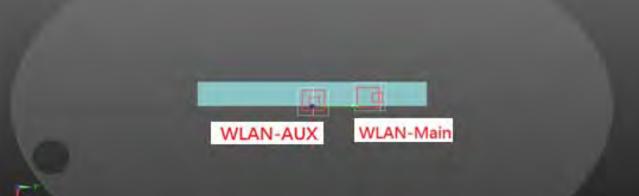
### WWAN & WLAN Aux

Position	SAR Value	Cool	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
	(W/kg)	х	у	Z	(00/kg)	Distance (mm)		SAR Test
Topido	1.069	-1.35	-8.34	-0.48	1 011	07.0	0.020	SPLSR<0.04,
Top side	0.842	-0.74	0.58	-0.73	1.911	87.8	0.030	Not required
	Position Top side	Position Value (W/kg) Top side	Position         Value (W/kg)            Top side         1.069         -1.35	Value (W/kg)         x         y           1.069         -1.35         -8.34           Top side         -         -	Value (W/kg)         Value x         y         z           Top side         1.069         -1.35         -8.34         -0.48	Position         Value (W/kg)         ZSAR (W/kg)           Top side         1.069         -1.35         -8.34         -0.48	PositionSAR Value (W/kg) $Coordinates (cm)$ $\Sigma SAR(W/kg)LocationSeparationDistance(mm)Top side1.069-1.35-8.34-0.481.91187.8$	PositionSAR Value (W/kg) $Coordinates (cm)$ $\Sigma SAR$ (W/kg) $LocationSeparationDistance(mm)SPLSRTop side1.069-1.35-8.34-0.48-0.4887.80.030$



### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR · (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	z	(W/Kg)	Distance (mm)		SAR Test
WLAN Main	Topido	0.0527	-0.70	6.24	2.55	0.8947	67.1	0.012	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	0.0947	07.1	0.013	Not required



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# LTE FDD Band V + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.491	0.261	0.111	0.863	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.58	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
8	LTE Band 5	Top side	0	0.576	0.0527	0.842	1.4707	ΣSAR<1.6, Not required
		Bottom side	0	0.076	0.006	0.007	0.089	ΣSAR<1.6, Not required
		Left side	0	0.601	0.006	0.003	0.61	ΣSAR<1.6, Not required
		Right side	0	0.014	1.01	0.007	1.031	ΣSAR<1.6, Not required

# LTE FDD Band XIII + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.468	0.261	0.111	0.84	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.486	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
9	LTE Band 13	Top side	0	0.549	0.0527	0.842	1.4437	ΣSAR<1.6, Not required
		Bottom side	0	0.093	0.006	0.007	0.106	ΣSAR<1.6, Not required
		Left side	0	0.837	0.006	0.003	0.846	ΣSAR<1.6, Not required
		Right side	0	0.01	1.01	0.007	1.027	ΣSAR<1.6, Not required

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# LTE FDD Band XVII + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.264	0.261	0.111	0.636	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.296	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
10	LTE Band 17	Top side	0	0.223	0.0527	0.842	1.1177	ΣSAR<1.6, Not required
		Bottom side	0	0.009	0.006	0.007	0.022	ΣSAR<1.6, Not required
		Left side	0	0.438	0.006	0.003	0.447	ΣSAR<1.6, Not required
		Right side	0	0.005	1.01	0.007	1.022	ΣSAR<1.6, Not required

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# LTE FDD Band XXV + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.151	0.261	0.111	1.523	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.979	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
11	LTE Band 25	Top side	0	1.159	0.0527	0.842	2.0537	Analyzed as below
		Bottom side	0	0.026	0.006	0.007	0.039	ΣSAR<1.6, Not required
		Left side	0	0.375	0.006	0.003	0.384	ΣSAR<1.6, Not required
		Right side	0	0.007	1.01	0.007	1.024	ΣSAR<1.6, Not required

#### WWAN & WLAN Main

Conditions	Position	SAR Value	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(\\\\Kg)	Distance (mm)		SAR Test
LTE Band 25	Top side	1.159	-1.14	-8.47	0.51	1.2117	148.6	0.009	SPLSR<0.04,
WLAN Main	TOP SIDE	0.0527	-0.70	6.24	2.55	1.2117	140.0	0.007	Not required
-	W	WAN	1	WL	AN-M	ain		2	

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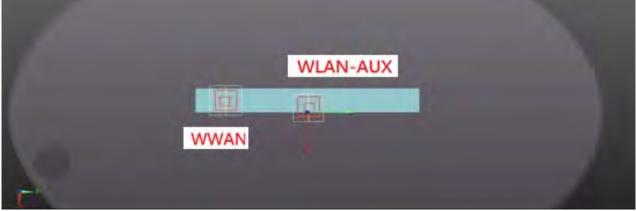
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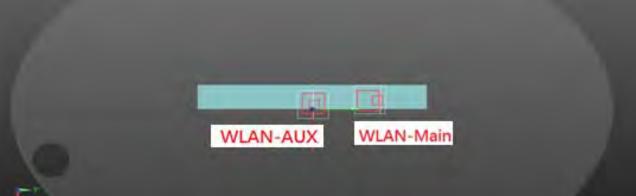


Conditions	Position	Position SAR Value (W/kg)	Coo	rdinates	(cm)	ΣSAR	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission
			х	у	Z	(W/kg)			SAR Test
LTE Band 25	Top side	1.159	-1.14	-8.47	0.51	2 001	00.0	0 0 2 2	SPLSR<0.04,
WLAN Aux		0.842	-0.74	0.58	-0.73	2.001	89.8	0.032	Not required



### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.0527	-0.70	6.24	2.55	0.8947	67.1	0.013	SPLSR<0.04,
WLAN Aux		0.842	-0.74	0.58	-0.73	0.0947			Not required
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# CDMA / EVDO BC0 + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.54	0.261	0.111	0.912	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.618	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
12	EVDO BC 0	Top side	0	0.658	0.0527	0.842	1.5527	ΣSAR<1.6, Not required
		Bottom side	0	0.07	0.006	0.007	0.083	ΣSAR<1.6, Not required
		Left side	0	0.771	0.006	0.003	0.78	ΣSAR<1.6, Not required
		Right side	0	0.007	1.01	0.007	1.024	ΣSAR<1.6, Not required

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# CDMA / EVDO BC1 + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.008	0.261	0.111	1.38	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.973	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
13	EVDO BC 1	Top side	0	0.903	0.0527	0.842	1.7977	Analyzed as below
		Bottom side	0	0.025	0.006	0.007	0.038	ΣSAR<1.6, Not required
		Left side	0	0.341	0.006	0.003	0.35	ΣSAR<1.6, Not required
		Right side	0	0.004	1.01	0.007	1.021	ΣSAR<1.6, Not required

#### WWAN & WLAN Main

Conditions	Position	SAR Value	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(00/Kg)	Distance (mm)		SAR Test	
EVDO BC 1	Top side	0.903	-0.99	-8.56	-0.46	1.745	89.7	0.026	97 0076	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	1.740	89.7	0.020	Not required	
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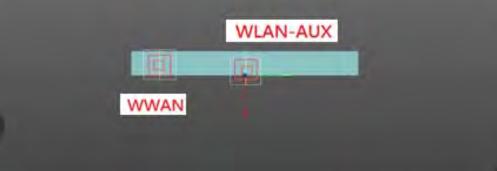
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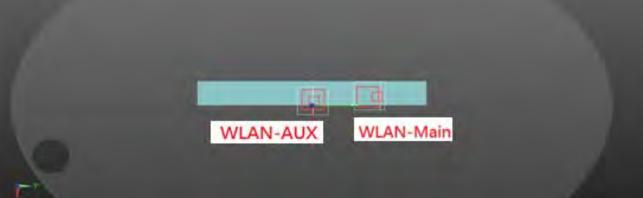


Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
EVDO BC 1	Top side	0.903	-0.99	-8.56	-0.46	0.9557	151.1	0.006	SPLSR<0.04,
WLAN Main		0.0527	-0.70	6.24	2.55	0.9557	151.1	0.006	Not required



### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.0527	-0.70	6.24	2.55	0.8947	67.1	0.013	SPLSR<0.04,
WLAN Aux		0.842	-0.74	0.58	-0.73	0.0947	07.1	0.013	Not required



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# CDMA / EVDO BC10 + 2.4GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.55	0.261	0.111	0.922	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.635	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.356	-	-	ΣSAR<1.6, Not required
14	EVDO BC 10	Top side	0	0.582	0.0527	0.842	1.4767	ΣSAR<1.6, Not required
		Bottom side	0	0.058	0.006	0.007	0.071	ΣSAR<1.6, Not required
		Left side		0.723	0.006	0.003	0.732	ΣSAR<1.6, Not required
		Right side	0	0.004	1.01	0.007	1.021	ΣSAR<1.6, Not required

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# GPRS 850 + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.866	0.073	0.212	1.151	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.754	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
15	850	Top side	0	0.762	0.089	0.928	1.779	Analyzed as below
		Bottom side	0	0.013	0.003	0.007	0.023	ΣSAR<1.6, Not required
		Left side	0	1.038	0.002	0.006	1.046	ΣSAR<1.6, Not required
		Right side	0	0.002	0.513	0.029	0.544	ΣSAR<1.6, Not required

#### WWAN & WLAN Main

Conditions	Position	SAR Value				ΣSAR · (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/Kg)	Distance (mm)		SAR Test
GPRS 850	Top side	0.762	-0.84	-4.83	-0.70	0.851	138.9	0.006	SPLSR<0.04,
WLAN Main	Top side	0.089	-2.10	8.72	2.08	0.851	130.7	0.000	Not required
	WV	VAN	t	W	LAN-M	lain			
e .									

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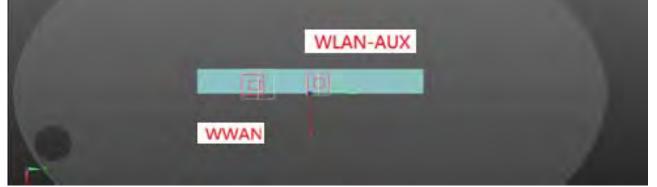
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Conditions	Position	Position	Position Value	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	z (W/kg)		Distance (mm)		SAR Test
GPRS 850	<b>.</b>	0.762	-0.84	-4.83	-0.70	1.69	58	0.038	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.09	56	0.036	Not required



# WLAN Main & WLAN Aux

WLAN Main &	VVLAN A	ux							
Conditions	Position	SAR Value	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/Kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required
0			WLAN	-AUX		WLAN-	Main		

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# GPRS 1900 + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.197	0.073	0.212	1.482	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.335	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
16	1900	Top side	0	1.144	0.089	0.928	2.161	Analyzed as below
		Bottom side	0	0.0145	0.003	0.007	0.0245	ΣSAR<1.6, Not required
		Left side	0	0.287	0.002	0.006	0.295	ΣSAR<1.6, Not required
		Right side	0	0.0012	0.513	0.029	0.5432	ΣSAR<1.6, Not required

#### WWAN & WLAN Main

Conditions	Position	SAR Value	Cool	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)			(W/kg)	Distance (mm)		SAR Test	
GPRS 1900	- ··	1.144	-0.54	-8.59	0.45	1.233	174.6	0.008	SPLSR<0.04,
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.233	174.0	0.008	Not required
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Conditions	SAR Position Value		Coo	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission		
		(W/kg)	х	у	Z	(₩/ĸġ)	Distance (mm)		SAR Test		
GPRS 1900	Top side	1.144	-0.54	-8.59	0.45	2.072	96.4	0.031	SPLSR<0.04,		
WLAN Aux		0.928	-1.08	0.96	-0.76				Not required		
WI AN-AUX											



### WLAN Main & WLAN Aux

WLAN Main &		ux							
Conditions	SAR Position Value		Coo	rdinates	(cm)	ΣSAR · (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/Kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required
			-	1Fi					

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WLAN-AUX

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WLAN-Main



# WCDMA Band II + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.962	0.073	0.212	1.247	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.16	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
17	WCDMA Band 2	Top side	0	1.033	0.089	0.928	2.05	Analyzed as below
		Bottom side		0.016	0.003	0.007	0.026	ΣSAR<1.6, Not required
		Left side	0	0.299	0.002	0.006	0.307	ΣSAR<1.6, Not required
		Right side	0	0.002	0.513	0.029	0.544	ΣSAR<1.6, Not required

### WWAN & WLAN Main

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR · (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/Kg)	Distance (mm)		SAR Test
WCDMA B2	Top side	1.033	-1.00	-8.00	0.45	1.122	168.3	0.007	SPLSR<0.04,
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.122	100.5	0.007	Not required
-	WWA	and the second se	l	V	/LAN-N	vlain			

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Conditions	Position	SAR Value	Coordinates (cm)			ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	· (W/kg)	Distance (mm)		SAR Test
WCDMA B2	Top side	1.033	-1.00	-8.00	0.45	1.961	90.4	0.030	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.901	90.4	0.030	Not required
				V	VLAN-	AUX			
-		WWA	N						

### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/Kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required
				1		9			
2			WLAN	I-AUX		WLAN	-Main		

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# WCDMA Band IV + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.999	0.073	0.212	1.284	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.131	-	-	-	ΣSAR<1.6, Not required
	Back sid	Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
18	WCDMA Band 4	Top side	0	1.049	0.089	0.928	2.066	Analyzed as below
		Bottom side	0	0.0235	0.003	0.007	0.0335	ΣSAR<1.6, Not required
		Left side	0	0.532	0.002	0.006	0.54	ΣSAR<1.6, Not required
		Right side	0	0.0042	0.513	0.029	0.5462	ΣSAR<1.6, Not required

# WWAN & WI AN Main

	an main	SAR	aluo			ΣSAR	Peak Location		Simultaneous
Conditions	Position	Value (W/kg)	х	у	z	(W/kg)	Separation Distance (mm)	SPLSR	Transmission SAR Test
WCDMA B4	Topoido	1.049	-0.84	-8.59	-0.50	1 1 2 0	17E E	0.007	SPLSR<0.04,
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.138	175.5	0.007	Not required
-	WWAN		1	WL	AN-M	ain			

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Conditions	Conditions Position		SAR Coordinates (cm) Value				Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
WCDMA B4	Top side	1.049	-0.84	-8.59	-0.50	1.977	95.6	0.029	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.977	93.0	0.029	Not required
		wwa	a N	V	VLAN-	AUX			

### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Cool	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	У	Z	(W/Kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required
			_	ļ					
2			WLAN	I-AUX	1	WLAN	-Main		

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### WCDMA Band V + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.407	0.073	0.212	0.692	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.402	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
19	WCDMA Band 5	Top side	0	0.391	0.089	0.928	1.408	ΣSAR<1.6, Not required
		Bottom side	0	0.035	0.003	0.007	0.045	ΣSAR<1.6, Not required
		Left side	0	0.615	0.002	0.006	0.623	ΣSAR<1.6, Not required
		Right side	0	0.003	0.513	0.029	0.545	ΣSAR<1.6, Not required

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# LTE FDD Band II + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.062	0.073	0.212	1.347	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.086	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
20	LTE Band 2	Top side	0	1.09	0.089	0.928	2.107	Analyzed as below
		Bottom side	0	0.041	0.003	0.007	0.051	ΣSAR<1.6, Not required
		Left side	0	0.281	0.002	0.006	0.289	ΣSAR<1.6, Not required
		Right side	0	0.027	0.513	0.029	0.569	ΣSAR<1.6, Not required

### WWAN & WLAN Main

Conditions	Conditions Position		Соог	Coordinates (cm)			Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test	
LTE Band 2	Top side	1.09	-1.30	-8.16	0.45	1.179	169.8	0.008	SPLSR<0.04,	
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.179	107.0	0.008	Not required	
	la.	I								
	WWAN			W	LAN-M	lain				
1										

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Conditions			Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/Kg)	Distance (mm)		SAR Test
LTE Band 2	Top side	1.09	-1.30	-8.16	0.45	2.018	92	0.031	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	-1.08	0.96	-0.76	2.010	72	0.031	Not required
			5		VLAN	AUX			5
-		WWA	AN	1	1				21

# WI AN Main & WI AN Aux

WLAN Main &		ux							
Conditions	Position	SAR Value				ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/kg)	Distance (mm)		SAR Test
WLAN Main	Ton side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required
				0					

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WLAN-AUX

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WLAN-Main



# LTE FDD Band IV + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.193	0.073	0.212	1.478	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.154	-	-	-	ΣSAR<1.6, Not required
	Back side	Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
21	LTE Band 4	Top side	0	1.069	0.089	0.928	2.086	Analyzed as below
		Bottom side	0	0.044	0.003	0.007	0.054	ΣSAR<1.6, Not required
		Left side	0	0.543	0.002	0.006	0.551	ΣSAR<1.6, Not required
		Right side	0	0.007	0.513	0.029	0.549	ΣSAR<1.6, Not required

### WWAN & WLAN Main

Conditions	Position	SAR Value				ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test	
LTE Band 4	Top side	1.069	-1.35	-8.34	-0.48	1.158	172.7	0.007	SPLSR<0.04,	
WLAN Main	TOP SIDE	0.089	-2.10	8.72	2.08	1.130	172.7	0.007	Not required	
	-	_			-					
	P		-		1					
	WWAN	l		W	LAN-N	lain				

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Conditions Position		SAR Value					Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	· (W/kg)	Distance (mm)		SAR Test
LTE Band 4	Top side	1.069	-1.35	-8.34	-0.48	1.997	93.1	0.030	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	-1.08	0.96	-0.76	1.777	73.1	0.030	Not required
		WWA		V	VLAN-	AUX			
									1

# WIAN Main & WIAN Aux

WLAN Wain &	VVLAN A	ux							
Conditions	Conditions Position		Соо	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(vv/kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required
				μ					
		-	-	-1	a 7		-		

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WLAN-AUX

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WLAN-Main



# LTE FDD Band V + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.491	0.073	0.212	0.776	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.58	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
22	LTE Band 5	Top side	0	0.576	0.089	0.928	1.593	ΣSAR<1.6, Not required
		Bottom side	0	0.076	0.003	0.007	0.086	ΣSAR<1.6, Not required
		Left side		0.601	0.002	0.006	0.609	ΣSAR<1.6, Not required
		Right side	0	0.014	0.513	0.029	0.556	ΣSAR<1.6, Not required

# LTE FDD Band XIII + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.468	0.073	0.212	0.753	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.486	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
23	LTE Band 13	Top side	0	0.549	0.089	0.928	1.566	ΣSAR<1.6, Not required
		Bottom side	0	0.093	0.003	0.007	0.103	ΣSAR<1.6, Not required
		Left side	0	0.837	0.002	0.006	0.845	ΣSAR<1.6, Not required
		Right side	0	0.01	0.513	0.029	0.552	ΣSAR<1.6, Not required

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# LTE FDD Band XVII + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.264	0.073	0.212	0.549	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.296	-	-	-	ΣSAR<1.6, Not required
	Ва	Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
24	LTE Band 17	Top side	0	0.223	0.089	0.928	1.24	ΣSAR<1.6, Not required
		Bottom side	0	0.009	0.003	0.007	0.019	ΣSAR<1.6, Not required
		Left side	0	0.438	0.002	0.006	0.446	ΣSAR<1.6, Not required
		Right side	0	0.005	0.513	0.029	0.547	ΣSAR<1.6, Not required

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# LTE FDD Band XXV + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.151	0.073	0.212	1.436	ΣSAR<1.6, Not required
		Back side_Curve(LLeft)	0	0.979	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
25	LTE Band 25	Top side	0	1.136	0.089	0.928	2.153	Analyzed as below
		Bottom side	0	0.026	0.003	0.007	0.036	ΣSAR<1.6, Not required
		Left side	0	0.375	0.002	0.006	0.383	ΣSAR<1.6, Not required
		Right side	0	0.007	0.513	0.029	0.549	ΣSAR<1.6, Not required

#### WWAN & WLAN Main

Conditions	Position	SAR Value			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(00/kg)	Distance (mm)		SAR Test
LTE Band 25	Top side	1.159	-1.14	-8.47	0.51	1.248	172.9	0.008	SPLSR<0.04,
WLAN Main	TOP SIDE	0.089	-2.10	8.72	2.08	1.240	172.7	0.000	Not required
		-		-					
	<u> </u>		-		1				
	WWAN	1		W	LAN-M	lain			
+									

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Conditions	Position	SAR Coordinates (cm) Value			ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
LTE Band 25	Top side	1.159	-1.14	-8.47	0.51	2.087	95.1	0.032	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	2.007	75.1	0.032	Not required
		WWA	N		VLAN-	AUX			

### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Coordinates (cm)			ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	· (W/kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required
				Ę					
6			WLAN	I-AUX		WLAN	-Main		

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# CDMA / EVDO BC0 + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.54	0.073	0.212	0.825	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.618	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
26	EVDO BC 0	Top side	0	0.658	0.089	0.928	1.675	Analyzed as below
		Bottom side	0	0.07	0.003	0.007	0.08	ΣSAR<1.6, Not required
		Left side	0	0.771	0.002	0.006	0.779	ΣSAR<1.6, Not required
		Right side	0	0.007	0.513	0.029	0.549	ΣSAR<1.6, Not required

#### WWAN & WLAN Main

Conditions	Conditions Position		Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	z	(W/Kg)	Distance (mm)		SAR Test
EVDO BC 0	Top side	0.658	-1.15	-5.29	-0.68	0.747	143.1	0.005	SPLSR<0.04,
WLAN Main	TOP SIDE	0.089	-2.10	8.72	2.08	0.747	145.1	0.005	Not required
	WWA			- []					
-	VVVA		8	V	VLAN-I	Main			

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Conditions Pos	Position	SAR Value	Соо	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(11/19)	Distance (mm)		SAR Test
EVDO BC 0	Top sido	0.658	-1.15	-5.29	-0.68	1.586	62.5	0.032	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.586	02.5	0.032	Not required
					WLAN	-AUX			

WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Соо	Coordinates (cm)			Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required
				ĮÞ		3			
			WLAN	-AUX		WLAN-	Main		

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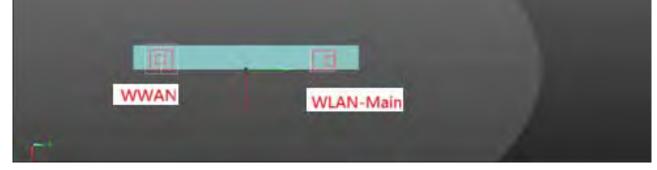
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# CDMA / EVDO BC1 + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.008	0.073	0.212	1.293	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.973	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
27	EVDO BC 1	Top side	0	0.903	0.089	0.928	1.92	Analyzed as below
		Bottom side	0	0.025	0.003	0.007	0.035	ΣSAR<1.6, Not required
		Left side		0.341	0.002	0.006	0.349	ΣSAR<1.6, Not required
		Right side	0	0.004	0.513	0.029	0.546	ΣSAR<1.6, Not required

#### WWAN & WLAN Main

Conditions	SAR Position Value		Coordinates (cm)			ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
EVDO BC 1	Top side	0.903	-0.99	-8.56	-0.46	0.992	175	0.006	SPLSR<0.04,
WLAN Main	Top side	0.089	-2.10	8.72	2.08	0.992	175	0.006	Not required



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Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(W/kg)	Distance (mm)		SAR Test
EVDO BC 1	Top side	0.903	-0.99	-8.56	-0.46	1.831	95.2	0.026	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	-1.08	0.96	-0.76	1.051	75.2	0.020	Not required
									1
		1	1	V	VLAN-	AUX			

### WLAN Main & WLAN Aux

Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR · (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(00/Kg)	Distance (mm)		SAR Test	
WLAN Main	Top side	0.089	-2.10	8.72	2.08	1.017	83.2	0.012	SPLSR<0.04,	
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.017	03.2	0.012	Not required	
			-	la	1					
2			-							
O		L	WLAN	-AUX		WLAN-	Main			
E.										

