

Hotspot on

Table 11.3-2: The conducted Power for LTE

Band 2								
Bandwidth (MHz)	RB allocation	Frequency (MHz)	Max. Target Power (dBm)	QPSK		16QAM		
	RB offset (Start RB)			Actual output power (dBm)	MPR	Actual output power (dBm)	MPR	
1.4 MHz	1RB High (5)	1909.3	22	20.88	/	20.94	/	
		1880	22	20.99	/	21.33	/	
		1850.7	22	20.98	/	21.02	/	
	1RB Middle (3)	1909.3	22	20.89	/	21.00	/	
		1880	22	21.01	/	21.35	/	
		1850.7	22	21.02	/	21.02	/	
	1RB Low (0)	1909.3	22	20.94	/	20.97	/	
		1880	22	21.00	/	21.32	/	
		1850.7	22	20.96	/	21.00	/	
	3RB High (3)	1909.3	22	20.93	/	20.96	/	
		1880	22	21.02	/	21.19	/	
		1850.7	22	21.04	/	21.18	/	
	3RB Middle (1)	1909.3	22	20.87	/	20.89	/	
		1880	22	20.95	/	21.13	/	
		1850.7	22	20.96	/	21.13	/	
	3RB Low (0)	1909.3	22	20.95	/	20.96	/	
		1880	22	20.98	/	21.18	/	
		1850.7	22	21.03	/	21.19	/	
	6RB (0)	1909.3	22	20.94	/	20.96	/	
		1880	22	20.97	/	21.19	/	
		1850.7	22	21.03	/	21.19	/	
	3 MHz	1RB High (14)	1908.5	22	20.83	/	20.66	/
			1880	22	20.95	/	21.28	/
			1851.5	22	20.93	/	20.90	/
		1RB Middle (7)	1908.5	22	20.88	/	20.78	/
			1880	22	21.03	/	21.33	/
			1851.5	22	20.96	/	20.98	/
1RB Low (0)		1908.5	22	20.87	/	20.79	/	
		1880	22	20.99	/	21.30	/	
		1851.5	22	20.97	/	20.99	/	
8RB High (7)		1908.5	22	20.94	/	21.01	/	
		1880	22	21.00	/	21.07	/	
		1851.5	22	21.01	/	21.01	/	
8RB Middle (4)		1908.5	22	20.97	/	21.03	/	
		1880	22	21.01	/	21.09	/	
		1851.5	22	21.03	/	21.04	/	
8RB Low (0)		1908.5	22	20.96	/	21.04	/	
		1880	22	21.00	/	21.07	/	
		1851.5	22	21.03	/	21.04	/	
15RB (0)		1908.5	22	20.93	/	20.94	/	
		1880	22	20.95	/	20.98	/	
		1851.5	22	21.01	/	20.95	/	

5 MHz	1RB High (24)	1907.5	22	20.94	/	21.01	/
		1880	22	20.98	/	21.44	/
		1852.5	22	21.02	/	21.06	/
	1RB Middle (12)	1907.5	22	21.03	/	21.11	/
		1880	22	21.05	/	21.51	/
		1852.5	22	21.08	/	21.11	/
	1RB Low (0)	1907.5	22	21.09	/	21.15	/
		1880	22	21.06	/	21.53	/
		1852.5	22	21.12	/	21.13	/
	12RB High (13)	1907.5	22	20.93	/	21.03	/
		1880	22	21.00	/	21.13	/
		1852.5	22	21.02	/	21.04	/
	12RB Middle (6)	1907.5	22	20.98	/	21.06	/
		1880	22	21.02	/	21.16	/
		1852.5	22	21.03	/	21.06	/
	12RB Low (0)	1907.5	22	21.01	/	21.08	/
		1880	22	21.03	/	21.16	/
		1852.5	22	21.08	/	21.10	/
25RB (0)	1907.5	22	20.94	/	20.96	/	
	1880	22	20.95	/	21.01	/	
	1852.5	22	21.00	/	20.93	/	
10 MHz	1RB High (49)	1905	22	20.85	/	20.76	/
		1880	22	21.00	/	21.32	/
		1855	22	21.16	/	21.18	/
	1RB Middle (24)	1905	22	20.94	/	20.87	/
		1880	22	21.00	/	21.30	/
		1855	22	20.97	/	20.97	/
	1RB Low (0)	1905	22	21.03	/	21.00	/
		1880	22	21.10	/	21.39	/
		1855	22	21.06	/	21.06	/
	25RB High (25)	1905	22	20.92	/	20.93	/
		1880	22	20.96	/	21.00	/
		1855	22	21.04	/	21.11	/
	25RB Middle (12)	1905	22	20.99	/	21.01	/
		1880	22	20.99	/	21.02	/
		1855	22	21.02	/	21.09	/
	25RB Low (0)	1905	22	21.02	/	21.04	/
		1880	22	20.98	/	21.01	/
		1855	22	20.99	/	21.06	/
50RB (0)	1905	22	20.99	/	20.97	/	
	1880	22	20.97	/	20.98	/	
	1855	22	21.04	/	21.06	/	
15 MHz	1RB High (74)	1902.5	22	20.78	/	20.67	/
		1880	22	20.98	/	21.27	/
		1857.5	22	21.11	/	21.46	/
	1RB Middle (37)	1902.5	22	20.91	/	20.85	/
		1857.5	22	21.04	/	21.34	/
		1857.5	22	20.89	/	21.23	/

