Full Power / Hotspot on

LTE-FDD Band 71				Actual output Power (dBm)			Tune up
Band-width	RB allocation	RB offset	Modulation	High	Middle	Low	
5 MHz				695.5MHz	680.5MHz	665.5MHz	
	1RB	High	QPSK	23.33	23.38	23.34	**24.6**
			16QAM	22.55	22.59	22.56	**23.6**
		Middle	QPSK	23.41	23.31	23.36	**24.6**
			16QAM	22.54	22.49	22.52	**23.6**
		Low	QPSK	23.35	23.36	23.43	**24.6**
			16QAM	22.47	22.51	22.61	**23.6**
	12RB	High	QPSK	22.37	22.39	22.27	**23.6**
			16QAM	21.30	21.33	22.22	**22.6**
		Middle	QPSK	22.40	22.33	22.28	**23.6**
			16QAM	21.33	21.42	21.36	**22.6**
		Low	QPSK	22.39	22.34	22.26	**23.6**
			16QAM	21.56	21.51	21.43	**22.6**
	25RB	/	QPSK	22.36	22.34	22.33	**23.6**
			16QAM	21.35	21.37	21.32	**22.6**
10 MHz				693MHz	680.5MHz	668MHz	/
	1RB	High	QPSK	23.36	23.39	23.38	**24.6**
			16QAM	22.59	22.58	22.59	**23.6**
		Middle	QPSK	23.43	23.29	23.42	**24.6**
			16QAM	22.57	22.44	22.55	**23.6**
		Low	QPSK	23.37	23.34	23.46	**24.6**
			16QAM	22.46	22.49	22.63	**23.6**
	25RB	High	QPSK	22.39	22.37	22.30	**23.6**
			16QAM	21.33	21.31	22.26	**22.6**
		Middle	QPSK	22.42	22.31	22.31	**23.6**
			16QAM	21.37	21.40	21.39	**22.6**
		Low	QPSK	22.41	22.36	22.29	**23.6**
			16QAM	21.58	21.47	21.45	**22.6**
	50RB	/	QPSK	22.39	22.34	22.38	**23.6**
			16QAM	21.35	21.35	21.33	**22.6**

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Full Power / Hotspot on

LTE-FDD Band 71				Actual output Power (dBm)			Tune up
Band-width	RB allocation	RB offset	Modulation	High	Middle	Low	
15 MHz				/	680.5MHz	/	
	1RB	High	QPSK	/	23.13	/	**24.6**
			16QAM	/	22.12	/	**23.6**
		Middle	QPSK	/	22.53	/	**24.6**
			16QAM	/	21.55	/	**23.6**
		Low	QPSK	/	23.58	/	**24.6**
			16QAM	/	22.51	/	**23.6**
	36RB	High	QPSK	/	21.69	/	**23.6**
			16QAM	/	20.81	/	**22.6**
		Middle	QPSK	/	21.67	/	**23.6**
			16QAM	/	20.76	/	**22.6**
		Low	QPSK	/	22.10	/	**23.6**
			16QAM	/	21.20	/	**22.6**
	75RB	/	QPSK	/	21.81	/	**23.6**
			16QAM	/	20.91	/	**22.6**
20 MHz				/	680.5MHz	/	/
	1RB	High	QPSK	/	23.71	/	**24.6**
			16QAM	/	23.20	/	**23.6**
		Middle	QPSK	/	23.33	/	**24.6**
			16QAM	/	22.82	/	**23.6**
		Low	QPSK	/	**24.49**	/	**24.6**
			16QAM	/	23.94	/	**23.6**
	50RB	High	QPSK	/	22.58	/	**23.6**
			16QAM	/	21.63	/	**22.6**
		Middle	QPSK	/	22.51	/	**23.6**
			16QAM	/	21.56	/	**22.6**
		Low	QPSK	/	**23.12**	/	**23.6**
			16QAM	/	22.19	/	**22.6**
	100RB	/	QPSK	/	22.72	/	**23.6**
			16QAM	/	21.80	/	**22.6**

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<>Inter-Band>

CA List	PCC							SCC				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
CA_2A-4A	Band 2	20M	1900	19100	QPSK	1	0	Band 4	20M	2132.5	2175	23.67	23.80
	Band 4	20M	1720	20050	QPSK	1	0	Band 2	20M	1960	900	24.41	24.50
CA_2A-5A	Band 2	20M	1900	19100	QPSK	1	0	Band 5	10M	881.5	2525	23.70	23.80
	Band 5	10M	844	20600	QPSK	1	99	Band 2	20M	1960	900	23.71	23.79
CA_2A-12A	Band 2	20M	1900	19100	QPSK	1	0	Band 12	10M	737.5	5095	23.66	23.80
	Band 12	10M	707.5	23095	QPSK	1	49	Band 2	20M	1960	900	23.81	22.86
CA_2A-66A	Band 2	20M	1900	19100	QPSK	1	0	Band 66	20M	2155	66886	23.75	23.80
	Band 66	20M	1745	132322	QPSK	1	49	Band 2	20M	1960	900	23.70	23.87
CA_2A-71A	Band 2	20M	1900	19100	QPSK	1	0	Band 71	20M	634.5	68761	23.64	23.80
	Band 71	20M	680.5	133297	QPSK	1	0	Band 2	20M	1960	900	24.37	24.49
CA_4A-5A	Band 4	20M	1720	20050	QPSK	1	0	Band 5	10M	881.5	2525	24.42	24.50
	Band 5	10M	844	20600	QPSK	1	99	Band 4	20M	2132.5	2175	23.74	23.79
CA_4A-12A	Band 4	20M	1720	20050	QPSK	1	0	Band 12	10M	737.5	5095	24.38	24.50
	Band 12	10M	707.5	23095	QPSK	1	49	Band 4	20M	2132.5	2175	22.76	22.86
CA_4A-71A	Band 5	20M	1720	20050	QPSK	1	0	Band 71	20M	634.5	68761	24.35	24.50
	Band 71	20M	680.5	133297	QPSK	1	0	Band 4	20M	2132.5	2175	24.41	24.49
CA_12A-66A	Band 12	10M	707.5	23095	QPSK	1	49	Band 66	20M	2155	66886	22.73	22.86
	Band 66	20M	1745	132322	QPSK	1	49	Band 12	10M	737.5	5095	23.81	23.87
CA_12A-71A	Band 12	10M	707.5	23095	QPSK	1	49	Band 71	20M	634.5	68761	22.82	22.86
	Band 71	20M	680.5	133297	QPSK	1	0	Band 12	10M	737.5	5095	24.27	24.49

<Intra-Band>

CA List	PCC							SCC				Power	
	LTE Band	BW (MHz)	UL Freq. (MHz)	UL Channel	Mod.	UL# RB	UL RB Offset	LTE Band	BW (MHz)	DL Freq. (MHz)	DL Channel	With CA Tx. Power (dBm)	Without CA Tx. Power (dBm)
Contiguous													
CA_2C	Band 2	20M	1900	19100	QPSK	1	0	Band 2	20M	1960.2	902	23.73	23.80
CA_66C	Band 66	20M	1745	132322	QPSK	1	49	Band 66	20M	2174.8	67084	23.69	23.87

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11.4 Wi-Fi and BT Measurement result

The highest BT power is 3.29dBm and tune up is 4dBm.

Table 11.5: The conducted Power measurement results for 2.4G WIFI

WiFi 2.4GHz	Averaged Power (dBm)		
Mode	Ch.1(2412 MHz)	Ch.6(2437Mhz)	Ch.11(2462MHz)
Tune up	**18**	**18**	**17**
802.11b	16.93	16.81	16.37
Tune up	**17**	**18**	**17**
802.11g	16.17	16.96	15.60
Tune up	**18**	**18**	**17**
802.11n(20MHz)	17.21	17.04	15.58
/	Ch.3(2422 MHz)	Ch.6(2437Mhz)	Ch.9(2452MHz)
Tune up	**17**	**17**	**17**
802.11n(40MHz)	15.45	15.53	16.38

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Table 11.6: The conducted Power measurement results for 5G WIFI

Averaged Power (dBm)								
Mode	802.11a	802.11n -20MHz	802.11ac -20MHz	Mode	802.11n -40MHz	802.11ac -40MHz	Mode	802.11ac -80MHz
Channel	6Mbps	MCS0	MCS0	Channel	MCS0	MCS0	Channel	MCS0
<U-NII-1>								
Tune up	**15.5**	**15.5**	**15.5**	/	**15**	**15**	/	**14**
36(5180MHz)	14.93	14.88	14.86	38(5190MHz)	13.87	14.18	42(5210MHz)	12.85
40(5200MHz)	14.81	14.73	14.69	46(5230MHz)	13.63	14.15	/	/
48(5240MHz)	14.65	14.55	14.42	/	/	/	/	/
<U-NII-2A>								
Tune up	**15.5**	**15.5**	**15.5**	/	**15**	**15**	/	**14**
52(5260MHz)	14.97	14.80	14.69	54(5270MHz)	14.08	13.55	58(5290MHz)	12.93
56(5280MHz)	14.89	14.65	14.45	62(5310MHz)	14.23	13.51	/	/
64(5320MHz)	14.63	14.56	14.21	/	/	/	/	/
<U-NII-2C>								
Tune up	**15.5**	**15.5**	**15.5**	/	**15**	**15**	/	**14**
100(5500MHz)	15.05	14.43	14.53	102(5510MHz)	14.75	14.17	106(5530MHz)	12.88
120(5600MHz)	14.93	14.55	14.58	118(5590MHz)	14.71	14.09	122(5610MHz)	12.85
140(5700MHz)	14.89	14.70	14.75	134(5670MHz)	14.42	13.90	/	/
<U-NII-3>								
Tune up	**16**	**16**	**16**	/	**15.5**	**15.5**	/	**14**
149(5745MHz)	15.68	15.60	15.76	151(5755 MHz)	15.09	15.25	155(5775MHz)	12.95
157(5785MHz)	15.64	15.58	15.71	159(5795 MHz)	15.17	15.13	/	/
165(5825MHz)	15.59	15.49	15.61	/	/	/	/	/

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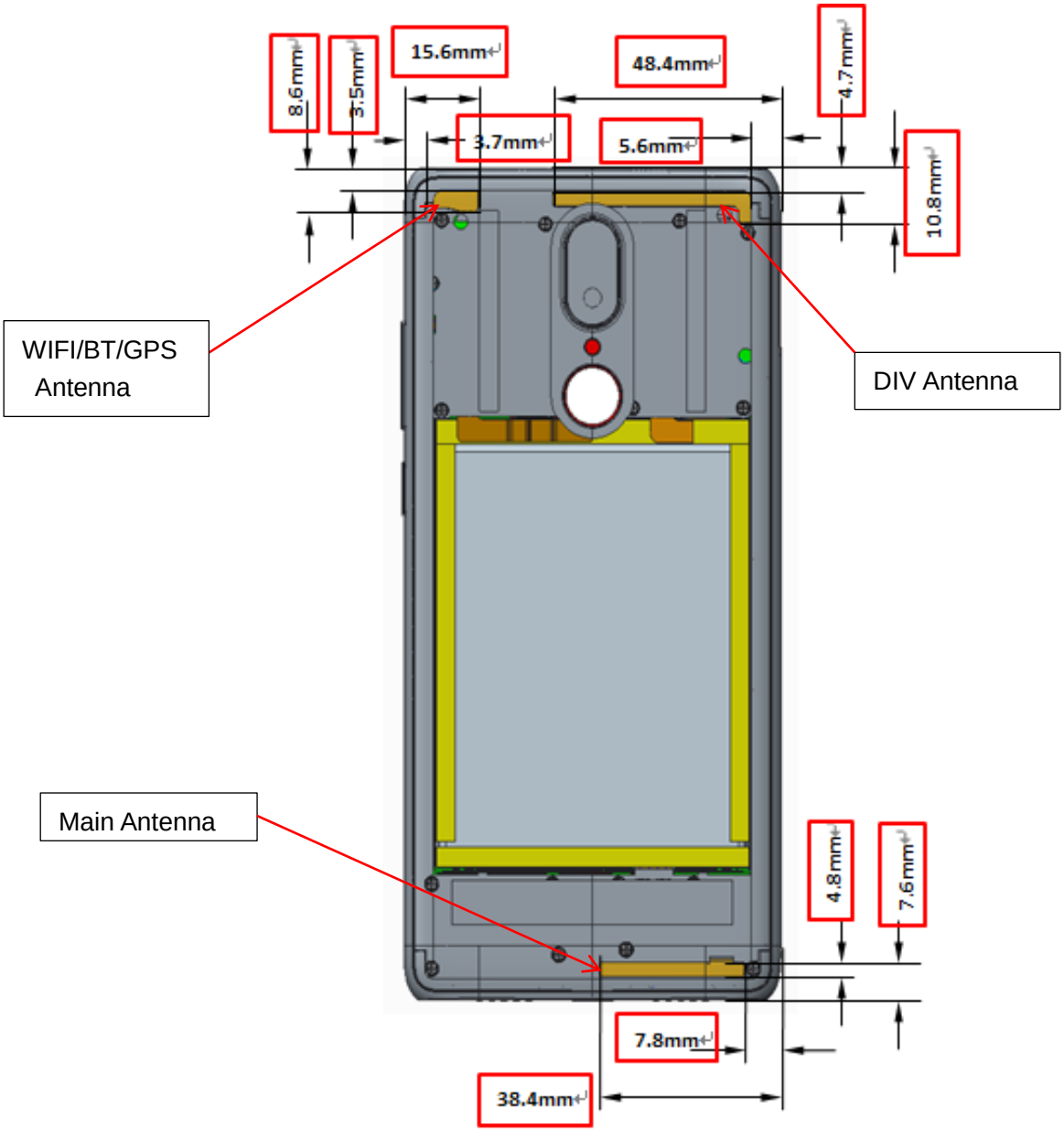
12 Simultaneous TX SAR Considerations

12.1 Introduction

The following procedures adopted from “FCC SAR Considerations for Cell Phones with Multiple Transmitters” are applicable to handsets with built-in unlicensed transmitters such as 802.11 a/b/g and Bluetooth devices which may simultaneously transmit with the licensed transmitter.
For this device, the BT and Wi-Fi can transmit simultaneous with other transmitters.

