

	15RB	/	QPSK	23.15	23.24	23.19
			16QAM	22.15	22.30	22.04
			64QAM	22.16	22.47	22.20
5 MHz				713.5MHz	707.5MHz	701.5MHz
	1RB	High	QPSK	22.87	22.94	22.92
			16QAM	22.85	22.78	22.87
			64QAM	22.43	22.49	22.65
		Middle	QPSK	23.17	23.17	22.99
			16QAM	23.09	23.23	23.11
			64QAM	23.01	23.10	23.01
		Low	QPSK	22.90	23.07	22.84
			16QAM	22.53	22.93	22.67
			64QAM	22.29	22.97	22.71
	12RB	High	QPSK	23.10	23.09	23.13
			16QAM	22.07	22.06	22.12
			64QAM	22.10	22.09	22.06
		Middle	QPSK	23.28	23.16	23.18
			16QAM	22.41	22.14	22.18
			64QAM	22.38	22.32	22.11
		Low	QPSK	23.13	23.06	23.16
			16QAM	22.21	22.16	22.08
			64QAM	22.09	22.11	22.10
	25RB	/	QPSK	23.14	23.14	23.10
			16QAM	22.25	22.34	22.25
			64QAM	22.08	22.43	22.32

LTE-FDD Band 12				Actual output Power (dBm)		
10 MHz				711MHz	707.5MHz	704MHz
	1RB	High	QPSK	23.13	23.01	23.12
			16QAM	22.72	22.91	22.90
			64QAM	22.73	22.54	22.79
		Middle	QPSK	23.30	23.30	23.25
			16QAM	23.18	23.25	23.06
			64QAM	23.01	23.01	22.97
		Low	QPSK	23.01	22.97	23.04
			16QAM	22.76	22.59	22.68
			64QAM	22.85	22.62	22.46
	25RB	High	QPSK	23.17	23.21	23.23
			16QAM	22.17	22.30	22.41
			64QAM	22.29	22.38	22.12
		Middle	QPSK	23.24	23.29	23.24
			16QAM	22.34	22.35	22.36
			64QAM	22.19	22.22	22.20
		Low	QPSK	23.27	23.19	23.01
			16QAM	22.28	22.30	22.26
			64QAM	22.49	22.36	22.24
	50RB	/	QPSK	23.20	23.20	23.19
			16QAM	22.23	22.31	22.25
			64QAM	22.34	22.25	22.34

11.6 Wi-Fi and BT Measurement result

The output power of BT antenna is as following:

Mode	Conducted Power (dBm)		
	Channel 0 (2402MHz)	Channel 39 (2441MHz)	Channel 78 (2480MHz)
GFSK	-0.73	0.04	-1.63
$\pi/4$ DQPSK	0.07	0.74	-0.89
8DPSK	0.17	0.82	-0.83
BLE	-0.85	-0.03	-1.51

The average conducted power for Wi-Fi is as following:

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
1(2412MHz)	17.03	16.33	16.06	16.29
6(2437MHz)	17.14	17.07	16.38	17.02
11(2462MHz)	17.49	16.93	17.06	17.16

802.11g (dBm)

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
1(2412MHz)	17.00	17.12	16.78	16.86	16.91	16.17	16.24	15.38
6(2437MHz)	16.75	16.82	16.45	16.54	16.58	15.78	15.88	14.93
11(2462MHz)	16.76	16.69	16.31	16.41	16.47	15.67	15.77	14.86

802.11n (dBm) - HT20 (2.4G)

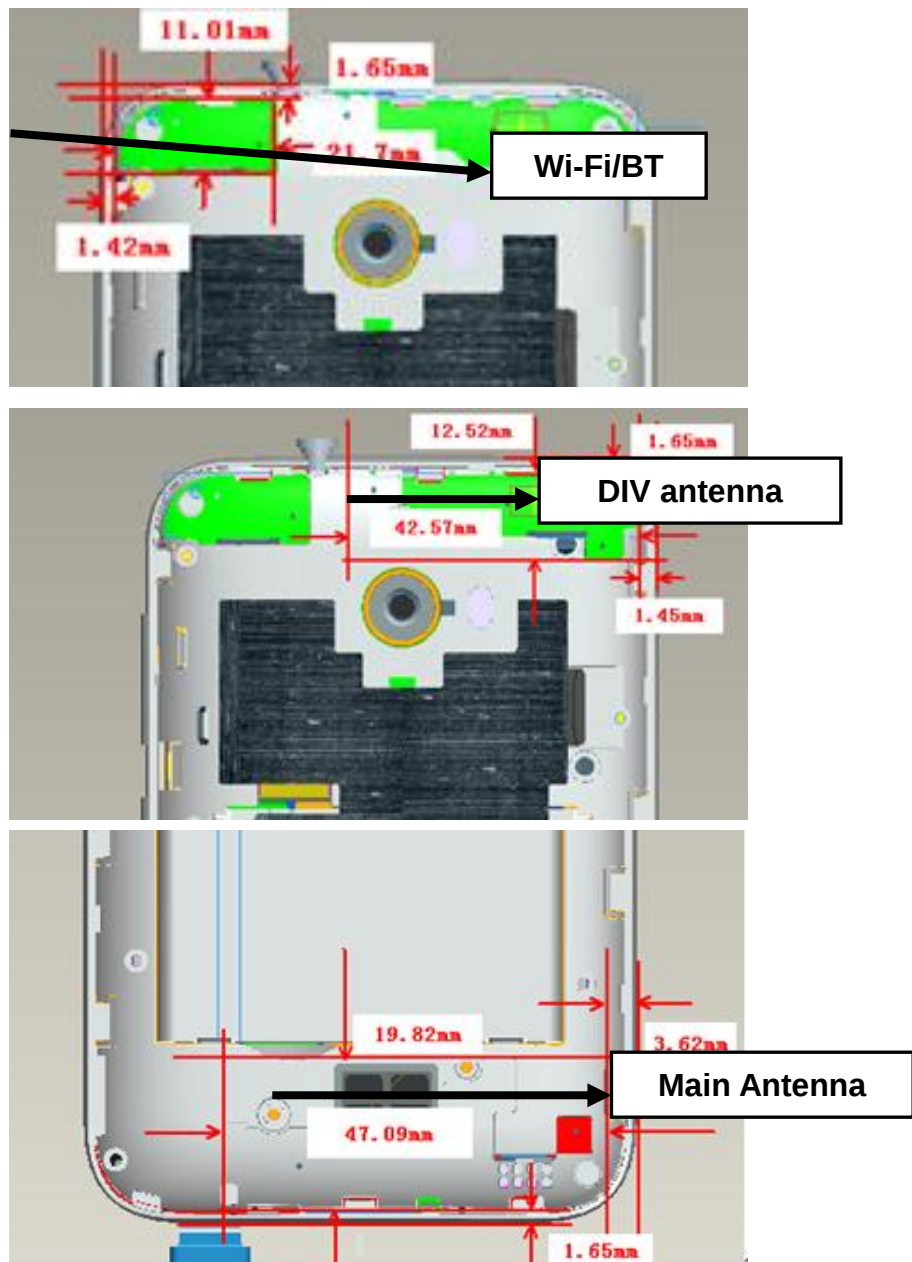
Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
1(2412MHz)	16.65	16.32	15.51	15.08	15.22	15.31	14.92	14.49
6(2437MHz)	16.38	15.98	15.14	14.68	15.14	15.15	14.68	14.14
11(2462MHz)	16.42	16.08	15.21	14.77	14.89	14.96	14.48	14.04

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

12.3 SAR Measurement Positions

According to the KDB941225 D06 Hot Spot SAR, the edges with less than 2.5 cm 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	Yes	Yes	No	Yes
WLAN	Yes	Yes	No	Yes	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:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ for 1-g SAR, where

- $f(\text{GHz})$ 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	1.5	1.41	Yes
		Body	19.20	1.5	1.41	Yes
2.4GHz WLAN 802.11 b	2.45	Head	9.58	18	63.10	No
		Body	19.17	18	63.10	No

13 Evaluation of Simultaneous

Table 13.1: The sum of reported SAR values for main antenna and WiFi

	Position	Main antenna	WiFi	Sum
Highest reported SAR value for Head	Left Touch	0.61	0.97	1.58
	Right Touch	0.62	0.48	1.10
Highest reported SAR value for Body	Rear	1.29	0.26	1.55
	Bottom	1.33	/	1.33

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	Left Touch	0.61	0.06	0.67
	Right Touch	0.62	0.06	0.68
Highest reported SAR value for Body	Rear	1.29	0.03	1.32
	Bottom	1.33	/	1.33

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	1.5	1.41	0.06
Body	2.441	10	1.5	1.41	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.

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:

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

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&EGPRS for GSM850/1900 (AP OFF)	1:8.3
GPRS&EGPRS for GSM850/1900 (AP ON)	1:2
WCDMA850/1700/1900	1:1
FDD_LTE Band 2/4/5/12	1:1

14.1 The evaluation of multi-batteries

We'll perform the head measurement in all bands with the primary battery depending on the evaluation of multi-batteries and retest on highest value point with other batteries. Then, repeat the measurement in the Body test.

Table 14.2: The evaluation of multi-batteries for Head Test

Frequency		Mode/Band	Side	Test Position	Battery Manufacturer	SAR(1g)	Power Drift(dB)
MHz	Ch.					(W/kg)	
836.6	190	GSM850	Right	Touch	Zhuhai COSLIGHT Battery CO., Ltd.	0.247	0.05
836.6	190	GSM850	Right	Touch	Tianjin Lishen Battery Joint-Stock Co.,Ltd.	0.264	0.02

Note: According to the values in the above table, the battery, CPLD-417 by Tianjin Lishen Battery Joint-stock Co., Ltd., is the primary battery. We'll perform the Head measurement with this battery and retest on highest value point with others.

Table 14.3: The evaluation of multi-batteries for Body Test

Frequency		Mode/Band	Test Position	Spacing (mm)	Battery Manufacturer	SAR(1g)	Power Drift(dB)
MHz	Ch.					(W/kg)	
836.6	190	GSM850	Rear	10	Zhuhai COSLIGHT Battery CO., Ltd.	0.353	-0.04
836.6	190	GSM850	Rear	10	Tianjin Lishen Battery Joint-Stock Co.,Ltd.	0.378	0.06

Note: According to the values in the above table, the battery, CPLD-417 by Tianjin Lishen Battery Joint-stock Co., Ltd., is the primary battery. We'll perform the Body measurement with this battery and retest on highest value point with others.