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### CDMA / EVDO BC10 + 5GHz WLAN MIMO

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.55	0.073	0.212	0.835	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.635	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.078	-	-	ΣSAR<1.6, Not required
28	EVDO BC 10	Top side	0	0.582	0.089	0.928	1.599	ΣSAR<1.6, Not required
		Bottom side	0	0.058	0.003	0.007	0.068	ΣSAR<1.6, Not required
		Left side	0	0.723	0.002	0.006	0.731	ΣSAR<1.6, Not required
		Right side	0	0.004	0.513	0.029	0.546	ΣSAR<1.6, Not required

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# GPRS 850 + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.866	0.094	0.111	1.071	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.754	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
29	850	Top side	0	0.762	0.03	0.842	1.634	Analyzed as below
		Bottom side	0	0.013	0.4	0.007	0.42	ΣSAR<1.6, Not required
		Left side		1.038	0.4	0.003	1.441	ΣSAR<1.6, Not required
		Right side	0	0.002	0.094	0.007	0.103	ΣSAR<1.6, Not required

### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
GPRS 850	Topido	0.762	0.792	185.8	0.004	SPLSR<0.04,
ВТ	Top side	0.03	0.792	0.001	0.004	Not required

# BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03	0.872	79	0.010	SPLSR<0.04,
WLAN Aux		0.842	0.072	17	0.010	Not required

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Conditions	Position	SAR Value	Соо	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(₩/ĸġ)	Distance (mm)		SAR Test
GPRS 850	Top side	0.762	-0.84	-4.83	-0.70	1.604	52.4	0.039	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	1.004	52.4	0.037	Not required
			WAN	M		AUX			

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### GPRS 1900 + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.197	0.094	0.111	1.402	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.335	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
30	1900	Top side	0	1.144	0.03	0.842	2.016	Analyzed as below
		Bottom side	0	0.0145	0.4	0.007	0.4215	ΣSAR<1.6, Not required
		Left side	0	0.287	0.4	0.003	0.69	ΣSAR<1.6, Not required
		Right side	0	0.0012	0.094	0.007	0.1022	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
GPRS 1900	Top side	1.144	1.174	185.8	0.007	SPLSR<0.04,
ВТ		0.03	1.1/4	0.001	0.007	Not required

**BT & WLAN Aux** 

Conditions	Position	Position SAR Value (W/kg) ΣSAR (W/kg)		Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test	
ВТ	Top side	0.03	0.872	79	0.010	SPLSR<0.04,	
WLAN Aux	TOP SIDE	0.842	0.072	19	0.010	Not required	

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Conditions Position		SAR Value	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
	(W/kg)	х	у	Z	(₩/ĸġ)	Distance (mm)		SAR Test	
GPRS 1900	Top side	1.144	-0.54	-8.59	0.45	1.986	90.7	0.031	SPLSR<0.04, Not required
WLAN Aux	TOP SIDE	0.842	-0.74	0.58	-0.73	1.900			
		ww/	AN	M	/LAN-/	AUX			

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# WCDMA Band II + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
	31 WCDMA Band 2	Back side	0	0.962	0.094	0.111	1.167	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.16	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
31		Top side	0	1.033	0.03	0.842	1.905	Analyzed as below
		Bottom side	0	0.016	0.4	0.007	0.423	ΣSAR<1.6, Not required
		Left side		0.299	0.4	0.003	0.702	ΣSAR<1.6, Not required
		Right side	0	0.002	0.094	0.007	0.103	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test	
WCDMA B2	Top side	1.033	1.063	185.8	0.006	SPLSR<0.04,	
ВТ	TOP SIDE	0.03	1.005	105.0	0.000	Not required	

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test	
ВТ	Top side	0.03	0.872	79	0.010	SPLSR<0.04,	
WLAN Aux		0.842	0.072	19	0.010	Not required	

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Conditions Position		SAR Value	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(007Kg)	Distance (mm)		SAR Test
WCDMA B2	Top side	1.033	-1.00	-8.00	0.45	1.875	85	0.030	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	1.075	80	0.030	Not required
				W		AUX			
		W	WAN						

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## WCDMA Band IV + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.999	0.094	0.111	1.204	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.131	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
32	WCDMA Band 4	Top side	0	1.049	0.03	0.842	1.921	Analyzed as below
		Bottom side	0	0.0235	0.4	0.007	0.4305	ΣSAR<1.6, Not required
		Left side	le 0 0.532 0.4 0.003 0.935	0.935	ΣSAR<1.6, Not required			
		Right side	0	0.0042	0.094	0.007	0.1052	ΣSAR<1.6, Not required

### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
WCDMA B4	Topido	1.049	1.079	185.8	0.006	SPLSR<0.04,
ВТ	Top side	0.03	1.079	0.001	0.000	Not required

### **BT & WLAN Aux**

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03	0.872	79	0.010	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.842	0.872	19	0.010	Not required

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Conditions	Position	SAR Value	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)		Z	(W/Kg)	Distance (mm)		SAR Test	
WCDMA B4	Top side	1.049	-0.84	-8.59	-0.50	1.891	90	0.029	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	1.071	70	0.027	Not required
			/AN	W	LAN-A	UX			

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## WCDMA Band V + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.407	0.094	0.111	0.612	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.402	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
33	WCDMA Band 5	Top side	0	0.391	0.03	0.842	1.263	ΣSAR<1.6, Not required
		Bottom side	0	0.035	0.4	0.007	0.442	ΣSAR<1.6, Not required
		Left side	0	0.615	0.4	0.003	1.018	ΣSAR<1.6, Not required
		Right side	0	0.003	0.094	0.007	0.104	ΣSAR<1.6, Not required

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# LTE FDD Band II + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.062	0.094	0.111	1.267	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.086	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
34	LTE Band 2	Top side	0	1.09	0.03	0.842	1.962	Analyzed as below
		Bottom side	0	0.041	0.4	0.007	0.448	ΣSAR<1.6, Not required
		Left side	0	0.281	0.4	0.003	0.684	ΣSAR<1.6, Not required
		Right side	0	0.027	0.094	0.007	0.128	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 2	Topido	1.09	1.12	185.8	0.006	SPLSR<0.04,
ВТ	Top side	0.03	1.12	0.001	0.000	Not required

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Topido	0.03	0.872	79	0.010	SPLSR<0.04,
WLAN Aux	Top side	0.842	0.072	19	0.010	Not required

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Conditions	Position	SAR Value			ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	y z (W/kg) Di		Distance (mm)		SAR Test
LTE Band 2	Top side	1.09	-1.30	-8.16	0.45	1.932	86.7	0.031	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	1.732	00.7	0.031	Not required
		WV	VAN	W		UX.			

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## LTE FDD Band IV + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.193	0.094	0.111	1.398	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.154	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
35	LTE Band 4	Top side	0	1.069	0.03	0.842	1.941	Analyzed as below
		Bottom side	0	0.044	0.4	0.007	0.451	ΣSAR<1.6, Not required
		Left side	0	0.543	0.4	0.003	0.946	ΣSAR<1.6, Not required
		Right side	0	0.007	0.094	0.007	0.108	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 4	Top side	1.069	1.099	185.8	0.006	SPLSR<0.04,
ВТ		0.03	1.099	0.001	0.000	Not required

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03		79	0.010	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.842	0.072	19	0.010	Not required

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Conditions	Position	SAR Value	Coo	rdinates	dinates (cm)		Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	· (W/kg)	Distance (mm)		SAR Test
LTE Band 4	Top side	1.069	-1.35	-8.34	-0.48	1.911	87.8	0.030	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.842	-0.74	0.58	-0.73	1.711	07.0	0.030	Not required
			VAN	W	LAN-A	UX			

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## LTE FDD Band V + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.491	0.094	0.111	0.696	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.58	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
36	LTE Band 5	Top side	0	0.576	0.03	0.842	1.448	ΣSAR<1.6, Not required
		Bottom side	0	0.076	0.4	0.007	0.483	ΣSAR<1.6, Not required
		Left side	0	0.601	0.4	0.003	1.004	ΣSAR<1.6, Not required
		Right side	0	0.014	0.094	0.007	0.115	ΣSAR<1.6, Not required

# LTE FDD Band XIII + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.468	0.094	0.111	0.673	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.486	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
37	LTE Band 13	Top side	0	0.549	0.03	0.842	1.421	ΣSAR<1.6, Not required
		Bottom side	0	0.093	0.4	0.007	0.5	ΣSAR<1.6, Not required
		Left side	0	0.837	0.4	0.003	1.24	ΣSAR<1.6, Not required
		Right side	0	0.01	0.094	0.007	0.111	ΣSAR<1.6, Not required

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## LTE FDD Band XVII + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.264	0.094	0.111	0.469	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.296	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
38	LTE Band 17	Top side	0	0.223	0.03	0.842	1.095	ΣSAR<1.6, Not required
		Bottom side	0	0.009	0.4	0.007	0.416	ΣSAR<1.6, Not required
		Left side	0	0.438	0.4	0.003	0.841	ΣSAR<1.6, Not required
		Right side	0	0.005	0.094	0.007	0.106	ΣSAR<1.6, Not required

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## LTE FDD Band XXV + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.151	0.094	0.111	1.356	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.979	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
39	LTE Band 25	Top side	0	1.159	0.03	0.842	2.031	Analyzed as below
		Bottom side	0	0.026	0.4	0.007	0.433	ΣSAR<1.6, Not required
		Left side	0	0.375	0.4	0.003	0.778	ΣSAR<1.6, Not required
		Right side	0	0.007	0.094	0.007	0.108	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 25	Top side	1.159	1.189	185.8	0.007	SPLSR<0.04,
BT	Top Side	0.03	1.107	103.0	0.007	Not required

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03	0.872	79	0.010	SPLSR<0.04,
WLAN Aux		0.842	0.072	17	0.010	Not required

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Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	z	(W/Kg)	Distance (mm)		SAR Test
LTE Band 25	Topsido	1.159	-1.14	-8.47	0.51	2.001	89.8	0.032	SPLSR<0.04,
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	2.001	09.0	0.032	Not required
		wv	VAN	W					

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## CDMA / EVDO BC0 + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.54	0.094	0.111	0.745	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.618	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
40	EVDO BC 0	Top side	0	0.658	0.03	0.842	1.53	ΣSAR<1.6, Not required
		Bottom side	0	0.07	0.4	0.007	0.477	ΣSAR<1.6, Not required
		Left side	0	0.771	0.4	0.003	1.174	ΣSAR<1.6, Not required
		Right side	0	0.007	0.094	0.007	0.108	ΣSAR<1.6, Not required

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## CDMA / EVDO BC1 + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.008	0.094	0.111	1.213	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.973	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
41	EVDO BC 1	Top side	0	0.903	0.03	0.842	1.775	Analyzed as below
		Bottom side	0	0.025	0.4	0.007	0.432	ΣSAR<1.6, Not required
		Left side	0	0.341	0.4	0.003	0.744	ΣSAR<1.6, Not required
		Right side	0	0.004	0.094	0.007	0.105	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
EVDO BC1	Top side	0.903	0.933	185.8	0.005	SPLSR<0.04,
ВТ	TOP SIDE	0.03	0.733	105.0	0.005	Not required

BT & WI AN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
BT	Top side	0.03	0.972	79	0.010	SPLSR<0.04,
WLAN Aux	Top side	0.842	0.872	19	0.010	Not required

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Conditions	Position	SAR Value	Coo	Coordinates (cm)			Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(W/kg)	(W/Kg)	Distance (mm)		SAR Test
EVDO BC 1	Top side	0.903	-0.99	-8.56	-0.46	1.745	89.7	0.026	SPLSR<0.04,	
WLAN Aux	Top side	0.842	-0.74	0.58	-0.73	1.745	07.7	0.020	Not required	
		wv	VAN	W		UX				

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## CDMA / EVDO BC10 + BT+ 2.4GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.55	0.094	0.111	0.755	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.635	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
42	EVDO BC 10	Top side	0	0.582	0.03	0.842	1.454	ΣSAR<1.6, Not required
		Bottom side	0	0.058	0.4	0.007	0.465	ΣSAR<1.6, Not required
		Left side	0	0.723	0.4	0.003	1.126	ΣSAR<1.6, Not required
		Right side	0	0.004	0.094	0.007	0.105	ΣSAR<1.6, Not required

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## GPRS 850 + BT+ 5GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.866	0.094	0.212	1.172	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.754	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
43	850	Top side	0	0.762	0.03	0.928	1.72	Analyzed as below
		Bottom side	0	0.013	0.4	0.007	0.42	ΣSAR<1.6, Not required
		Left side	0	1.038	0.4	0.006	1.444	ΣSAR<1.6, Not required
		Right side	0	0.002	0.094	0.029	0.125	ΣSAR<1.6, Not required

### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
GPRS 850	Top side	0.762	0.792	185.8	0.004	SPLSR<0.04,
BT	TOP SIDE	0.03	0.792	105.0	0.004	Not required

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03	0.958	79	0.012	SPLSR<0.04,
WLAN Aux		0.928	0.938	17	0.012	Not required

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Conditions	Position	SAR Value			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(00/kg)	Distance (mm)		SAR Test
GPRS 850	Top side	0.762	-0.84	-4.83	-0.70	1.69	58	0.038	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.09	50	0.030	Not required
		W	(EI) WAN		VLAN-	AUX			

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## GPRS 1900 + BT+ 5GHz WLAN Main

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.197	0.094	0.212	1.503	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.335	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
44	1900	Top side	0	1.144	0.03	0.928	2.102	Analyzed as below
		Bottom side	0	0.0145	0.4	0.007	0.4215	ΣSAR<1.6, Not required
		Left side	0	0.287	0.4	0.006	0.693	ΣSAR<1.6, Not required
		Right side	0	0.0012	0.094	0.029	0.1242	ΣSAR<1.6, Not required

### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
GPRS 1900	Top side	1.144	1.174	185.8	0.007	SPLSR<0.04,
ВТ	TOP SIDE	0.03	1.1/4	105.0	0.007	Not required

**BT & WLAN Aux** 

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03	0.958	79	0.012	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	0.936	19	0.012	Not required

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Conditions	Position	SAR Value	Coo	oordinates (cm) ΣSAR (W/kg)		Peak Location Separation	SPLSR	Simultaneous Transmission	
		(W/kg)	х	у	Z	(VV/K <u>G</u> )	Distance (mm)		SAR Test
GPRS 1900	Top side	1.144	-0.54	-8.59	0.45	2.072	96.4	0.031	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	2.072	70.4	0.031	Not required
				V	VLAN-	AUX			
		WWA							
T									

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## WCDMA Band II + BT+ 5GHz WLAN Main

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.962	0.094	0.212	1.268	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.16	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
45	WCDMA Band 2	Top side	0	1.033	0.03	0.928	1.991	Analyzed as below
		Bottom side	0	0.016	0.4	0.007	0.423	ΣSAR<1.6, Not required
		Left side	0	0.299	0.4	0.006	0.705	ΣSAR<1.6, Not required
		Right side	0	0.002	0.094	0.029	0.125	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
WCDMA B2	Top side	1.033	1.063	85.8	0.013	SPLSR<0.04,
ВТ		0.03	1.003	00.0	0.013	Not required

**BT & WLAN Aux** 

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Topido	0.03	0.958	79	0.012	SPLSR<0.04,
WLAN Aux	Top side	0.928	0.936	19	0.012	Not required

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Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(007Kg)	Distance (mm)		SAR Test
WCDMA B2	Top side	1.033	-1.00	-8.00	0.45	1.961	90.4	0.030	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.901	90.4	0.030	Not required
			N	v I	LAN-4	AUX			

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## WCDMA Band IV + BT+ 5GHz WLAN Main

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.999	0.094	0.212	1.305	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.131	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
46	WCDMA Band 4	Top side	0	1.049	0.03	0.928	2.007	Analyzed as below
		Bottom side	0	0.0235	0.4	0.007	0.4305	ΣSAR<1.6, Not required
		Left side	0	0.532	0.4	0.006	0.938	ΣSAR<1.6, Not required
		Right side	0	0.0042	0.094	0.029	0.1272	ΣSAR<1.6, Not required

### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
WCDMA B4	Top side	1.049	1.079	185.8	0.006	SPLSR<0.04,
BT	TOP SIDE	0.03	1.079	105.0	0.000	Not required

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03	0.958	79	0.012	SPLSR<0.04,
WLAN Aux		0.928	0.930	17	0.012	Not required

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Conditions	Position	SAR Value	Coordinates (cm)			ΣSAR	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	· (W/kg)	Distance (mm)		SAR Test
WCDMA B4	Top side	1.049	-0.84	-8.59	-0.50	1.977	95.6	0.029	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.777	73.0	0.027	Not required
		WWA	N		/LAN-/	AUX			

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## WCDMA Band V + BT+ 5GHz WLAN Main

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.407	0.094	0.212	0.713	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.402	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
47	WCDMA Band 5	Top side	0	0.391	0.03	0.928	1.349	Analyzed as below
		Bottom side	0	0.035	0.4	0.007	0.442	ΣSAR<1.6, Not required
		Left side	0	0.615	0.4	0.006	1.021	ΣSAR<1.6, Not required
		Right side	0	0.003	0.094	0.029	0.126	ΣSAR<1.6, Not required

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# LTE FDD Band II + BT+ 5GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.062	0.094	0.212	1.368	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.086	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
48	LTE Band 2	Top side	0	1.09	0.03	0.928	2.048	Analyzed as below
		Bottom side	0	0.041	0.4	0.007	0.448	ΣSAR<1.6, Not required
		Left side	0	0.281	0.4	0.006	0.687	ΣSAR<1.6, Not required
		Right side	0	0.027	0.094	0.029	0.15	ΣSAR<1.6, Not required

### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 2	Top side	1.09	1.12	185.8	0.006	SPLSR<0.04,
ВТ	TOP SIDE	0.03	1.12	105.0	0.000	Not required

**BT & WLAN Aux** 

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03	0.05.0		0.012	SPLSR<0.04,
WLAN Aux	Top side	0.928	0.958	79	0.012	Not required

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Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR · (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/Kg)	Distance (mm)		SAR Test
LTE Band 2	Top side	1.09	-1.30	-8.16	0.45	2.018	92	0.031	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	2.010	72	0.031	Not required
		ww	AN	V	VLAN	AUX			

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## LTE FDD Band IV + BT+ 5GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	-	Max. WLAN Main	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.193	0.094	0.212	1.499	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	1.154	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
49	LTE Band 4	Top side	0	1.069	0.03	0.928	2.027	Analyzed as below
		Bottom side	0	0.044	0.4	0.007	0.451	ΣSAR<1.6, Not required
		Left side	0	0.543	0.4	0.006	0.949	ΣSAR<1.6, Not required
		Right side	0	0.007	0.094	0.029	0.13	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test	
LTE Band 4	Top side	1.069	1.099	185.8	0.006	SPLSR<0.04,	
ВТ		0.03	1.099	105.0	0.000	Not required	

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
BT	Top side	0.03	0.958	79	0.012	SPLSR<0.04,
WLAN Aux		0.928	0.900	17	0.012	Not required

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Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/kg)	Distance (mm)		SAR Test
LTE Band 4	Top side	1.069	-1.35	-8.34	-0.48	1.997	93.1	0.030	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	1.777	75.1	0.030	Not required
		ww.		V	VLAN-	AUX			

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## LTE FDD Band V + BT+ 5GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.491	0.094	0.212	0.797	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.58	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
50	LTE Band 5	Top side	0	0.576	0.03	0.928	1.534	ΣSAR<1.6, Not required
		Bottom side	0	0.076	0.4	0.007	0.483	ΣSAR<1.6, Not required
		Left side	0	0.601	0.4	0.006	1.007	ΣSAR<1.6, Not required
		Right side	0	0.014	0.094	0.029	0.137	ΣSAR<1.6, Not required