12.2 Transmit Antenna Separation Distances



Picture 12.1 Antenna Locations (Back View)

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12.3 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR, the edges with less than 25 mm distance to the antennas need to be tested for SAR.

SAR measurement positions						
Mode	Front	Rear	Left edge	Right edge	Top edge	Bottom edge
Main antenna	Yes	Yes	No	Yes	No	Yes
WIFI antenna	Yes	Yes	Yes	No	Yes	No

12.4 Standalone SAR Test Exclusion Considerations

Standalone 1-g head or body SAR evaluation by measurement or numerical simulation is not required when the corresponding SAR Exclusion Threshold condition, listed below, is satisfied.
The 1-g SAR test exclusion threshold for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)] · [√f(GHz)] ≤ 3.0 for 1-g SAR, where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

Table 12.1: Standalone SAR test exclusion considerations

Band/Mode	f(GHz)	Position	SAR test exclusion threshold (mW)	RF output power		SAR test exclusion
				dBm	mW	
Bluetooth	2.441	Head	9.60	4	2.5	Yes
		Body	19.20	4	2.5	Yes
2.4GHz WLAN	2.45	Head	9.58	18	63.1	No
		Body	19.17	18	63.1	No
5GHz WLAN	5.2	Head	6.58	15.5	35.5	No
	5.2	Body	13.16	15.5	35.5	No
	5.3	Head	6.52	15.5	35.5	No
	5.3	Body	13.03	15.5	35.5	No
	5.6	Head	6.34	15.5	35.5	No
	5.6	Body	12.68	15.5	35.5	No
	5.8	Head	6.23	16	39.8	No
	5.8	Body	12.46	16	39.8	No

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13 Evaluation of Simultaneous

Table 13.1: The sum of reported SAR values for main antenna and Wi-Fi

/	Position	Main antenna	Wi-Fi	Sum
Highest reported SAR value for Head	Left Touch	0.21	0.87	1.08
Highest reported SAR value for Hotspot	Bottom	1.28	/	1.28
Highest reported SAR value for Body-worn	Front	0.97	0.06	1.03

Table 13.2: The sum of reported SAR values for main antenna and Bluetooth

/	Position	Main antenna	BT*	Sum
Highest reported SAR value for Head	Right Touch	0.25	0.10	0.35
Highest reported SAR value for Hotspot	Bottom	1.28	/	1.28
Highest reported SAR value for Body-worn	Front	0.97	0.03	1.00

BT* - Estimated SAR for Bluetooth (see the table 13.3)

Table 13.3: Estimated SAR for Bluetooth

Position	f (GHz)	Distance (mm)	Upper limit of power *		Estimated$_{1g}$ (W/kg)
			dBm	mW	
Head	2.441	5	4	2.5	0.10
Body	2.441	10	4	2.5	0.05
Body	2.441	15	4	2.5	0.03

* - Maximum possible output power declared by manufacturer

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. power of channel, including tune-up tolerance, mW) / (min. test separation distance, mm)]·[√f(GHz)/x] W/kg for test separation distances ≤ 50 mm;
Where x = 7.5 for 1-g SAR.
When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion

Conclusion:
According to the above tables, the sum of reported SAR values is < 1.6W/kg. So the simultaneous transmission SAR with volume scans is not required.

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14 SAR Test Result

It is determined by user manual for the distance between the EUT and the phantom bottom.
The distance is 10mm and just applied to the condition of body worn accessory.
It is performed for all SAR measurements with area scan based 1-g SAR estimation (Fast SAR). A zoom scan measurement is added when the estimated 1-g SAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or >1.2W/kg.
The calculated SAR is obtained by the following formula:

$$\text{Reported SAR} = \text{Measured SAR} \times 10^{(P_{Target}-P_{Measured})/10}$$

Where P_{Target} is the power of manufacturing upper limit;
$P_{Measured}$ is the measured power in chapter 11.

Table 14.1: Duty Cycle

Mode	Duty Cycle
Speech for GSM850/1900	1:8.3
GPRS for GSM850/1900	1:2
WCDMA850/1700/1900	1:1
FDD_LTE Band 2/4/5/7/12/66/71	1:1

Note: B1 (Battery), Tianjin Lishen
B2 (Battery), Zhuhai Coslight

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14.1 SAR results

Table 14.2: SAR Values (GSM 850 - Head)

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
836.6	190	Speech	Left Touch	/	34.31	34.5	0.154	0.16	0.04
836.6	190	Speech	Left Tilt	/	34.31	34.5	0.093	0.10	0.04
836.6	190	Speech	Right Touch	/	34.31	34.5	0.182	0.19	0.02
836.6	190	Speech	Right Tilt	/	34.31	34.5	0.009	0.01	0.03
The worst case with B2									
836.6	190	Speech	Left Touch	**Fig.1**	34.31	34.5	**0.195**	**0.20**	0.09

Table 14.3: SAR Values (GSM 850 -Body)

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
836.6	190	GPRS	Front	/	29.76	30.5	0.334	0.40	0.04
836.6	190	GPRS	Rear	**Fig.2**	29.76	30.5	**0.345**	**0.41**	0.00
836.6	190	GPRS	Left	/	29.76	30.5	0.160	0.19	0.05
836.6	190	GPRS	Bottom	/	29.76	30.5	0.168	0.20	0.17
Body Worn Test Data (15mm)									
836.6	190	GPRS	Front	/	29.76	30.5	0.179	0.21	0.03
836.6	190	GPRS	Rear	/	29.76	30.5	0.238	0.28	-0.15
The worst case with B2									
836.6	190	GPRS	Rear	/	29.76	30.5	0.327	0.39	-0.02

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Table 14.4: SAR Values (GSM 1900 - Head)

Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1880	661	Speech	Left Touch	/	30.05	30.5	0.009	0.01	0.08
1880	661	Speech	Left Tilt	/	30.05	30.5	0.003	<0.01	0.01
1880	661	Speech	Right Touch	**Fig.3**	30.05	30.5	**0.012**	**0.01**	0.09
1880	661	Speech	Right Tilt	/	30.05	30.5	0.009	0.01	0.01
The worst case with B2									
1880	661	Speech	Right Touch	/	30.05	30.5	0.011	0.01	0.09

Table 14.5: SAR Values (GSM 1900 - Body)

Ambient Temperature: 22.4°C Liquid Temperature: 22.0°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
1880	661	GPRS	Front	/	24.1	25	0.473	0.58	0.04
1880	661	GPRS	Rear	/	24.1	25	0.356	0.44	0.09
1880	661	GPRS	Left	/	24.1	25	0.019	0.02	0.05
1880	661	GPRS	Bottom	/	24.1	25	0.702	0.86	-0.01
1909.8	810	GPRS	Bottom	/	24.04	25	0.898	1.12	-0.02
1852.4	512	GPRS	Bottom	/	24.02	25	0.572	0.72	-0.16
Body Worn Test Data (15mm)									
1880	661	GPRS	Front	/	25.79	26.5	0.316	0.37	0.09
1880	661	GPRS	Rear	/	25.79	26.5	0.304	0.36	0.05
The worst case with B2									
1909.8	810	GPRS	Bottom	**Fig.4**	24.04	25	**0.955**	**1.19**	0.02

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Table 14.6: SAR Values (WCDMA 850 - Head)

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
836.4	4182	RMC	Left Touch	/	23.7	24.5	0.041	0.05	0.09
836.4	4182	RMC	Left Tilt	/	23.7	24.5	0.036	0.04	0.07
836.4	4182	RMC	Right Touch	**Fig.5**	23.7	24.5	**0.204**	**0.25**	0.07
836.4	4182	RMC	Right Tilt	/	23.7	24.5	0.087	0.10	0.03
The worst case with B2									
836.4	4182	RMC	Right Touch	/	23.7	24.5	0.155	0.19	0.07

Table 14.7: SAR Values (WCDMA 850 -Body)

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
836.4	4182	RMC	Front	**Fig.6**	23.7	24.5	**0.340**	**0.41**	0.02
836.4	4182	RMC	Rear	/	23.7	24.5	0.331	0.40	0.03
836.4	4182	RMC	Left	/	23.7	24.5	0.091	0.11	0.03
836.4	4182	RMC	Bottom	/	23.7	24.5	0.202	0.24	0.05
Body Worn Test Data (15mm)									
836.4	4182	RMC	Front	/	23.7	24.5	0.200	0.24	0.05
836.4	4182	RMC	Rear	/	23.7	24.5	0.225	0.27	0.06
The worst case with B2									
836.4	4182	RMC	Front	/	23.7	24.5	0.275	0.33	-0.04

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Table 14.8: SAR Values (WCDMA1900 - Head)

Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1880	9400	RMC	Left Touch	/	23.8	24.5	0.054	0.06	0.03
1880	9400	RMC	Left Tilt	/	23.8	24.5	0.038	0.04	0.06
1880	9400	RMC	Right Touch	/	23.8	24.5	0.052	0.06	0.07
1880	9400	RMC	Right Tilt	**Fig.7**	23.8	24.5	**0.069**	**0.08**	0.03
The worst case with B2									
1880	9400	RMC	Right Tilt	/	23.8	24.5	0.047	0.05	0.03

Table 14.9: SAR Values (WCDMA1900 - Body)

Ambient Temperature: 22.4°C Liquid Temperature: 22.0°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
1880	9400	RMC	Front	/	19.1	20	0.380	0.47	0.06
1880	9400	RMC	Rear	/	19.1	20	0.370	0.46	0.06
1880	9400	RMC	Left	/	19.1	20	0.020	0.02	0.02
1880	9400	RMC	Bottom	/	19.1	20	0.766	0.94	0.05
1907.6	9538	RMC	Bottom	/	19.1	20	0.967	1.19	0.04
1852.4	9262	RMC	Bottom	/	19.4	20	0.688	0.79	0.03
Body Worn Test Data (15mm)									
1880	9400	RMC	Front	/	23.8	24.5	0.541	0.64	0.02
1880	9400	RMC	Rear	/	23.8	24.5	0.517	0.61	0.03
The worst case with B2									
1907.6	9538	RMC	Bottom	**Fig.8**	19.1	20	**1.04**	**1.28**	0.03

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Table 14.10: SAR Values (WCDMA 1700 - Head)

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1732.6	1413	RMC	Left Touch	**Fig.9**	24.1	24.5	**0.102**	**0.11**	0.02
1732.6	1413	RMC	Left Tilt	/	24.1	24.5	0.080	0.09	0.01
1732.6	1413	RMC	Right Touch	/	24.1	24.5	0.071	0.08	0.03
1732.6	1413	RMC	Right Tilt	/	24.1	24.5	0.087	0.09	-0.01
The worst case with B2									
1732.6	1413	RMC	Left Touch	/	24.1	24.5	0.072	0.08	0.07

Table 14.11: SAR Values (WCDMA 1700 - Body)

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
1732.6	1413	RMC	Front	/	19.4	20	0.398	0.46	0.06
1732.6	1413	RMC	Rear	/	19.4	20	0.362	0.42	0.03
1732.6	1413	RMC	Left	/	19.4	20	0.044	0.05	0.03
1732.6	1413	RMC	Bottom	/	19.4	20	0.732	0.84	0.02
1752.6	1513	RMC	Bottom	**Fig.10**	19.4	20	**0.736**	**0.85**	0.08
1712.4	1312	RMC	Bottom	/	19.4	20	0.635	0.73	0.14
Body Worn Test Data (15mm)									
1732.6	1413	RMC	Front	/	24.1	24.5	0.587	0.64	0.08
1732.6	1413	RMC	Rear	/	24.1	24.5	0.547	0.60	0.09
Hotspot Test Data (10mm)									
1752.6	1513	RMC	Bottom	/	19.4	20	0.606	0.70	0.09

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Table 14.12: SAR Values (LTE Band 2 - Head)

Ambient Temperature: 22.7°C Liquid Temperature: 22.2°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1880	18900	1RB_Mid	Left Touch	**Fig.11**	23.56	24.5	**0.072**	**0.09**	0.09
1880	18900	50RB_Low	Left Touch	/	22.72	23.5	0.033	0.04	0.07
1880	18900	1RB_Mid	Left Tilt	/	23.56	24.5	0.019	0.02	0.03
1880	18900	50RB_Low	Left Tilt	/	22.72	23.5	0.031	0.04	0.01
1880	18900	1RB_Mid	Right Touch	/	23.56	24.5	0.058	0.07	0.01
1880	18900	50RB_Low	Right Touch	/	22.72	23.5	0.048	0.06	0.06
1880	18900	1RB_Mid	Right Tilt	/	23.56	24.5	0.056	0.07	0.06
1880	18900	50RB_Low	Right Tilt	/	22.72	23.5	0.048	0.06	0.01
The worst case with B2									
1880	18900	1RB_Mid	Left Touch	/	23.56	24.5	0.069	0.09	0.04