14.2 SAR results for Fast SAR

According to the client request, we perform the spot check for head and body of each band respectively. If the spot check value is larger than the original value and does not exceed half of the SAR limit, the same configuration is tested to replace the original values and others are quoted. Otherwise, all the original values are quoted directly. The original values are marked with "Original" in the Left side of tables and the new tested values are marked with "New".

Table 14.4: SAR Values (GSM 850 MHz - Head)

Note: Original		Ambient Temperature: 22.6.°C					Liquid Temperature: 22.1°C				
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
836.6	190	Left	Touch	/	32.93	33.5	0.198	0.23	0.281	0.32	0.03
836.6	190	Left	Tilt	/	32.93	33.5	0.135	0.15	0.190	0.22	0.06
836.6	190	Right	Touch	/	32.93	33.5	0.186	0.21	0.264	0.30	0.02
836.6	190	Right	Tilt	/	32.93	33.5	0.129	0.15	0.181	0.21	-0.12
848.8	251	Left	Touch	Fig.1	32.54	33.5	0.231	0.29	0.309	0.39	-0.08
824.2	128	Left	Touch	/	32.80	33.5	0.174	0.20	0.247	0.29	0.05
Note: New											
848.8	251	Left	Touch	/	32.54	33.5	0.153	0.19	0.205	0.26	0.16

Table 14.5: SAR Values (GSM 850 MHz -Body) -AP ON

Note: Original		Ambient Temperature: 22.6.°C				Liquid Temperature: 22.1°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.6	190	Front	/	32.88	33.5	0.231	0.27	0.321	0.37	0.09
836.6	190	Rear	Fig.2	32.88	33.5	0.282	0.33	0.378	0.44	0.06
836.6	190	Left	/	32.88	33.5	0.108	0.12	0.156	0.18	-0.14
836.6	190	Right	/	32.88	33.5	0.178	0.21	0.258	0.30	-0.11
836.6	190	Bottom	/	32.88	33.5	0.070	0.08	0.110	0.13	0.02
848.8	251	Rear	/	32.51	33.5	0.247	0.31	0.343	0.43	0.07
824.2	128	Rear	/	32.77	33.5	0.242	0.29	0.335	0.40	-0.09
836.6	190	Rear EGPRS	/	32.24	33.0	0.264	0.31	0.362	0.43	0.10
Note: New										
836.6	190	Rear	/	32.88	33.5	0.215	0.25	0.298	0.34	-0.09

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.6: SAR Values (GSM 850 MHz -Body) -AP OFF

Ambient Temperature: 22.6.°C										
Liquid Temperature: 22.1°C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.6	190	Front	/	32.88	33.5	0.231	0.27	0.321	0.37	0.09
836.6	190	Rear	/	32.88	33.5	0.282	0.33	0.378	0.44	0.06
848.8	251	Rear	/	32.51	33.5	0.247	0.31	0.343	0.43	0.07
824.2	128	Rear	/	32.77	33.5	0.242	0.29	0.335	0.40	-0.09
836.6	190	Rear EGPRS	/	32.24	33.0	0.264	0.31	0.362	0.43	0.10

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.7: SAR Values (GSM 1900 MHz - Head)

Note: Original		Ambient Temperature: 22.2°C					Liquid Temperature: 21.7°C				
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
1880	661	Left	Touch	/	30.08	31	0.011	0.01	0.019	0.02	0.01
1880	661	Left	Tilt	/	30.08	31	0.007	0.01	0.012	0.01	0.07
1880	661	Right	Touch	/	30.08	31	0.012	0.01	0.020	0.02	-0.03
1880	661	Right	Tilt	/	30.08	31	0.006	0.01	0.010	0.01	0.05
1909.8	810	Right	Touch	/	29.62	31	0.011	0.02	0.019	0.03	-0.06
1850.2	512	Right	Touch	Fig.3	30.48	31	0.012	0.01	0.021	0.02	-0.11
Note: New											
1909.8	810	Right	Touch	/	29.62	31	0.010	0.01	0.017	0.02	0.02

Table 14.8: SAR Values (GSM 1900 MHz -Body) -AP ON

Note: Original		Ambient Temperature: 22.2°C				Liquid Temperature: 21.7°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	661	Front	/	23.58	24.5	0.291	0.36	0.543	0.67	0.03
1880	661	Rear	Fig.4	23.58	24.5	0.346	0.43	0.668	0.83	0.12
1880	661	Left	/	23.58	24.5	0.041	0.05	0.069	0.09	0.06
1880	661	Right	/	23.58	24.5	0.056	0.07	0.097	0.12	0.12
1880	661	Bottom	/	23.58	24.5	0.325	0.40	0.655	0.81	0.07
1909.8	810	Rear	/	23.59	24.5	0.295	0.36	0.543	0.67	0.11
1850.2	512	Rear	/	23.80	24.5	0.348	0.41	0.617	0.72	0.13
1880	661	Rear EGPRS	/	23.39	24.5	0.281	0.36	0.512	0.66	0.01
Note: New										
1880	661	Rear	/	23.58	24.5	0.161	0.20	0.290	0.36	0.09

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.9: SAR Values (GSM 1900 MHz -Body) -AP OFF

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	661	Front	/	30.05	31	0.200	0.25	0.345	0.43	0.09
1880	661	Rear	/	30.05	31	0.264	0.33	0.473	0.59	-0.04
1909.8	810	Rear	/	29.61	31	0.301	0.41	0.523	0.72	-0.09
1850.2	512	Rear	/	30.48	31	0.269	0.30	0.480	0.54	0.02
1909.8	810	Rear EGPRS	/	28.95	30	0.299	0.38	0.522	0.66	0.05

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.10: SAR Values (WCDMA 850 MHz - Head)

Note: Original		Ambient Temperature: 22.5°C					Liquid Temperature: 22.0°C				
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
836.4	4182	Left	Touch	/	23.84	24.	0.296	0.31	0.421	0.44	0.03
836.4	4182	Left	Tilt	/	23.84	24.	0.222	0.23	0.316	0.33	-0.08
836.4	4182	Right	Touch	/	23.84	24.	0.276	0.29	0.391	0.41	0.13
836.4	4182	Right	Tilt	/	23.84	24.	0.171	0.18	0.242	0.25	0.05
846.6	4233	Left	Touch	/	23.86	24.	0.229	0.24	0.331	0.34	-0.09
826.4	4132	Left	Touch	Fig.5	23.93	24.	0.387	0.39	0.520	0.53	-0.04
Note: New											
826.4	4132	Left	Touch	/	23.93	24.	0.303	0.31	0.403	0.41	0.03

Table 14.11: SAR Values (WCDMA 850 MHz -Body) -AP ON

Note: Original		Ambient Temperature: 22.5°C				Liquid Temperature: 22.0°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.4	4182	Front	/	23.84	24.	0.361	0.37	0.498	0.52	0.06
836.4	4182	Rear	/	23.84	24	0.464	0.48	0.644	0.67	-0.03
836.4	4182	Left	/	23.84	24	0.296	0.31	0.426	0.44	0.11
836.4	4182	Right	/	23.84	24	0.324	0.34	0.467	0.48	0.16
836.4	4182	Bottom	/	23.84	24	0.138	0.14	0.217	0.23	-0.08
846.6	4233	Rear	Fig.6	23.86	24	0.524	0.54	0.676	0.70	0.06
826.4	4132	Rear	/	23.93	24	0.481	0.49	0.665	0.68	0.07
Note: New										
846.6	4233	Rear	/	23.86	24	0.314	0.32	0.414	0.43	0.05

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.12: SAR Values (WCDMA 850 MHz -Body) -AP OFF

Ambient Temperature: 22.5°C					Liquid Temperature: 22.0°C					
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.4	4182	Front	/	23.84	24.	0.361	0.37	0.498	0.52	0.06
836.4	4182	Rear	/	23.84	24	0.464	0.48	0.644	0.67	-0.03
846.6	4233	Rear	/	23.86	24	0.524	0.54	0.676	0.70	0.06
826.4	4132	Rear	/	23.93	24	0.481	0.49	0.665	0.68	0.07

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.13: SAR Values (WCDMA1900 MHz - Head)

Note: Original		Ambient Temperature: 21.8°C					Liquid Temperature: 21.3°C				
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
1880	9400	Left	Touch	/	23.83	24.2	0.177	0.19	0.312	0.34	0.04
1880	9400	Left	Tilt	/	23.83	24.2	0.114	0.12	0.208	0.23	0.03
1880	9400	Right	Touch	/	23.83	24.2	0.229	0.25	0.402	0.44	0.09
1880	9400	Right	Tilt	/	23.83	24.2	0.130	0.14	0.228	0.25	-0.05
1907.6	9538	Right	Touch	/	23.69	24.2	0.197	0.22	0.347	0.39	-0.06
1852.4	9262	Right	Touch	Fig.7	23.78	24.2	0.241	0.27	0.417	0.46	0.02
Note: New											
1852.4	9262	Right	Touch	/	23.78	24.2	0.292	0.32	0.486	0.54	0.01

Table 14.14: SAR Values (WCDMA1900 MHz Body) -AP ON

Note: Original		Ambient Temperature: 22.3°C				Liquid Temperature: 21.8°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	9400	Front	/	20.9	21.7	0.485	0.58	0.895	1.08	0.05
1880	9400	Rear	/	20.9	21.7	0.549	0.66	1.010	1.21	0.03
1880	9400	Left	/	20.9	21.7	0.064	0.08	0.109	0.13	-0.11
1880	9400	Right	/	20.9	21.7	0.089	0.11	0.157	0.19	0.14
1880	9400	Bottom	Fig.8	20.9	21.7	0.571	0.69	1.110	1.33	0.03
1907.6	9538	Rear	/	21.1	21.7	0.616	0.71	1.100	1.26	0.01
1852.4	9262	Rear	/	20.9	21.7	0.520	0.63	0.940	1.13	-0.02
1907.6	9538	Front	/	21.1	21.7	0.476	0.55	0.887	1.02	-0.09
1852.4	9262	Front	/	20.9	21.7	0.493	0.59	0.904	1.09	0.06
1907.6	9538	Bottom	/	21.1	21.7	0.534	0.61	1.050	1.21	-0.12
1852.4	9262	Bottom	/	20.9	21.7	0.553	0.66	1.070	1.29	0.03
Note: New										
1880	9400	Bottom	/	20.9	21.7	0.568	0.68	1.100	1.32	-0.02