## LTE FDD Band XIII + BT+ 5GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.468	0.094	0.212	0.774	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.486	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
51	LTE Band 13	Top side	0	0.549	0.03	0.928	1.507	ΣSAR<1.6, Not required
		Bottom side	0	0.093	0.4	0.007	0.5	ΣSAR<1.6, Not required
		Left side	0	0.837	0.4	0.006	1.243	ΣSAR<1.6, Not required
		Right side	0	0.01	0.094	0.029	0.133	ΣSAR<1.6, Not required

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### LTE FDD Band XVII + BT+ 5GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.264	0.094	0.212	0.57	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.296	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
52	LTE Band 17	Top side	0	0.223	0.03	0.928	1.181	ΣSAR<1.6, Not required
		Bottom side	0	0.009	0.4	0.007	0.416	ΣSAR<1.6, Not required
		Left side	0	0.438	0.4	0.006	0.844	ΣSAR<1.6, Not required
		Right side	0	0.005	0.094	0.029	0.128	ΣSAR<1.6, Not required

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## LTE FDD Band XXV+ BT+ 5GHz WLAN Aux

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.151	0.094	0.212	1.457	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.979	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
53	LTE Band 25	Top side	0	1.136	0.03	0.928	2.094	ΣSAR<1.6, Not required
		Bottom side	0	0.026	0.4	0.007	0.433	ΣSAR<1.6, Not required
		Left side	0	0.375	0.4	0.006	0.781	ΣSAR<1.6, Not required
		Right side	0	0.007	0.094	0.029	0.13	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
LTE Band 25	Top side	1.159	1.189	185.8	0.007	SPLSR<0.04,
ВТ		0.03	1.107	0.001	0.007	Not required

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Top side	0.03	0.958	79	0.012	SPLSR<0.04,
WLAN Aux	TOP SIDE	0.928	0.936	19	0.012	Not required

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Conditions	Position	SAR Value	Coo	rdinates	(cm)	ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	У	Z	(00/Kg)	Distance (mm)		SAR Test
LTE Band 25	Top side	1.159	-1.14	-8.47	0.51	2.087	95.1	0.032	SPLSR<0.04,
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76	2.007	73.1	0.032	Not required
			1	V	VLAN-	AUX			
F		WWA	IN						/

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## CDMA / EVDO BC0 + BT+ 5GHz WLAN Main

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	0.54	0.094	0.212	0.846	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.618	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
54	EVDO BC 0	Top side	0	0.658	0.03	0.928	1.616	ΣSAR<1.6, Not required
		Bottom side	0	0.07	0.4	0.007	0.477	ΣSAR<1.6, Not required
		Left side	0	0.771	0.4	0.006	1.177	ΣSAR<1.6, Not required
		Right side	0	0.007	0.094	0.029	0.13	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
EVDO BC 0	Top side	0.658	0.688	185.8	0.003	SPLSR<0.04,
ВТ	Top Side	0.03	0.000	105.0	0.003	Not required

BT & WLAN Aux

Conditions	Position	Position SAR Value (W/kg) (W/k		Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Topido	0.03	0.958	79	0.012	SPLSR<0.04,
WLAN Aux	Top side	0.928	0.930		0.012	Not required

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Conditions Position		SAR Value	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(007Kg)	Distance (mm)		SAR Test
EVDO BC 0	Top side	0.658	-1.15	-5.29	-0.68	1.586	62.5	0.032	SPLSR<0.04, Not required
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76				
		ww	AN			I-AUX			

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## CDMA / EVDO BC1 + BT+ 5GHz WLAN Main

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
		Back side	0	1.008	0.094	0.212	1.314	ΣSAR<1.6, Not required
	55 EVDO BC 1	Back side_Curve(Left)	0	0.973	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
55		Top side	0	0.903	0.03	0.928	1.861	ΣSAR<1.6, Not required
		Bottom side		0.025	0.4	0.007	0.432	ΣSAR<1.6, Not required
		Left side	0	0.341	0.4	0.006	0.747	ΣSAR<1.6, Not required
		Right side	0	0.004	0.094	0.029	0.127	ΣSAR<1.6, Not required

#### WWAN & BT

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test	
EVDO BC 1	Topido	0.903	0.933	185.8	0.005	SPLSR<0.04,	
ВТ	Top side	0.03	0.933	100.0	0.005	Not required	

BT & WLAN Aux

Conditions	Position	SAR Value (W/kg)	ΣSAR (W/kg)	Peak Location Separation Distance (mm)	SPLSR	Simultaneous Transmission SAR Test
ВТ	Topido	0.03	0.958	79	0.012	SPLSR<0.04,
WLAN Aux	Top side	0.928	0.936			Not required

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Conditions Position		SAR Value	Coordinates (cm)			ΣSAR (W/kg)	Peak Location Separation	SPLSR	Simultaneous Transmission
		(W/kg)	х	у	Z	(00/Kg)	Distance (mm)		SAR Test
EVDO BC 1	Top side	0.903	-0.99	-8.56	-0.46	1.831	95.2	0.026	SPLSR<0.04, Not required
WLAN Aux	Top side	0.928	-1.08	0.96	-0.76				
	0.928 -1.08 0.96 -0.76					AUX			

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#### CDMA / EVDO BC10 + BT+ 5GHz WLAN Main

No.	Conditions	Position	Distance (mm)	Max. WWAN	BT	Max. WLAN Aux	SAR Sum	SPLSR
56	EVDO BC 10	Back side	0	0.55	0.094	0.212	0.856	ΣSAR<1.6, Not required
		Back side_Curve(Left)	0	0.635	-	-	-	ΣSAR<1.6, Not required
		Back side_Curve(Right)	0	-	0.094	-	-	ΣSAR<1.6, Not required
		Top side	0	0.582	0.03	0.928	1.54	ΣSAR<1.6, Not required
		Bottom side	0	0.058	0.4	0.007	0.465	ΣSAR<1.6, Not required
		Left side	0	0.723	0.4	0.006	1.129	ΣSAR<1.6, Not required
		Right side	0	0.004	0.094	0.029	0.127	ΣSAR<1.6, Not required

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## 4. Instruments List

Manufacturer	Device	Туре	Serial number	Date of last calibration	Date of next calibration
Schmid & Partner Engineering AG	Dosimetric E-Field Probe	EX3DV4	3770	Apr.28,2015	Apr.27,2016
		D750V2	1015	Aug.28,2014	Aug.27,2015
		D835V2	4d063	Aug.28,2014	Aug.27,2015
Schmid & Partner	System Validation Dipole	D1750V2	1008	Aug.28,2014	Aug.27,2015
Engineering AG		D1900V2	5d027	Apr.29,2015	Apr.28,2016
		D2450V2	727	Apr.22,2015	Apr.21,2016
		D5GHzV2	1023	Jan.29,2015	Jan.28,2016
Schmid & Partner Engineering AG	Data acquisition Electronics	DAE4	856	Aug.27,2015	Aug.26,2016
Schmid & Partner Engineering AG	Software	DASY 52 V52.8.8	N/A	Calibration not required	Calibration not required
Schmid & Partner Engineering AG	Phantom	SAM	N/A	Calibration not required	Calibration not required
HP	Network Analyzer	8753D	3410A05547	May.21,2015	May.20,2016
Agilent	Dielectric Probe Kit	85070E	MY44300677	Calibration not required	Calibration not required
Agilopt	Dual-directional	777D	50114	Aug.07,2014	Aug.06,2015
Agilent	coupler	778D	50313	Aug.07,2014	Aug.06,2015
Agilent	RF Signal Generator	N5181A	MY50145142	Feb.06.2015	Feb.05.2016
Agilent	Power Meter	E4417A	MY51410006	Oct.25,2013	Oct.24,2015
Agilent	Power Sensor	E9301H	MY51470001	Dec.11,2014	Dec.10,2015
TECPEL	Digital thermometer	DTM-303A	TP130078	Mar.30,2015	Mar.29,2016
R&S	Radio Communication Test	CMU200	122498	Aug.14,2014	Aug.13,2015
Anritsu	Radio Communication Test	MT8820C	6201061014	Aug.06,2014	Aug.05,2015

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## 5. Measurements

Date: 2015/6/16

### GPRS 850\_Body-worn\_Left side\_CH 251

Communication System: GPRS (1Dn2Up); Frequency: 848.8 MHz Medium parameters used: f = 849 MHz;  $\sigma$  = 1.026 S/m;  $\epsilon_r$  = 56.515;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

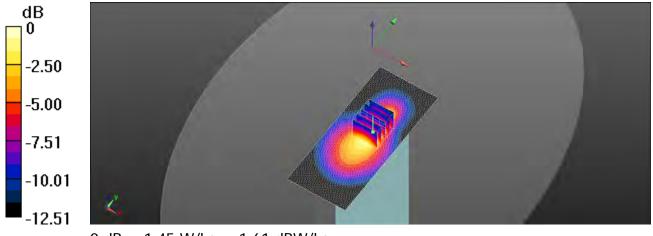
- Probe: EX3DV4 SN3770; ConvF(9.17, 9.17, 9.17); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

# **Configuration/Body/Area Scan (51x121x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.42 W/kg

## Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 29.58 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 1.75 W/kg SAR(1 g) = 0.991 W/kg; SAR(10 g) = 0.626 W/kg Maximum value of SAR (measured) = 1.45 W/kg



0 dB = 1.45 W/kg = 1.61 dBW/kg

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Date: 2015/6/18

#### GPRS 1900\_Body-worn\_Back(Curve)\_CH 512

Communication System: GPRS (1Dn2Up); Frequency: 1850.2 MHz Medium parameters used: f = 1850.2 MHz;  $\sigma$  = 1.45 S/m;  $\epsilon_r$  = 53.753;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

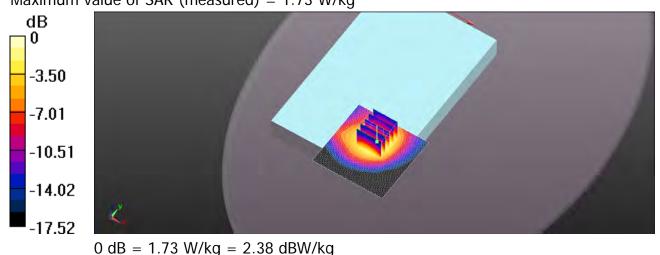
- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x61x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.79 W/kg

#### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 4.512 V/m; Power Drift = 0.17 dB Peak SAR (extrapolated) = 2.20 W/kg SAR(1 g) = 1.26 W/kg; SAR(10 g) = 0.698 W/kg Maximum value of SAR (measured) = 1.73 W/kg



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#### WCDMA Band 2\_Body-worn\_Back(Curve)\_CH 9262

Communication System: WCDMA; Frequency: 1852.4 MHz

Medium parameters used: f = 1852.4 MHz;  $\sigma$  = 1.454 S/m;  $\epsilon_r$  = 53.75;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

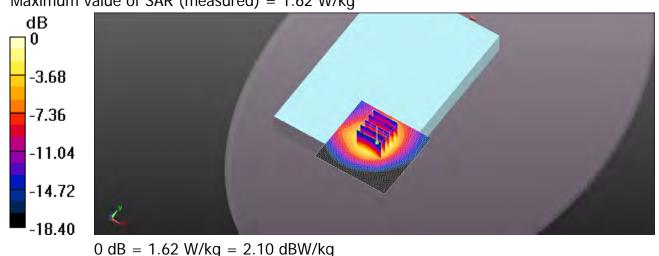
- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x61x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.61 W/kg

#### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 4.542 V/m; Power Drift = 0.00 dB Peak SAR (extrapolated) = 2.04 W/kg SAR(1 g) = 1.16 W/kg; SAR(10 g) = 0.639 W/kg Maximum value of SAR (measured) = 1.62 W/kg



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### WCDMA Band 4\_Body-worn\_Back(Curve)\_CH 1513

Communication System: WCDMA; Frequency: 1752.6 MHz Medium parameters used: f = 1753 MHz;  $\sigma$  = 1.446 S/m;  $\epsilon_r$  = 52.808;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

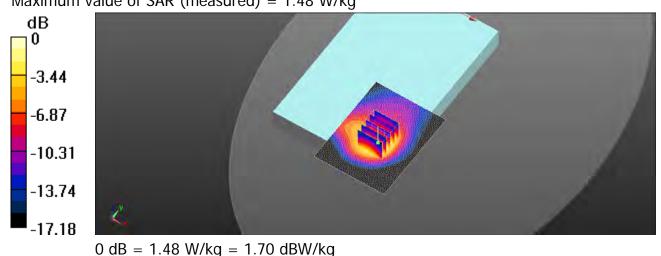
- Probe: EX3DV4 SN3770; ConvF(7.79, 7.79, 7.79); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x81x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.50 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 4.935 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 1.86 W/kg SAR(1 g) = 1.07 W/kg; SAR(10 g) = 0.585 W/kg Maximum value of SAR (measured) = 1.48 W/kg



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### WCDMA Band 5\_Body-worn\_Left side\_CH 4183

Communication System: WCDMA; Frequency: 836.6 MHz Medium parameters used: f = 837 MHz;  $\sigma$  = 1.014 S/m;  $\epsilon_r$  = 56.669;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

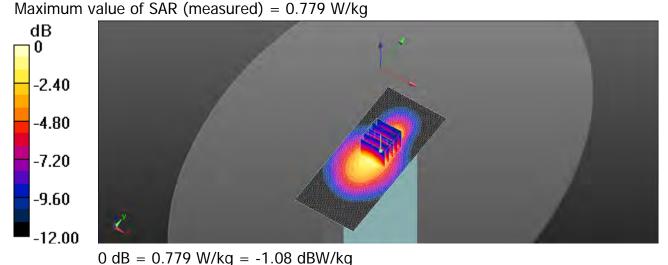
- Probe: EX3DV4 SN3770; ConvF(9.17, 9.17, 9.17); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (51x121x1):** Interpolated grid: dx=15mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.718 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 20.85 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 0.932 W/kg SAR(1 g) = 0.565 W/kg; SAR(10 g) = 0.356 W/kg Maximum value of SAD (measured) = 0.770 W/kg



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## LTE Band 2\_Body-worn\_Back(Curve)\_CH 18700\_20M\_100-0

Communication System: LTE; Frequency: 1860 MHz

Medium parameters used: f = 1860 MHz;  $\sigma$  = 1.459 S/m;  $\epsilon_r$  = 53.718;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

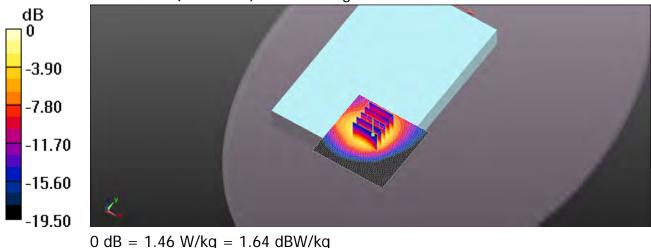
# **Configuration/Body/Area Scan (61x61x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.44 W/kg

## Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 4.320 V/m; Power Drift = 0.16 dB Peak SAR (extrapolated) = 1.84 W/kg SAR(1 g) = 1.03 W/kg; SAR(10 g) = 0.569 W/kg

Maximum value of SAR (measured) = 1.46 W/kg



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### LTE Band 4\_Body-worn\_Back\_CH 20175\_20M\_1-0

Communication System: LTE; Frequency: 1732.5 MHz

Medium parameters used: f = 1732.5 MHz;  $\sigma$  = 1.425 S/m;  $\epsilon_r$  = 52.831;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

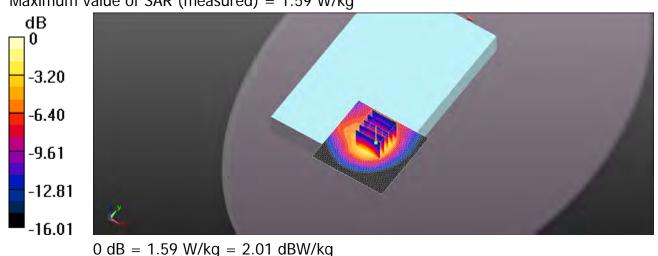
- Probe: EX3DV4 SN3770; ConvF(7.79, 7.79, 7.79); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x61x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.43 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 5.429 V/m; Power Drift = 0.19 dB Peak SAR (extrapolated) = 1.95 W/kg SAR(1 g) = 1.15 W/kg; SAR(10 g) = 0.625 W/kg Maximum value of SAR (measured) = 1.59 W/kg



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### LTE Band 5\_Body-worn\_Left side\_CH 20600\_10M\_1-49

Communication System: LTE; Frequency: 844 MHz

Medium parameters used: f = 844 MHz;  $\sigma$  = 1.02 S/m;  $\epsilon_r$  = 56.606;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

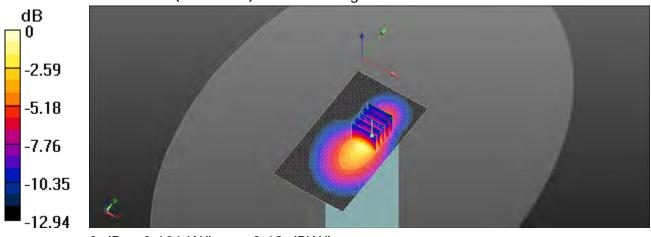
- Probe: EX3DV4 SN3770; ConvF(9.17, 9.17, 9.17); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x111x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.596 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 18.01 V/m; Power Drift = 0.10 dB Peak SAR (extrapolated) = 0.741 W/kg SAR(1 g) = 0.432 W/kg; SAR(10 g) = 0.255 W/kg Maximum value of SAR (measured) = 0.606 W/kg



0 dB = 0.606 W/kg = -2.18 dBW/kg

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### LTE Band 13\_Body-worn\_Left side\_CH 23230\_10M\_1-25

Communication System: LTE; Frequency: 782 MHz

Medium parameters used: f = 782 MHz;  $\sigma$  = 1.005 S/m;  $\epsilon$ r = 53.042;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

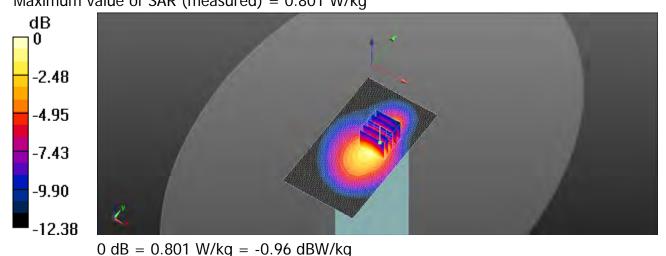
- Probe: EX3DV4 SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x111x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.803 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 20.82 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 0.954 W/kg SAR(1 g) = 0.594 W/kg; SAR(10 g) = 0.372 W/kg Maximum value of SAR (measured) = 0.801 W/kg



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### LTE Band 17\_Body-worn\_Left side\_CH 23800\_10M\_1-25

Communication System: LTE; Frequency: 711 MHz

Medium parameters used: f = 711 MHz;  $\sigma$  = 0.974 S/m;  $\epsilon$ r = 53.797;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

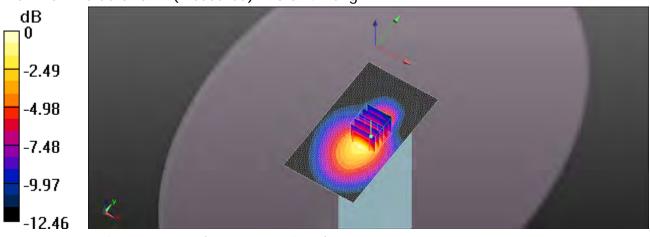
- Probe: EX3DV4 SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x111x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 0.537 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 19.47 V/m; Power Drift = 0.16 dB Peak SAR (extrapolated) = 0.719 W/kg SAR(1 g) = 0.397 W/kg; SAR(10 g) = 0.252 W/kg Maximum value of SAR (measured) = 0.594 W/kg



0 dB = 0.594 W/kg = -2.26 dBW/kg

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### LET Band 25\_Body-worn\_Top side\_CH 26590\_20M\_50-50

Communication System: LTE; Frequency: 1905 MHz

Medium parameters used: f = 1905 MHz;  $\sigma$  = 1.508 S/m;  $\epsilon_r$  = 53.572;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

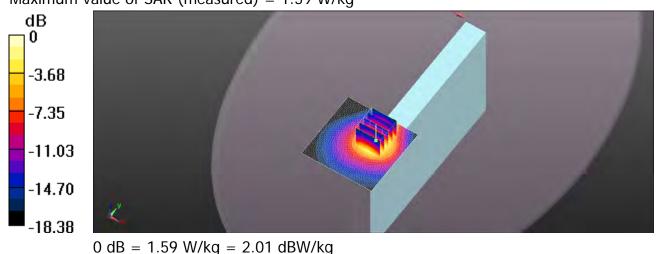
- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x61x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.60 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 7.854 V/m; Power Drift = 0.10 dB Peak SAR (extrapolated) = 2.07 W/kg SAR(1 g) = 1.14 W/kg; SAR(10 g) = 0.604 W/kg Maximum value of SAR (measured) = 1.59 W/kg



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### EVDO BC0\_Body-worn\_Left side\_CH 384

Communication System: 1xEvDO; Frequency: 836.52 MHz Medium parameters used: f = 837 MHz;  $\sigma$  = 1.014 S/m;  $\epsilon_r$  = 56.669;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

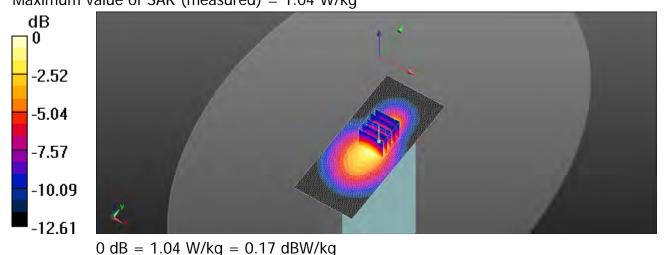
- Probe: EX3DV4 SN3770; ConvF(9.17, 9.17, 9.17); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (51x121x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.02 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 25.75 V/m; Power Drift = -0.09 dB Peak SAR (extrapolated) = 1.26 W/kg SAR(1 g) = 0.73 W/kg; SAR(10 g) = 0.44 W/kg Maximum value of SAR (measured) = 1.04 W/kg