Table 14.13: SAR Values (LTE Band 2 - Body)

Ambient Temperature: 22.4°C Liquid Temperature: 22.0°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
1880	18900	1RB_Low	Front	/	19.52	20.5	0.245	0.31	-0.08
1880	18900	50RB_Low	Front	/	19.70	20.5	0.251	0.30	0.06
1880	18900	1RB_Low	Rear	/	19.52	20.5	0.280	0.35	-0.02
1880	18900	50RB_Low	Rear	/	19.70	20.5	0.254	0.31	0.02
1880	18900	1RB_Low	Left	/	19.52	20.5	0.010	0.01	0.05
1880	18900	50RB_Low	Left	/	19.70	20.5	0.008	0.01	0.05
1880	18900	1RB_Low	Bottom	/	19.52	20.5	0.573	0.72	-0.04
1880	18900	50RB_Low	Bottom	/	19.70	20.5	0.620	0.75	-0.07
Body Worn Test Data (15mm)									
1880	18900	1RB_Low	Front	/	23.56	24.5	0.382	0.47	0.04
1880	18900	50RB_Low	Front	/	22.72	23.5	0.292	0.35	0.09
1880	18900	1RB_Low	Rear	/	23.56	24.5	0.403	0.50	0.09
1880	18900	50RB_Low	Rear	/	22.72	23.5	0.306	0.37	0.09
The worst case with B2									
1880	18900	50RB_Low	Bottom	**Fig.12**	19.70	20.5	**0.751**	**0.90**	0.07
1900	19100	50RB_Mid	Bottom	/	19.74	20.5	0.721	0.86	0.10
1860	18700	50RB_Mid	Bottom	/	19.66	20.5	0.684	0.83	-0.03
1880	18900	100RB	Bottom	/	19.44	20.5	0.701	0.89	0.02

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Table 14.14: SAR Values (LTE Band 4 - Head)

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1732.5	20175	1RB_Low	Left Touch	**Fig.13**	24.37	25	**0.131**	**0.15**	0.04
1732.5	20175	50RB_Low	Left Touch	/	22.85	24	0.081	0.11	0.08
1732.5	20175	1RB_Low	Left Tilt	/	24.37	25	0.055	0.06	0.07
1732.5	20175	50RB_Low	Left Tilt	/	22.85	24	0.037	0.05	0.07
1732.5	20175	1RB_Low	Right Touch	/	24.37	25	0.086	0.10	0.11
1732.5	20175	50RB_Low	Right Touch	/	22.85	24	0.059	0.08	0.03
1732.5	20175	1RB_Low	Right Tilt	/	24.37	25	0.074	0.09	0.09
1732.5	20175	50RB_Low	Right Tilt	/	22.85	24	0.046	0.06	0.04
The worst case with B2									
1732.5	20175	1RB_Low	Left Touch	/	24.37	25	0.097	0.11	0.03

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Table 14.15: SAR Values (LTE Band 4 - Body)

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
1732.5	20175	1RB_Low	Front	/	20.56	21.2	0.401	0.46	0.07
1732.5	20175	50RB_Low	Front	/	19.97	21.2	0.339	0.45	0.04
1732.5	20175	1RB_Low	Rear	/	20.56	21.2	0.415	0.48	0.08
1732.5	20175	50RB_Low	Rear	/	19.97	21.2	0.353	0.47	0.07
1732.5	20175	1RB_Low	Left	/	20.56	21.2	0.046	0.05	0.03
1732.5	20175	50RB_Low	Left	/	19.97	21.2	0.044	0.06	0.03
1732.5	20175	1RB_Low	Bottom	/	20.56	21.2	0.859	1.00	-0.12
1732.5	20175	50RB_Low	Bottom	/	19.97	21.2	0.706	0.94	-0.09
1745	20300	1RB_Low	Bottom	**Fig.14**	20.64	21.2	**0.892**	**1.01**	-0.05
1720	20050	1RB_Low	Bottom	/	20.68	21.2	0.748	0.84	-0.06
1745	20300	50RB_Low	Bottom	/	19.89	21.2	0.730	0.99	-0.06
1720	20050	50RB_Low	Bottom	/	20.02	21.2	0.652	0.86	-0.05
1732.5	20175	100RB	Bottom	/	19.79	21.2	0.701	0.97	-0.01
Body Worn Test Data (15mm)									
1732.5	20175	1RB_Low	Front	/	24.37	25	0.842	0.97	0.09
1732.5	20175	50RB_Low	Front	/	22.85	24	0.441	0.57	0.09
1732.5	20175	1RB_Low	Rear	/	24.37	25	0.793	0.92	0.01
1732.5	20175	50RB_Low	Rear	/	22.85	24	0.423	0.55	0.04
1745	20300	1RB_Low	Front	/	24.42	25	0.665	0.76	0.08
1720	20050	1RB_Low	Front	/	24.50	25	0.600	0.67	0.03
1732.5	20175	100RB	Front	/	22.65	24	0.390	0.53	0.04
1745	20300	1RB_Low	Rear	/	24.42	25	0.598	0.68	0.11
1720	20050	1RB_Low	Rear	/	24.50	25	0.564	0.63	0.08
1732.5	20175	100RB	Rear	/	22.65	24	0.364	0.50	0.02
The worst case with B2									
1745	20300	1RB_Low	Bottom	/	20.64	21.2	0.778	0.85	0.07

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Table 14.16: SAR Values (LTE Band 5 - Head)

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
836.5	20525	1RB_High	Left Touch	/	23.64	24	0.191	0.21	0.01
836.5	20525	25RB_High	Left Touch	/	22.44	23	0.135	0.15	0.07
836.5	20525	1RB_High	Left Tilt	/	23.64	24	0.117	0.13	0.04
836.5	20525	25RB_High	Left Tilt	/	22.44	23	0.085	0.10	0.08
836.5	20525	1RB_High	Right Touch	**Fig.15**	23.64	24	**0.206**	**0.22**	0.06
836.5	20525	25RB_High	Right Touch	/	22.44	23	0.141	0.16	0.01
836.5	20525	1RB_High	Right Tilt	/	23.64	24	0.107	0.12	0.08
836.5	20525	25RB_High	Right Tilt	/	22.44	23	0.080	0.09	0.02
The worst case with B2									
836.5	20525	1RB_High	Right Touch	/	23.64	24	0.204	0.22	0.08

Table 14.17: SAR Values (LTE Band 5 - Body)

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
836.5	20525	1RB_High	Front	/	23.64	24	0.430	0.47	0.05
836.5	20525	25RB_High	Front	/	22.44	23	0.315	0.36	0.00
836.5	20525	1RB_High	Rear	**Fig.16**	23.64	24	**0.468**	**0.51**	-0.13
836.5	20525	25RB_High	Rear	/	22.44	23	0.382	0.43	0.07
836.5	20525	1RB_High	Left	/	23.64	24	0.096	0.10	0.08
836.5	20525	25RB_High	Left	/	22.44	23	0.076	0.09	0.14
836.5	20525	1RB_High	Bottom	/	23.64	24	0.210	0.23	0.01
836.5	20525	25RB_High	Bottom	/	22.44	23	0.156	0.18	0.16
Body Worn Test Data (15mm)									
836.5	20525	1RB_High	Front	/	23.64	24	0.240	0.26	0.07
836.5	20525	25RB_High	Front	/	22.44	23	0.174	0.20	0.08
836.5	20525	1RB_High	Rear	/	23.64	24	0.235	0.26	0.01
836.5	20525	25RB_High	Rear	/	22.44	23	0.180	0.20	0.04
The worst case with B2									
836.5	20525	1RB_High	Rear	/	23.64	24	0.352	0.38	-0.03

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Table 14.18: SAR Values (LTE Band 7 - Head)

Ambient Temperature: 22.8°C Liquid Temperature: 22.3°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
2535	21100	1RB_Low	Left Touch	/	23.71	24.2	0.069	0.08	0.06
2535	21100	50RB_Low	Left Touch	/	22.49	23.2	0.086	0.10	-0.02
2535	21100	1RB_Low	Left Tilt	/	23.71	24.2	0.101	0.11	0.04
2535	21100	50RB_Low	Left Tilt	/	22.49	23.2	0.084	0.10	0.05
2535	21100	1RB_Low	Right Touch	/	23.71	24.2	0.090	0.10	0.07
2535	21100	50RB_Low	Right Touch	/	22.49	23.2	0.048	0.06	0.04
2535	21100	1RB_Low	Right Tilt	**Fig.17**	23.71	24.2	**0.162**	**0.18**	0.03
2535	21100	50RB_Low	Right Tilt	/	22.49	23.2	0.064	0.08	0.01
The worst case with B2									
2535	21100	1RB_Low	Right Tilt	/	23.71	24.2	0.065	0.07	0.02

Table 14.19: SAR Values (LTE Band 7 - Body)

Ambient Temperature: 22.8°C Liquid Temperature: 22.3°C									
Frequency		Test Mode	Test Position	Figure No. / Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
2535	21100	1RB_Low	Front	/	19.70	20.5	0.331	0.40	0.07
2535	21100	50RB_Low	Front	/	19.45	20.5	0.299	0.38	0.07
2535	21100	1RB_Low	Rear	/	19.70	20.5	0.349	0.42	0.09
2535	21100	50RB_Low	Rear	/	19.45	20.5	0.280	0.36	0.01
2535	21100	1RB_Low	Left	/	19.70	20.5	0.128	0.15	0.01
2535	21100	50RB_Low	Left	/	19.45	20.5	0.115	0.15	0.01
2535	21100	1RB_Low	Bottom	/	19.70	20.5	0.723	0.87	0.07
2535	21100	50RB_Low	Bottom	/	19.45	20.5	0.595	0.76	0.02
2560	21350	1RB_Low	Bottom	/	19.83	20.5	0.618	0.72	0.04
2510	20850	1RB_Low	Bottom	**Fig.18**	19.55	20.5	**0.728**	**0.91**	0.13
2535	21100	100RB	Bottom	/	19.45	20.5	0.509	0.65	0.10
Body Worn Test Data (15mm)									
2535	21100	1RB_Low	Front	/	23.71	24.2	0.387	0.43	0.04
2535	21100	50RB_Low	Front	/	22.49	23.2	0.376	0.44	0.05
2535	21100	1RB_Low	Rear	/	23.71	24.2	0.655	0.73	0.05
2535	21100	50RB_Low	Rear	/	22.49	23.2	0.399	0.47	0.03
The worst case with B2									
2510	20850	1RB_Low	Bottom	/	19.55	20.5	0.718	0.89	0.13

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Table 14.20: SAR Values (LTE Band 12 - Head)

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
707.5	23095	1RB_Mid	Left Touch	**Fig.19**	22.86	23.5	**0.116**	**0.13**	0.03
707.5	23095	25RB_Mid	Left Touch	/	21.96	22.5	0.090	0.10	0.08
707.5	23095	1RB_Mid	Left Tilt	/	22.86	23.5	0.100	0.12	0.03
707.5	23095	25RB_Mid	Left Tilt	/	21.96	22.5	0.068	0.08	0.07
707.5	23095	1RB_Mid	Right Touch	/	22.86	23.5	0.114	0.13	0.03
707.5	23095	25RB_Mid	Right Touch	/	21.96	22.5	0.085	0.10	0.07
707.5	23095	1RB_Mid	Right Tilt	/	22.86	23.5	0.086	0.10	0.01
707.5	23095	25RB_Mid	Right Tilt	/	21.96	22.5	0.066	0.07	0.01
The worst case with B2									
707.5	23095	1RB_Mid	Left Touch	/	22.86	23.5	0.097	0.11	0.06

Table 14.21: SAR Values (LTE Band 12 - Body)

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
707.5	23095	1RB_Mid	Front	/	22.86	23.5	0.202	0.23	-0.04
707.5	23095	25RB_Mid	Front	/	21.96	22.5	0.163	0.18	0.01
707.5	23095	1RB_Mid	Rear	**Fig.20**	22.86	23.5	**0.204**	**0.24**	0.01
707.5	23095	25RB_Mid	Rear	/	21.96	22.5	0.177	0.20	0.02
707.5	23095	1RB_Mid	Left	/	22.86	23.5	0.079	0.09	0.14
707.5	23095	25RB_Mid	Left	/	21.96	22.5	0.062	0.07	0.09
707.5	23095	1RB_Mid	Bottom	/	22.86	23.5	0.100	0.12	0.07
707.5	23095	25RB_Mid	Bottom	/	21.96	22.5	0.078	0.09	0.17
Body Worn Test Data (15mm)									
707.5	23095	1RB_Mid	Front	/	22.86	23.5	0.140	0.16	0.01
707.5	23095	25RB_Mid	Front	/	21.96	22.5	0.110	0.12	0.09
707.5	23095	1RB_Mid	Rear	/	22.86	23.5	0.173	0.20	0.08
707.5	23095	25RB_Mid	Rear	/	21.96	22.5	0.137	0.16	0.08
The worst case with B2									
707.5	23095	1RB_Mid	Rear	/	22.86	23.5	0.189	0.22	0.03

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Table 14.22: SAR Values (LTE Band 66 - Head)