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.15: SAR Values (WCDMA1900 MHz -Body) -AP OFF

Ambient Temperature: 22.3°C Liquid Temperature: 21.8°C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	9400	Front	/	23.83	24.2	0.290	0.32	0.511	0.56	0.03
1880	9400	Rear	/	23.83	24.2	0.342	0.37	0.612	0.67	0.05
1907.6	9538	Rear	/	23.69	24.2	0.337	0.38	0.623	0.70	-0.06
1852.4	9262	Rear	/	23.78	24.2	0.405	0.45	0.699	0.77	0.04

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.16: SAR Values (WCDMA 1700 MHz - Head)

Note: Original		Ambient Temperature: 22.7°C					Liquid Temperature: 22.2°C				
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
1732.6	1413	Left	Touch	/	24.77	25.2	0.289	0.32	0.488	0.54	-0.02
1732.6	1413	Left	Tilt	/	24.77	25.2	0.105	0.12	0.178	0.20	-0.04
1732.6	1413	Right	Touch	/	24.77	25.2	0.314	0.35	0.517	0.57	0.02
1732.6	1413	Right	Tilt	/	24.77	25.2	0.137	0.15	0.220	0.24	-0.07
1752.6	1513	Right	Touch	Fig.9	24.86	25.2	0.342	0.37	0.545	0.59	0.12
1712.4	1312	Right	Touch	/	24.88	25.2	0.236	0.25	0.390	0.42	0.02
Note: New											
1752.6	1513	Right	Touch	/	24.86	25.2	0.365	0.39	0.576	0.62	-0.06

Table 14.17: SAR Values (WCDMA 1700 MHz -Body) -AP ON

Note: Original		Ambient Temperature: 22.6°C				Liquid Temperature: 22.1°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1732.6	1413	Front	Fig.10	21.8	22.2	0.592	0.65	1.090	1.20	0.13
1732.6	1413	Rear	/	21.8	22.2	0.540	0.59	0.901	0.99	-0.08
1732.6	1413	Left	/	21.8	22.2	0.079	0.09	0.131	0.14	0.05
1732.6	1413	Right	/	21.8	22.2	0.132	0.14	0.230	0.25	0.07
1732.6	1413	Bottom	/	21.8	22.2	0.453	0.50	0.863	0.95	0.11
1752.6	1513	Front	/	21.9	22.2	0.482	0.52	0.872	0.93	-0.07
1712.4	1312	Front	/	21.8	22.2	0.444	0.49	0.805	0.88	-0.04
1752.6	1513	Rear	/	21.9	22.2	0.550	0.59	0.914	0.98	0.11
1712.4	1312	Rear	/	21.8	22.2	0.496	0.54	0.821	0.90	0.07
1752.6	1513	Bottom	/	21.9	22.2	0.508	0.54	1.010	1.08	0.03
1712.4	1312	Bottom	/	21.8	22.2	0.451	0.49	0.901	0.99	0.15
Note: New										
1732.6	1413	Front	/	21.8	22.2	0.464	0.51	0.832	0.91	-0.08

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.18: SAR Values (WCDMA1700 MHz -Body) -AP OFF

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C										
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1732.6	1413	Front	/	24.77	25.2	0.394	0.44	0.652	0.72	0.02
1732.6	1413	Rear	/	24.77	25.2	0.371	0.41	0.615	0.68	0.03
1752.6	1513	Front	/	24.86	25.2	0.459	0.50	0.790	0.85	0.01
1712.4	1312	Front	/	24.88	25.2	0.355	0.38	0.585	0.63	0.07

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.19: SAR Values (LTE Band 2-Head)

Note: Original		Ambient Temperature: 21.5°C				Liquid Temperature: 21.0°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1860	18700	1RB_Mid	Left Touch	23.75	24	Fig.11	0.157	0.17	0.269	0.28	-0.10
1880	18900	50RB_Mid	Left Touch	22.65	23	/	0.110	0.12	0.188	0.20	0.06
1860	18700	1RB_Mid	Left Tilt	23.75	24	/	0.120	0.13	0.210	0.22	0.08
1880	18900	50RB_Mid	Left Tilt	22.65	23	/	0.093	0.10	0.168	0.18	0.05
1860	18700	1RB_Mid	Right Touch	23.75	24	/	0.148	0.16	0.256	0.27	-0.12
1880	18900	50RB_Mid	Right Touch	22.65	23	/	0.097	0.11	0.152	0.16	-0.06
1860	18700	1RB_Mid	Right Tilt	23.75	24	/	0.125	0.13	0.215	0.23	0.04
1880	18900	50RB_Mid	Right Tilt	22.65	23	/	0.086	0.09	0.150	0.16	0.07
Note: New											
1860	18700	1RB_Mid	Left Touch	23.75	24	/	0.348	0.37	0.572	0.61	0.11

Table 14.20: SAR Values (LTE Band 2-Body)-AP ON

Note: Original		Ambient Temperature: 21.8°C				Liquid Temperature: 21.3°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1880	18900	1RB_Mid	Front	21.64	22.5	/	0.440	0.54	0.800	0.98	-0.06
1900	19100	50RB_Low	Front	21.64	22.5	/	0.413	0.50	0.743	0.91	-0.05
1880	18900	1RB_Mid	Rear	21.64	22.5	/	0.477	0.58	0.894	1.09	0.02
1900	19100	50RB_Low	Rear	21.64	22.5	/	0.446	0.54	0.781	0.95	0.07
1880	18900	1RB_Mid	Left	21.64	22.5	/	0.059	0.07	0.101	0.12	0.15
1900	19100	50RB_Low	Left	21.64	22.5	/	0.052	0.06	0.094	0.11	0.13
1880	18900	1RB_Mid	Right	21.64	22.5	/	0.095	0.12	0.171	0.21	0.05
1900	19100	50RB_Low	Right	21.64	22.5	/	0.091	0.11	0.165	0.20	0.07
1880	18900	1RB_Mid	Bottom	21.64	22.5	Fig.12	0.530	0.65	1.030	1.26	-0.03
1900	19100	50RB_Low	Bottom	21.64	22.5	/	0.468	0.57	0.924	1.13	-0.01
1900	19100	1RB_Mid	Rear	21.55	22.5	/	0.462	0.57	0.873	1.09	-0.04
1860	18700	1RB_Mid	Rear	21.61	22.5	/	0.459	0.56	0.869	1.07	0.08
1800	18900	50RB_Low	Rear	21.52	22.5	/	0.442	0.55	0.775	0.97	0.04
1860	18700	50RB_Low	Rear	21.55	22.5	/	0.436	0.54	0.771	0.96	-0.14
1860	18700	100RB	Rear	21.49	22.5	/	0.424	0.54	0.746	0.94	-0.11
1900	19100	1RB_Mid	Front	21.55	22.5	/	0.421	0.52	0.783	0.97	0.09
1860	18700	1RB_Mid	Front	21.61	22.5	/	0.433	0.53	0.792	0.97	0.10
1800	18900	50RB_Low	Front	21.52	22.5	/	0.407	0.51	0.734	0.92	0.05
1860	18700	50RB_Low	Front	21.55	22.5	/	0.418	0.52	0.774	0.96	0.05
1860	18700	100RB	Front	21.49	22.5	/	0.403	0.51	0.733	0.92	0.15
1900	19100	1RB_Mid	Bottom	21.55	22.5	/	0.526	0.65	0.996	1.24	0.08
1860	18700	1RB_Mid	Bottom	21.61	22.5	/	0.514	0.63	0.985	1.21	-0.04
1800	18900	50RB_Low	Bottom	21.52	22.5	/	0.455	0.57	0.894	1.12	0.07

1860	18700	50RB_Low	Bottom	21.55	22.5	/	0.437	0.54	0.886	1.10	0.02
1860	18700	100RB	Bottom	21.49	22.5	/	0.432	0.55	0.846	1.07	0.06
Note: New											
1880	18900	1RB_Mid	Bottom	21.64	22.5	/	0.525	0.64	1.020	1.24	-0.02

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.21: SAR Values (LTE Band 2-Body)-AP OFF

Ambient Temperature: 21.8°C						Liquid Temperature: 21.3°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1860	18700	1RB_Mid	Front	23.75	24	/	0.409	0.43	0.698	0.74	0.03
1880	19890	50RB_Mid	Front	22.65	23	/	0.306	0.33	0.529	0.57	-0.04
1860	18700	1RB_Mid	Rear	23.75	24	/	0.448	0.47	0.766	0.81	-0.02
1880	19890	50RB_Mid	Rear	22.65	23	/	0.337	0.37	0.600	0.65	0.03
1900	19100	1RB_Mid	Rear	23.50	24	/	0.438	0.49	0.752	0.84	0.09
1880	19890	1RB_Mid	Rear	23.43	24	/	0.434	0.49	0.745	0.85	0.11
1860	18700	100RB	Rear	22.59	23	/	0.417	0.46	0.725	0.80	0.05

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.22: SAR Values (LTE Band 4-Head)

Ambient Temperature: 22.2°C						Liquid Temperature: 21.7°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1720	20050	1RB_Low	Left Touch	23.59	24	/	0.202	0.22	0.334	0.37	0.11
1745	20300	50RB_Low	Left Touch	22.67	23	/	0.183	0.20	0.286	0.31	0.08
1720	20050	1RB_Low	Left Tilt	23.59	24	/	0.067	0.07	0.111	0.12	-0.06
1745	20300	50RB_Low	Left Tilt	22.67	23	/	0.062	0.07	0.105	0.11	0.03
1720	20050	1RB_Low	Right Touch	23.59	24	Fig.13	0.223	0.25	0.350	0.38	-0.14
1745	20300	50RB_Low	Right Touch	22.67	23	/	0.208	0.22	0.327	0.35	0.13
1720	20050	1RB_Low	Right Tilt	23.59	24	/	0.086	0.09	0.141	0.15	-0.09
1745	20300	50RB_Low	Right Tilt	22.67	23	/	0.075	0.08	0.119	0.13	0.07
Note: New											
1720	20050	1RB_Low	Right Touch	23.59	24	/	0.240	0.26	0.375	0.41	-0.08