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### EVDO BC1\_Body-worn\_Back\_CH 1175

Communication System: 1xEvDO; Frequency: 1908.75 MHz Medium parameters used: f = 1909 MHz;  $\sigma$  = 1.513 S/m;  $\epsilon_r$  = 53.621;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

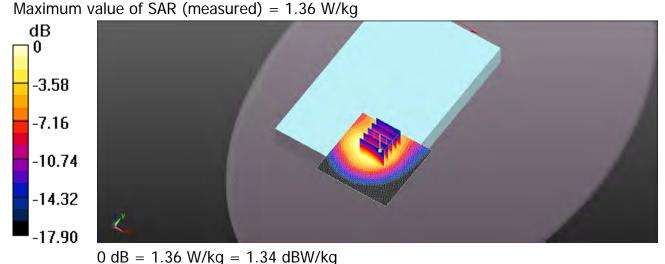
- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (61x61x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.37 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 4.984 V/m; Power Drift = 0.11 dB Peak SAR (extrapolated) = 1.75 W/kg SAR(1 g) = 1 W/kg; SAR(10 g) = 0.563 W/kg



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### EVDO BC10\_Body-worn\_Left side\_CH 684

Communication System: 1xEvDO; Frequency: 823.1 MHz Medium parameters used: f = 823.1 MHz;  $\sigma$  = 0.999 S/m;  $\epsilon_r$  = 56.773;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(9.17, 9.17, 9.17); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

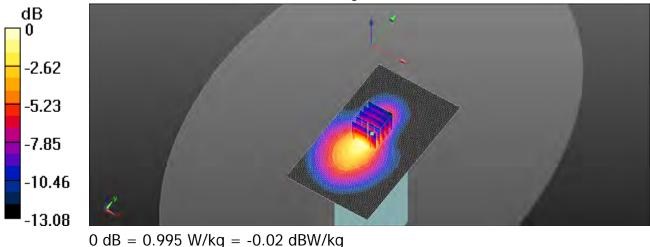
## **Configuration/Body/Area Scan (71x121x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 1.01 W/kg

### Configuration/Body/Zoom Scan (5x5x7)/Cube 0: Measurement grid:

dx=8mm, dy=8mm, dz=5mm Reference Value = 28.67 V/m; Power Drift = -0.10 dB Peak SAR (extrapolated) = 1.20 W/kg SAR(1 g) = 0.668 W/kg; SAR(10 g) = 0.412 W/kg

Maximum value of SAR (measured) = 0.995 W/kg



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### WLAN802.11 b 2.4G\_Body\_Right side\_CH 1\_Main

Communication System: WLAN 2.45G; Frequency: 2412 MHz Medium parameters used: f = 2412 MHz;  $\sigma$  = 1.992 S/m;  $\epsilon_r$  = 51.436;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(7.21, 7.21, 7.21); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

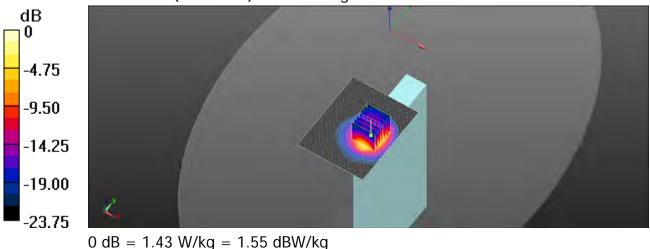
## **Configuration/Body/Area Scan (71x91x1):** Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.58 W/kg

### Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 6.773 V/m; Power Drift = 0.15 dB Peak SAR (extrapolated) = 1.97 W/kg SAR(1 g) = 0.915 W/kg; SAR(10 g) = 0.394 W/kg

Maximum value of SAR (measured) = 1.43 W/kg



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#### WLAN802.11 a 5.2G\_Body\_Right side\_CH 40\_Main

Communication System: WLAN 5G; Frequency: 5200 MHz Medium parameters used: f = 5200 MHz;  $\sigma$  = 5.462 S/m;  $\epsilon_r$  = 47.93;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

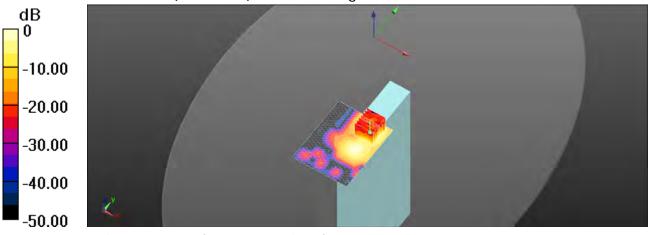
## **Configuration/Body/Area Scan (71x91x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.708 W/kg

#### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 11.54 V/m; Power Drift = -0.19 dB Peak SAR (extrapolated) = 1.55 W/kg SAR(1 g) = 0.383 W/kg; SAR(10 g) = 0.116 W/kg

Maximum value of SAR (measured) = 0.761 W/kg



0 dB = 0.761 W/kg = -1.19 dBW/kg

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### WLAN802.11 n(40M) 5.2G\_Body\_Right side\_CH 46\_Main

Communication System: WLAN 5G; Frequency: 5230 MHz

Medium parameters used: f = 5230 MHz;  $\sigma$  = 5.507 S/m;  $\epsilon_r$  = 47.832;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

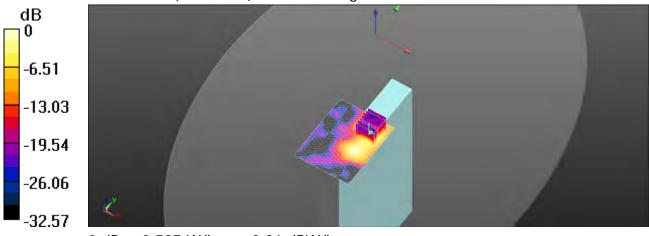
## **Configuration/Body/Area Scan (71x91x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.593 W/kg

#### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 9.846 V/m; Power Drift = -0.12 dB Peak SAR (extrapolated) = 1.29 W/kg SAR(1 g) = 0.303 W/kg; SAR(10 g) = 0.090 W/kg

Maximum value of SAR (measured) = 0.587 W/kg



0 dB = 0.587 W/kg = -2.31 dBW/kg

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## WLAN802.11 n(20M) 5.3G\_Body\_Right side\_CH 60\_Main

Communication System: WLAN 5G; Frequency: 5300 MHz Medium parameters used: f = 5300 MHz;  $\sigma$  = 5.609 S/m;  $\epsilon_r$  = 47.56;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

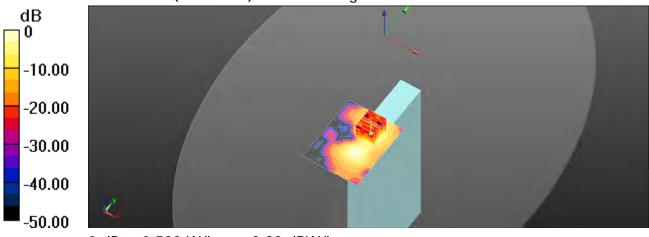
## **Configuration/Body/Area Scan (71x91x1):** Interpolated grid: dx=10 mm, dy=10 mm

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

### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mmReference Value = 4.687 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 1.07 W/kg SAR(1 g) = 0.261 W/kg; SAR(10 g) = 0.078 W/kg.

Maximum value of SAR (measured) = 0.522 W/kg



0 dB = 0.522 W/kg = -2.82 dBW/kg

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### WLAN802.11 n(40M) 5.3G\_Body\_Right side\_CH 54\_Main

Communication System: WLAN 5G; Frequency: 5270 MHz

Medium parameters used: f = 5270 MHz;  $\sigma$  = 5.567 S/m;  $\epsilon_r$  = 47.696;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

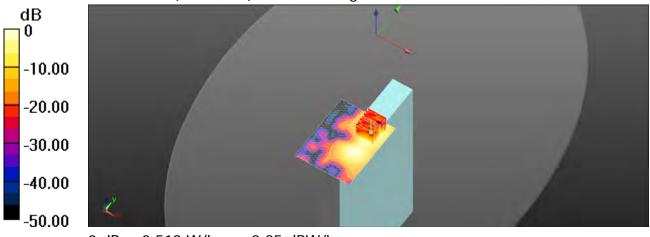
## **Configuration/Body/Area Scan (71x91x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.534 W/kg

### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 8.546 V/m; Power Drift = 0.04 dB Peak SAR (extrapolated) = 1.12 W/kg SAR(1 g) = 0.270 W/kg; SAR(10 g) = 0.082 W/kg

Maximum value of SAR (measured) = 0.519 W/kg



0 dB = 0.519 W/kg = -2.85 dBW/kg

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### WLAN802.11 n(20M) 5.6G\_Body\_Right side\_CH 104\_Main

Communication System: WLAN 5G; Frequency: 5520 MHz Medium parameters used: f = 5520 MHz;  $\sigma$  = 5.91 S/m;  $\epsilon_r$  = 46.795;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.03, 4.03, 4.03); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

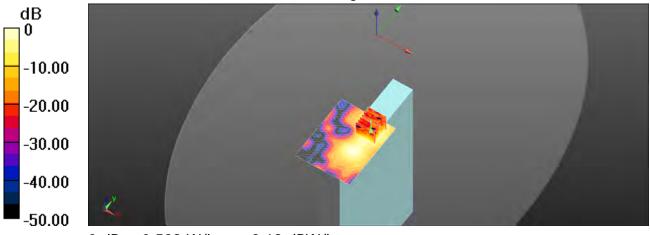
## **Configuration/Body/Area Scan (71x91x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.549 W/kg

### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 8.736 V/m; Power Drift = 0.16 dB Peak SAR (extrapolated) = 1.12 W/kg SAR(1 g) = 0.276 W/kg; SAR(10 g) = 0.085 W/kg

Maximum value of SAR (measured) = 0.539 W/kg



0 dB = 0.539 W/kg = -2.68 dBW/kg

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### WLAN802.11 n(20M) 5.6G\_Body\_Right side\_CH 120\_Main

Communication System: WLAN 5G; Frequency: 5600 MHz Medium parameters used: f = 5600 MHz;  $\sigma$  = 6.004 S/m;  $\epsilon_r$  = 46.575;  $\rho$  = 1000 kg/m<sup>3</sup>

Phantom section: Flat Section

**DASY5** Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.03, 4.03, 4.03); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

#### Configuration/Body/Area Scan (71x91x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.598 W/kg

### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mmReference Value = 5.764 V/m; Power Drift = 0.15 dBPeak SAR (extrapolated) = 1.39 W/kg

SAR(1 q) = 0.313 W/kq; SAR(10 q) = 0.098 W/kq.

Maximum value of SAR (measured) = 0.632 W/kg

#### Configuration/Body/Zoom Scan (7x7x12)/Cube 1: Measurement grid:

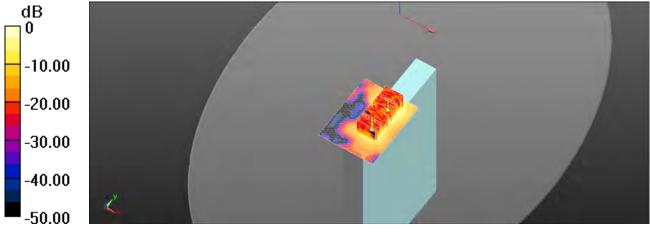
dx=4mm, dy=4mm, dz=2mm

Reference Value = 5.764 V/m; Power Drift = 0.15 dB

Peak SAR (extrapolated) = 1.19 W/kg

SAR(1 g) = 0.251 W/kg; SAR(10 g) = 0.065 W/kg

Maximum value of SAR (measured) = 0.546 W/kg



0 dB = 0.546 W/kg = -2.63 dBW/kg

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### WLAN802.11 n(20M) 5.6G\_Body\_Right side\_CH 140\_Main

Communication System: WLAN 5G; Frequency: 5700 MHz Medium parameters used: f = 5700 MHz;  $\sigma$  = 6.037 S/m;  $\epsilon_r$  = 46.301;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.03, 4.03, 4.03); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

## **Configuration/Body/Area Scan (71x91x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 0.624 W/kg

### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mmReference Value = 6.024 V/m; Power Drift = 0.16 dB Peak SAR (extrapolated) = 1.41 W/kg

## SAR(1 g) = 0.324 W/kg; SAR(10 g) = 0.102 W/kg

Maximum value of SAR (measured) = 0.655 W/kg

#### Configuration/Body/Zoom Scan (7x7x12)/Cube 1: Measurement grid:

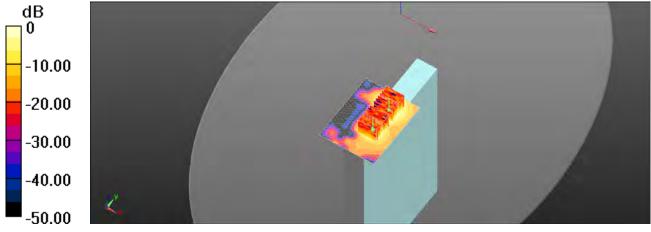
dx=4mm, dy=4mm, dz=2mm

Reference Value = 6.024 V/m; Power Drift = 0.16 dB

Peak SAR (extrapolated) = 1.31 W/kg

SAR(1 g) = 0.263 W/kg; SAR(10 g) = 0.069 W/kg

Maximum value of SAR (measured) = 0.565 W/kg



0 dB = 0.565 W/kg = -2.48 dBW/kg

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### WLAN802.11 n(40M) 5.8G\_Body\_Right side\_CH 159\_Main

Communication System: WLAN 5G; Frequency: 5795 MHz

Medium parameters used: f = 5795 MHz;  $\sigma$  = 6.208 S/m;  $\epsilon_r$  = 46.024;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.33, 4.33, 4.33); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

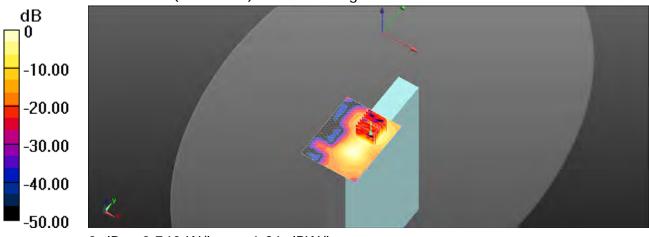
## **Configuration/Body/Area Scan (71x91x1):** Interpolated grid: dx=10 mm, dy=10 mm.

Maximum value of SAR (interpolated) = 0.733 W/kg

### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 6.559 V/m; Power Drift = 0.09 dB Peak SAR (extrapolated) = 1.58 W/kg SAR(1 g) = 0.349 W/kg; SAR(10 g) = 0.099 W/kg

Maximum value of SAR (measured) = 0.740 W/kg



0 dB = 0.740 W/kg = -1.31 dBW/kg

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### WLAN802.11 b 2.4G\_Body\_Top side\_CH 6\_Aux

Communication System: WLAN 2.45G; Frequency: 2437 MHz Medium parameters used: f = 2437 MHz;  $\sigma$  = 2.019 S/m;  $\epsilon_r$  = 51.353;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(7.21, 7.21, 7.21); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

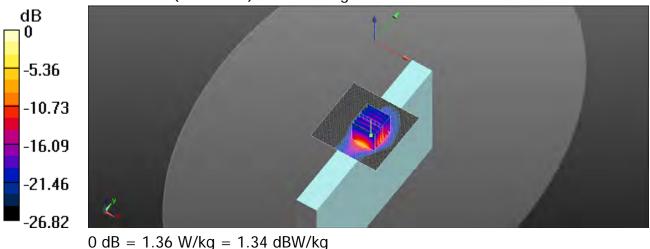
## **Configuration/Body/Area Scan (71x71x1):** Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 1.60 W/kg

### Configuration/Body/Zoom Scan (7x7x7)/Cube 0: Measurement grid:

dx=5mm, dy=5mm, dz=5mm Reference Value = 23.52 V/m; Power Drift = 0.14 dB Peak SAR (extrapolated) = 2.20 W/kg SAR(1 g) = 0.830 W/kg; SAR(10 g) = 0.315 W/kg

Maximum value of SAR (measured) = 1.36 W/kg



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#### WLAN802.11 a 5.2G\_Body\_Top side\_CH 36\_Aux

Communication System: WLAN 5G; Frequency: 5180 MHz Medium parameters used: f = 5180 MHz;  $\sigma$  = 5.424 S/m;  $\epsilon_r$  = 48.079;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

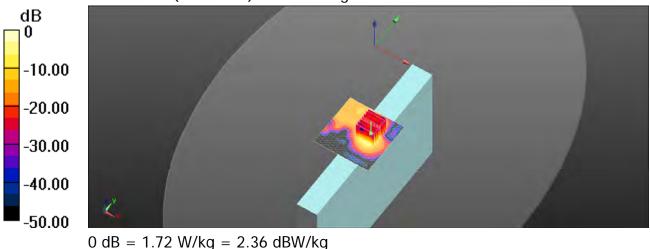
## **Configuration/Body/Area Scan (71x71x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.53 W/kg

#### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 7.653 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 4.05 W/kg SAR(1 g) = 0.792 W/kg; SAR(10 g) = 0.197 W/kg

Maximum value of SAR (measured) = 1.72 W/kg



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#### WLAN802.11 n(40M) 5.2G\_Body\_Top side\_CH 46\_Aux

Communication System: WLAN 5G; Frequency: 5230 MHz Medium parameters used: f = 5230 MHz;  $\sigma$  = 5.507 S/m;  $\epsilon_r$  = 47.832;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

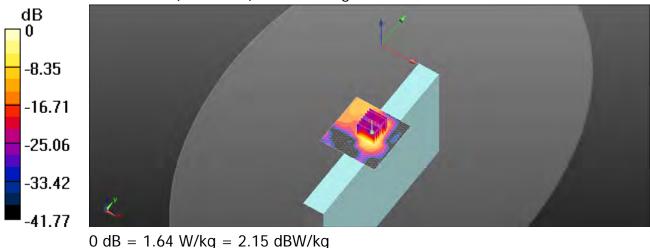
## **Configuration/Body/Area Scan (71x71x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.62 W/kg

#### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 4.568 V/m; Power Drift = 0.17 dB Peak SAR (extrapolated) = 4.17 W/kg SAR(1 g) = 0.775 W/kg; SAR(10 g) = 0.194 W/kg

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



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### WLAN802.11 n(20M) 5.3G\_Body\_Top side\_CH 60\_Aux

Communication System: WLAN 5G; Frequency: 5300 MHz Medium parameters used: f = 5300 MHz;  $\sigma$  = 5.609 S/m;  $\epsilon_r$  = 47.56;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

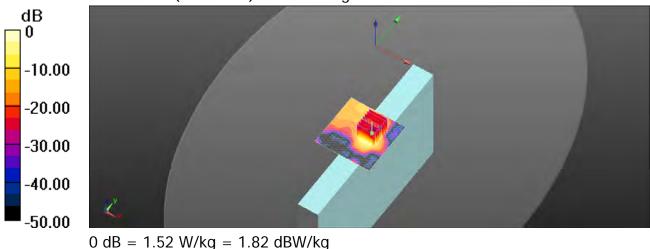
## **Configuration/Body/Area Scan (71x71x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.40 W/kg

### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 6.878 V/m; Power Drift = 0.10 dB Peak SAR (extrapolated) = 3.68 W/kg SAR(1 g) = 0.690 W/kg; SAR(10 g) = 0.177 W/kg

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



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### WLAN802.11 n(40M) 5.3G\_Body\_Top side\_CH 54\_Aux

Communication System: WLAN 5G; Frequency: 5270 MHz Medium parameters used: f = 5270 MHz;  $\sigma$  = 5.567 S/m;  $\epsilon_r$  = 47.696;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

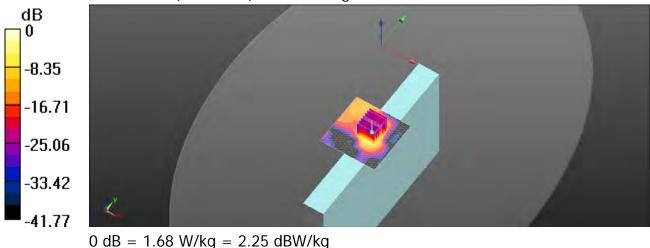
## **Configuration/Body/Area Scan (71x71x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.65 W/kg

### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 4.598 V/m; Power Drift = 0.17 dB Peak SAR (extrapolated) = 4.27 W/kg SAR(1 g) = 0.793 W/kg; SAR(10 g) = 0.199 W/kg

Maximum value of SAR (measured) = 1.68 W/kg



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### WLAN802.11 n(20M) 5.6G\_Body\_Top side\_CH 120\_Aux

Communication System: WLAN 5G; Frequency: 5600 MHz Medium parameters used: f = 5600 MHz;  $\sigma$  = 6.004 S/m;  $\epsilon_r$  = 46.575;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.03, 4.03, 4.03); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

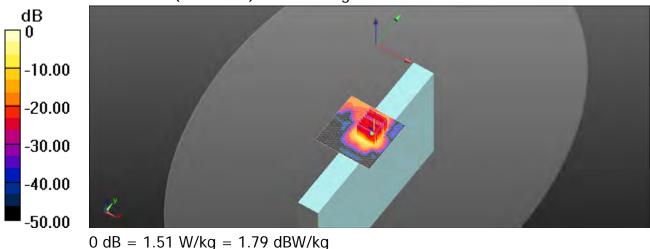
## **Configuration/Body/Area Scan (71x71x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.28 W/kg

#### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mmReference Value = 5.503 V/m; Power Drift = 0.10 dB Peak SAR (extrapolated) = 4.00 W/kg SAR(1 g) = 0.654 W/kg; SAR(10 g) = 0.149 W/kg

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



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### WLAN802.11 n(40M) 5.8G\_Body\_Top side\_CH 159\_Aux