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
1745	132322	1RB_Mid	Left Touch	**Fig.21**	23.87	24	**0.100**	**0.10**	0.01
1745	132322	50RB_High	Left Touch	/	22.43	23	0.065	0.07	0.02
1745	132322	1RB_Mid	Left Tilt	/	23.87	24	0.039	0.04	0.09
1745	132322	50RB_High	Left Tilt	/	22.43	23	0.031	0.04	0.03
1745	132322	1RB_Mid	Right Touch	/	23.87	24	0.060	0.06	0.03
1745	132322	50RB_High	Right Touch	/	22.43	23	0.055	0.06	0.06
1745	132322	1RB_Mid	Right Tilt	/	23.87	24	0.048	0.05	0.07
1745	132322	50RB_High	Right Tilt	/	22.43	23	0.039	0.04	0.01
The worst case with B2									
1745	132322	1RB_Mid	Left Touch	/	23.87	24	0.094	0.10	0.05

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Table 14.23: SAR Values (LTE Band 66 - Body)

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C									
Frequency		Test Mode	Test Position	Figure No. / Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
1745	132322	1RB_High	Front	/	19.34	20.5	0.342	0.45	0.04
1745	132322	50RB_Mid	Front	/	19.40	20.5	0.342	0.44	0.01
1745	132322	1RB_High	Rear	/	19.34	20.5	0.395	0.52	0.05
1745	132322	50RB_Mid	Rear	/	19.40	20.5	0.388	0.50	0.07
1745	132322	1RB_High	Left	/	19.34	20.5	0.035	0.05	0.09
1745	132322	50RB_Mid	Left	/	19.40	20.5	0.038	0.05	0.05
1745	132322	1RB_High	Bottom	/	19.34	20.5	0.715	0.93	0.05
1745	132322	50RB_Mid	Bottom	/	19.40	20.5	0.705	0.91	0.08
1770	132572	1RB_Mid	Bottom	**Fig.22**	19.27	20.5	**0.725**	**0.96**	0.03
1720	132072	1RB_Mid	Bottom	/	19.26	20.5	0.608	0.81	0.05
1770	132572	50RB_Mid	Bottom	/	19.47	20.5	0.709	0.90	0.04
1720	132072	50RB_Mid	Bottom	/	19.43	20.5	0.621	0.79	0.06
1745	132322	100RB	Bottom	/	19.30	20.5	0.697	0.92	0.02
Body Worn Test Data (15mm)									
1745	132322	1RB_Mid	Front	/	23.87	24	0.549	0.57	0.07
1745	132322	50RB_High	Front	/	22.43	23	0.419	0.48	0.04
1745	132322	1RB_Mid	Rear	/	23.87	24	0.492	0.51	0.02
1745	132322	50RB_High	Rear	/	22.43	23	0.378	0.43	0.09
The worst case with B2									
1770	132572	1RB_Mid	Bottom	/	19.27	20.5	0.498	0.66	0.18

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Table 14.24: SAR Values (LTE Band 71 - Head)

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
680.5	133297	1RB_Low	Left Touch	/	24.49	24.6	0.157	0.16	0.03
680.5	133297	50RB_Low	Left Touch	/	23.12	23.6	0.088	0.10	0.02
680.5	133297	1RB_Low	Left Tilt	/	24.49	24.6	0.088	0.09	0.07
680.5	133297	50RB_Low	Left Tilt	/	23.12	23.6	0.053	0.06	0.09
680.5	133297	1RB_Low	Right Touch	**Fig.23**	24.49	24.6	**0.160**	**0.16**	0.09
680.5	133297	50RB_Low	Right Touch	/	23.12	23.6	0.092	0.10	0.05
680.5	133297	1RB_Low	Right Tilt	/	24.49	24.6	0.077	0.08	0.05
680.5	133297	50RB_Low	Right Tilt	/	23.12	23.6	0.052	0.06	-0.04
The worst case with B2									
680.5	133297	1RB_Low	Right Touch	/	24.49	24.6	0.149	0.15	-0.03

Table 14.25: SAR Values (LTE Band 71 - Body)

Ambient Temperature: 22.5°C Liquid Temperature: 22.0°C									
Frequency		Test Mode	Test Position	Figure No. / Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Hotspot Test Data (10mm)									
680.5	133297	1RB_Low	Front	/	24.49	24.6	0.193	0.20	0.01
680.5	133297	50RB_Low	Front	/	23.12	23.6	0.123	0.14	0.01
680.5	133297	1RB_Low	Rear	**Fig.24**	24.49	24.6	**0.216**	**0.22**	0.08
680.5	133297	50RB_Low	Rear	/	23.12	23.6	0.138	0.15	0.07
680.5	133297	1RB_Low	Left	/	24.49	24.6	0.085	0.09	0.01
680.5	133297	50RB_Low	Left	/	23.12	23.6	0.050	0.06	0.03
680.5	133297	1RB_Low	Bottom	/	24.49	24.6	0.096	0.10	0.01
680.5	133297	50RB_Low	Bottom	/	23.12	23.6	0.066	0.07	0.08
Body Worn Test Data (15mm)									
680.5	133297	1RB_Low	Front	/	24.49	24.6	0.165	0.17	0.02
680.5	133297	50RB_Low	Front	/	23.12	23.6	0.098	0.11	0.05
680.5	133297	1RB_Low	Rear	/	24.49	24.6	0.125	0.13	0.05
680.5	133297	50RB_Low	Rear	/	23.12	23.6	0.102	0.11	-0.07
The worst case with B2									
680.5	133297	1RB_Low	Rear	/	24.49	24.6	0.199	0.20	-0.12

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14.2 WLAN Evaluation for 2.4G

According to the KDB248227 D01, SAR is measured for 2.4GHz 802.11b DSSS using the initial test position procedure.

Table 14.26: SAR Values (WLAN 2.4G - Head)

Ambient Temperature: 22.4°C Liquid Temperature: 21.8°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
2412	1	802.11 b	Left Touch	/	16.93	18	0.590	0.75	-0.09
2412	1	802.11 b	Left Tilt	/	16.93	18	0.583	0.75	0.01
2412	1	802.11 b	Right Touch	/	16.93	18	0.235	0.30	0.04
2412	1	802.11 b	Right Tilt	/	16.93	18	0.266	0.34	0.05
The worst case with B2									
2412	1	802.11 b	Left Touch	**Fig.25**	16.93	18	**0.680**	**0.87**	0.09
2437	6	802.11 b	Left Touch	/	16.81	18	0.653	0.86	-0.06

Note1: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 100% is achievable for WLAN in this project and the scaled reported SAR is presented as below.

Table 14.27: SAR Values (WLAN - Head) – 802.11b 1Mbps (Scaled Reported SAR)

Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.					
2412	1	Left Touch	100%	100%	0.87	**0.87**

SAR is not required for OFDM because the 802.11b adjusted SAR ≤ 1.2 W/kg.

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Table 14.28: SAR Values (WLAN 2.4G - Body)

Ambient Temperature: 22.4°C Liquid Temperature: 21.8°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
Test Data (10mm)									
2412	1	802.11 b	Front	/	16.93	18	0.063	0.08	0.09
2412	1	802.11 b	Rear	/	16.93	18	0.083	0.11	0.09
2412	1	802.11 b	Right	/	16.93	18	0.032	0.04	0.03
2412	1	802.11 b	Top	/	16.93	18	0.105	0.13	0.07
Test Data (15mm)									
2412	1	802.11 b	Front	/	16.93	18	0.042	0.05	-0.06
2412	1	802.11 b	Rear	/	16.93	18	0.072	0.09	0.02
The worst case with B2									
2412	1	802.11 b	Top	**Fig.26**	16.93	18	**0.153**	**0.20**	0.04

Note1: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 100% is achievable for WLAN in this project and the scaled reported SAR is presented as below.

Table 14.29: SAR Values (WLAN - Body) – 802.11b 1Mbps (Scaled Reported SAR)

Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C						
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.					
2412	1	Rear	100%	100%	0.11	**0.11**
2412	1	Top	100%	100%	0.20	**0.20**

SAR is not required for OFDM because the 802.11b adjusted SAR ≤ 1.2 W/kg.

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14.3 WLAN Evaluation for 5G

Table 14.30: SAR Values (WLAN 5G - Head)

Ambient Temperature: 22.8°C Liquid Temperature: 22.3°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
U-NII-2A									
5260	52	802.11 a	Left Touch	/	14.97	15.5	**0.633**	0.72	0.03
5260	52	802.11 a	Left Tilt	/	14.97	15.5	0.352	0.40	0.04
5260	52	802.11 a	Right Touch	/	14.97	15.5	0.250	0.28	0.01
5260	52	802.11 a	Right Tilt	/	14.97	15.5	0.272	0.31	0.00
U-NII-2C									
5500	100	802.11 a	Left Touch	/	15.05	15.5	**0.273**	0.30	0.09
5500	100	802.11 a	Left Tilt	/	15.05	15.5	0.238	0.26	0.02
5500	100	802.11 a	Right Touch	/	15.05	15.5	0.197	0.22	0.00
5500	100	802.11 a	Right Tilt	/	15.05	15.5	0.218	0.24	0.09
U-NII-3									
5745	149	802.11 a	Left Touch	**Fig.27**	15.68	16	**0.695**	**0.75**	0.02
5745	149	802.11 a	Left Tilt	/	15.68	16	0.687	0.74	0.04
5745	149	802.11 a	Right Touch	/	15.68	16	0.291	0.31	0.02
5745	149	802.11 a	Right Tilt	/	15.68	16	0.422	0.45	0.04
The worst case with B2									
5745	149	802.11 a	Left Touch	/	15.68	16	0.434	0.47	0.03

Note1: U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.

Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 100% is achievable for WLAN in this project and the scaled reported SAR is presented as below.

Table 14.31: SAR Values (WLAN - Head) –(Scaled Reported SAR)

Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.					
5745	149	Left Touch	100%	100%	0.75	**0.75**

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Table 14.32: SAR Values (WLAN 5G - Body)

Ambient Temperature: 22.8°C Liquid Temperature: 22.3°C									
Frequency		Test Mode	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift(dB)
MHz	Ch.								
U-NII-2A Test Data (10mm)									
5260	52	802.11 a	Front	/	14.97	15.5	0.063	0.07	0.09
5260	52	802.11 a	Rear	**Fig.28**	14.97	15.5	**0.139**	**0.16**	-0.05
5260	52	802.11 a	Right	/	14.97	15.5	0.041	0.05	0.09
5260	52	802.11 a	Top	/	14.97	15.5	0.077	0.09	0.04
U-NII-2C Test Data (10mm)									
5500	100	802.11 a	Front	/	15.05	15.5	0.042	0.05	0.00
5500	100	802.11 a	Rear	/	15.05	15.5	**0.130**	0.14	0.11
5500	100	802.11 a	Right	/	15.05	15.5	0.039	0.04	0.14
5500	100	802.11 a	Top	/	15.05	15.5	0.029	0.03	-0.09
U-NII-3 Test Data (10mm)									
5745	149	802.11 a	Front	/	15.68	16	0.078	0.08	0.07
5745	149	802.11 a	Rear	/	15.68	16	**0.138**	0.15	-0.05
5745	149	802.11 a	Right	/	15.68	16	0.036	0.04	0.00
5745	149	802.11 a	Top	/	15.68	16	0.065	0.07	0.02
Test Data (15mm)									
5745	149	802.11 a	Front	/	15.68	16	0.055	0.06	-0.13
5260	52	802.11 a	Rear	/	14.97	15.5	0.082	0.09	0.09
The worst case with B2									
5260	52	802.11 a	Rear	/	14.97	15.5	0.115	0.13	0.06

Note1: U-NII-1 and U-NII-2A bands have the same specified maximum output and tolerance; SAR is measured for U-NII-2A band first. Adjusted SAR of U-NII-2A band is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band.

Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg or all required channels are tested.

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According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. A maximum transmission duty factor of 100% is achievable for WLAN in this project and the scaled reported SAR is presented as below.

Table 14.33: SAR Values (WLAN - Body) – (Scaled Reported SAR)

Ambient Temperature: 22.6°C Liquid Temperature: 22.0°C						
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.					
5260	52	Rear	100%	100%	0.16	**0.16**

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15 SAR Measurement Variability

SAR measurement variability must be assessed for each frequency band, which is determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media are required for SAR measurements in a frequency band, the variability measurement procedures should be applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium.

The following procedures are applied to determine if repeated measurements are required.

1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.

2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.

3) 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).