Table 14.23: SAR Values (LTE Band 4-Body)-AP ON

Ambient Temperature: 21.8°C						Liquid Temperature: 21.3°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1745	20300	1RB_Mid	Front	22.64	24	/	0.474	0.65	0.855	1.17	0.06
1745	20300	50RB_Low	Front	22.70	24	/	0.439	0.59	0.763	1.03	0.12
1745	20300	1RB_Mid	Rear	22.64	24	/	0.460	0.63	0.799	1.09	0.05
1745	20300	50RB_Low	Rear	22.70	24	/	0.411	0.55	0.742	1.00	-0.03

1745	20300	1RB_Mid	Left	22.64	24	/	0.075	0.10	0.121	0.17	0.02
1745	20300	50RB_Low	Left	22.70	24	/	0.076	0.10	0.125	0.17	-0.01
1745	20300	1RB_Mid	Right	22.64	24	/	0.120	0.16	0.210	0.29	0.11
1745	20300	50RB_Low	Right	22.70	24	/	0.122	0.16	0.214	0.29	-0.06
1745	20300	1RB_Mid	Bottom	22.64	24	Fig.14	0.486	0.66	0.892	1.22	0.13
1745	20300	50RB_Low	Bottom	22.70	24	/	0.458	0.62	0.881	1.19	0.03
1732.5	20175	1RB_Mid	Front	22.58	24	/	0.462	0.64	0.836	1.16	-0.07
1720	20050	1RB_Mid	Front	22.55	24	/	0.458	0.64	0.729	1.02	-0.05
1732.5	20175	50RB_Low	Front	22.49	24	/	0.433	0.61	0.755	1.07	0.05
1720	20050	50RB_Low	Front	22.44	24	/	0.424	0.61	0.751	1.08	0.03
1745	20300	100RB	Front	22.54	24	/	0.409	0.57	0.734	1.03	-0.09
1732.5	20175	1RB_Mid	Rear	22.58	24	/	0.453	0.63	0.788	1.09	-0.08
1720	20050	1RB_Mid	Rear	22.55	24	/	0.448	0.63	0.773	1.08	0.07
1732.5	20175	50RB_Low	Rear	22.49	24	/	0.432	0.61	0.753	1.07	0.06
1720	20050	50RB_Low	Rear	22.44	24	/	0.425	0.61	0.742	1.06	-0.07
1745	20300	100RB	Rear	22.54	24	/	0.404	0.57	0.742	1.04	0.05
1732.5	20175	1RB_Mid	Bottom	22.58	24	/	0.477	0.66	0.874	1.21	0.04
1720	20050	1RB_Mid	Bottom	22.55	24	/	0.465	0.65	0.869	1.21	0.11
1732.5	20175	50RB_Low	Bottom	22.49	24	/	0.431	0.61	0.855	1.21	0.14
1720	20050	50RB_Low	Bottom	22.44	24	/	0.427	0.61	0.850	1.19	-0.04
1745	20300	100RB	Bottom	22.54	24	/	0.419	0.59	0.855	1.20	0.06

Note: New

1745	20300	1RB_Mid	Bottom	22.64	24	/	0.496	0.68	0.943	1.29	0.15
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Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.24: SAR Values (LTE Band 4-Body)–AP OFF

Frequency		Ambient Temperature: 21.8°C						Liquid Temperature: 21.3°C			
MHz	Ch.	Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
1720	20050	1RB_Low	Front	23.59	24	/	0.322	0.35	0.539	0.59	0.08
1745	20300	50RB_Low	Front	22.67	23	/	0.273	0.29	0.477	0.51	0.13
1720	20050	1RB_Low	Rear	23.59	24	/	0.300	0.33	0.504	0.55	-0.03
1745	20300	50RB_Low	Rear	22.67	23	/	0.283	0.31	0.481	0.52	0.06

Note1: The distance between the EUT and the phantom bottom is 15mm.

Table 14.25: SAR Values (LTE Band 5-Head)

Note: Original		Ambient Temperature: 22.0°C				Liquid Temperature: 21.5°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
844	20600	1RB_Mid	Left Touch	23.28	24	/	0.214	0.25	0.311	0.37	0.12
829	20450	25RB_Mid	Left Touch	23.33	24	/	0.182	0.21	0.263	0.31	0.11
844	20600	1RB_Mid	Left Tilt	23.28	24	/	0.135	0.16	0.194	0.23	0.15
829	20450	25RB_Mid	Left Tilt	23.33	24	/	0.112	0.13	0.159	0.19	0.20
844	20600	1RB_Mid	Right Touch	23.28	24	Fig.15	0.268	0.32	0.356	0.42	-0.12
829	20450	25RB_Mid	Right Touch	23.33	24	/	0.185	0.22	0.269	0.31	0.11
844	20600	1RB_Mid	Right Tilt	23.28	24	/	0.132	0.16	0.191	0.23	0.17
829	20450	25RB_Mid	Right Tilt	23.33	24	/	0.106	0.12	0.151	0.18	0.12
Note: New											
844	20600	1RB_Mid	Right Touch	23.28	24	/	0.250	0.30	0.335	0.40	0.07

Table 14.26: SAR Values (LTE Band 5-Body) -AP ON

Note: Original		Ambient Temperature: 22.4°C				Liquid Temperature: 21.9°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
844	20600	1RB_Mid	Front	23.28	24	/	0.249	0.29	0.352	0.42	-0.08
829	20450	25RB_Mid	Front	23.33	24	/	0.218	0.25	0.307	0.36	0.03
844	20600	1RB_Mid	Rear	23.28	24	Fig.16	0.433	0.51	0.570	0.67	-0.06
829	20450	25RB_Mid	Rear	23.33	24	/	0.326	0.38	0.461	0.54	-0.14
844	20600	1RB_Mid	Left	23.28	24	/	0.246	0.29	0.356	0.42	-0.08
829	20450	25RB_Mid	Left	23.33	24	/	0.232	0.27	0.343	0.40	0.00
844	20600	1RB_Mid	Right	23.28	24	/	0.237	0.28	0.352	0.42	-0.04
829	20450	25RB_Mid	Right	23.33	24	/	0.221	0.26	0.327	0.38	-0.04
844	20600	1RB_Mid	Bottom	23.28	24	/	0.136	0.16	0.222	0.26	-0.12
829	20450	25RB_Mid	Bottom	23.33	24	/	0.103	0.12	0.169	0.20	-0.12
Note: New											
844	20600	1RB_Mid	Rear	23.28	24	/	0.232	0.27	0.306	0.36	0.12

Note1: The distance between the EUT and the phantom bottom is 10mm

Table 14.27: SAR Values (LTE Band 5-Body) -AP OFF

		Ambient Temperature: 22.4°C				Liquid Temperature: 21.9°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
844	20600	1RB_Mid	Front	23.28	24	/	0.249	0.29	0.352	0.42	-0.08
829	20450	25RB_Mid	Front	23.33	24	/	0.218	0.25	0.307	0.36	0.03
844	20600	1RB_Mid	Rear	23.28	24	/	0.433	0.51	0.570	0.67	-0.06
829	20450	25RB_Mid	Rear	23.33	24	/	0.326	0.38	0.461	0.54	-0.14

Note1: The distance between the EUT and the phantom bottom is 10mm

Table 14.28: SAR Values (LTE Band 12-Head)

Note: Original		Ambient Temperature: 22.3°C				Liquid Temperature: 21.8°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
707.5	23095	1RB_Mid	Left Touch	23.30	24	Fig.17	0.192	0.23	0.245	0.29	0.05
707.5	23095	25RB_Mid	Left Touch	23.29	24	/	0.145	0.17	0.209	0.25	0.03
707.5	23095	1RB_Mid	Left Tilt	23.30	24	/	0.117	0.14	0.165	0.19	0.02
707.5	23095	25RB_Mid	Left Tilt	23.29	24	/	0.094	0.11	0.132	0.16	0.12
707.5	23095	1RB_Mid	Right Touch	23.30	24	/	0.158	0.19	0.223	0.26	0.13
707.5	23095	25RB_Mid	Right Touch	23.29	24	/	0.125	0.15	0.177	0.21	0.08
707.5	23095	1RB_Mid	Right Tilt	23.30	24	/	0.096	0.11	0.136	0.16	0.14
707.5	23095	25RB_Mid	Right Tilt	23.29	24	/	0.080	0.09	0.113	0.13	0.08
Note: New											
707.5	23095	1RB_Mid	Left Touch	23.30	24	/	0.165	0.19	0.213	0.25	0.07

Table 14.29: SAR Values (LTE Band 12-Body) -AP ON

Note: Original		Ambient Temperature: 22.7°C				Liquid Temperature: 22.2°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
707.5	23095	1RB_Mid	Front	23.30	24	/	0.159	0.19	0.222	0.26	-0.13
707.5	23095	25RB_Mid	Front	23.29	24	/	0.128	0.15	0.179	0.21	0.12
707.5	23095	1RB_Mid	Rear	23.30	24	Fig.18	0.385	0.45	0.459	0.54	-0.07
707.5	23095	25RB_Mid	Rear	23.29	24	/	0.177	0.21	0.253	0.30	-0.04
707.5	23095	1RB_Mid	Left	23.30	24	/	0.218	0.26	0.316	0.37	0.14
707.5	23095	25RB_Mid	Left	23.29	24	/	0.190	0.22	0.274	0.32	-0.12
707.5	23095	1RB_Mid	Right	23.30	24	/	0.213	0.25	0.312	0.37	-0.02
707.5	23095	25RB_Mid	Right	23.29	24	/	0.146	0.17	0.225	0.26	0.06
707.5	23095	1RB_Mid	Bottom	23.30	24	/	0.078	0.09	0.123	0.14	0.06
707.5	23095	25RB_Mid	Bottom	23.29	24	/	0.062	0.07	0.098	0.12	0.00
Note: New											
707.5	23095	1RB_Mid	Rear	23.30	24	/	0.206	0.24	0.293	0.36	-0.03