Communication System: WLAN 5G; Frequency: 5795 MHz

Medium parameters used: f = 5795 MHz;  $\sigma$  = 6.208 S/m;  $\epsilon_r$  = 46.024;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

- Probe: EX3DV4 SN3770; ConvF(4.33, 4.33, 4.33); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

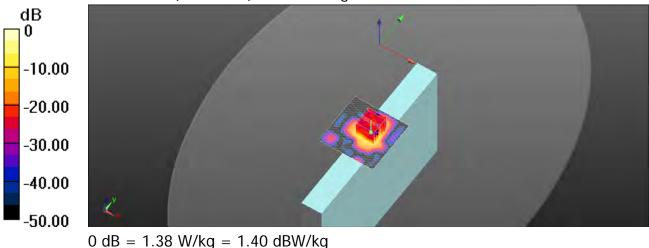
## **Configuration/Body/Area Scan (71x71x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 1.33 W/kg

#### Configuration/Body/Zoom Scan (7x7x12)/Cube 0: Measurement grid:

dx=4mm, dy=4mm, dz=2mm Reference Value = 3.611 V/m; Power Drift = 0.12 dB Peak SAR (extrapolated) = 3.61 W/kg SAR(1 g) = 0.586 W/kg; SAR(10 g) = 0.126 W/kg

Maximum value of SAR (measured) = 1.38 W/kg



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## 6. SAR System Performance Verification

Date: 2015/6/15

## Dipole 750 MHz\_SN:1015\_Body

Communication System: CW; Frequency: 750 MHz

Medium parameters used: f = 750 MHz;  $\sigma$  = 0.981 S/m;  $\epsilon_r$  = 52.393;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

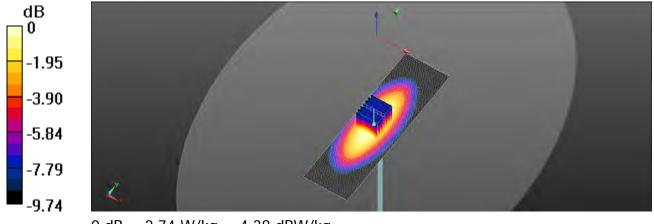
- Probe: EX3DV4 SN3770; ConvF(9.3, 9.3, 9.3); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=250mW/Area Scan (41x141x1): Interpolated grid:

dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 2.69 W/kg

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

grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 52.19 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 3.17 W/kg SAR(1 g) = 2.18 W/kg; SAR(10 g) = 1.46 W/kg Maximum value of SAR (measured) = 2.74 W/kg



0 dB = 2.74 W/kg = 4.38 dBW/kg

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## Dipole 835 MHz\_SN:4d063\_Body

Communication System: CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz;  $\sigma$  = 1.01 S/m;  $\epsilon_r$  = 56.648;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

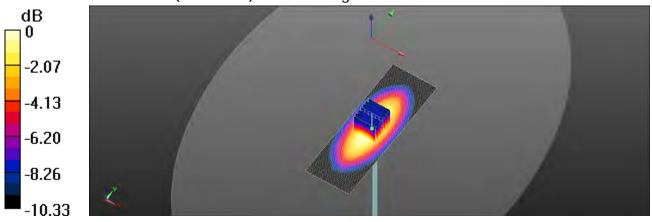
- Probe: EX3DV4 SN3770; ConvF(9.17, 9.17, 9.17); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

#### Configuration/Pin=250mW/Area Scan (41x121x1): Interpolated grid:

dx=15 mm, dy=15 mm Maximum value of SAR (interpolated) = 3.10 W/kg

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

grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 56.93 V/m; Power Drift = -0.11 dB Peak SAR (extrapolated) = 3.58 W/kg SAR(1 g) = 2.42 W/kg; SAR(10 g) = 1.59 W/kg Maximum value of SAR (measured) = 3.06 W/kg



0 dB = 3.06 W/kg = 4.86 dBW/kg

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### Dipole 1750 MHz\_SN:1008\_Body

Communication System: CW; Frequency: 1750 MHz Medium parameters used: f = 1750 MHz;  $\sigma$  = 1.442 S/m;  $\epsilon_r$  = 52.821;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

#### DASY5 Configuration:

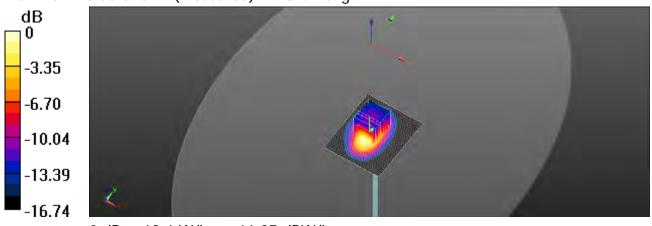
- Probe: EX3DV4 SN3770; ConvF(7.79, 7.79, 7.79); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

# **Configuration/Pin=250mW/Area Scan (41x71x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 14.0 W/kg

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

grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 97.78 V/m; Power Drift = -0.00 dB Peak SAR (extrapolated) = 16.7 W/kg SAR(1 g) = 9.43 W/kg; SAR(10 g) = 5.02 W/kg Maximum value of SAR (measured) = 13.4 W/kg



0 dB = 13.4 W/kg = 11.27 dBW/kg

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### Dipole 1900 MHz\_SN:5d027\_Body

Communication System: CW; Frequency: 1900 MHz Medium parameters used: f = 1900 MHz;  $\sigma$  = 1.501 S/m;  $\epsilon_r$  = 53.595;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

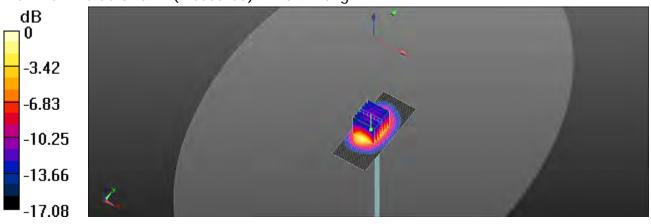
- Probe: EX3DV4 SN3770; ConvF(7.59, 7.59, 7.59); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (31x71x1):** Interpolated grid: dx=15 mm, dy=15 mm

Maximum value of SAR (interpolated) = 15.0 W/kg

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

grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 96.67 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 17.7 W/kg SAR(1 g) = 9.87 W/kg; SAR(10 g) = 5.19 W/kg Maximum value of SAR (measured) = 13.9 W/kg



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

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# Dipole 2450 MHz\_SN:727\_Body

Communication System: CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz;  $\sigma$  = 2.037 S/m;  $\epsilon_r$  = 51.276;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

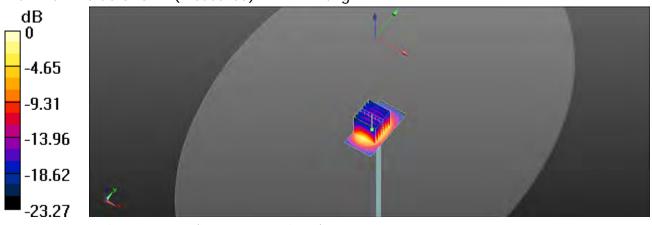
- Probe: EX3DV4 SN3770; ConvF(7.21, 7.21, 7.21); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=250mW/Area Scan (31x61x1):** Interpolated grid: dx=12 mm, dy=12 mm

Maximum value of SAR (interpolated) = 22.5 W/kg

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

grid: dx=5mm, dy=5mm, dz=5mm Reference Value = 103.9 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 30.8 W/kg SAR(1 g) = 13.8 W/kg; SAR(10 g) = 6.21 W/kg Maximum value of SAR (measured) = 22.1 W/kg



0 dB = 22.1 W/kg = 13.44 dBW/kg

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# Dipole 5200 MHz\_SN:1023\_Body

Communication System: CW; Frequency: 5200 MHz Medium parameters used: f = 5200 MHz;  $\sigma$  = 5.462 S/m;  $\epsilon_r$  = 47.93;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

# DASY5 Configuration:

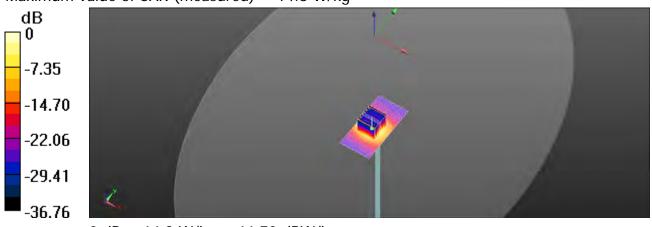
- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

# **Configuration/Pin=100mW/Area Scan (41x81x1):** Interpolated grid: dx=10 mm, dy=10 mm

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

# Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 53.89 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 31.7 W/kg SAR(1 g) = 7.08 W/kg; SAR(10 g) = 1.99 W/kg Maximum value of SAR (measured) = 14.8 W/kg



0 dB = 14.8 W/kg = 11.70 dBW/kg

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# Dipole 5300 MHz\_SN:1023\_Body

Communication System: CW; Frequency: 5300 MHz Medium parameters used: f = 5300 MHz;  $\sigma$  = 5.609 S/m;  $\epsilon_r$  = 47.56;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

# DASY5 Configuration:

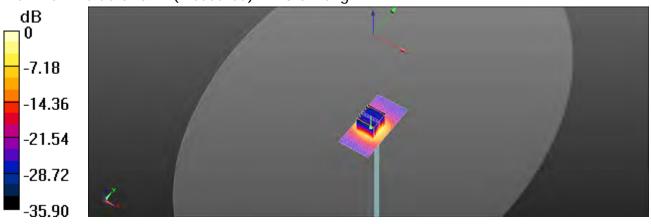
- Probe: EX3DV4 SN3770; ConvF(4.7, 4.7, 4.7); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

# **Configuration/Pin=100mW/Area Scan (41x81x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.1 W/kg

# Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 54.74 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 33.5 W/kg SAR(1 g) = 7.49 W/kg; SAR(10 g) = 2.11 W/kg Maximum value of SAR (measured) = 15.6 W/kg



0 dB = 15.6 W/kg = 11.93 dBW/kg

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# Dipole 5600 MHz\_SN:1023\_Body

Communication System: CW; Frequency: 5600 MHz Medium parameters used: f = 5600 MHz;  $\sigma$  = 6.004 S/m;  $\epsilon_r$  = 46.575;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

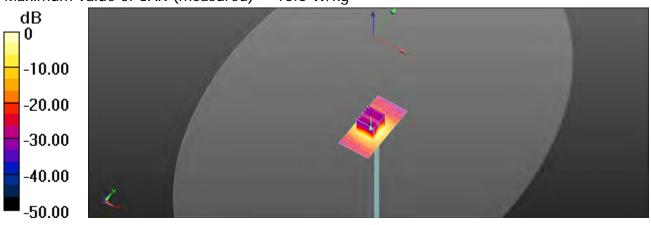
- Probe: EX3DV4 SN3770; ConvF(4.03, 4.03, 4.03); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

Configuration/Pin=100mW/Area Scan (41x81x1): Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 17.4 W/kg

# Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 55.83 V/m; Power Drift = -0.04 dB Peak SAR (extrapolated) = 37.4 W/kg SAR(1 g) = 7.81 W/kg; SAR(10 g) = 2.16 W/kg Maximum value of SAR (measured) = 16.6 W/kg



0 dB = 16.6 W/kg = 12.20 dBW/kg

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# Dipole 5800 MHz\_SN:1023\_Body

Communication System: CW; Frequency: 5800 MHz Medium parameters used: f = 5800 MHz;  $\sigma$  = 6.21 S/m;  $\epsilon_r$  = 46.008;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section

DASY5 Configuration:

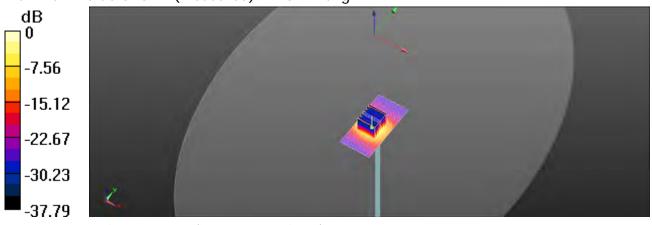
- Probe: EX3DV4 SN3770; ConvF(4.33, 4.33, 4.33); Calibrated: 2015/4/28;
- Sensor-Surface: 2mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn856; Calibrated: 2014/8/27
- Phantom: Body;
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

**Configuration/Pin=100mW/Area Scan (41x81x1):** Interpolated grid: dx=10 mm, dy=10 mm

Maximum value of SAR (interpolated) = 16.5 W/kg

# Configuration/Pin=100mW/Zoom Scan (7x7x12)/Cube 0: Measurement

grid: dx=4mm, dy=4mm, dz=2mm Reference Value = 54.44 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 34.8 W/kg SAR(1 g) = 7.51 W/kg; SAR(10 g) = 2.08 W/kg Maximum value of SAR (measured) = 15.9 W/kg



0 dB = 15.9 W/kg = 12.01 dBW/kg

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# 7. DAE & Probe Calibration Certificate

chmid & Partner Engineering AG rughausatrasse 43, 8004 Zum	ry of	Hac MEA C BRAT	Servizio svizzero di farafure
According by the Swiss Accord The Swiss Accreditation Servic Autiliateral Agreement for the	ce is one of the signatories	to the EA	n No : SCS 108
SGS - TW (Au	den)	Certificate N	DAE4-856_Aug14
CALIBRATION	CERTIFICATE		
Onject	DAE4 - SD 000 D	04 BM - SN: 856	
Calibration procedure(s)	QA CAL-06.v26 Calibration proces	dure for the data acquisition eler	ctronics (DAE)
Dailbration date:	August 27, 2014		
The measurements and the line	enantities with confidence pro-	mai standards, which resilze the physical u obability are given on the following pages a r tability: environment temperature (22 ± 3)	nd are part of the certificate.
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The measurements and the unc All calibrations have been bonds Galilination Equipment used (AB Primary Shandards Kwithley Muzumeler Type 2007	estanties with confidence pro- acted in the closed laboratory STE critical for patibration)	cleability are given on the following pages a readity: environment temperature (22 ± 3) Cas Date (Centilcase No ) (01-Qct-F3 (No 13978)	nd are part of the certificate. To and humidity = 10%. Scheduled Calibration
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The measurements and the line All calibrations have been bond Calibration Equipment used dwi Primary Standards Kethley Mictimeter Type 2007 Secondary Standards Auto DAE Calibration Unit	estanties with confidence pro- ucted in the closed taboratory STE official for pastration) ID-# SSU 0810276 ID-# SE UWS 053 AA 1001	cleability are given on the following pages a facility: environment temperature (22 ± 3) Can Date (Centilicate No.) (01-Col-13 (No.13978) Check Date (in Insues) (07-Jan-14 (in Insues)	nd are part of the certificate 15 and foundaty = 10%. Scheduled Galanation Oct-14 Scheduled Cleick III Pocce Check III Pocce Check
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The measurements and the line All calibrations have been cond Calibration Equipment used (AB <u>Primary Standards</u> Kethley Mattimeter Type 2007 <u>Secondary Standards</u> Auto DAE Calibration Unit Calibrator Box V2.1	Auteo in the closed taboratory atted in the closed taboratory atted in the closed taboratory atted in patientiany atted in patientinany atted in patientiany atted in patientiany atted in pati	Can Date (Centilcase No ) (1-Cent-13 (No (13978)) (01-Cent-13 (No (13978)) (07-Cent-14 (No (13978)) (07-Jan-14 (In focuse) (07-Jan-14 (In focuse check) (07-Jan-14 (In focuse check) (07-Jan-14 (In focuse check))	nd are part of the certificate 15 and humidity = 10%. Scheduled Calibration Och-14 Scheduled Check In house check, Jan-15 In house check, Jan-10

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# Report No. : EN/2015/40004 Page : 223 of 294

Calibration Laboratory of Schmid & Partner Engineering AG Zeuchausstrasse 43, 9005 Zurich, Switzer

According by the Seise Accordiation Service (SAS)

The Swas Accreditation Service is one of the signatories to the EA Multicurral Acreement for the recognition of salibration certificater



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Accreditation No.: SCS 108

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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 porresponding 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.

Continente No: DAE4-656\_Aug14

Fage 2 of 5

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# DC Voltage Measurement

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

<b>Galibration Factors</b>	×	Ŷ	2
High Range	403.468 ± 0.02% (k=2)	404.581 ± 0.02% (0+2)	403.903 ± 0.02% (k-2)
Low Range	3.97681 ± 1.50% (x=2)	3.97783 ± 1.50% (k=2)	3.97815±1.50% (k+2)

**Connector Angle** 

Connector Angle to be used in DASY system	52.5 ±1
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Certificate No. DAE4-856\_Aug14

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# Appendix (Additional assessments outside the scope of SCS108)

# 1. DC Voltage Linearity

High Range	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	1999998.32	0.84	0,00
Channel X + Input	19990.00	-2.25	+0,01
Channel X - Input	20000.45	0.34	-0,00
Channel Y + Input	199999.95	0.96	0.00
Channel Y + Input	19907.51	-3.82	-0,02
Channal Y + Input	-20000 77	0.07	-0,00
Channel Z + Input	199997.26	0.19	-0,00
Channel Z + Input	19997.85	-3.57	-0.02
Channel Z - Imput	-20002.47	1.55	0.01

Low Bange	Reading (µV)	Difference (µV)	Error (%)
Channel X + Input	2001.05	-0.09	-0.00
Channel X + Input	202,34	0.60	0.40
Channel X - Input	-198.9.1	0.26	-0.13
Channel Y + Input	2001.39	0,26	D.01
Channel Y + Input	201.08	-0,36	0.18
Channel Y - Input	- 199,24	-0.78	90,0P
Channel Z + Input	2000.92	-0.18	-0.01
Channel Z + Input	200.26	-1.22	-0.60
Channel Z - Input	-199,91	-1,47	0.74
		the second se	

### 2. Common mode sensitivity

DASY measurement parameters: Auto Zero Time; 9 sec; Maasunng time; 3 sec

	Common mode Input Voltage (mV)	High Range Average Reading (µV)	Low Range Average Reading (µV)
Channel X	200	-14,76	-16.42
	-200	17,19	15,88
Channel V	200	-217	2.25
	+ 200	0.30	0.01
Channel Z	200	10.27	10,05
	- 300	-13.06	-13.03

### 3. Channel separation

	Input Voltage (mV)	Channel X (UV)	Channel V (µV)	Channel Z (µV)
Channel X	200	1. 1.	2.81	-1.15
Channel V	200	7.99		.3:07
Channel Z	200	8.55	5.24	-

Cartillizate No: DAE4-856\_Aug14

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# 4. AD-Converter Values with Inputs shorted

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

	High Range (LSB)	Low Range (LSB)
Channel X	16226	16620
Channel Y	15942	16803
Channel 2	15875	16811

# 5. Input Offset Measurement

DASY measurement parameters: Auto Zero Time: 3 sec; Measuring time: 3 sec Input 10M2

	Average (µV)	min. Offset (j/V)	max. Offset (µV)	Std. Deviation (µV)
Channel X	0.72	+0.77	1.89	0.38
Channel Y	-0.24	-1.87	1,98	0.42
Channel Z	-0.98	-2.01	0.07	0.10

## 6. Input Offset Current

Nominal input circuitry offset current on all channels +25/A

# 7. Input Resistance (Typical values for information)

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

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

Typical values	Alarm Level (VDC)	
Supply (+ Vcc)	+7.9	
Supply (- Vcc)	-7.6	

#### 9. Power Consumption (Typical values for information)

Typical values	Switched off (mA)	Stand by (mA)	Transmitting (mA)
Supply (+ Vcc)	+0.01	86	+14
Supply (- Vcc)	-0:01	-8	-9

Certificate No: DAE4-856\_Aug14

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# Report No. : EN/2015/40004 Page : 227 of 294

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



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

Accreditation No.: SCS 0108

Certificate No: EX3-3770\_Apr15

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

Client SGS-TW (Auden)