4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Table 15.1: SAR Measurement Variability for Body – GSM 1900

Frequency		Test Position	Original	1st Repeated	Ratio	2nd Repeated
MHz	Ch.		SAR (W/kg)	SAR (W/kg)		SAR (W/kg)
1909.8	810	Bottom	0.955	0.943	1.01	/

Table 15.2: SAR Measurement Variability for Body – WCDMA 1900

Frequency		Test Position	Original	1st Repeated	Ratio	2nd Repeated
MHz	Ch.		SAR (W/kg)	SAR (W/kg)		SAR (W/kg)
1907.6	4233	Bottom	1.04	0.998	1.04	/

Table 15.3: SAR Measurement Variability for Body – LTE-Band 4

Frequency		Test Position	Original	1st Repeated	Ratio	2nd Repeated
MHz	Ch.		SAR (W/kg)	SAR (W/kg)		SAR (W/kg)
1745	20300	Bottom	0.892	0.875	1.02	/

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16 Measurement Uncertainty

16.1 Measurement Uncertainty for Normal SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	12	N	2	1	1	6.0	6.0	∞
2	Isotropy	B	7.4	R	$\sqrt{3}$	1	1	4.3	4.3	∞
3	Boundary effect	B	1.1	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	1.0	N	1	1	1	1.0	1.0	∞
7	Response time	B	0.0	R	$\sqrt{3}$	1	1	0.0	0.0	∞
8	Integration time	B	1.7	R	$\sqrt{3}$	1	1	1.0	1.0	∞
9	RF ambient conditions-noise	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
10	RF ambient conditions-reflection	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
11	Probe positioned mech. restrictions	B	0.35	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	5
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	1.3	N	1	0.64	0.43	0.83	0.56	9
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	0.96	0.78	9
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.4	10.3	95.5
Expanded uncertainty (Confidence interval of 95 %)		$u_e = 2u_c$						20.8	20.6	

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16.2 Measurement Uncertainty for Fast SAR Tests (300MHz~3GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	12	N	2	1	1	6.0	6.0	∞
2	Isotropy	B	7.4	R	$\sqrt{3}$	1	1	4.3	4.3	∞
3	Boundary effect	B	1.1	R	$\sqrt{3}$	1	1	0.6	0.6	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	1.0	N	1	1	1	1.0	1.0	∞
7	Response time	B	0.0	R	$\sqrt{3}$	1	1	0.0	0.0	∞
8	Integration time	B	1.7	R	$\sqrt{3}$	1	1	1.0	1.0	∞
9	RF ambient conditions-noise	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
10	RF ambient conditions-reflection	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
11	Probe positioned mech. Restrictions	B	0.35	R	$\sqrt{3}$	1	1	0.2	0.2	∞
12	Probe positioning with respect to phantom shell	B	2.9	R	$\sqrt{3}$	1	1	1.7	1.7	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
14	Fast SAR z-Approximation	B	7.0	R	$\sqrt{3}$	1	1	4.0	4.0	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	5
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	1.3	N	1	0.64	0.43	0.83	0.56	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	0.96	0.78	521
Combined standard uncertainty		$u_c' = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						11.1	11.0	257
Expanded uncertainty (Confidence interval of 95 %)		$u_e = 2u_c$						22.2	22.0	

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16.3 Measurement Uncertainty for Normal SAR Tests (3GHz~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	13	N	2	1	1	6.5	6.5	∞
2	Isotropy	B	7.4	R	$\sqrt{3}$	1	1	4.3	4.3	∞
3	Boundary effect	B	2.3	R	$\sqrt{3}$	1	1	1.3	1.3	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	1.0	N	1	1	1	1.0	1.0	∞
7	Response time	B	0.0	R	$\sqrt{3}$	1	1	0.0	0.0	∞
8	Integration time	B	1.7	R	$\sqrt{3}$	1	1	1.0	1.0	∞
9	RF ambient conditions-noise	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
10	RF ambient conditions-reflection	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
11	Probe positioned mech. restrictions	B	0.71	R	$\sqrt{3}$	1	1	0.4	0.4	∞
12	Probe positioning with respect to phantom shell	B	5.7	R	$\sqrt{3}$	1	1	3.3	3.3	∞
13	Post-processing	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
Test sample related										
14	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	5
15	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
16	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
17	Phantom uncertainty	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	1.3	N	1	0.64	0.43	0.83	0.56	9
20	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	0.96	0.78	9
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						11.3	11.2	95.5
Expanded uncertainty (Confidence interval of 95 %)		$u_e = 2u_c$						22.6	22.4	

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16.4 Measurement Uncertainty for Fast SAR Tests (3GHz~6GHz)

No.	Error Description	Type	Uncertainty value	Probably Distribution	Div.	(Ci) 1g	(Ci) 10g	Std. Unc. (1g)	Std. Unc. (10g)	Degree of freedom
Measurement system										
1	Probe calibration	B	13	N	2	1	1	6.5	6.5	∞
2	Isotropy	B	7.4	R	$\sqrt{3}$	1	1	4.3	4.3	∞
3	Boundary effect	B	2.3	R	$\sqrt{3}$	1	1	1.3	1.3	∞
4	Linearity	B	4.7	R	$\sqrt{3}$	1	1	2.7	2.7	∞
5	Detection limit	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
6	Readout electronics	B	1.0	N	1	1	1	1.0	1.0	∞
7	Response time	B	0.0	R	$\sqrt{3}$	1	1	0.0	0.0	∞
8	Integration time	B	1.7	R	$\sqrt{3}$	1	1	1.0	1.0	∞
9	RF ambient conditions-noise	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
10	RF ambient conditions-reflection	B	3.0	R	$\sqrt{3}$	1	1	1.7	1.7	∞
11	Probe positioned mech. Restrictions	B	0.71	R	$\sqrt{3}$	1	1	0.4	0.4	∞
12	Probe positioning with respect to phantom shell	B	5.7	R	$\sqrt{3}$	1	1	3.3	3.3	∞
13	Post-processing	B	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
14	Fast SAR z-Approximation	B	14.0	R	$\sqrt{3}$	1	1	8.1	8.1	∞
Test sample related										
15	Test sample positioning	A	3.3	N	1	1	1	3.3	3.3	5
16	Device holder uncertainty	A	3.4	N	1	1	1	3.4	3.4	5
17	Drift of output power	B	5.0	R	$\sqrt{3}$	1	1	2.9	2.9	∞
Phantom and set-up										
18	Phantom uncertainty	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	1.3	N	1	0.64	0.43	0.83	0.56	43
21	Liquid permittivity (target)	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞
22	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	0.96	0.78	521
Combined standard uncertainty		$u_c^{'} = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.9	13.9	257
Expanded uncertainty (Confidence interval of 95 %)		$u_e = 2u_c$						27.8	27.7	

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17 Main Test Instruments

Table 17.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	Agilent E5071C	MY46103759	2018-11-16	One year
02	Dielectric probe	85070E	MY44300317	/	/
03	Power meter	NRP	102603	2018-01-04	One year
04	Power sensor	NRP-Z51	102211		
05	Power meter	NRP	101460	2018-02-05	One year
06	Power sensor	NRP-Z91	100553		
07	Signal Generator	E8257D	MY47461211	2018-06-05	One year
08	Amplifier	VTL5400	0404	/	/
09	E-field Probe	SPEAG EX3DV4	3633	2018-02-01	One year
10	DAE	SPEAG DAE4	1527	2018-11-08	One year
11	Dipole Validation Kit	SPEAG D750V3	1163	2016-09-19	Three year
12	Dipole Validation Kit	SPEAG D835V2	4d057	2018-10-09	Three year
13	Dipole Validation Kit	SPEAG D1750V2	1152	2016-09-09	Three year
14	Dipole Validation Kit	SPEAG D1900V2	5d088	2018-10-24	Three year
15	Dipole Validation Kit	SPEAG D2450V2	873	2018-10-26	Three year
16	Dipole Validation Kit	SPEAG D2550V2	1058	2018-08-24	Three year
17	Dipole Validation Kit	SPEAG D5GHzV2	1238	2016-09-21	Three year
18	BTS	E5515C	GB46110722	2018-02-19	One year
19	Radio Communication Analyzer	Anristu MT8820C	6201341853	2018-03-08	One year

END OF REPORT BODY

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ANNEX A Graph Results

GSM850 Head

Date: 2018-10-22

Electronics: DAE4 Sn1527

Medium: Head 835 MHz

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.886 S/m; ε_r = 41.952; ρ = 1000 kg/m^3

Ambient Temperature: 22.0^{o}C Liquid Temperature: 21.5^{o}C

Communication System: UID 0, GSM (0) Frequency: 836.6 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 - SN3633 ConvF (9.33, 9.33, 9.33)

Right Cheek Middle/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.574 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.235 W/kg

SAR(1 g) = 0.195 W/kg; SAR(10 g) = 0.147 W/kg

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

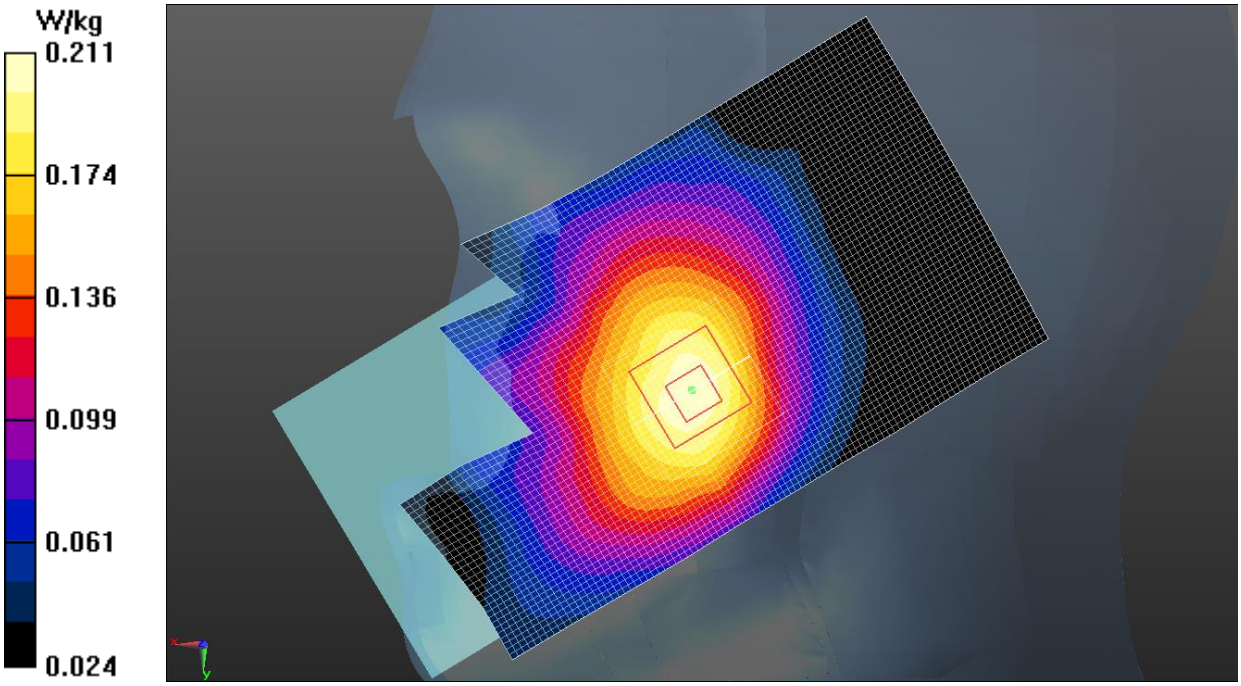

Fig.1 GSM 850MHz

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GSM850 Body

Date: 2018-10-22

Electronics: DAE4 Sn1527

Medium: Body 835 MHz

Medium parameters used (interpolated): f = 836.6 MHz; σ = 0.99 S/m; ε_r = 53.371; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, GPRS 4Txslot (0) Frequency: 836.6 MHz Duty Cycle: 1:2

Probe: EX3DV4 – SN3633 ConvF (9.69, 9.69, 9.69);

Rear Side Middle/Area Scan (131x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.511 W/kg

Rear Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.54 V/m; Power Drift = 0.00 dB

Peak SAR (extrapolated) = 0.601 W/kg

SAR(1 g) = 0.345 W/kg; SAR(10 g) = 0.202 W/kg

Maximum value of SAR (measured) = 0.491 W/kg

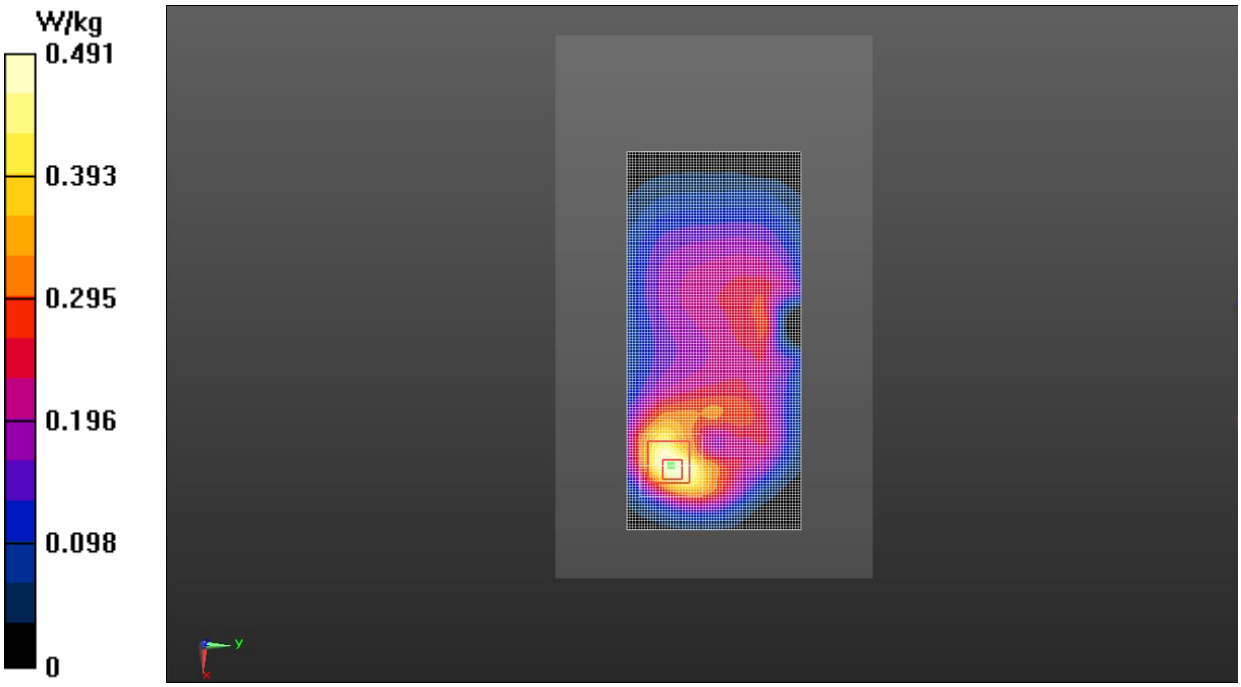

Fig.2 GSM 850 MHz

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GSM1900 Head

Date: 2018-10-23

Electronics: DAE4 Sn1527

Medium: Head 1900 MHz

Medium parameters used: f = 1880 MHz; σ = 1.349 S/m; ε_r = 40.763; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, GSM (0) Frequency: 1880 MHz Duty Cycle: 1:8.3