Note1: The distance between the EUT and the phantom bottom is 10mm

Table 14.30: SAR Values (LTE Band 12-Body)-AP OFF

		Ambient Temperature: 22.7°C				Liquid Temperature: 22.2°C					
Frequency		Configuration	Test Position	Conduct-ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
707.5	23095	1RB_Mid	Front	23.30	24	/	0.159	0.19	0.222	0.26	-0.13
707.5	23095	25RB_Mid	Front	23.29	24	/	0.128	0.15	0.179	0.21	0.12
707.5	23095	1RB_Mid	Rear	23.30	24	/	0.385	0.45	0.459	0.54	-0.07
707.5	23095	25RB_Mid	Rear	23.29	24	/	0.177	0.21	0.253	0.30	-0.04

Note1: The distance between the EUT and the phantom bottom is 10mm

Table 14.31: SAR Values ((WLAN - Head) for other batteries

Ambient Temperature: 21.8°C						Liquid Temperature: 21.3°C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
2462	11	Left	Touch	/	17.49	18	0.415	0.47	0.816	0.92	0.07

Table 14.32: SAR Values (WCDMA1900 MHz -Body) for other batteries

Ambient Temperature: 22.3°C						Liquid Temperature: 21.8°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	9400	Bottom	/	20.9	21.7	0.554	0.67	1.07	1.29	0.11

Note1: The distance between the EUT and the phantom bottom is 10mm

14.3 SAR results for Standard procedure

There is zoom scan measurement to be added for the highest measured SAR in each exposure configuration/band.

Table 14.33: SAR Values (GSM 850 MHz - Head)

Ambient Temperature: 22.6.°C						Liquid Temperature: 22.1°C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
848.8	251	Left	Touch	Fig.1	32.54	33.5	0.231	0.29	0.309	0.39	-0.08

Table 14.34: SAR Values (GSM 850 MHz -Body) –AP ON

Ambient Temperature: 22.6.°C						Liquid Temperature: 22.1°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
836.6	190	Rear	Fig.2	32.88	33.5	0.282	0.33	0.378	0.44	0.06

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.35: SAR Values (GSM 1900 MHz - Head)

Ambient Temperature: 22.2°C						Liquid Temperature: 21.7°C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
1909.8	810	Right	Touch	/	29.62	31	0.011	0.02	0.019	0.03	-0.06

Table 14.36: SAR Values (GSM 1900 MHz -Body) –AP ON

Ambient Temperature: 22.2°C						Liquid Temperature: 21.7°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	661	Rear	Fig.4	23.58	24.5	0.346	0.43	0.668	0.83	0.12

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.37: SAR Values (WCDMA 850 MHz - Head)

Ambient Temperature: 22.5°C						Liquid Temperature: 22.0°C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
826.4	4132	Left	Touch	Fig.5	23.93	24.	0.387	0.39	0.520	0.53	-0.04

Table 14.38: SAR Values (WCDMA 850 MHz -Body) –AP ON

Ambient Temperature: 22.5°C						Liquid Temperature: 22.0°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
846.6	4233	Rear	Fig.6	23.86	24	0.524	0.54	0.676	0.70	0.06

Note1: The distance between the EUT and the phantom bottom is 10mm

Table 14.39: SAR Values (WCDMA1900 MHz - Head)

Ambient Temperature: 21.8°C						Liquid Temperature: 21.3°C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1852.4	9262	Right	Touch	Fig.7	23.78	24.2	0.241	0.27	0.417	0.46	0.02

Table 14.40: SAR Values (WCDMA1900 MHz -Body) –AP ON

Ambient Temperature: 22.3°C					Liquid Temperature: 21.8°C					
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1880	9400	Bottom	Fig.8	20.9	21.7	0.571	0.69	1.110	1.33	0.03

Note1: The distance between the EUT and the phantom bottom is 10mm

Table 14.41: SAR Values (WCDMA1700 MHz - Head)

Ambient Temperature: 22.7°C						Liquid Temperature: 22.2°C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1752.6	1513	Right	Touch	Fig.9	24.86	25.2	0.342	0.37	0.545	0.59	0.12

Table 14.42: SAR Values (WCDMA1700 MHz -Body) -AP ON

Ambient Temperature: 22.6°C					Liquid Temperature: 22.1°C					
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
1732.6	1413	Front	Fig.10	21.8	22.2	0.592	0.65	1.090	1.20	0.13

Note1: The distance between the EUT and the phantom bottom is 10mm.

Table 14.43: SAR Values (LTE Band 2-Head)

Ambient Temperature: 21.5°C						Liquid Temperature: 21.0°C					
Frequency		Configuration	Test Position	Conduct -ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1860	18700	1RB_Mid	Left Touch	23.75	24	Fig.11	0.157	0.17	0.269	0.28	-0.10

Table 14.44: SAR Values (LTE Band 2-Body) -AP ON

Ambient Temperature: 21.8°C						Liquid Temperature: 21.3°C					
Frequency		Configuration	Test Position	Conduct -ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1880	18900	1RB_Mid	Bottom	21.64	22.5	Fig.12	0.530	0.65	1.030	1.26	-0.03

Note: The distance between the EUT and the phantom bottom is 10mm.

Table 14.45: SAR Values (LTE Band 4-Head)

Ambient Temperature: 22.2°C						Liquid Temperature: 21.7°C					
Frequency		Configuration	Test Position	Conduct -ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1720	20050	1RB_Low	Right Touch	23.59	24	Fig.13	0.223	0.25	0.35	0.38	-0.14

Table 14.46: SAR Values (LTE Band 4-Body) -AP ON

Ambient Temperature: 21.8°C						Liquid Temperature: 21.3°C					
Frequency		Configuration	Test Position	Conduct -ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
1745	20300	1RB_Mid	Bottom	22.64	24	Fig.14	0.486	0.66	0.892	1.22	0.13

Note: The distance between the EUT and the phantom bottom is 10mm.

Table 14.47: SAR Values (LTE Band 5-Head)

Ambient Temperature: 22.0°C						Liquid Temperature: 21.5°C					
Frequency		Configuration	Test Position	Conduct -ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
844	20600	1RB_Mid	Right Touch	23.28	24	Fig.15	0.268	0.32	0.356	0.42	-0.12

Table 14.48: SAR Values (LTE Band 5-Body) -AP ON

Ambient Temperature: 22.4°C						Liquid Temperature: 21.9°C					
Frequency		Configuration	Test Position	Conduct -ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
844	20600	1RB_Mid	Rear	23.28	24	Fig.16	0.433	0.51	0.570	0.67	-0.06

Note: The distance between the EUT and the phantom bottom is 10mm

Table 14.49: SAR Values (LTE Band 12-Head)

Ambient Temperature: 22.3°C						Liquid Temperature: 21.8°C					
Frequency		Configuration	Test Position	Conduct -ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
707.5	23095	1RB_Mid	Left Touch	23.30	24	Fig.17	0.192	0.23	0.245	0.29	0.05

Table 14.50: SAR Values (LTE Band 12-Body) -AP ON

Ambient Temperature: 22.7°C						Liquid Temperature: 22.2°C					
Frequency		Configuration	Test Position	Conduct -ed Power (dBm)	Max. tune-up Power (dBm)	Figure No.	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	Power Drift (dB)
MHz	Ch.										
707.5	23095	1RB_Mid	Rear	23.30	24	Fig.18	0.385	0.45	0.459	0.54	-0.07

Note: The distance between the EUT and the phantom bottom is 10mm

14.4 WLAN Evaluation

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

Head Evaluation

Table 14.51: SAR Values (WLAN - Head)– 802.11b 1Mbps (Fast SAR)

Ambient Temperature: 22.2°C						Liquid Temperature: 21.7°C					
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
2462	11	Left	Touch	/	17.49	18	0.436	0.49	0.833	0.94	-0.03
2462	11	Left	Tilt	/	17.49	18	0.297	0.33	0.584	0.66	0.03
2462	11	Right	Touch	/	17.49	18	0.224	0.25	0.405	0.46	-0.04
2462	11	Right	Tilt	/	17.49	18	0.163	0.18	0.291	0.33	0.03

As shown above table, the initial test position for head is “Left Touch”. So the head SAR of WLAN is presented as below:

Table 14.52: SAR Values (WLAN - Head) – 802.11b 1Mbps (Full SAR)

Note: Original		Ambient Temperature: 22.2°C					Liquid Temperature: 21.7°C				
Frequency		Side	Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.										
2462	11	Left	Touch	Fig.19	17.49	18	0.438	0.49	0.835	0.94	-0.03
2462	11	Left	Tilt	/	17.49	18	0.299	0.34	0.588	0.66	0.03
2442	6	Left	Touch	/	17.17	18	0.394	0.48	0.754	0.91	0.07
2462	11	Right	Touch	/	17.49	18	0.225	0.25	0.407	0.46	-0.04
Note: New											
2462	11	Left	Touch	/	17.49	18	0.419	0.47	0.820	0.92	-0.03

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 95.96% is achievable for WLAN in this project and the scaled reported SAR is presented as below.

Table 14.53: SAR Values (WLAN - Head) – 802.11b 1Mbps (Scaled Reported SAR)

Ambient Temperature: 22.2°C					Liquid Temperature: 21.7°C		
Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.						
2462	11	Left	Touch	95.96%	100%	0.94	0.97
2462	11	Right	Touch	95.96%	100%	0.46	0.48

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

Body Evaluation

Table 14.54: SAR Values (WLAN - Body)– 802.11b 1Mbps (Fast SAR)-AP ON

Ambient Temperature: 22.3°C						Liquid Temperature: 21.8°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
2462	11	Front	/	17.49	18	0.101	0.11	0.179	0.20	0.12
2462	11	Rear	/	17.49	18	0.113	0.13	0.222	0.25	0.10
2462	11	Right	/	17.49	18	0.086	0.10	0.147	0.17	-0.08
2462	11	Top	/	17.49	18	0.079	0.09	0.135	0.15	0.03

Note1: The distance between the EUT and the phantom bottom is 10mm.