	CERTIFICATE	-			
Object	EX3DV4 - SN:3770				
Calibration procedure(s)		A CAL-14.v4, QA CAL-23.v5, QA dure for dosimetric E-field probes	CAL-25.v6		
Calibration date:	April 28, 2015				
This calibration certificate docum	nents the traceability to natio	onal standards, which realize the physical units	of measurements (SI).		
The measurements and the unc	ertainties with confidence pr	robability are given on the following pages and	are part of the certificate.		
All calibrations have been seed	ated in the closed laborator	tacility any management tomporature (32 + 3100 -	and humidity < 70%		
All calibrations have been condu	icted in the closed laborator	y facility: environment temperature (22 $\pm$ 3)°C a	and numidity < 70%.		
Calibration Equipment used (M&	TE critical for calibration)				
Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration		
Primary Standards Power meter E4419B	ID GB41293874	Cal Date (Certificate No.) 01-Apr-15 (No. 217-02128)	Scheduled Calibration Mar-16		
and the second s	12				
Power meter E4419B	GB41293874	01-Apr-15 (No. 217-02128)	Mar-16		
Power meter E4419B Power sensor E4412A	GB41293874 MY41498087	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128)	Mar-16 Mar-16		
Power meter E4419B Power sensor E4412A Reference 3 dB Attenuator	GB41293874 MY41498087 SN: S5054 (3c)	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129)	Mar-16 Mar-16 Mar-16		
Power meter E4419B Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x)	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02132)	Mar-16 Mar-16 Mar-16 Mar-16 Mar-16		
Power meter E44198 Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b)	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02132) 01-Apr-15 (No. 217-02133)	Mar-16 Mar-16 Mar-16 Mar-16 Mar-16 Mar-16		
Power meter E44198 Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b) SN: 3013	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02132) 01-Apr-15 (No. 217-02133) 30-Dec-14 (No. ES3-3013_Dec14)	Mar-16 Mar-16 Mar-16 Mar-16 Mar-16 Dec-15		
Power meter E44198 Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b) SN: 3013 SN: 660	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02139) 01-Apr-15 (No. 217-02133) 30-Dec-14 (No. ES3-3013_Dec14) 14-Jan-15 (No. DAE4-660_Jan15)	Mar-16 Mar-16 Mar-16 Mar-16 Mar-16 Dec-15 Jan-16		
Power meter E44198 Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b) SN: 3013 SN: 660 ID	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02132) 01-Apr-15 (No. 217-02133) 30-Dec-14 (No. ES3-3013_Dec14) 14-Jan-15 (No. DAE4-660_Jan15) Check Date (in house)	Mar-16           Mar-16           Mar-16           Mar-16           Mar-16           Dec-15           Jan-16           Scheduled Check		
Power meter E44198 Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b) SN: 3013 SN: 660 ID US3642U01700	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02132) 01-Apr-15 (No. 217-02132) 01-Apr-15 (No. 217-02133) 30-Dec-14 (No. ES3-3013_Dec14) 14-Jan-15 (No. DAE4-660_Jan15) Check Date (in house) 4-Aug-99 (in house check Apr-13)	Mar-16 Mar-16 Mar-16 Mar-16 Mar-16 Dec-15 Jan-16 Scheduled Check In house check: Apr-16		
Power meter E44198 Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b) SN: 3013 SN: 660 ID US3642U01700 US3642U01700 US37390585	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02132) 01-Apr-15 (No. 217-02133) 30-Dec-14 (No. ES3-3013, Dec14) 14-Jan-15 (No. DAE4-660_Jan15) Check Date (in house) 4-Aug-99 (in house check Apr-13) 18-Oct-01 (in house check Oct-14)	Mar-16 Mar-16 Mar-16 Mar-16 Dec-15 Jan-16 Scheduled Check In house check: Apr-16 In house check: Oct-15		
Power meter E44198 Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 30 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C Network Analyzer HP 8753E Calibrated by:	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b) SN: 3013 SN: 660 ID US3642U01700 US37390585 Name Jeton Kastrati	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02132) 01-Apr-15 (No. 217-02133) 30-Dec-14 (No. ES3-3013_Dec14) 14-Jan-15 (No. DAE4-660_Jan15) Check Date (in house) 4-Aug-99 (in house check Apr-13) 18-Oct-01 (in house check Oct-14) Function Laboratory Technictan	Mar-16 Mar-16 Mar-16 Mar-16 Dec-15 Jan-16 Scheduled Check In house check: Apr-16 In house check: Oct-15		
Power meter E44198 Power sensor E4412A Reference 3 dB Attenuator Reference 20 dB Attenuator Reference 20 dB Attenuator Reference Probe ES3DV2 DAE4 Secondary Standards RF generator HP 8648C Network Analyzer HP 8753E	GB41293874 MY41498087 SN: S5054 (3c) SN: S5277 (20x) SN: S5129 (30b) SN: 3013 SN: 660 ID US3642U01700 US37390585 Name	01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02128) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02129) 01-Apr-15 (No. 217-02132) 01-Apr-15 (No. 217-02133) 30-Dec-14 (No. ES3-3013_Dec14) 14-Jan-15 (No. DAE4-660_Jan15) Check Date (in house) 4-Aug-99 (in house check Apr-13) 18-Oct-01 (in house check Oct-14) Function	Mar-16 Mar-16 Mar-16 Mar-16 Dec-15 Jan-16 Scheduled Check In house check: Apr-16 In house check: Oct-15		

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# Report No. : EN/2015/40004 Page: 228 of 294

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



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Accreditation No.: SCS 0108

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Glossary:	
TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization p	g rotation around probe axis
Polarization 9	9 rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., 9 = 0 is normal to probe axis
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:

- a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement
- Techniques", June 2013 IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close b) proximity to the ear (frequency range of 300 MHz to 3 GHz)", February 2005

### Methods Applied and Interpretation of Parameters:

- NORMx, y, z: Assessed for E-field polarization 9 = 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<sup>2</sup>-field uncertainty inside TSL (see below ConvF).
- NORM(f)x,y,z = NORMx,y,z \* frequency\_response (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of ConvF.
- DCPx, y, z; DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- PAR: PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. VR is the maximum calibration range expressed in RMS voltage across the diode
- ConvF and Boundary Effect Parameters: Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to NORMx, y, z \* ConvF whereby the uncertainty corresponds to that given for ConvF. A frequency dependent ConvF is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz
- Spherical isotropy (3D deviation from isotropy): in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- Sensor Offset. The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- Connector Angle: The angle is assessed using the information gained by determining the NORMx (no uncertainty required).

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EX3DV4 - \$N:3770

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April 28, 2015

# Probe EX3DV4

# SN:3770

Manufactured: Calibrated: July 6, 2010 April 28, 2015

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

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April 28, 2015

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

## **Basic Calibration Parameters**

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm (µV/(V/m) <sup>2</sup> ) <sup>A</sup>	0.31	0.62	0.40	± 10.1 %
DCP (mV) <sup>8</sup>	105.3	100.7	101.6	

# Modulation Calibration Parameters

UID	Communication System Name		A dB	B dBõV	c	D dB	VR mV	Unc <sup>E</sup> (k=2)
0	CW	X	0.0	0.0	1.0	0.00	145.1	±3.8 %
		Y	0.0	0.0	1.0		129.4	
		Z	0.0	0.0	1.0		138.4	

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

The uncertainties of NormX,Y,Z do not affect the E<sup>2</sup>-field uncertainty inside TSL (see Pages 5 and 6).

<sup>B</sup> Numerical linearization parameter: uncertainty not required.
<sup>E</sup> Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

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# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

f (MHz) <sup>C</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha <sup>G</sup>	Depth <sup>G</sup> (mm)	Unct. (k=2)
750	41.9	0.89	9.53	9.53	9.53	0.26	1.28	± 12.0 %
835	41.5	0.90	9.13	9.13	9.13	0.21	1.53	± 12.0 %
900	41.5	0.97	8.89	8.89	8.89	0.23	1.38	± 12.0 %
1450	40.5	1.20	8.19	8.19	8.19	0.18	1.59	± 12.0 %
1750	40.1	1.37	8.04	8.04	8.04	0.38	0.80	± 12.0 %
1900	40.0	1.40	7.82	7.82	7.82	0.36	0.80	± 12.0 %
2000	40.0	1.40	7.81	7.81	7.81	0.36	0.80	± 12.0 %
2300	39.5	1.67	7.47	7.47	7.47	0.27	0.96	± 12.0 %
2450	39.2	1.80	7.16	7.16	7.16	0.34	0.80	± 12.0 %
2600	39.0	1.96	6.85	6.85	6.85	0.34	0.92	± 12.0 %
5250	35.9	4.71	5.27	5.27	5.27	0.30	1.80	± 13.1 %
5600	35.5	5.07	4.65	4.65	4.65	0.35	1.80	± 13.1 %
5750	35.4	5.22	4.92	4.92	4.92	0.40	1.80	± 13.1 %

Calibration Parameter Determined in Head Tissue Simulating Media

<sup>c</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency

below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz. FAI frequencies below 3 GHz, the validity of tissue parameters (e and o) 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 (e and o) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters. <sup>6</sup> AlphaDpeth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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April 28, 2015

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

f (MHz) <sup>c</sup>	Relative Permittivity <sup>F</sup>	Conductivity (S/m) <sup>F</sup>	ConvF X	ConvF Y	ConvF Z	Alpha <sup>G</sup>	Depth <sup>G</sup> (mm)	Unct. (k=2)
750	55.5	0.96	9.30	9.30	9.30	0.25	1.38	± 12.0 %
835	55.2	0.97	9.17	9.17	9.17	0.34	1.05	± 12.0 <u>%</u>
900	55.0	1.05	8.91	8.91	8.91	0.30	1.20	± 12.0 %
1450	54.0	1.30	8.12	8.12	8.12	0.18	1.62	± 12.0 %
1750	53.4	1.49	7.79	7.79	7.79	0.44	0.80	± 12.0 %
1900	53.3	1.52	7.59	7.59	7.59	0.44	0.80	± 12.0 %
2000	53.3	1.52	7.73	7.73	7.73	0.42	0.80	± 12.0 %
2300	52.9	1.81	7.32	7.32	7.32	0.41	0.80	± 12.0 %
2450	52.7	1.95	7.21	7.21	7.21	0.31	0.80	± 12.0 %
2600	52.5	2.16	6.96	6.96	6.96	0.27	0.80	± 12.0 %
5250	48.9	5.36	4.70	4.70	4.70	0.35	1.90	± 13.1 %
5600	48.5	5.77	4.03	4.03	4.03	0.45	1.90	± 13.1 %
5750	48.3	5.94	4.33	4.33	4.33	0.50	1.90	± 13.1 %

# Calibration Parameter Determined in Body Tissue Simulating Media

<sup>c</sup> Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency bend. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Above 5 GHz frequency validity can be extended to ± 110 MHz.
FAI frequencies below 3 GHz, the validity of tissue parameters (s and o) 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.
FA (strequency har e determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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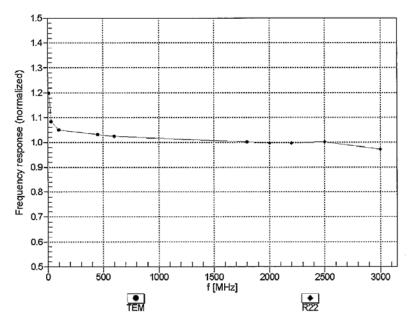
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# Frequency Response of E-Field (TEM-Cell:ifi110 EXX, Waveguide: R22)



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

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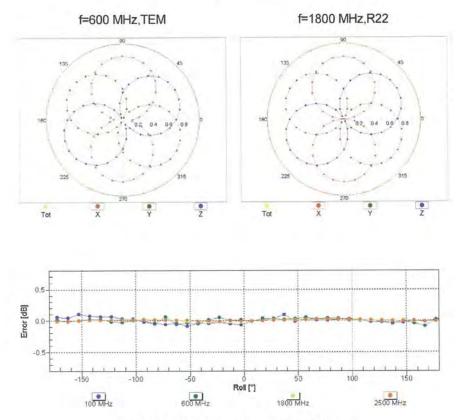
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Receiving Pattern ( $\phi$ ),  $\vartheta = 0^{\circ}$ 

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

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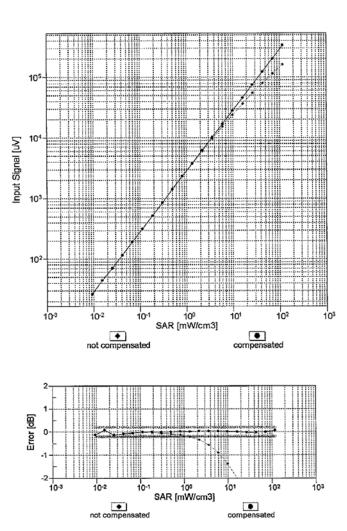
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Dynamic Range f(SAR<sub>head</sub>) (TEM cell , f<sub>eval</sub>= 1900 MHz)

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

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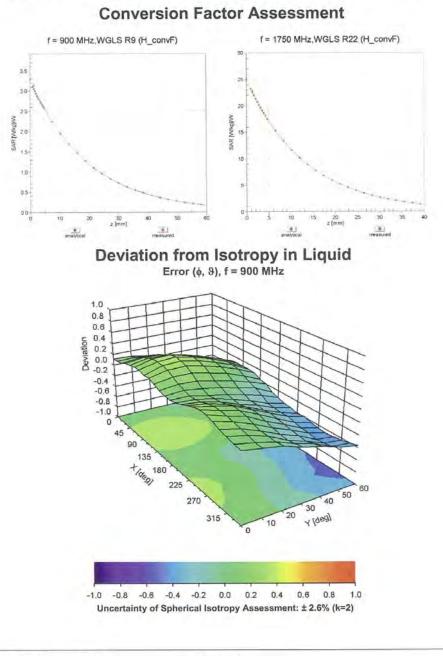
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台灣檢驗科技股份有限公司 t (886-2) 2299-3279

f (886-2) 2298-0488



April 28, 2015

# DASY/EASY - Parameters of Probe: EX3DV4 - SN:3770

# Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-32.7
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

Certificate No: EX3-3770\_Apr15

Page 11 of 11

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# 8. Uncertainty Budget

Measurement Uncertainty evaluation template for DUT SAR test IFFE 1528

IEEE 1528						-			
A	с	D	е		f	g	h=c * f / e	i=c * g / e	k
Source of Uncertainty	Tolerance/ Uncertainty	Probability Distributioi	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%	~
Isotropy , Axial	3.50%	R	√3	1.732	1	1	2.02%	2.02%	8
Isotropy, Hemispherical	9.60%	R	√3	1.732	1	1	5.54%	5.54%	8
Boundary Effect	1.00%	R	√3	1.732	1	1	0.58%	0.58%	~
Linearity	4.70%	R	√3	1.732	1	1	2.71%	2.71%	8
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%	8
Response time	0.80%	R	√3	1.732	1	1	0.46%	0.46%	8
Integration Time	2.60%	R	√3	1.732	1	1	1.50%	1.50%	8
<i>Measurement drift (class A evaluation)</i>	1.75%	R	√3	1.732	1	1	1.01%	1.01%	8
RF ambient condition - noise	3.00%	R	√3	1.732	1	1	1.73%	1.73%	~
RF ambient conditions - reflections	3.00%	R	√3	1.732	1	1	1.73%	1.73%	~
Probe positioner Mechanical restrictions	0.40%	R	√3	1.732	1	1	0.23%	0.23%	8
Probe Positioning with respect to phantom shell	2.90%	R	√3	1.732	1	1	1.67%	1.67%	8
Post-processing	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Max SAR Eval	1.00%	R	√3	1.732	1	1	0.58%	0.58%	8
Test Sample related									
Test sample positioning	2.90%	N	1	1	1	1	2.90%	2.90%	M-1
Device Holder Uncertainty	3.60%	N	1	1	1	1	3.60%	3.60%	M-1
Drift of output power	5.00%	R	√3	1.732	1	1	2.89%	2.89%	8
Phantom and Setup									
Phantom Uncertainty	4.00%	R	√3	1.732	1	1	2.31%	2.31%	~
Deviation from reference liquid target ε 'r(Body)	3.04%	N	1	1	0.64	0.43	1.95%	1.31%	М
Deviation from reference liquid target $\sigma$ (Body)	3.74%	N	1	1	0.6	0.49	2.24%	1.83%	М
Liquid conductivity $\sigma$ – temperature uncertainty	2.20%	R	√3	1.732	0.78	0.71	0.99%	0.90%	8
Liquid permittivity ε — temperature uncertainty	0.20%	R	√3	1.732	0.23	0.26	0.03%	0.03%	8
Combined standard uncertainty		RSS					11.99%	11.82%	
Expant uncertainty (95% confidence interval), K=2							23.97%	23.64%	

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# 9. Phantom Description

Schmus & Panner Engineering AG е а o

Zoughaunstraser 43, 8004 Zunch, Switzerland, Phone +41 1 245 9700, Fax +41 1 245 9779 m/o@epage.com, http://www.apeeg.com

Certificate of Conformity / First Article Inspection

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

#### Tests

The series production process used allows the imitation to test of first articles. Complete tests were made on the pre-series Type No. OD 000 P40 AA. Serial No. TP-1001 and on the series first article Type No. OD 000 P40 BA, Serial No. TP-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.	(TIS 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 < 0.8% if filed with 155mm of HSL900 and without OUT below	Prototypes, Sample testing

Standarda (1) CENELEC EN 50361 (2) IEEE Std 1528-2003 (3) IEC 62209 Part 1 1234

FCC OET Builetin 65, Supplement C, Edition 01-01 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]

D 8 a 07.07.2005 8 Date nnin & Parsair Engineering AQ Ultrauspieres 43, 8004 Zurist, Saitzeri Gas 441 S 245 0700/122-08 17 245 0770 Signature / Stamp hnp

Doc He MI1 - 00 000 P40 C - \*

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Рюрк 1115

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# **10. System Validation from Original Equipment Supplier**

	h, Switzerland	"Indeateday"	Swiss Calibration Service
credited by the Swiss Accredite e Swiss Accreditation Service dillateral Agreement for the r	is one of the signatories	s to the EA	No.: SCS 108
SGS-TW (Aude	n)	Certificate No	: D750V3-1015_Aug14
ALIBRATION	CERTIFICATE		
bjeci	D750V3 - SN 10	15	
lationatio) procedurație)	GA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	we 700 MHz
astration cate:	August 28, 2014		
he measurements and the onde	etainlies with confidence p	onal idensionates, which number the physical un robebility are given on the following pages an ry lactific environment temperature (122 ± 3)*(	d are part of the certificate.
he measurements and the onde	etainlies with confidence p cred in the crosed laborator TE cotical ico calibrationi	robability are given on the following pages an	d are part of the certificate.
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# Report No. : EN/2015/40004 Page : 241 of 294

Calibration Laboratory of Schmid & Partner Engineering AG Zeughauestrises 43, 000+ Zurich, Switzerland



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Accreditation No.: SCS 108

Accentitiset by the Swas Accentitution Service (SAS) The Swiles Accentitation Service is rais of the legenerative to the EA Multilateral Agreement for the recognition of calibration certificates

# Glossary:

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

### Calibration is Performed According to the Following Standards:

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

#### Additional Documentation:

d) DASY4/5 System Handbook

## Methods Applied and Interpretation of Parametera:

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

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

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# Measurement Conditions

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

DASY Version	DASYS	V52.8.6
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	15 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz, = 5 mm	
Frequency	750 MHz = 1 MHz	

### Head TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41,9	m/ddm e8.0
Measured Head TSL parameters	(22.0 ± 0.2) *O	#2.2±6 %	0.91 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		-

# SAR result with Head TSL

SAR measured     250 mW input power     2.11 W/kg       SAR for nominal Head TSL parameters     .normalized to 1W     8.31 W/kg ± 17.0 % (kx2)       SAR averaged over 10 cm² (10 g) of Head TSL     condition       SAR measured     .250 mW input power     1.38 W/kg	SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL	Ganidillow	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL condition	SAR measured	250 mW input power	2.11 W/kg
	SAR for nominal Head TSL parameters	normalized to 1W	8.31 W/kg ± 17.0 % (km2)
	SAR averaged over 10 cm <sup>1</sup> (10 a) of Heart TSI	condition	

#### Body TSL parameters p. and entry listings using percent

de the

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22,0 °C	55,5	0,96 mho/m
Measured Body TSL parameters	(22.0±0.2) °C	55,4 ± 8 %	0.99 mholm ± 6 %
Body TSL temperature change during lest	< 0.5 °C	Control Inc.	California (

# SAR result with Body TSL

SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL	Condition	
SAR meesured	950 mW input power	2.24 WAg
SAR for nominal Body TSL parametera	normalized to 1W	8.75 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL	contilion	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL. SAR measured	condition 250 mW input power	1.49 W/kg

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### Appendix (Additional assessments outside the scope of SCS108)

# Antenna Parameters with Head TSL

Impedance, transformed to feed point	53.1 Ω - 0.4 jΩ
Return Loss	- 30.4 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	48.3 Ω - 2.9 jΩ	
Return Loss	- 29.5 dB	

### General Antenna Parameters and Design

Electrical Delay (one direction)	1.037 ns
----------------------------------	----------

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

The dipole is made of standard 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	March 22, 2010

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# **DASY5 Validation Report for Head TSL**

Date: 28.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

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

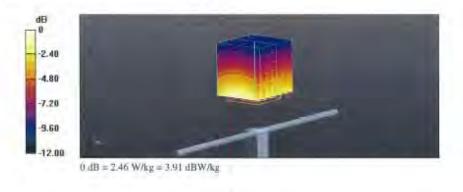
Communication System: UID 0 - CW; Frequency: 750 MHz Medium parameters used: f = 750 MHz;  $\sigma = 0.91$  S/m;  $c_r = 42.2$ ; p = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.37, 6.37, 6.37); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

# 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 = 53.68 V/m; Power Drift = 0.01 dB

Peak SAR (extrapolated) = 3.13 W/kg SAR(1 g) = 2.11 W/kg; SAR(10 g) = 1.38 W/kg Maximum value of SAR (measured) = 2.46 W/kg



Cartificate No: 0750V3-1015\_Aug14

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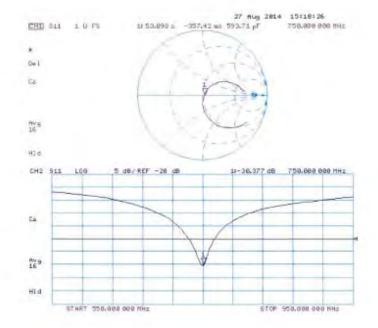
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# Impedance Measurement Plot for Head TSL



Certificate No: D750V3-1015\_Aug14 P

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# DASY5 Validation Report for Body TSL

Date: 27.08.2014

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;  $\sigma$  = 0.99 S/m;  $\epsilon_r$  = 55.4; p = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63,19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.13, 6.13, 6.13); Calibrated: 30,12,2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52,8.8(1222); SEMCAD X 14.6.10(7331)

# 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 = 53.06 V/m; Power Drift = 40.02 dB Peak SAR (extrapolated) = 3.26 W/kg SAR(1 g) = 2.24 W/kg; SAR(10 g) = 1.49 W/kg Maximum value of SAR (measured) = 2.60 W/kg



0 dB = 2.60 W/kg = 4.15 dBW/kg

Certilicate No D750V3-1015\_Aug14

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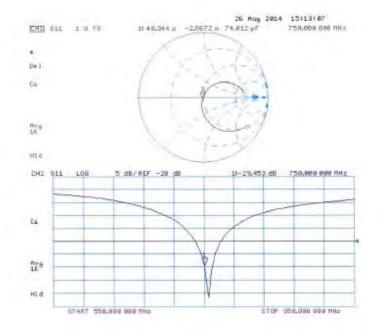
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# Impedance Measurement Plot for Body TSL



Certificate No: D750V3-1015\_Aug14 Page 8 of 8

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Client SGS-TW (Aude	n)	Certificate No	D835V2-4d063_Aug14	
CALIBRATION CERTIFICATE				
Object	D835V2 - SN. 40	063		
Calevation procedura(s)	DA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ove 700 MHz	
ÓwtOration ante:	August 28, 2014			
The measurements and the lines		ional standards, which realize the physical un robability are given on the following pages ar		
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Certificate No: D835V2-40063\_Aug14

Calibration Laboratory of

Schmid & Partner

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



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Anmediation No.: 5CS 108

According in the Sweet According on Service (BAS). The Swiss Accordington Service is one of the signatories to the EA wolflight of Agreement for the recognition of calibration carbficates Glossary:

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

### Calibration is Performed According to the Following Standards:

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

#### Additional Documentation:

d) 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 leed point exactly below the center marking of the flat phantom section, with the arms oriented parallel to the body axis.
- Feed Point Impedance and Return Loss: These parameters are measured with the dipole positioned under the liquid filled phantom. The impedance stated is transformed from the measurement at the SMA connector to the feed point. The Return Loss ensures low reflected power. No uncertainty required.
- Electrical Delay: One-way delay between the SMA connector and the antenna feed point. No uncertainty required
- SAR measured: SAR measured at the stated antenna input power.
- SAR normalized, SAR as measured, normalized to an input power of 1 W at the antenna connector.
- SAR for nominal TSL parameters. The measured TSL parameters are used to calculate the nominal SAR result.