Probe: EX3DV4 – SN3633 ConvF (7.81, 7.81, 7.81);

Right Cheek Middle/Area Scan (71x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.014 W/kg

Right Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 0.884 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.022 W/kg

SAR(1 g) = 0.012 W/kg; SAR(10 g) = 0.006 W/kg

Maximum value of SAR (measured) = 0.015 W/kg

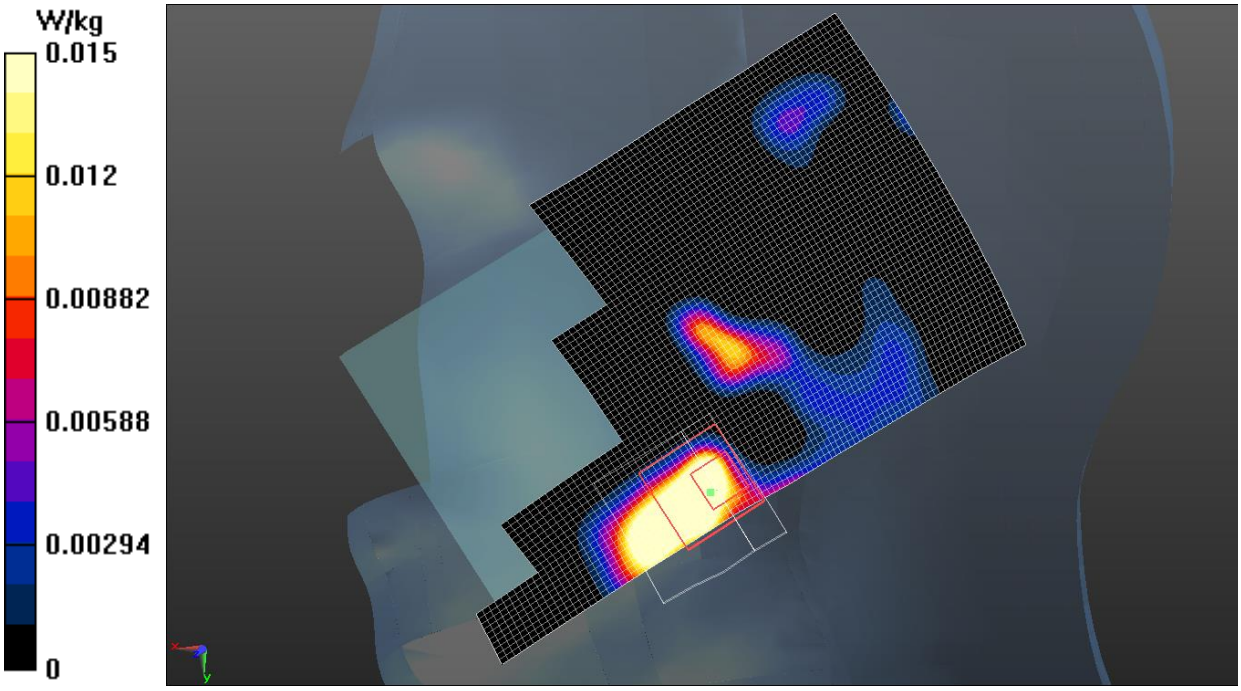

Fig.3 GSM 1900 MHz

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GSM1900 Body

Date: 2018-11-20

Electronics: DAE4 Sn1527

Medium: Body 1900 MHz

Medium parameters used: f = 1910 MHz; σ = 1.563 S/m; ε_r = 52.941; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, GPRS 4Txslot (0) Frequency: 1909.8 MHz Duty Cycle: 1:2

Probe: EX3DV4 – SN3633 ConvF (7.75, 7.75, 7.75);

Bottom Side High /Area Scan (41x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.45 W/kg

Bottom Side High /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 21.27 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 1.63 W/kg

SAR(1 g) = 0.955 W/kg; SAR(10 g) = 0.497 W/kg

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

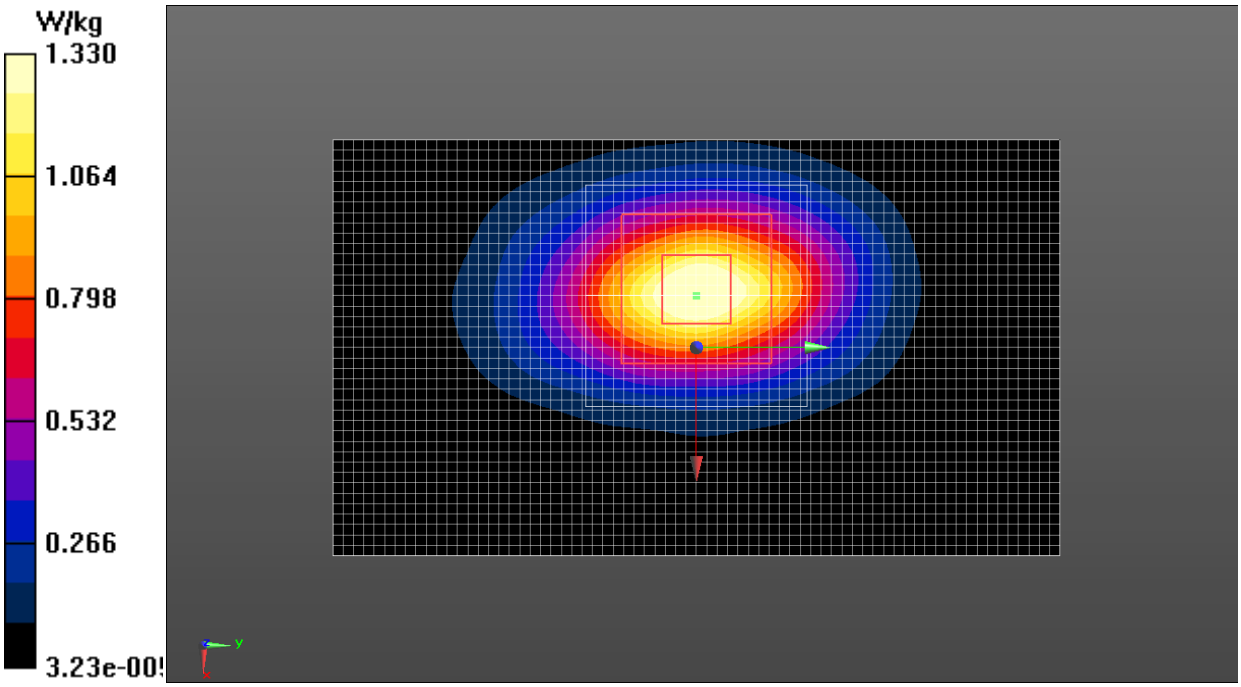

Fig.4 GSM 1900 MHz

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WCDMA 850 Head

Date: 2018-10-22

Electronics: DAE4 Sn1527

Medium: Head 835 MHz

Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.886 S/m; ε_r = 41.954; ρ = 1000 kg/m^3

Ambient Temperature: 22.0^{o}C Liquid Temperature: 21.5^{o}C

Communication System: UID 0, WCDMA (0) Frequency: 836.4 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (9.33, 9.33, 9.33);

Right Cheek Middle /Area Scan (71x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.241 W/kg

Right Cheek Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.745 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 0.267 W/kg

SAR(1 g) = 0.204 W/kg; SAR(10 g) = 0.154 W/kg

Maximum value of SAR (measured) = 0.237 W/kg

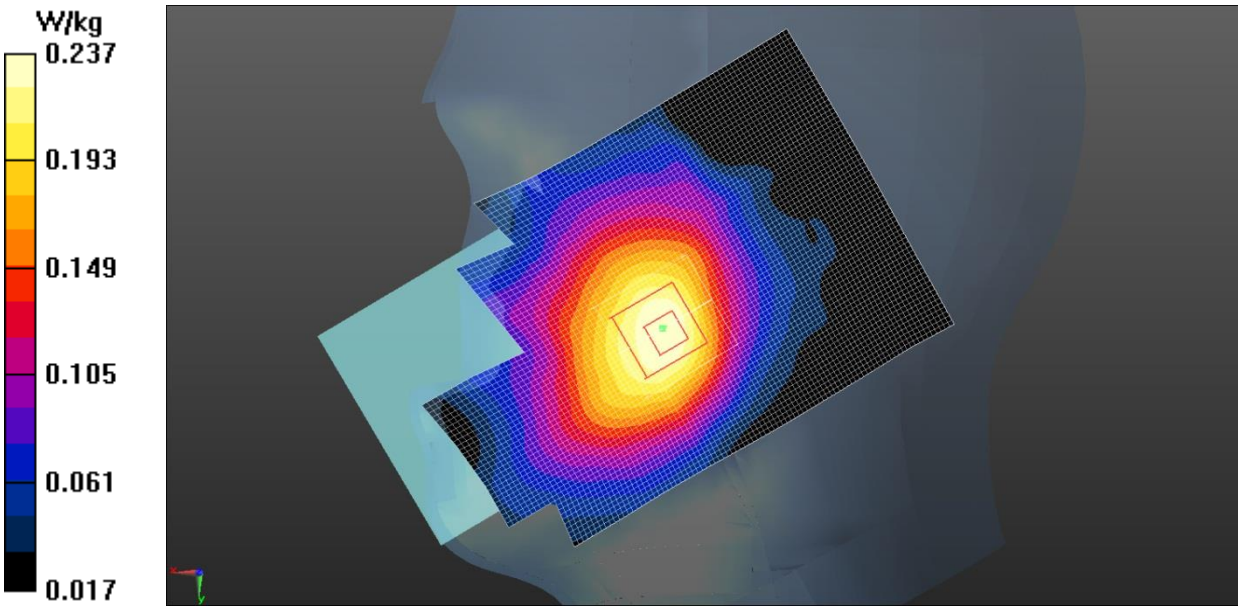

Fig.5 WCDMA 850

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WCDMA 850 Body

Date: 2018-10-22

Electronics: DAE4 Sn1527

Medium: Body 835 MHz

Medium parameters used (interpolated): f = 836.4 MHz; σ = 0.99 S/m; ε_r = 53.373; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, WCDMA (0) Frequency: 836.4 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (9.69, 9.69, 9.69);

Front Side Middle/Area Scan (121x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.462 W/kg

Front Side Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 14.76 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.554 W/kg

SAR(1 g) = 0.340 W/kg; SAR(10 g) = 0.210 W/kg

Maximum value of SAR (measured) = 0.445 W/kg

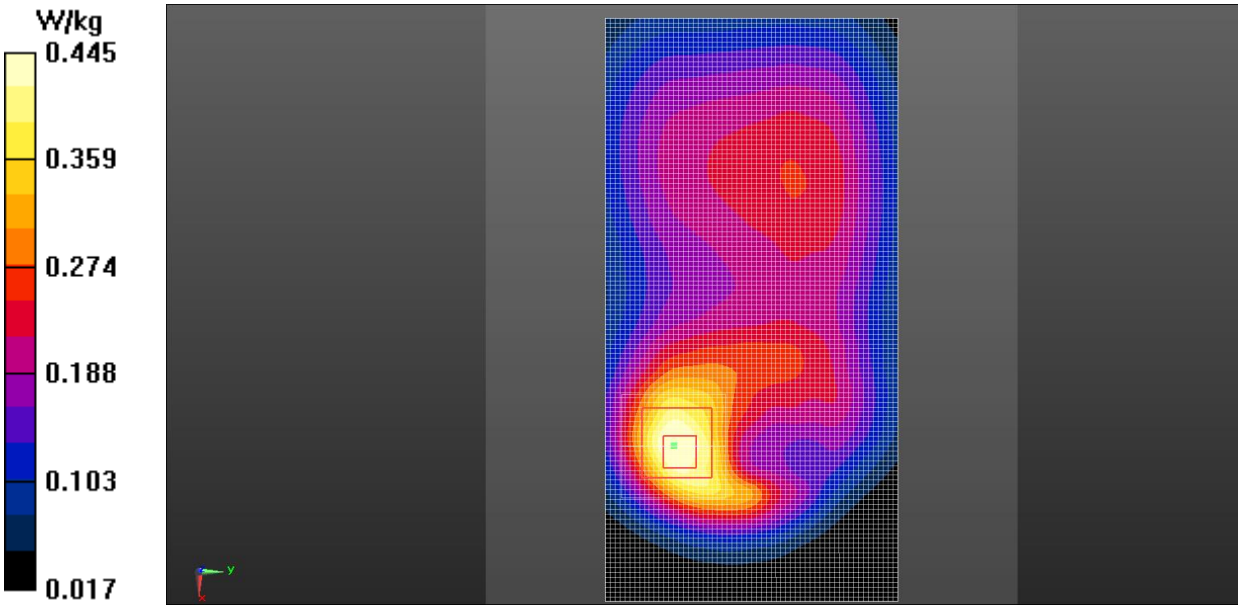

Fig.6 WCDMA 850

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WCDMA 1900 Head

Date: 2018-10-23

Electronics: DAE4 Sn1527

Medium: Head 1900 MHz

Medium parameters used: f = 1880 MHz; σ = 1.349 S/m; ε_r = 40.763; ρ = 1000 kg/m^3