As shown above table, the initial test position for body is “Rear”. So the body SAR of WLAN is presented as below:

Table 14.55: SAR Values (WLAN - Body) – 802.11b 1Mbps (Full SAR)

Note: Original		Ambient Temperature: 22.2°C				Liquid Temperature: 21.7°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
2462	11	Rear	Fig.20	17.49	18	0.115	0.13	0.224	0.25	0.10
Note: New										
2462	11	Rear	/	17.49	18	0.106	0.12	0.207	0.23	-0.02

Table 14.56: SAR Values (WLAN - Body)– 802.11b 1Mbps (Fast SAR)-AP OFF

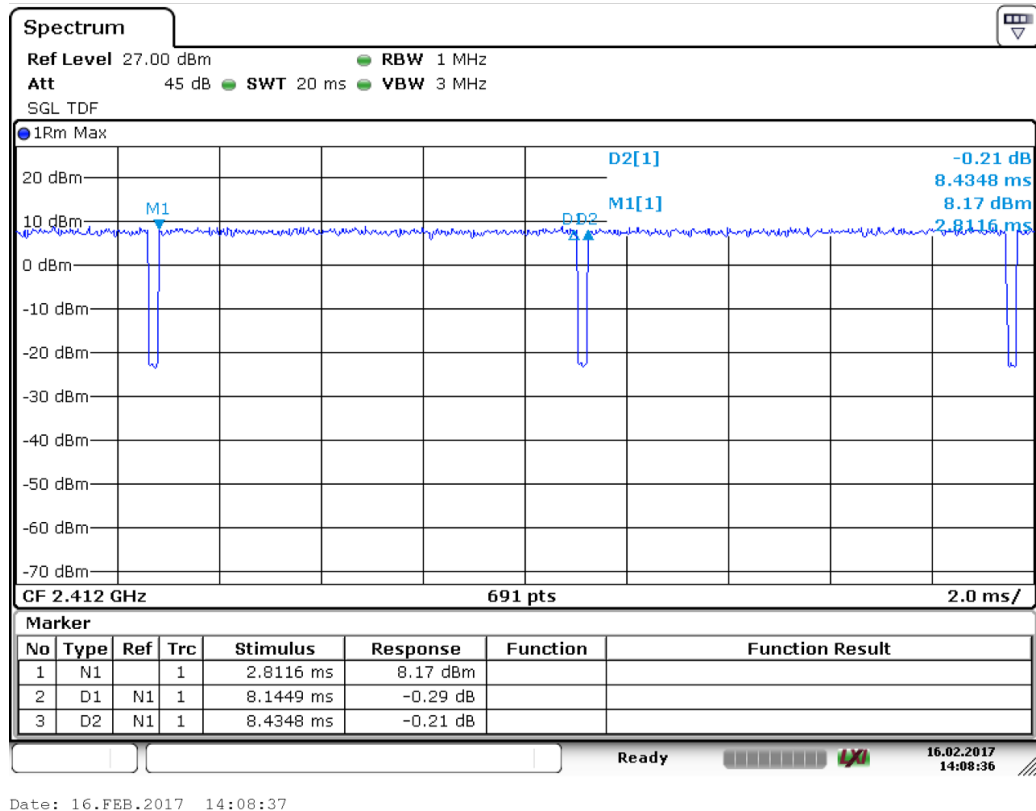
Ambient Temperature: 22.3°C						Liquid Temperature: 21.8°C				
Frequency		Test Position	Figure No.	Conducted Power (dBm)	Max. tune-up Power (dBm)	Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	Power Drift (dB)
MHz	Ch.									
2462	11	Front	/	17.49	18	0.101	0.11	0.179	0.20	0.12
2462	11	Rear	/	17.49	18	0.113	0.13	0.222	0.25	0.10

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 95.96% is achievable for WLAN in this project and the scaled reported SAR is presented as below.

Table 14.57: SAR Values (WLAN - Body) – 802.11b 1Mbps (Scaled Reported SAR)

Ambient Temperature: 22.3°C				Liquid Temperature: 21.8°C		
Frequency		Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
MHz	Ch.					
2437	6	Rear	95.96%	100%	0.25	0.26

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



Picture 14.1: The plot of duty factor

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 WCDMA 1900 (1g) –AP ON

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1880	9400	Bottom	10	1.11	1.10	1.01	/

Table 15.2: SAR Measurement Variability for Body WCDMA 1700 (1g) - AP ON

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1732.6	1413	Front	10	1.09	1.07	1.02	/

Table 15.3: SAR Measurement Variability for Body LTE Band 2 (1g) –AP ON

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1880	18900	Bottom	10	1.03	1.00	1.03	/

Table 15.4: SAR Measurement Variability for Body LTE Band 4 (1g) –AP ON

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
1745	20300	Bottom	10	0.892	0.885	1.01	/

Table 15.5: SAR Measurement Variability for Head WIFI 802.11b 1Mbps (1g)

Frequency		Side	Test Position	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
MHz	Ch.						
2462	11	Left	Touch	0.835	0.818	1.02	/

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	

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	

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	2016-11-19	One year
02	Dielectric probe	85070E	MY44300317	/	
03	Power meter	NRP	102603	2017-01-06	One year
04	Power sensor	NRP-Z51	102211		
05	Power meter	NRP	101460	2017-02-06	One year
06	Power sensor	NRP-Z91	100553		
07	Signal Generator	E8257D	MY47461211	2017-06-06	One year
08	Amplifier	VTL5400	0404	/	
09	DAE	SPEAG DAE4	786	2016-12-08	One year
10	E-field Probe	SPEAG ES3DV3	3151	2016-11-17	One year
11	Dipole Validation Kit	SPEAG D750V3	1163	2016-09-19	Three year
12	Dipole Validation Kit	SPEAG D835V2	4d057	2015-10-22	Three year
13	Dipole Validation Kit	SPEAG D1800V2	2d147	2015-11-03	Three year
14	Dipole Validation Kit	SPEAG D1900V2	5d088	2015-11-04	Three year
15	Dipole Validation Kit	SPEAG D2450V2	873	2015-10-30	Three year
16	BTS	E5515C	GB47460389	2017-01-06	One year
17	Radio Communication Analyzer	Anristu MT8820C	6201563767	2017-01-06	One year

END OF REPORT BODY

ANNEX A Graph Results

GSM850 Left Cheek High

Date/Time: 2017-2-8

Electronics: DAE4 Sn786

Medium: Head 835 MHz

Medium parameters used (interpolated): $f = 848.8$ MHz; $\sigma = 0.910$ S/m; $\epsilon_r = 41.018$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C

Communication System: UID 0, 2G_GSM (0) Frequency: 848.8 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3151 ConvF(6.08,6.08, 6.08);