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

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## Measurement Conditions

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

DASY5	V52.8.8
Advanced Extrapolation	
Modular Flat Phantom	
15 mm	with Spacer
dx, dy, dz = 5 mm	
835 MHz ± 1 MHz	
	Advanced Extrapolation Modular Flat Phantom 15 mm dx, dy, dz = 5 mm

### Head TSL parameters

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	41.5	0.90 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) *C	42.0 ± 6 %	0.94 mha/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

# SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	2.38 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	9.24 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 250 mW input power	1.55 W/kg

### **Body TSL parameters**

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	55.2	0.97 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) "C	$55.2 \pm 6 \%$	1.01 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

# SAR result with Body TSL

SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	2.41 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	9.35 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>8</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>8</sup> (10 g) of Body TSL SAR measured	condition 250 mW input power	1.59 W/kg

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### Appendix (Additional assessments outside the scope of SCS108)

# Antenna Parameters with Head TSL

Impedance: transformed to filled point	51,7 Ω - 3,6 jΩ
Relum Loss	-28.2 dB

# Antenna Parameters with Body TSL

Impedance, transformed to feed point	47.1 LL - LLB (LL
Rahim Loss	-23.7 dB

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.021.05
----------------------------------	----------

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

The dipole is made of standard samingid coaxial cable. This center conductor of the feeding line a directly connected to the second ann of the dipole. The antenna is lineratoric stant-circuited for DC-signals. On some of the dipoles, cmail end caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Donditions" paragraph. The SAR data are not affocted by this change. The overnil cipole 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 leadpoint may be damaged.

## Additional EUT Data

Manufactured by	SPEAG
Manufactured on	November 27, 2006

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Date: 28.08.2014

# **DASY5 Validation Report for Head TSL**

Test Laboratory: SPEAG, Zurich, Switzerland

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

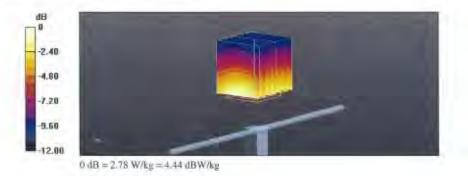
Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz;  $\sigma = 0.94$  S/m;  $\epsilon_r = 42$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section; Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63,19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.22, 6.22, 6.22); Calibrated: 30.12,2013;
- · Sensor-Surface: 3mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

# 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 = 56.23 V/m; Power Drift = -0,02 dB

Peak SAR (extrapolated) = 3.53 W/kg SAR(1 g) = 2.38 W/kg; SAR(10 g) = 1.55 W/kg Maximum value of SAR (measured) = 2.78 W/kg



Certificate No: D835V2-4d083\_Aug14

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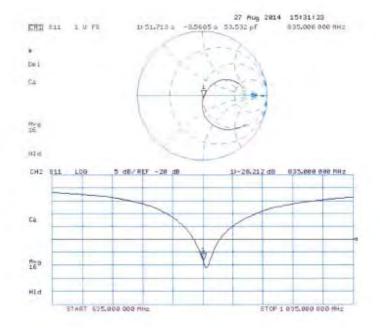
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### Impedance Measurement Plot for Head TSL



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### DASY5 Validation Report for Body TSL

Date: 27.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

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

Communication System: UID 0 - CW; Frequency: 835 MHz Medium parameters used: f = 835 MHz;  $\sigma$  = 1.01 S/m;  $z_e$  = 55.2;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(6.09, 6.09, 6.09), Calibrated: 30.12.2013;
- Sensor-Surface; 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 4.9L; Type: QD000P49AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

### 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 = 54.65 V/m; Power Drift = -0.03 dB Peak SAR (extrapolated) = 3.53 W/kg SAR(1 g) = 2.41 W/kg; SAR(10 g) = 1.59 W/kg Maximum value of SAR (measured) = 2.80 W/kg



0 dB = 2.80 W/kg = 4.47 dBW/kg

Centricate No: D836V2-4d063\_Aug14

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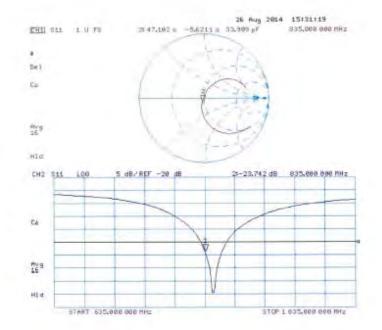
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### Impedance Measurement Plot for Body TSL



Certificate No: D835V2-4d063\_Aug14

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he Swiss Accreditation Service Initialized Agreement for the r	e is one of the signatories	to the EA	No.: SCS 108
lient SGS-TW (Aude			D1750V2-1008_Aug14
CALIBRATION	ERTIFICATE		
Objact	D1750V2 - SN: 1	800	
Calibration proceeding(s)	DA CAL-05.v9 Calibration proce	dure for dipole validation kits abo	ove 700 MHz
Californition date:	August 26, 2014		
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Certificate No: D1750V2-1008\_Aug14

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# Report No. : EN/2015/40004 Page : 257 of 294

Calibration Laboratory of Schmid & Partner Engineering AG 7arghateetrese 45, 8004 Zunch, Switzens



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Accenditation No.: SCS 108

Accentated by the Swite Accentinities Sinvare (SAS) The Swite Accentitation Service is one of the signalization to the EA. Multilateral Agreement for the recognition of calibration certificates

#### Glossary:

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

### Calibration is Performed According to the Following Standards:

- IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
- b) IEC 62209-1, "Procedure to measure the Specific Absorption Rate (SAR) for hand-held devices used in close proximity to the eer (frequency range of 300 MHz to 3 GHz)", February 2005
- c) KDB 865864, "SAR Measurement Requirements lbr 100 MHz to 6 GHz"

#### Additional Documentation:

d) 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 centificate. 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 tilled 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 entenna connector.
- SAR for nominal TSL parameters: The measured TSL parameters are used to calculate the nominal SAR result.

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

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### Measurement Conditions

DASY system config	guration, as tai	as not g	ven on page 1
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DASY Version	DASY5	V52,6,8
Extrapolation	Advanced Extrapolation	
Phentom	Modular Plat Phantom	
Distance Dipole Center - TSL	10 mm	with Space
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	25.0 °C	40.1	1.37 mmp/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	392 = 6%	1.37 mho/m = 6 %
Head TSL temperature change during test	~0.5 °C		

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	9.26 W/kg
SAR for nominal Need TSL parameters	mormalized to 1W	36.9 W/kg = 17.0 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm² (10 g) of Head T5L SAR measured	condition 250 mW signal power	4.91 W/kg
		4.91 W/kg 19.6 W/kg = 16.5 % (k=2)

#### **Body TSL parameters**

	Tamperature	Permittivity	Conductivity
Nominal Body TSL parameters	22,0 "C	E3,#	1.49 mbalm
Measured Body TSL parameters.	(22.0 ± 0.2) °C	52.0±8 %	1.49 mbo/m ± 6 %
Body TSL temperature change during test	< 0.5 %	-	

### SAR result with Body TSL

SAR averaged over 1 cm <sup>1</sup> (1 g) of Body TSL	Condition	and the second sec
SAR measured	250 mW input power	9.44 W/kg
SAR for nominal Body TSL parameters	nominized to 1W	37.5 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>1</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL SAR measured	condition 250 mW input power-	5.07 W/kg

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#### Appendix (Additional assessments outside the scope of SCS108)

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.4 Ω + 0.3 jΩ	
Return Loss	- 46.4 dB	

#### Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.4 Ω + 0.3 jΩ	
Return Loss	- 28.5 dB	

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.222 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 11, 2009

Certificate No: D1750V2-1008\_Aug14

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### DASY5 Validation Report for Head TSL

Date: 28.08.2014

Test Laboratory: SPEAG, Zurich. Switzerland

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

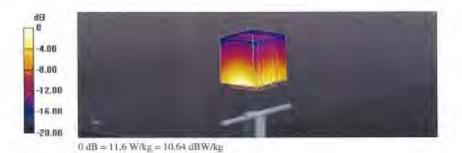
Communication System: UID 0 - CW; Frequency: 1750 MHz Medium parameters used: f = 1750 MHz;  $\sigma = 1.37$  S/m;  $\epsilon_r = 39.2$ ; p = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(5.23, 5.23, 5.23); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52,8.8(1222); SEMCAD X 14.6.10(7331)

### 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 = 95.53 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 16.7 W/kg SAR(1 g) = 9.26 W/kg; SAR(10 g) = 4.91 W/kg Maximum value of SAR (measured) = 11.6 W/kg



Certificate No: D1750V2-1008\_Aug14

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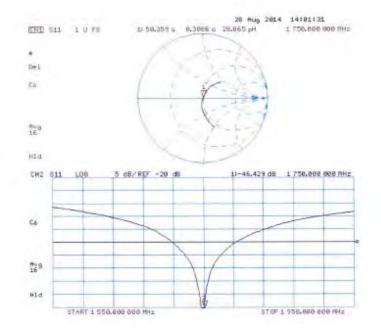
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### Impedance Measurement Plot for Head TSL



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### DASY5 Validation Report for Body TSL

Date: 28.08.2014

Test Laboratory: SPEAG, Zurich, Switzerland

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

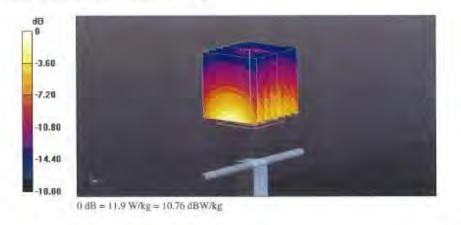
Communication System: UID 0 - CW; Frequency: 1750 MHz Medium parameters used: f = 1750 MHz;  $\sigma = 1.49 \text{ S/m}$ ;  $\epsilon_r = 52$ ;  $\rho = 1000 \text{ kg/m}^3$ Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.89, 4.89, 4.89); Calibrated: 30.12.2013;
- Sensor-Surface: 3mm (Mechanical Surface Detection) .
- · Electronics: DAE4 Sn601; Calibrated: 18:08:2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002 ÷.
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

### 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 = 93,44 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 16.3 W/kg SAR(1 g) = 9.44 W/kg; SAR(10 g) = 5.07 W/kg Maximum value of SAR (measured) = 11.9 W/kg



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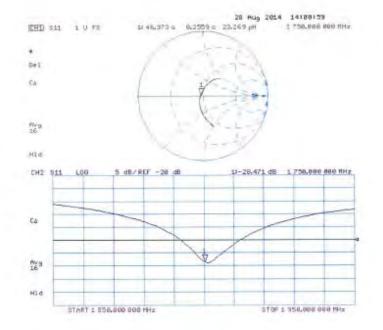
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### Impedance Measurement Plot for Body TSL



Certificate No: D1750V2-1008\_Aug14

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# Report No. : EN/2015/40004 Page : 264 of 294

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ccredited by the Swiss Accredital he Swiss Accreditation Service	is one of the signatories	to the EA	ccreditation No.: SCS 0108
ultilateral Agreement for the re lient SGS-TW (Aude			D1900V2-5d027_Apr1
CALIBRATION C	· · · ·		
ALIBRATION	ERTIFICATE		
Dbject	D1900V2 - SN:50	027	
Calibration procedure(s)	QA CAL-05.v9 Calibration proces	dure for dipole validation kits abo	ove 700 MHz
	Compromoti proce		
Calibration date:	April 29, 2015		
The measurements and the unce	rtaintles with confidence p	onal standards, which realize the physical un robability are given on the following pages ar v facility: environment temperature (22 ± 3)*	nd are part of the certificate.
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The measurements and the unce All calibrations have been conduc Calibration Equipment used (M&T Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3	rtainties with confidence protect in the closed laborator TE critical for calibration) ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327	coability are given on the following pages ar         y facility: env(ronment temperature (22 ± 3)*         Cal Date (Certificate No.)         07-Oct-14 (No. 217-02020)         07-Oct-14 (No. 217-02020)         07-Oct-14 (No. 217-02021)         01-Apr-15 (No. 217-02131)         01-Apr-15 (No. 217-02134)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16
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The measurements and the unce All calibrations have been conduct Calibration Equipment used (M&T Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	rtainties with confidence provided in the closed laborator TE critical for calibration) ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 601 ID # 100005	obability are given on the following pages ar           y facility: env(ronment temperature (22 ± 3)*           Cal Date (Certificate No.)           07-Oct-14 (No. 217-02020)           07-Oct-14 (No. 217-02020)           07-Oct-14 (No. 217-02020)           07-Oct-14 (No. 217-02021)           01-Apr-15 (No. 217-02131)           01-Apr-15 (No. 217-02134)           30-Dec-14 (No. ES3-3205_Dec14)           18-Aug-14 (No. DAE4-601_Aug14)           Check Date (in house)           04-Aug-99 (in house check Oct-13)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16
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The measurements and the unce	rtainties with confidence protected in the closed laborator TE critical for calibration) ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206 Name	obability are given on the following pages ar           y facility: env(ronment temperature (22 ± 3)*           Cal Date (Certificate No.)           07-Oct-14 (No. 217-02020)           07-Oct-14 (No. 217-02020)           07-Oct-14 (No. 217-02020)           07-Oct-14 (No. 217-02021)           01-Apr-15 (No. 217-02131)           01-Apr-15 (No. 217-02134)           30-Dec-14 (No. ES3-3205_Dec14)           18-Aug-14 (No. DAE4-601_Aug14)           Check Date (in house)           04-Aug-99 (in house check Oct-13)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16
The measurements and the unce All calibrations have been conduc Calibration Equipment used (M&T Primary Standards Power meter EPM-442A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	rtaintles with confidence pr sted in the closed laborator FE critical for calibration) ID # GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601 ID # 100005 US37390585 S4206	obability are given on the following pages ar           y facility: environment temperature (22 ± 3)*           Cal Date (Certificate No.)           07-Oct-14 (No. 217-02020)           07-Oct-14 (No. 217-02020)           07-Oct-14 (No. 217-02021)           01-Apr-15 (No. 217-02131)           01-Apr-15 (No. 217-02134)           30-Dec:14 (No. DAE4-601_Aug14)           Check Date (in house)           04-Aug-99 (in house check Oct-13)           18-Oct-01 (in house check Oct-14)	nd are part of the certificate. C and humidity < 70%. Scheduled Calibration Oct-15 Oct-15 Oct-15 Oct-15 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-15

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# Report No. : EN/2015/40004 Page : 265 of 294

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



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Accreditation No.: SCS 0108

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Accredited by the Swiss Accreditation Service (SAS)

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### Glossary:

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

### Calibration is Performed According to the Following Standards:

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

### Additional Documentation:

d) DASY4/5 System Handbook

#### Methods Applied and Interpretation of Parameters:

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

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

Certificate No: D1900V2-5d027\_Apr15

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#### **Measurement Conditions**

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	1900 MHz ± 1 MHz	

### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	40.0	1.40 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	38.6 ± 6 %	1.37 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	10.1 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	40.6 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 250 mW input power	5.30 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	52.8 ± 6 %	1.50 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

### SAR result with Body TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	9.78 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	39.3 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAN AVELAGED OVEL TO CITE TTO GTOT DOGY TOL		
		E 20 W//kg
SAR measured	250 mW input power	5.20 W/kg

Certificate No: D1900V2-5d027\_Apr15

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Page 3 of 8

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### Appendix (Additional assessments outside the scope of SCS 0108)

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	50.2 Ω + 2.5 jΩ
Return Loss	- 32.2 dB

#### Antenna Parameters with Body TSL

Impedance, transformed to feed point	46.5 Ω + 2.5 jΩ
Return Loss	- 27.0 dB

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.197 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	December 17, 2002

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### DASY5 Validation Report for Head TSL

Date: 29.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

### DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN:5d027

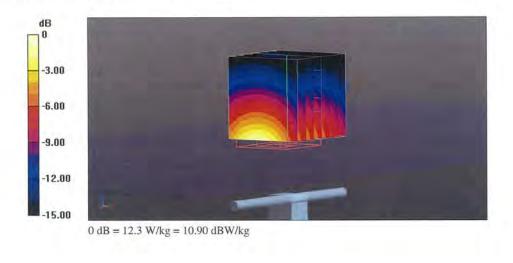
Communication System: UID 0 - CW; Frequency: 1900 MHz Medium parameters used: f = 1900 MHz;  $\sigma$  = 1.37 S/m;  $\epsilon_r$  = 38.6;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe; ES3DV3 SN3205; ConvF(5, 5, 5); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

### 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 = 97.71 V/m; Power Drift = 0.03 dB Peak SAR (extrapolated) = 18.5 W/kg SAR(1 g) = 10.1 W/kg; SAR(10 g) = 5.3 W/kg Maximum value of SAR (measured) = 12.3 W/kg



Certificate No: D1900V2-5d027\_Apr15

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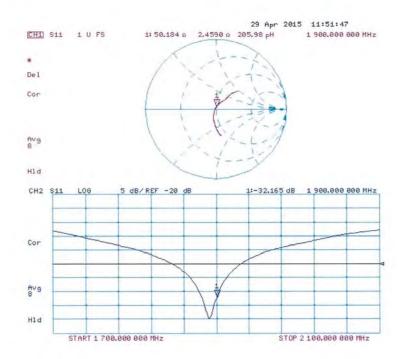
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### Impedance Measurement Plot for Head TSL



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### DASY5 Validation Report for Body TSL

Date: 29.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

### DUT: Dipole 1900 MHz; Type: D1900V2; Serial: D1900V2 - SN: 5d027

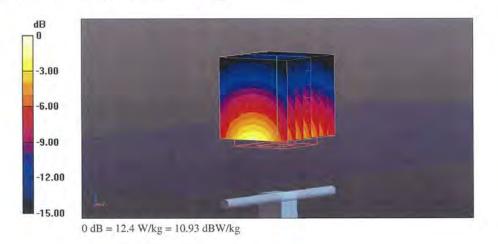
Communication System: UID 0 - CW; Frequency: 1900 MHz Medium parameters used: f = 1900 MHz;  $\sigma$  = 1.5 S/m;  $\epsilon_r$  = 52.8;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.65, 4.65, 4.65); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

### 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 = 94.63 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 16.7 W/kg SAR(1 g) = 9.78 W/kg; SAR(10 g) = 5.2 W/kg Maximum value of SAR (measured) = 12.4 W/kg



Certificate No: D1900V2-5d027\_Apr15

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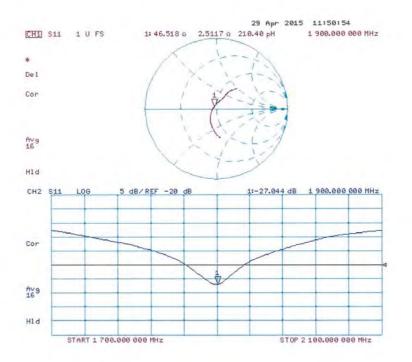
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### Impedance Measurement Plot for Body TSL



Certificate No: D1900V2-5d027\_Apr15

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Client SGS-TW (Auden)