Ambient Temperature: 22.0^{o}C Liquid Temperature: 21.5^{o}C

Communication System: UID 0, WCDMA (0) Frequency: 1880 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (7.81, 7.81, 7.81);

Right Tilt Middle /Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.0730 W/kg

Right Tilt Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 4.852 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 0.0850 W/kg

SAR(1 g) = 0.069 W/kg; SAR(10 g) = 0.055 W/kg

Maximum value of SAR (measured) = 0.0774 W/kg

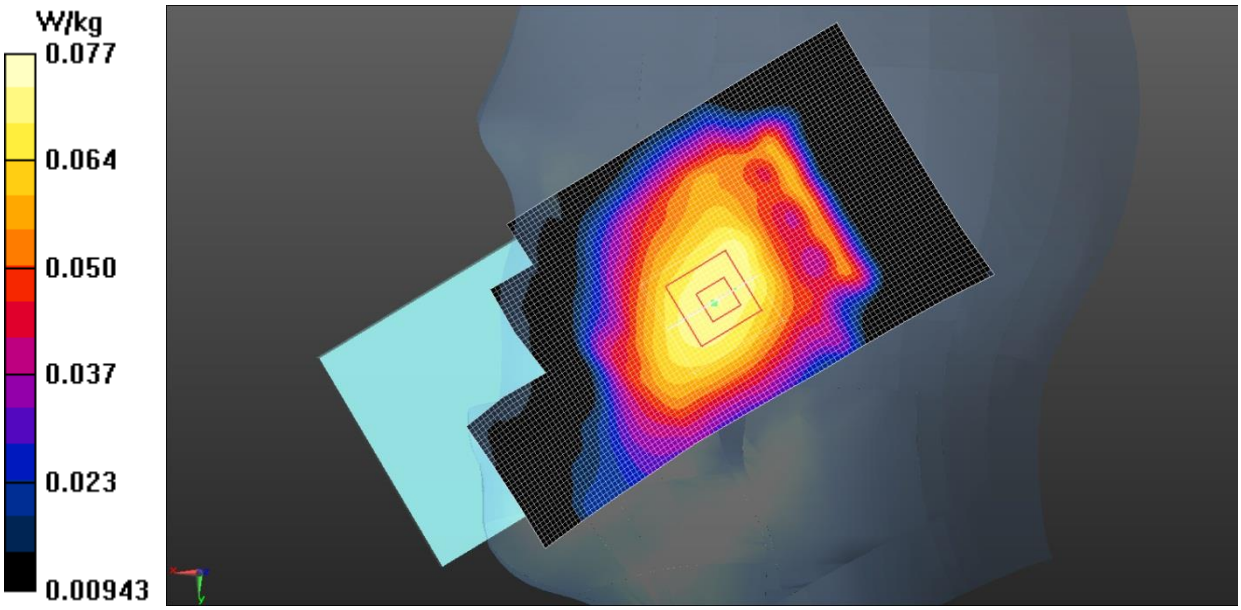

Fig.7 WCDMA 1900

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WCDMA 1900 Body

Date: 2018-11-20

Electronics: DAE4 Sn1527

Medium: Body 1900 MHz

Medium parameters used: f = 1908 MHz; σ = 1.562 S/m; ε_r = 52.945; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, WCDMA (0) Frequency: 1907.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (7.75, 7.75, 7.75);

Bottom Side High /Area Scan (41x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

Bottom Side High /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 15.70 V/m; Power Drift = 0.03 dB

Peak SAR (extrapolated) = 1.77 W/kg

SAR(1 g) = 1.04 W/kg; SAR(10 g) = 0.540 W/kg

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

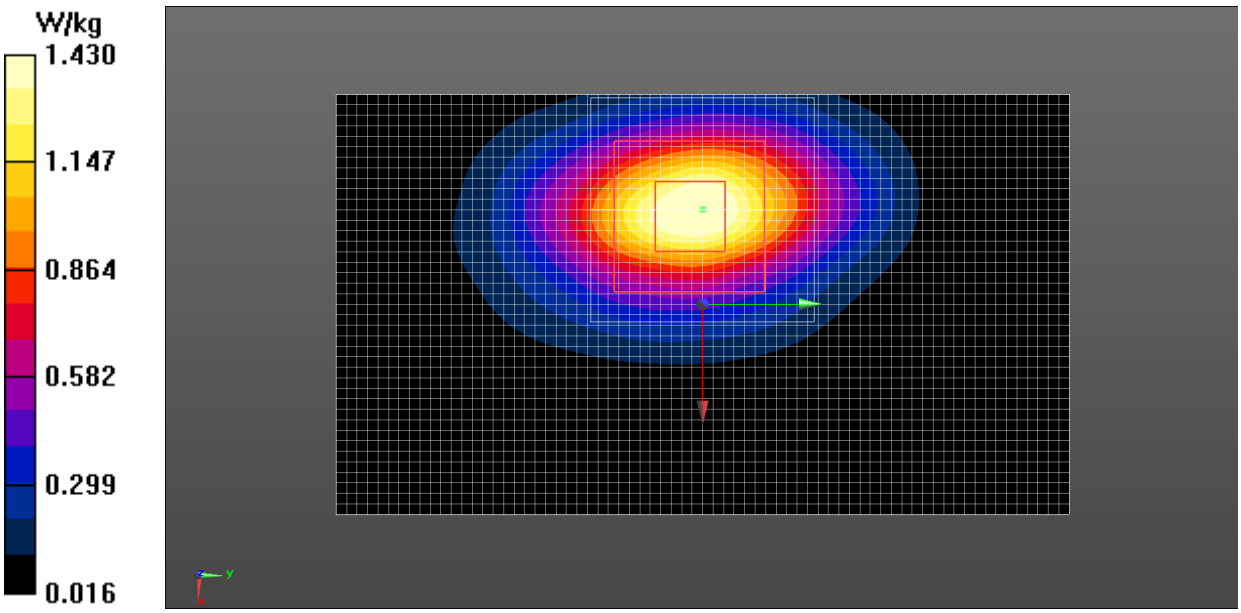

Fig.8 WCDMA 1900

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WCDMA 1700 Head

Date: 2018-10-17

Electronics: DAE4 Sn1527

Medium: Head 1750 MHz

Medium parameters used (interpolated): f = 1732.6 MHz; σ = 1.365 S/m; ε_r = 40.882; ρ = 1000 kg/m^3

Ambient Temperature: 22.0^{o}C Liquid Temperature: 21.5^{o}C

Communication System: UID 0, WCDMA (0) Frequency: 1732.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (8.12, 8.12, 8.12);

Left Cheek Middle /Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

Left Cheek Middle/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.649 V/m; Power Drift = 0.02 dB

Peak SAR (extrapolated) = 0.149 W/kg

SAR(1 g) = 0.102 W/kg; SAR(10 g) = 0.065 W/kg

Maximum value of SAR (measured) = 0.124 W/kg

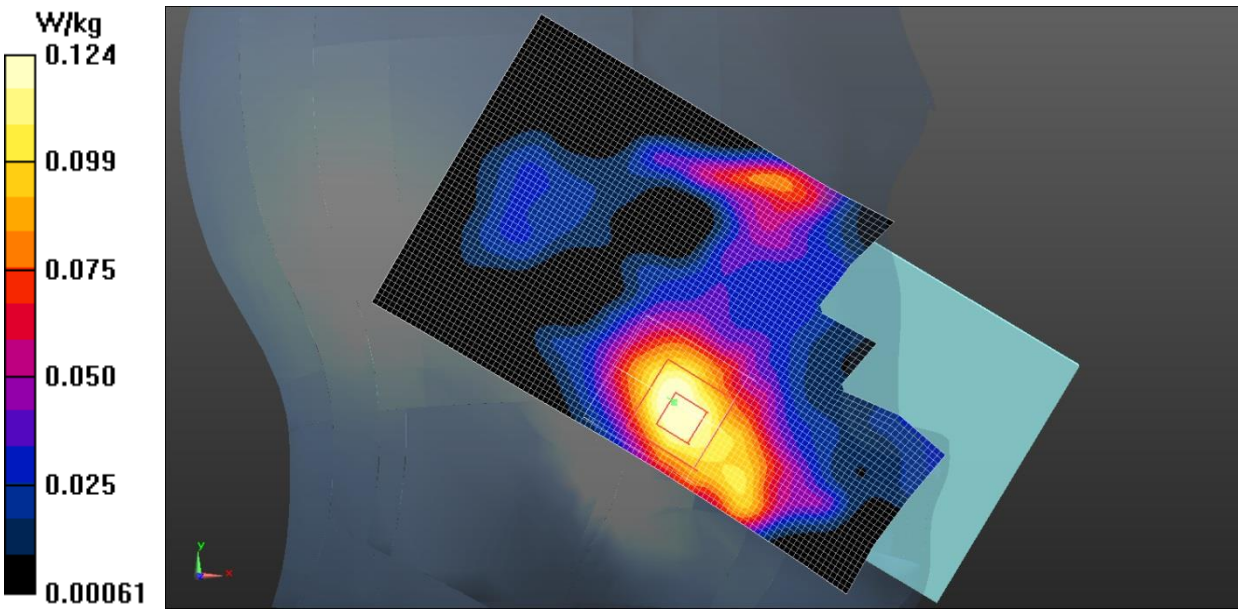

Fig.9 WCDMA 1700

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WCDMA 1700 Body

Date: 2018-10-17

Electronics: DAE4 Sn1527

Medium: Body 1750 MHz

Medium parameters used (interpolated): f = 1752.6 MHz; σ = 1.459 S/m; ε_r = 53.682; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, WCDMA (0) Frequency: 1752.6 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (8.05, 8.05, 8.05);

Bottom Side High/Area Scan (41x71x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.00 W/kg

Bottom Side High/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 17.45 V/m; Power Drift = 0.08 dB

Peak SAR (extrapolated) = 1.21 W/kg

SAR(1 g) = 0.736 W/kg; SAR(10 g) = 0.398 W/kg

Maximum value of SAR (measured) = 1.00 W/kg

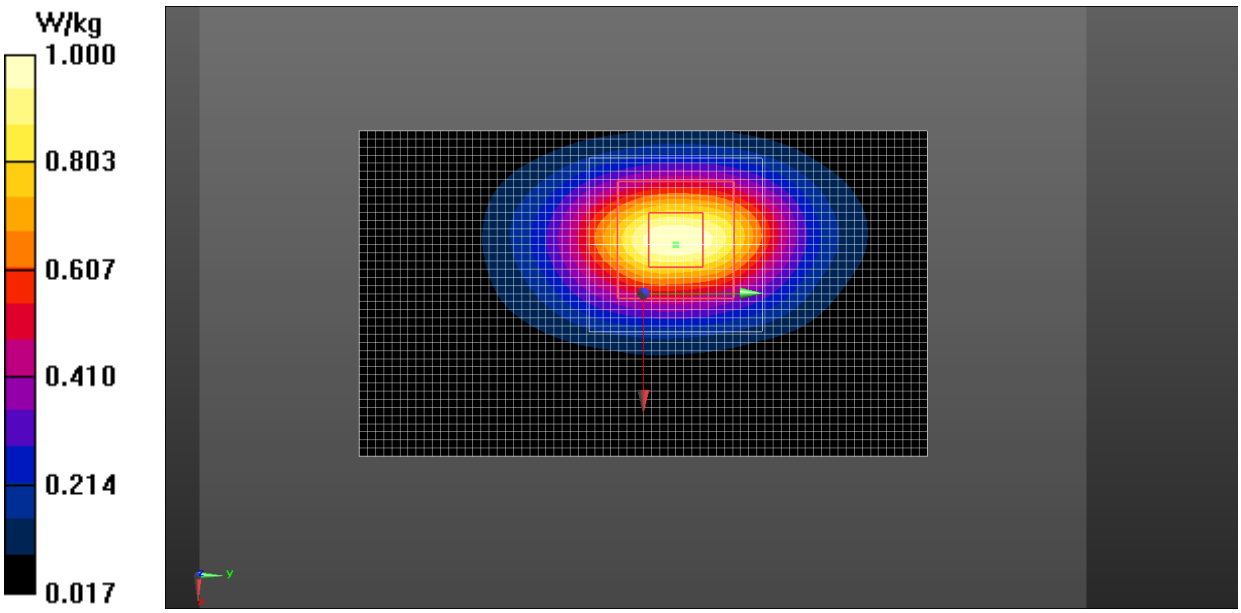

Fig.10 WCDMA 1700

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LTE Band 2 Head

Date: 2018-10-23

Electronics: DAE4 Sn1527

Medium: Head 1900 MHz

Medium parameters used: f = 1880 MHz; σ = 1.349 S/m; ε_r = 40.763; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, LTE_FDD (0) Frequency: 1880 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (7.81, 7.81, 7.81);

Left Cheek Middle 1RB_Middle /Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.119 W/kg

Left Cheek Middle 1RB_Middle /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 2.085 V/m; Power Drift = 0.09 dB