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

Maximum value of SAR (interpolated) = 0.312 W/kg

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

Reference Value = 7.623 V/m; Power Drift = -0.08 dB

Peak SAR (extrapolated) = 0.296 W/kg

SAR(1 g) = 0.309 W/kg; SAR(10 g) = 0.231 W/kg

Maximum value of SAR (measured) = 0.327 W/kg

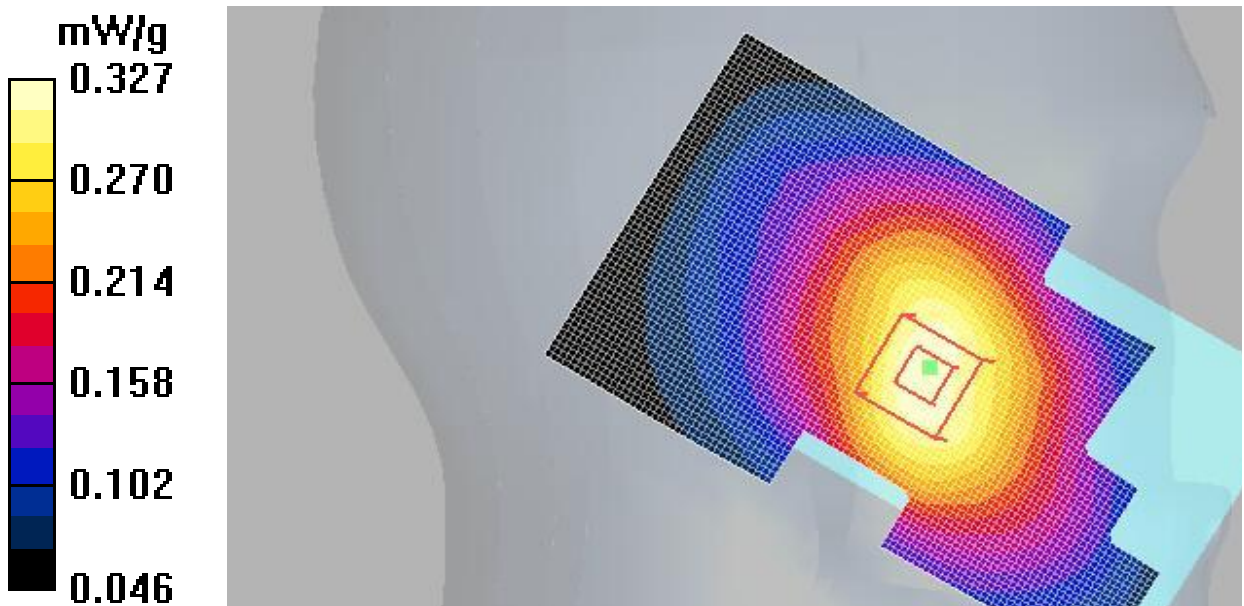


Fig.1 GSM 850MHz CH251

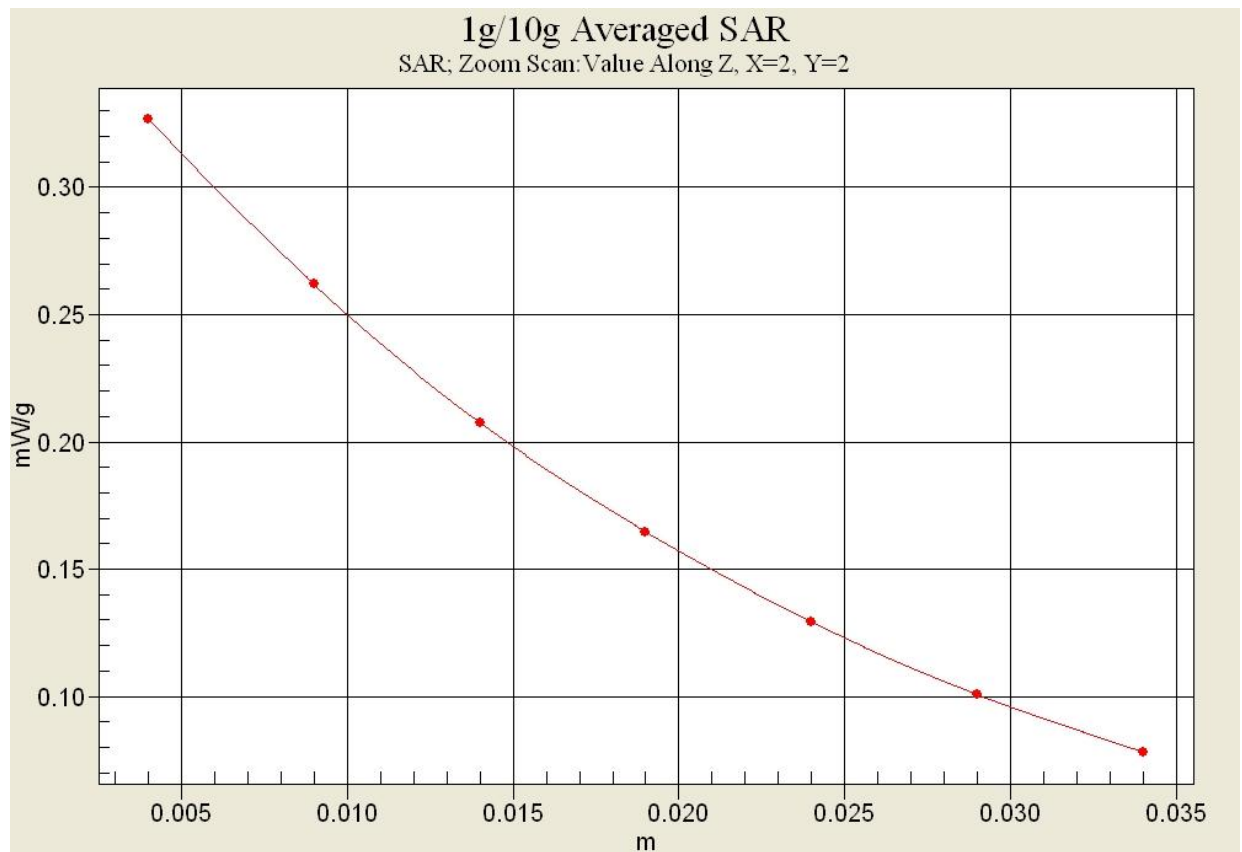


Fig.1-1 Z-Scan at power reference point (GSM 850 MHz CH251)

GSM850 Body Rear Middle

Date/Time: 2017-2-8

Electronics: DAE4 Sn786

Medium: Body 835 MHz

Medium parameters used (interpolated): $f = 836.6$ MHz; $\sigma = 0.985$ S/m; $\epsilon_r = 55.566$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.6°C Liquid Temperature: 22.1°C

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

Probe: ES3DV3 - SN3151 ConvF(6.13, 6.13, 6.13);

Rear side Mid/Area Scan (41x111x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm

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

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

Reference Value = 19.108 V/m; Power Drift = 0.06 dB

Peak SAR (extrapolated) = 0.521 W/kg

SAR(1 g) = 0.378 W/kg; SAR(10 g) = 0.282 W/kg

Maximum value of SAR (measured) = 0.382 W/kg

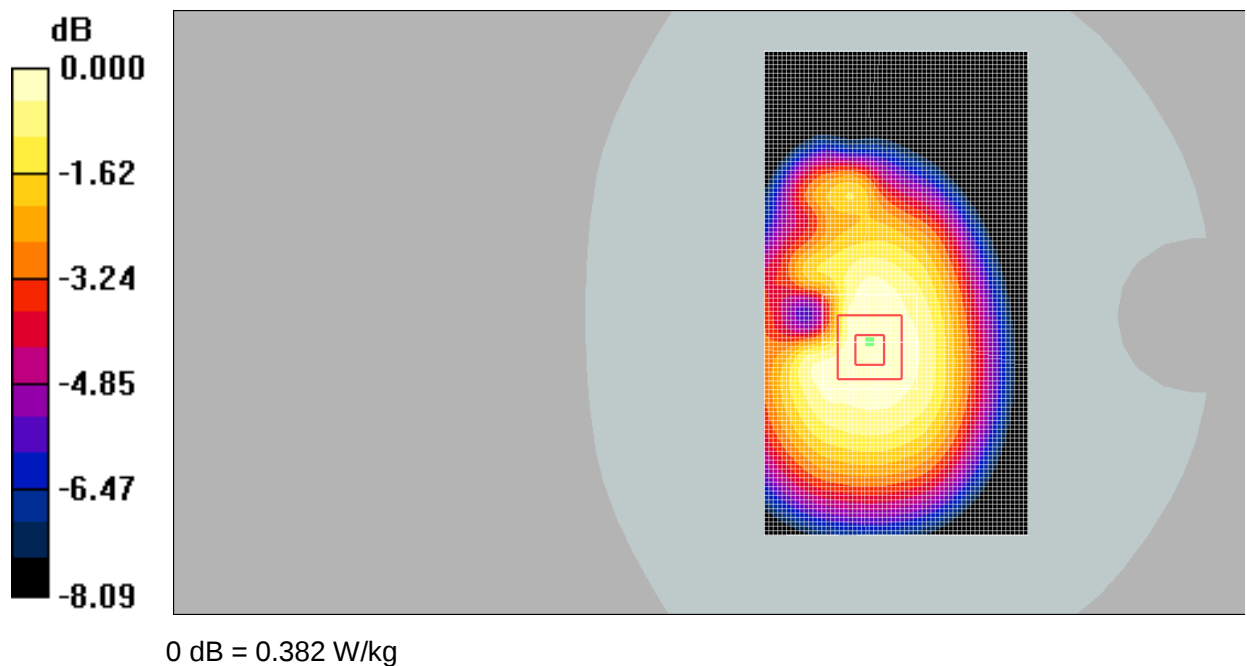


Fig.2 GSM 850 MHz CH190

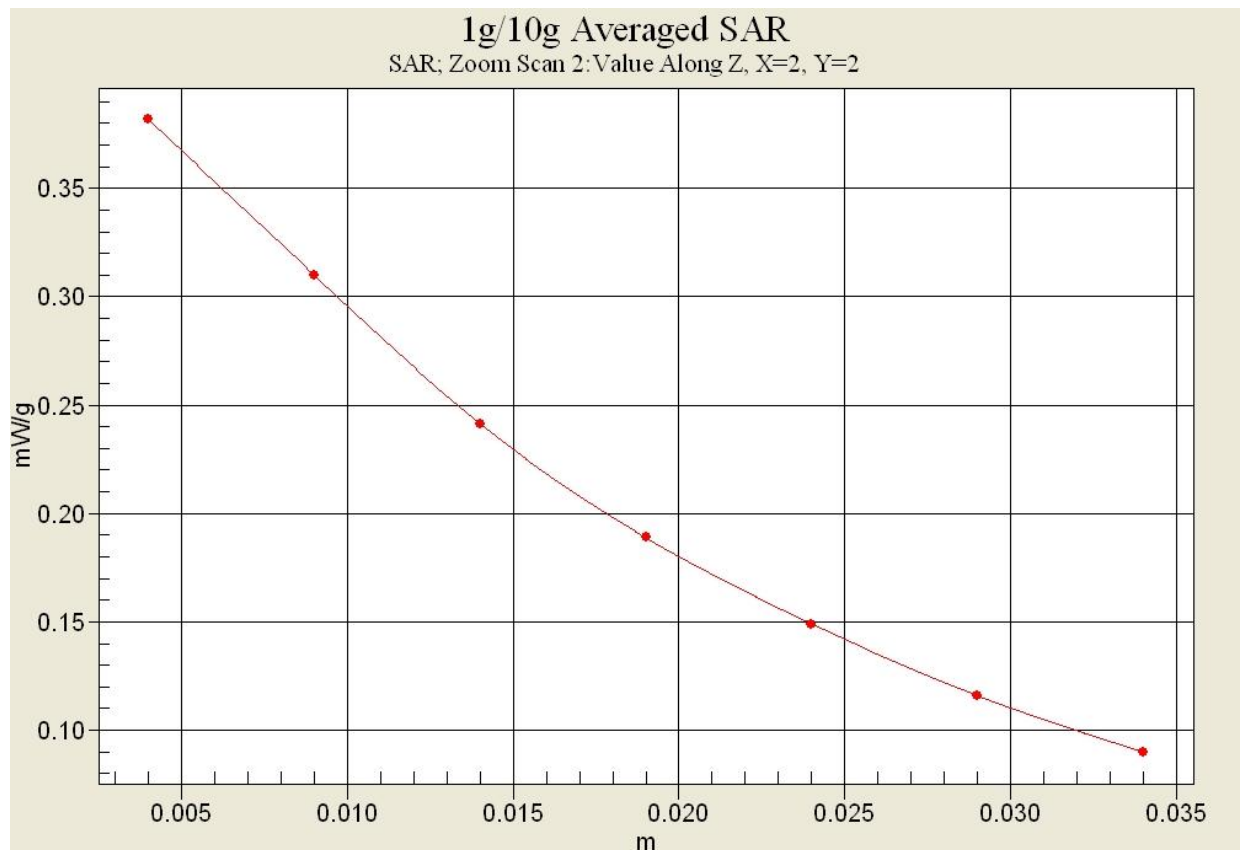


Fig.2-1 Z-Scan at power reference point (GSM 850 MHz CH190)

GSM1900 Right Cheek Low

Date/Time: 2017-2-12

Electronics: DAE4 Sn786

Medium: Head 1900 MHz

Medium parameters used (interpolated): $f = 1850.2$ MHz; $\sigma = 1.377$ S/m; $\epsilon_r = 40.793$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C

Communication System: UID 0, 2G_GSM (0) Frequency: 1850.2 MHz Duty Cycle: 1:8.3

Probe: ES3DV3 - SN3151 ConvF(4.88, 4.88, 4.88);