Certificate No: D2450V2-727 Apr15

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bject	D2450V2 - SN: 72	27	
alibration procedure(s)	QA CAL-05.v9 Calibration procee	dure for dipole validation kits abo	ove 700 MHz
alibration date:	April 22, 2015		
All calibrations have been conduc		y facility: environment temperatura (22 $\pm$ 3)°C	C and humidity < 70%.
rimary Standards	ID #	Cal Date (Certificate No.)	Scheduled Calibration
ower meter EPM-442A	GB37480704	07-Oct-14 (No. 217-02020)	Oct-15
ower meter EPM-442A ower sensor HP 8481A	GB37480704 US37292783	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020)	Oct-15 Oct-15
ower meter EPM-442A ower sensor HP 8481A ower sensor HP 8481A	GB37480704 US37292783 MY41092317	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021)	Oct-15 Oct-15 Oct-15
ower meter EPM-442A ower sensor HP 8481A ower sensor HP 8481A teference 20 dB Attenuator	GB37480704 US37292783 MY41092317 SN: 5058 (20k)	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131)	Oct-15 Oct-15 Oct-15 Mar-16
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134)	Oct-15 Oct-15 Oct-15 Mar-16 Mar-16
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Fype-N mismatch combination Reference Probe ES3DV3	GB37480704 US37292783 MY41092317 SN: 5058 (20k)	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131)	Oct-15 Oct-15 Oct-15 Mar-16
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14)	Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Fype-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 05327 SN: 3205 SN: 601 ID #	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02031) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house)	Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Verence 20 dB Attenuator ype-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 3205 SN: 601	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. ES3-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14)	Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Fype-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 601 ID # 100005 US37390585 S4206	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. E33-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14)	Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-15
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047,2 / 06327 SN: 601 ID # 100005 US37390585 S4206 Name	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. 53-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (In house) 04-Aug-99 (In house check Oct-13) 18-Oct-01 (In house check Oct-14) Function	Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16
Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047.2 / 06327 SN: 601 ID # 100005 US37390585 S4206	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. E33-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (in house) 04-Aug-99 (in house check Oct-13) 18-Oct-01 (in house check Oct-14)	Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-15
Primary Standards Power meter EPM-442A Power sensor HP 8481A Power sensor HP 8481A Reference 20 dB Attenuator Type-N mismatch combination Reference Probe ES3DV3 DAE4 Secondary Standards RF generator R&S SMT-06 Network Analyzer HP 8753E Calibrated by:	GB37480704 US37292783 MY41092317 SN: 5058 (20k) SN: 5047,2 / 06327 SN: 601 ID # 100005 US37390585 S4206 Name	07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02020) 07-Oct-14 (No. 217-02021) 01-Apr-15 (No. 217-02131) 01-Apr-15 (No. 217-02134) 30-Dec-14 (No. 53-3205_Dec14) 18-Aug-14 (No. DAE4-601_Aug14) Check Date (In house) 04-Aug-99 (In house check Oct-13) 18-Oct-01 (In house check Oct-14) Function	Oct-15 Oct-15 Oct-15 Mar-16 Mar-16 Dec-15 Aug-15 Scheduled Check In house check: Oct-16 In house check: Oct-15

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Accreditation No.: SCS 0108

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### Glossary:

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

### Calibration is Performed According to the Following Standards:

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

#### Additional Documentation:

d) DASY4/5 System Handbook

#### Methods Applied and Interpretation of Parameters:

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

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

Certificate No: D2450V2-727\_Apr15

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### **Measurement Conditions**

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

DASY Version	DASY5	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	dx, dy, dz = 5 mm	
Frequency	2450 MHz ± 1 MHz	

#### Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	39.2	1.80 mho/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	37.6 ± 6 %	1.82 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

### SAR result with Head TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Head TSL	Condition	
SAR measured	250 mW input power	13.2 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	52.0 W/kg ± 17.0 % (k=2)
	· · · · ·	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 250 mW input power	6.10 W/kg

### **Body TSL parameters**

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	52.7	1.95 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	50.6 ± 6 %	2.02 mho/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		

### SAR result with Body TSL

SAR averaged over 1 cm <sup>3</sup> (1 g) of Body TSL	Condition	
SAR measured	250 mW input power	13.1 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	51.0 W/kg ± 17.0 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL SAR measured	condition 250 mW input power	6.10 W/kg

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### Appendix (Additional assessments outside the scope of SCS 0108)

#### Antenna Parameters with Head TSL

Impedance, transformed to feed point	56.2 Ω + 1.3 jΩ
Return Loss	- 24.6 dB

### Antenna Parameters with Body TSL

Impedance, transformed to feed point	51.8 Ω + 3.3 jΩ
Return Loss	- 28.6 dB

#### General Antenna Parameters and Design

Electrical Delay (one direction)	1.149 ns

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

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

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

#### **Additional EUT Data**

Manufactured by	SPEAG
Manufactured on	January 09, 2003

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### DASY5 Validation Report for Head TSL

Date: 22.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

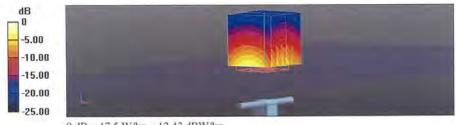
Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz;  $\sigma = 1.82$  S/m;  $\varepsilon_r = 37.6$ ;  $\rho = 1000$  kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.54, 4.54, 4.54); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- · Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

### 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 = 101.5 V/m; Power Drift = 0.01 dB Peak SAR (extrapolated) = 27.4 W/kg SAR(1 g) = 13.2 W/kg; SAR(10 g) = 6.1 W/kg Maximum value of SAR (measured) = 17.5 W/kg



0 dB = 17.5 W/kg = 12.43 dBW/kg

Certificate No: D2450V2-727\_Apr15

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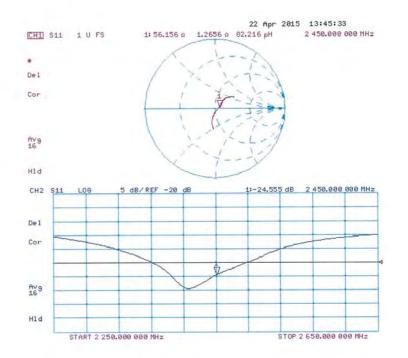
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### Impedance Measurement Plot for Head TSL



Certificate No: D2450V2-727\_Apr15

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### DASY5 Validation Report for Body TSL

Date: 22.04.2015

Test Laboratory: SPEAG, Zurich, Switzerland

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

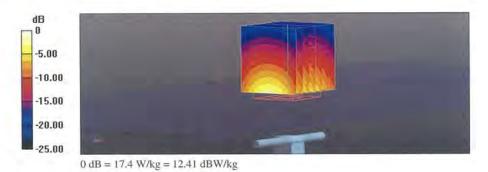
Communication System: UID 0 - CW; Frequency: 2450 MHz Medium parameters used: f = 2450 MHz;  $\sigma$  = 2.02 S/m;  $\varepsilon_r$  = 50.6;  $\rho$  = 1000 kg/m<sup>3</sup> Phantom section: Flat Section Measurement Standard: DASY5 (IEEE/IEC/ANSI C63.19-2011)

DASY52 Configuration:

- Probe: ES3DV3 SN3205; ConvF(4.32, 4.32, 4.32); Calibrated: 30.12.2014;
- Sensor-Surface: 3mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

# 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 = 95.54 V/m; Power Drift = -0.01 dB Peak SAR (extrapolated) = 27.2 W/kg SAR(1 g) = 13.1 W/kg; SAR(10 g) = 6.1 W/kg Maximum value of SAR (measured) = 17.4 W/kg



Certificate No: D2450V2-727\_Apr15

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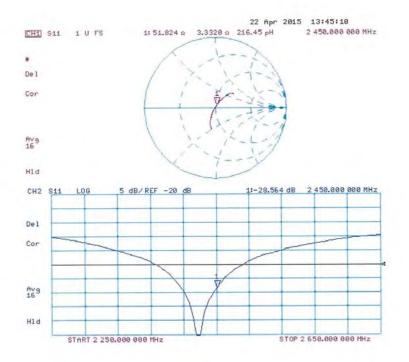
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### Impedance Measurement Plot for Body TSL



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Certificate No: D5GHzV2+1023\_Jan15

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Calibration Laboratory of Schmid & Pariner Engineering AG Zeuchausstresse 43, 8004 Zurich, Switzerland



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Amereditation No.: SCS 0108

According by the Swiss Accordington Service (SAS) The Swiss Accreditation Service is one of the signatories to the EA Multilateria Accreditation for the recognition of calibration cartilication

#### 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) IEC 62209-2, "Evaluation of Human Exposure to Radio Frequency Fields from Handheld and Body-Mounted Wireless Communication Devices in the Frequency Range of 30 MHz to 6 GHz: Human models, Instrumentation, and Procedures" Part 2: "Procedure to determine the Specific Absorption Rate (SAR) for including accessories and multiple transmitters", March 2010
- b) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"
- c) 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

### Additional Documentation:

d) 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%.

Certificant No; DSGI Ltv2-1023\_1m15

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#### Measurement Conditions

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

DASY Version	DASYS	V52.8.8
Extrapolation	Advanced Extrapolation	
Phantom	Modular Flat Phantom V5.0	
Distance Dipole Center - TSL	10 mm	with Spacer
Zoom Scan Resolution	ds. dy = 4.0 mm dz = 1.4 mm	Graded Ratio = 1.4 (Z direction)
Frequency	5200 MHz ± 1 MHz 5000 MHz ± 1 MHz 5600 MHz ± 1 MHz 6600 MHz ± 1 MHz	

### Head TSL parameters at 5200 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	36.0	4.66 mbo/m
Measured Head TSL parameters	[22,0±02] °C	36.3±0 %	4.56 mho/m ± 6 %
Head TSL temperature change during test	< 0.5 °C	-	1 -

#### SAR result with Head TSL at 5200 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW Input power	7.78 W/kg
SAR for nominal Head TSL parameters	normalized to 1W	77.9 W/kg = 19.9 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) o/ Head TSL	constition	
SAR avaraged over 10 cm <sup>2</sup> (10 g) o/ Head TSL SAR measured	constition 100 mW input power	2:32 W/kg

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# Head TSL parameters at 5300 MHz

	Temperature	Permittivity	Conductivity
Nominal Head TSL parameters	22.0 °C	35,9	4.78 mhaim
Measured Head TSL parameters	(22.0 ± 0.2) °C	361 + 6 %	4.66 mho/m = 6 %
Head TSL temperature change during test	<0.5 °C	-	

in the second second

#### SAR result with Head TSL at 5300 MHz

SAR averaged over 1 cm <sup>4</sup> (1 g) of Head TSL	Condilian	
6AR measured	100 mW input power	8.17 W/kg
SAR for nominal Nead TSL parameters	normalized to 1W	81.7 W / kg ± 19.9 % (k=2)
	a chaine and the	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
1 A 4 4	4900 million and a comment	10.04.04.000
SAR masured	100 mW input power	2.34 W/kg

normalized to 1W

23.4 W/kg ± 19.5 % (Ma2)

#### Head TSL parameters at 5600 MHz

SAH for nominal Head TSL parameters

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Nead TSL parameters	22.0 °C	35.5	5.07 mhu/m
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.7 ± 0.%	4.97 mbo/m ± 6 %
Head TSL temperature change during test	< 0.5 °C		

#### SAR result with Head TSL at 5600 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL	Condition	
SAR measured	100 mW input power	8.14 W/kg
SAR for nominal Hoad TSL parameters	WI of besilamon	61.4 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL	condition	
SAR averaged over 10 cm <sup>3</sup> (10 g) of Head TSL SAR measured	condition 100 mW input power	2.31 W/kg

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### Head TSL parameters at 5800 MHz

	Temperature	Permittivity	Conductivity
Nominal Nead TSL parameters	22.0 °C	35.3	5.27 mbolm
Measured Head TSL parameters	(22.0 ± 0.2) °C	35.4 = 8.%	5.18 mho/m = 6 %
Head TSL temperature change during test	<0.5°C	-	-

#### SAR result with Head TSL at 5800 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Head TSL	Condilion	
SAR measured	100 mW input power	7.82 W/kg
SAR for nominal Head TSL parameters	Wt of beglamon	78.2 W/kg ± 19.9 % (k=2)
and but some these test to be as the	The second secon	Designing a version by a
SAR averaged over 10 cm <sup>2</sup> (10 g) of Head TSL	condition	
		2.23 W/kg

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#### Body TSL parameters at 5200 MHz

The following parameters and calculations were applied

	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	49.4 ± 6 %	5.42 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 <sup>3</sup> (1 g) of Body TSL	Gondition	
SAR measured	100 mW input power	7.33 W/kg
SAR for nominal Body TSL parameters.	normalized to 1W	73.5 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL SAR measured	contition 100 mW input power	2,04 W/kg

### Body TSL parameters at 5300 MHz

The following parameters and calculations were applied.

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 *0	48.9	5.42 mho/m
Measured Body TSL parameters	(22.0 ± 0.2) "C	482=8%	5.55 mho/m = 6.%
Body TSL temperature change during test	< 0.5 °C		

### SAR result with Body TSL at 5300 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL	Condition	
SAR maasured	100 mW input power	7.45 W/kg
SAR for nominal Body TSL parameters	normalized to 1W	74.6 W/kg ± 19.9 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 a) of Rock TSI	nemitilen	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL SAR measured	condition 100 mW input power	2.07 W/kd

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### Body TSL parameters at 5600 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	.22.0 °C	48.5	5.77 mholm
Mnesured Body TSL parameters	(22.0 ± 0.2) °C	48.7±6%.	5.96 mho/m ± 6 %
Body TSL temperature change during test	≤05°C		

### SAR result with Body TSL at 5600 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL	Condition	
SAR measurad	100 mW input powei	1.77 W/kg
SAR for nominal Body TSL parameters	Normalized to 1W	77.9 W/kg = 19.9 % (k=2)
SAR averaged over 10 cm <sup>3</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL SAR measured	condition 100 mW input power	⊉15 W/kg

### Body TSL parameters at 5800 MHz

	Temperature	Permittivity	Conductivity
Nominal Body TSL parameters	22.0 °C	48.2	6,00 mño/m
Measured Body TSL parameters	(22.0 ± 0.2) °C	48.4 ± 6.%	6.25 mba/m ± 6 %
Body TSL temperature change during test	< 0.5 °C		_

### SAR result with Body TSL at 5800 MHz

SAR averaged over 1 cm <sup>2</sup> (1 g) of Body TSL	Condition	
SAR measured	100 mW input power	7.54 W/kg
SAFI for nominal Body TSL parameters	normalized to tW	75,5 W/kg ± 19,9 % (k=2)
SAR averaged over 10 cm <sup>2</sup> (10 g) of Body TSL	condition	
SAR averaged over 10 cm <sup>2</sup> (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 SCS0108)

### Antenna Parameters with Head TSL at 5200 MHz

Impedance, transformed to feed point	49.2 12 - 8,5 (2)
Return Loss	-21.4 dB

Antenna Parameters with Head TSL at 5300 MHz

Impedance, transformed to leed point	51.0.0 - 3.8 (0
Ratum Loss	- 28 Z 08

Antenna Parameters with Head TSL at 5600 MHz

Impediance, transformed to lead point	53.4 £1+2.7 jū
Return Loss	- 27.5 dB

Antenna Parameters with Head TSL at 5800 MHz

Impedance, transformed to feed point	55.5 G + 1.0 jú
Return Loss	- 25.4 dB

Antenna Parameters with Body TSL at 5200 MHz

Impedance, transformed to feed point	-49.0 Q - 7.1 jū
Retern Lass	- 22.8 dB

Antenna Parameters with Body TSL at 5300 MHz

Impedance, transformed to feed point	51.5 Q - 2.2 µ2	
Return Loss	-31.7 dB	_

Antenna Parameters with Body TSL at 5600 MHz

Impedance, transformed to feed point	54.6 Q - 1.5 M	
Return Loss	- 26.8 dB	

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#### Antenna Parameters with Body TSL at 5800 MHz

Impedance, transformed to feed primi	55.6.0 + 2.8 jΩ
Retirm Loss.	24.5 dB

### General Antenna Parameters and Design

The state of the s	2 100 55
Electrical Delay (one direction)	1.199 hts

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 teeding line is mirectly connected to the second arm of the dipole. The america is therefore short circulated for DC-signals. On some of the dipoles, amail and caps are added to the dipole arms in order to improve matching when loaded according to the position as explained in the "Measurement Conditions" paragraph. The SAR data are nel affected by this change. The overall dipole length is still according to the Standard.

No excessive force must be applied to the dipole arres, because they might bend or the soldered convections near the feedpoint may be carreged.

#### Additional EUT Data

Manufactined by	SPEAG
Manufactured on	February 05, 2004

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#### DASY5 Validation Report for Head TSL

Date: 28/01/2015

Test Laboratory; SPEAG, Zurich, Switzerland

# DUT: Dipole 5GHz; 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; a = 4.56 S/m; er = 36.3; p = 1000 kg/m<sup>3</sup>. Medium parameters used: f = 5300 MHz;  $\sigma = 4.66 \text{ S/m}$ ;  $\epsilon_r = 36.1$ ;  $\rho = 1000 \text{ kg/m}^3$ , Medium parameters used: f = 5600 MHz;  $\sigma = 1000 \text{ kg/m}^3$ a.97 S/m; e; = 35.7; p = 1000 kg/m<sup>2</sup>. Medium parameters used: 1 = 5800 MHz; n = 5.18 S/m; e; = 35.4; p = 1000 kg/m

Phantom section: Flat Section

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

DASY52 Configuration.

- Probe: EX3DV4 SN3503; ConvF(5.51, 5.51, 5.51); Calibrated: 30,12,2014, ConvF(5.21, 5.21, 5.21); Calibrated: 30.12.2014, ConvF(4.92, 4.92, 4.92); Calibrated: 30.12.2014, ConvF(4.9, 4.9, 4.9). Calibrated: 30/12/2014:
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn601; Calibrated: 18.08.2014
- Phantom: Flat Phantom 5.0 (front); Type: QD000P50AA; Serial: 1001
- DA5Y52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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 = 64.14 V/m; Power Drift = 0.07 dB Peak SAR (extrapolated) = 28.3 W/kg SAR(1 g) = 7.78 W/kg; SAR(10 g) = 2.22 W/kg Maximum value of SAR (measured) = 17.8 W/kg

Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5300 MHz/Zoom Scan. dist=1.4mm (8x8x7)/Cube 0: Measurement groß dx=4mm, dy=4mm, dz=1.4mm Reference Value = 65.47 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 30,7 W/kg SAR(1 g) = 8.17 W/kg; SAR(10 g) = 2.34 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 = 63.68 V/m, Power Drift = 0.08 dB Peak SAR (extrapolated) = 32.2 W/kg SAR(1 g) = 8.14 W/kg; SAR(10 g) = 2.31 W/kg Maximum value of SAR (measured) = 18.9 W/kg

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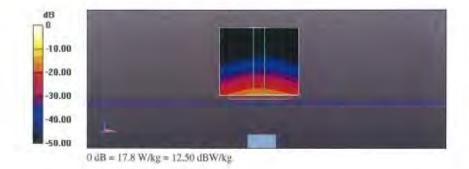
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Dipole Calibration for Head Tissue/Pin=100mW, dist=10mm, f=5800 MHz/Zoom Scan, dist=1.4mm (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm Reference Value = 61.76 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 32.0 W/kg SAR(1 g) = 7.82 W/kg; SAR(10 g) = 2.23 W/kg Maximum value of SAR (measured) = 18.4 W/kg



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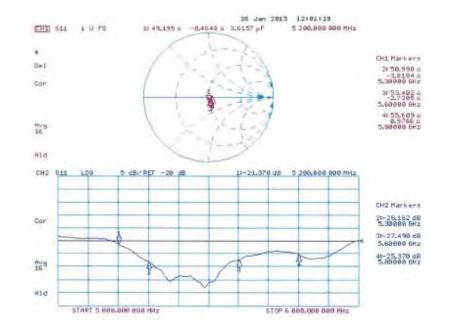
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### Impedance Measurement Plot for Head TSL



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### **DASY5 Validation Report for Body TSL**

Date: 29.01.2015

Test Laboratory-SPEAG, Zurich, Switzerland

#### DUT: Dipole 5GHz; 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: I = 5200 MHz; c = 5.42 S/m; v, = 49.4; c = 1000 kg/m<sup>3</sup>. Medium parameters used: f = 5300 MHz;  $\alpha = 5.55$  S/m;  $\alpha = 49.2$ ; p = 1000 kg/m<sup>3</sup>. Medium parameters used: f = 5600 MHz;  $\alpha = 1000$  kg/m<sup>3</sup>.  $5.96 \text{ S/m}; \epsilon_r = 48.7; \rho = 1000 \text{ kg/m}^2$  Medium parameters used:  $f = 5800 \text{ MHz}; \sigma = 6.25 \text{ S/m}; \epsilon_r = 48.4; \rho = 1000 \text{ kg/m}^2$ 1000 kg/m

Phantom section: Flat Section

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

DASY 52 Configuration:

- Probe: EX3DV4 SN3503; ConvF(4.95, 4.95, 4.95); Calibrated; 30.12.2014, ConvF(4.78, 4.78, 4.78); Calibrated: 30,12,2014, ConvF(4.35, 4.35, 4.35); Calibrated: 30,12,2014, ConvF(4.32, 4.32) 4.32); Calibrated: 30.12.2014,
- Sensor-Sufface: I Annu (Mechanical Sufface Detection)
- Electronics: DAE4 Sn601 (Calibrated) 18:08:2014
- Planton: Flat Phantom 5.0 (back); Type: QD000P50AA; Serial: 1002
- DASY52 52.8.8(1222); SEMCAD X 14.6.10(7331)

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 = 57.97 V/m; Power Drift = -0.02 dB Peak SAR (extrapolated) = 28.6 W/kg SAR(1 g) = 7.33 W/kg; SAR(10 g) = 2.04 W/kg Maximum value of SAR (measured) = 17.3 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 = 57.58 V/m. Power Drift = -0.06 (B Peak SAR (extrapolated) = 30.0 W/kg SAR(1 g) = 7.45 W/kg; SAR(10 g) = 2.07 W/kg Maximum value of SAR (measured) = 17.8 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 = 56.88 V/m; Power Drift = 0.06 dB Peak SAR (extrapolated) = 34.4 W/kg SAR(1 g) = 7.77 W/kg; SAR(10 g) = 2.15 W/kg Maximum value of SAR (measured) = 19.3 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 = 55.10 V/m; Power Drift = 0.05 dB Peak SAR (extrapolated) = 35.2 W/kg SAR(1 g) = 7.54 W/kg; SAR(10 g) = 2.07 W/kg Maximum value of SAR (measured) = 19.1 W/kg



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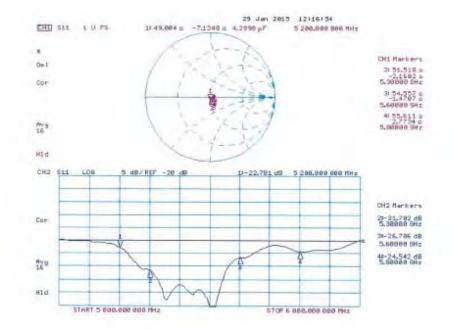
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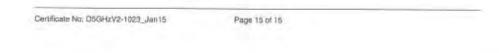
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#### Impedance Measurement Plot for Body TSL





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