Peak SAR (extrapolated) = 0.102 W/kg

SAR(1 g) = 0.072 W/kg; SAR(10 g) = 0.045 W/kg

Maximum value of SAR (measured) = 0.0866 W/kg

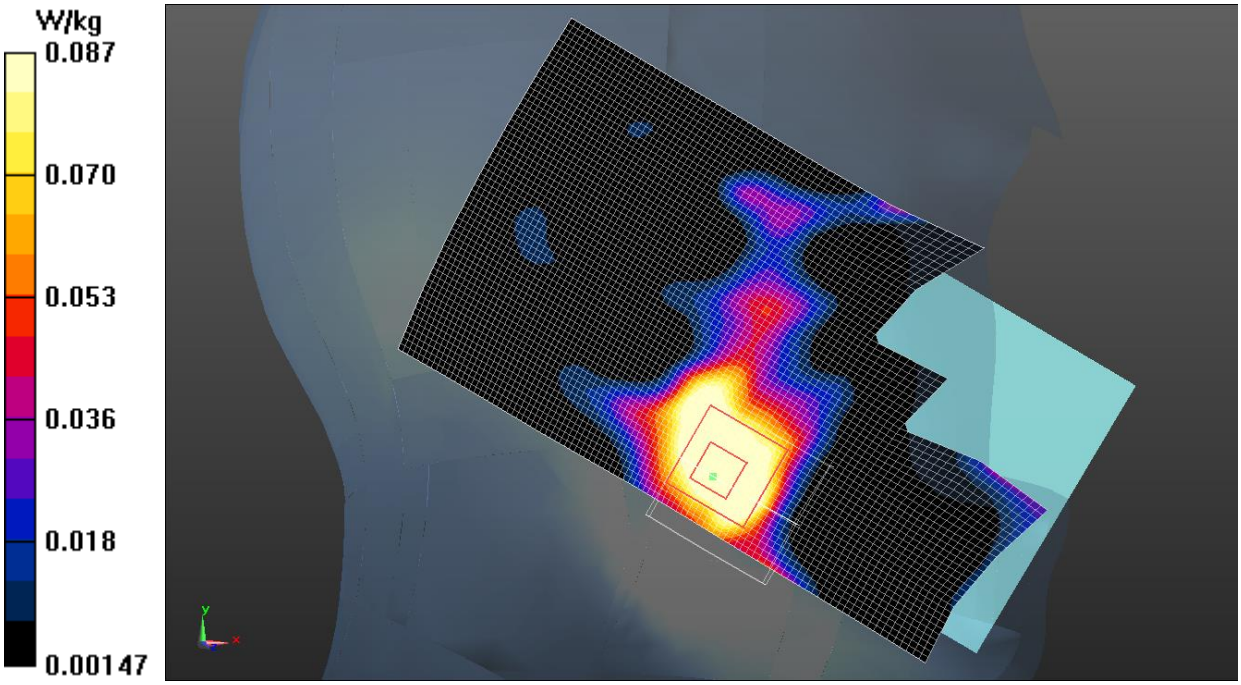

Fig.11 LTE Band 2

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LTE Band 2 Body

Date: 2018-11-20

Electronics: DAE4 Sn1527

Medium: Body 1900 MHz

Medium parameters used: f = 1880 MHz; σ = 1.537 S/m; ε_r = 52.992; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, LTE_FDD (0) Frequency: 1880 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (7.75, 7.75, 7.75);

Bottom Side Middle 50RB_Low /Area Scan (41x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.03 W/kg

Bottom Side Middle 50RB_ /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 10.73 V/m; Power Drift = 0.07 dB

Peak SAR (extrapolated) = 1.26 W/kg

SAR(1 g) = 0.751 W/kg; SAR(10 g) = 0.397 W/kg

Maximum value of SAR (measured) = 1.03 W/kg

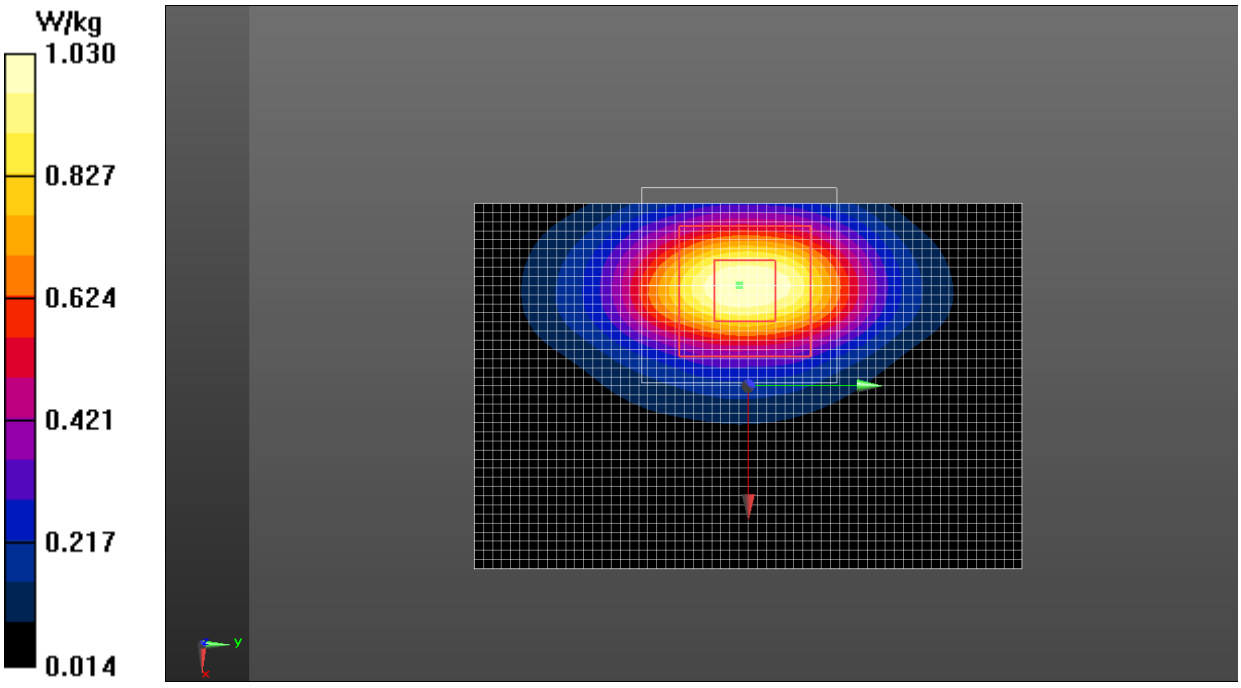

Fig.12 LTE Band 2

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LTE Band 4 Head

Date: 2018-10-17

Electronics: DAE4 Sn1527

Medium: Head 1750 MHz

Medium parameters used (interpolated): f = 1732.5 MHz; σ = 1.364 S/m; ε_r = 40.884; ρ = 1000 kg/m^3

Ambient Temperature: 22.0^{o}C Liquid Temperature: 21.5^{o}C

Communication System: UID 0, LTE_FDD (0) Frequency: 1732.5 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (8.12, 8.12, 8.12);

Left Cheek Middle 1RB_Low/Area Scan (61x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 0.174 W/kg

Left Cheek Middle 1RB_Low/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 3.378 V/m; Power Drift = 0.04 dB

Peak SAR (extrapolated) = 0.196 W/kg

SAR(1 g) = 0.131 W/kg; SAR(10 g) = 0.082 W/kg

Maximum value of SAR (measured) = 0.157 W/kg

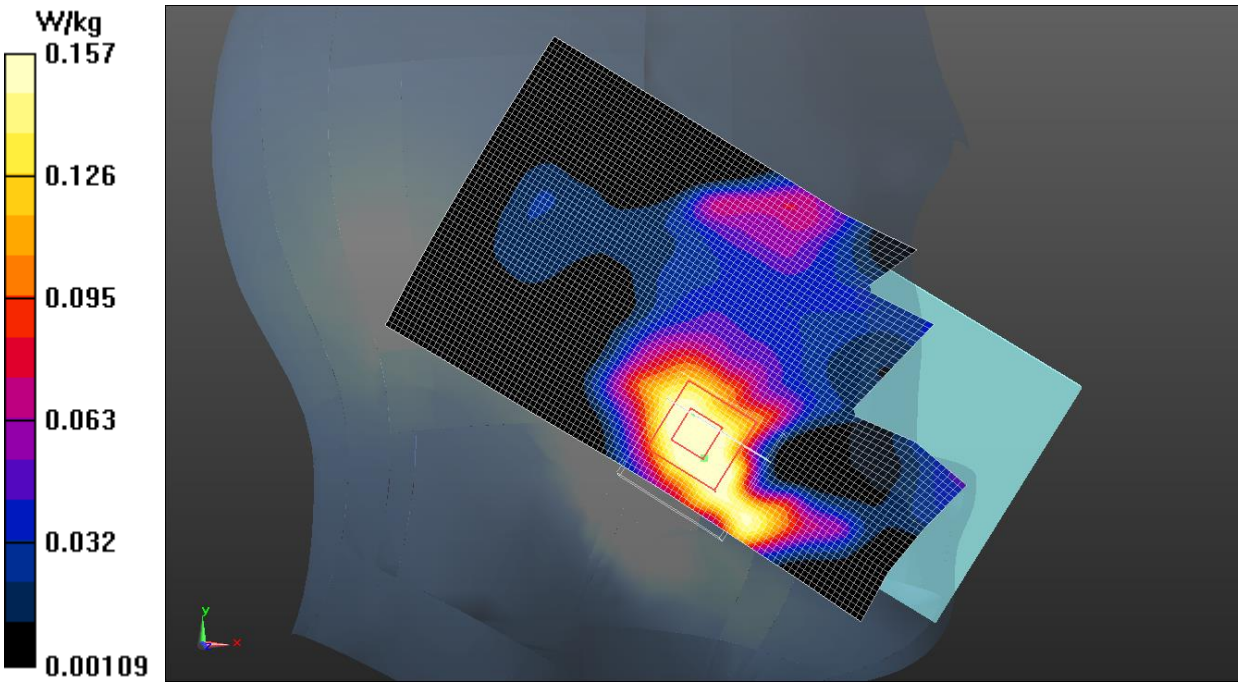

Fig.13 LTE Band 4

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LTE Band 4 Body

Date: 2018-10-17

Electronics: DAE4 Sn1527

Medium: Body 1750 MHz

Medium parameters used (interpolated): f = 1745 MHz; σ = 1.453 S/m; ε_r = 53.597; ρ = 1000 kg/m^3

Ambient Temperature: 22.0°C Liquid Temperature: 21.5°C

Communication System: UID 0, LTE_FDD (0) Frequency: 1745 MHz Duty Cycle: 1:1

Probe: EX3DV4 – SN3633 ConvF (8.05, 8.05, 8.05);

Bottom Side High 1RB_Low /Area Scan (41x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

Maximum value of SAR (interpolated) = 1.32 W/kg

Bottom Side High 1RB_Low /Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 23.80 V/m; Power Drift = -0.05 dB

Peak SAR (extrapolated) = 1.58 W/kg

SAR(1 g) = 0.892 W/kg; SAR(10 g) = 0.483 W/kg

Maximum value of SAR (measured) = 1.31 W/kg

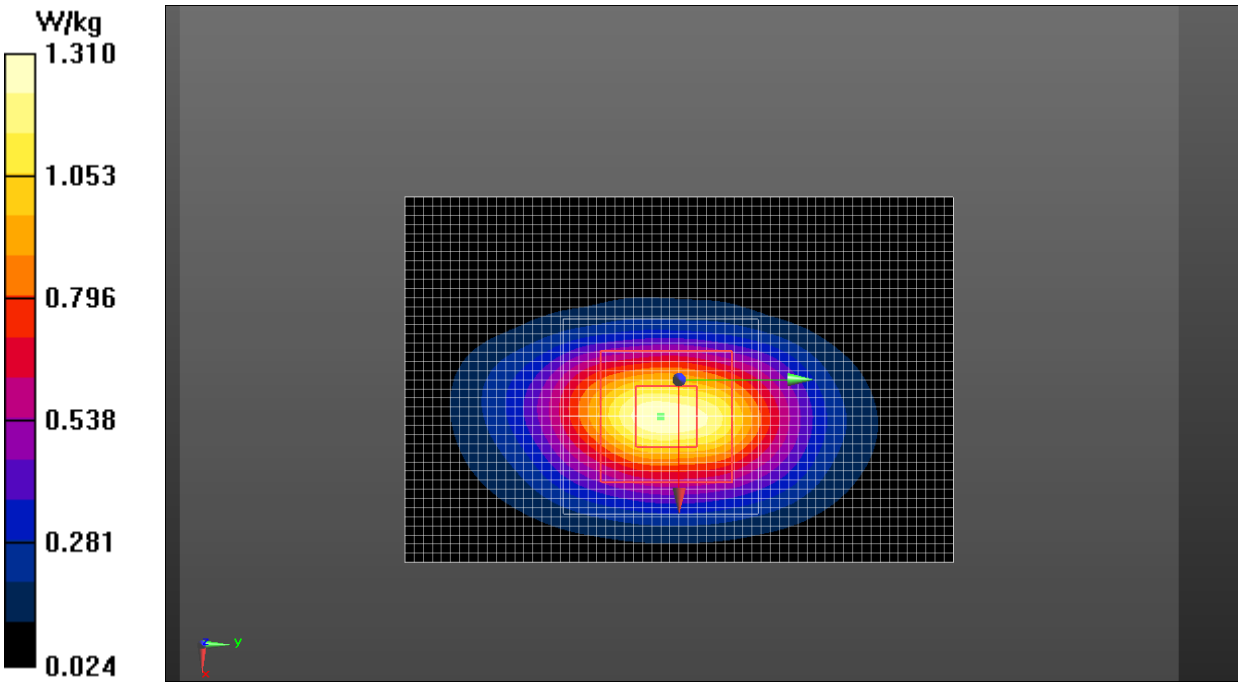

Fig.14 LTE Band 4

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