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

Maximum value of SAR (interpolated) = 0.023 W/kg

Right Cheek Low/Zoom Scan (5x5x7)/Cube0: Measurement grid: dx=8mm, dy=8mm, dz=5mm

Reference Value = 1.817 V/m; Power Drift = -0.11 dB

Peak SAR (extrapolated) = 0.025 W/kg

SAR(1 g) = 0.021 W/kg; SAR(10 g) = 0.012 W/kg

Maximum value of SAR (measured) = 0.022 W/kg

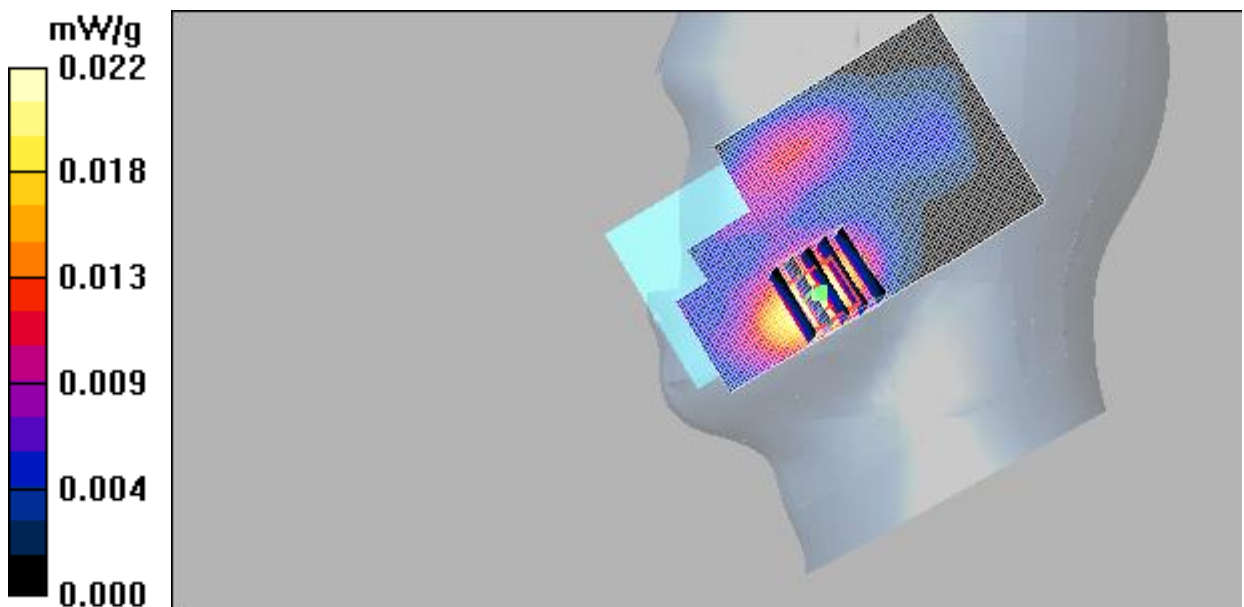


Fig.3 GSM 1900 MHz CH512

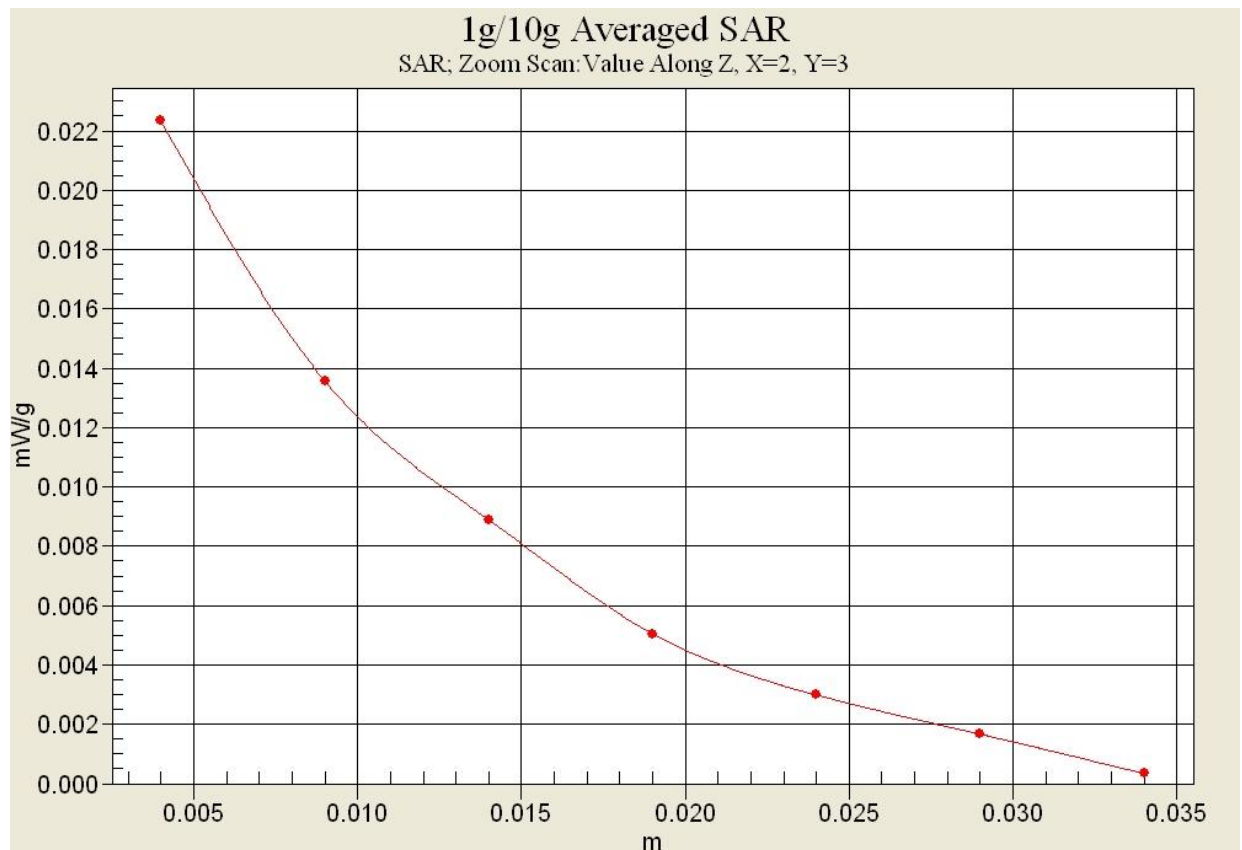


Fig.3-1 Z-Scan at power reference point (GSM 1900 MHz CH512)

GSM1900 Body Rear Middle

Date/Time: 2017-2-12

Electronics: DAE4 Sn786

Medium: Body 1900 MHz

Medium parameters used: $f = 1880$ MHz; $\sigma = 1.531$ S/m; $\epsilon_r = 52.973$; $\rho = 1000$ kg/m³

Ambient Temperature: 22.2°C Liquid Temperature: 21.7°C

Communication System: UID 0, GPRS 4 Txslot (0) Frequency: 1880 MHz Duty Cycle: 1:2

Probe: ES3DV3 - SN3151 ConvF(4.49, 4.49, 4.49);

Rear side Mid/Area Scan (51x61x1): Interpolated grid: $dx=1.500$ mm, $dy=1.500$ mm

Maximum value of SAR (interpolated) = 0.713 W/kg

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

Reference Value = 9.286 V/m; Power Drift = 0.12 dB

Peak SAR (extrapolated) = 1.07 W/kg

SAR(1 g) = 0.668 W/kg; SAR(10 g) = 0.346 W/kg

Maximum value of SAR (measured) = 0.692 W/kg

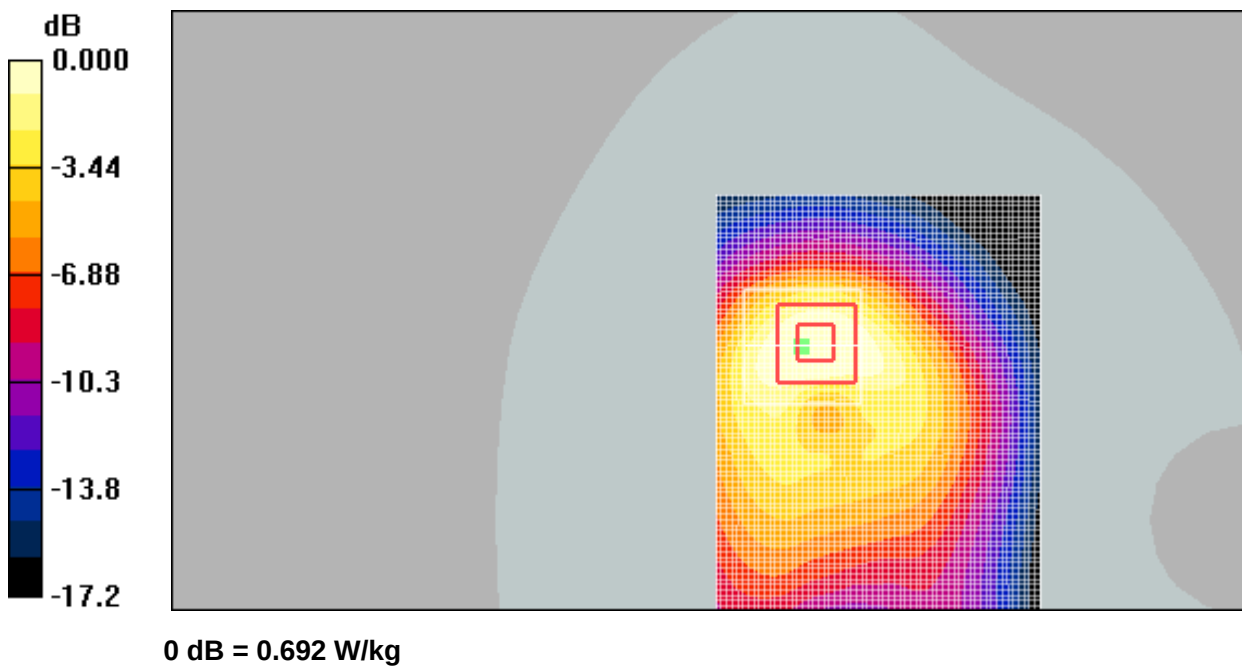


Fig.4 GSM 1900 MHz CH661