	1RB Low (0)	1902.5	22	20.99	/	20.93	/
		1880	22	21.11	/	21.42	/
		1857.5	22	20.89	/	21.21	/
	36RB High (38)	1902.5	22	20.90	/	20.89	/
		1880	22	20.98	/	21.00	/
		1857.5	22	21.01	/	20.96	/
	36RB Middle (19)	1902.5	22	20.92	/	20.91	/
		1880	22	21.01	/	21.05	/
		1857.5	22	20.86	/	20.81	/
	36RB Low (0)	1902.5	22	20.95	/	20.94	/
		1880	22	21.04	/	21.08	/
		1857.5	22	20.84	/	20.79	/
	75RB (0)	1902.5	22	20.94	/	20.93	/
		1880	22	21.02	/	21.02	/
		1857.5	22	20.90	/	20.87	/
20 MHz	1RB High (99)	1900	22	20.82	/	21.37	/
		1880	22	20.97	/	21.43	/
		1860	22	21.10	/	21.52	/
	1RB Middle (50)	1900	22	20.92	/	21.47	/
		1880	22	21.02	/	21.48	/
		1860	22	20.94	/	21.34	/
	1RB Low (0)	1900	22	21.05	/	21.60	/
		1880	22	21.05	/	21.50	/
		1860	22	20.80	/	21.19	/
	50RB High (50)	1900	22	20.91	/	20.94	/
		1880	22	20.94	/	20.97	/
		1860	22	21.04	/	21.00	/
	50RB Middle (25)	1900	22	20.91	/	20.95	/
		1880	22	20.96	/	20.99	/
		1860	22	20.90	/	20.86	/
	50RB Low (0)	1900	22	20.98	/	21.01	/
		1880	22	21.01	/	21.02	/
		1860	22	20.83	/	20.80	/
	100RB (0)	1900	22	20.94	/	20.97	/
		1880	22	20.99	/	20.99	/
		1860	22	20.93	/	20.92	/

11.4 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	4.63	5.30	4.70
Tune up	5.5	6	5.5
EDR2M-4_DQPSK	3.54	4.29	3.57
Tune up	4	5	4.5
EDR3M-8DPSK	3.71	4.46	3.76
Tune up	4.5	5	4.5

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

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps	Tune up
1	13.25	/	/	/	15
6	14.48	14.27	14.17	14.05	16
11	13.69	/	/	/	15

802.11g (dBm)

Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps	Tune up
1	13.28	/	13.45	/	/	/	/	/	15
6	14.09	14.03	14.22	14.14	14.07	13.67	13.75	13.43	15.4
11	13.73	/	13.86	/	/	/	/	/	15

802.11n (dBm) - HT20 (2.4G)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Tune up
1	13.25	/	/	/	/	/	/	/	15
6	14.06	13.96	13.91	13.79	13.66	13.75	13.47	13.41	15
11	13.71	/	/	/	/	/	/	/	15

802.11n (dBm) – HT40 (2.4G)

Channel\data rate	MCS0	MCS1	Tune up	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7	Tune up
3	13.86	/	15	/	/	/	/	/	/	15
6	14.15	13.96	15.5	13.33	13.14	12.89	12.53	12.29	12.20	14
9	13.61	/	15	/	/	/	/	/	/	15

802.11a (dBm)

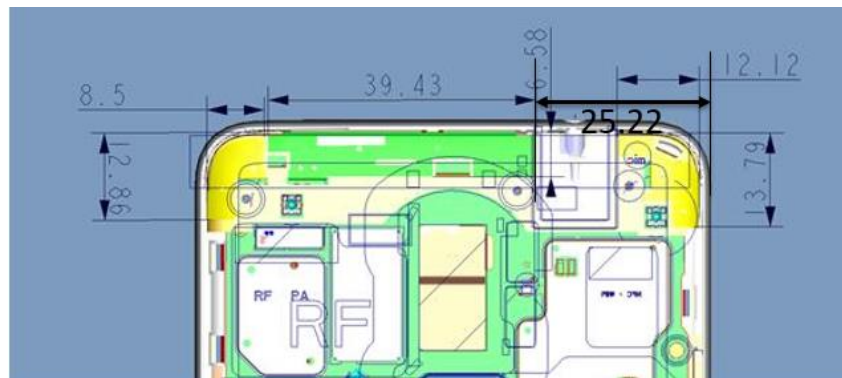
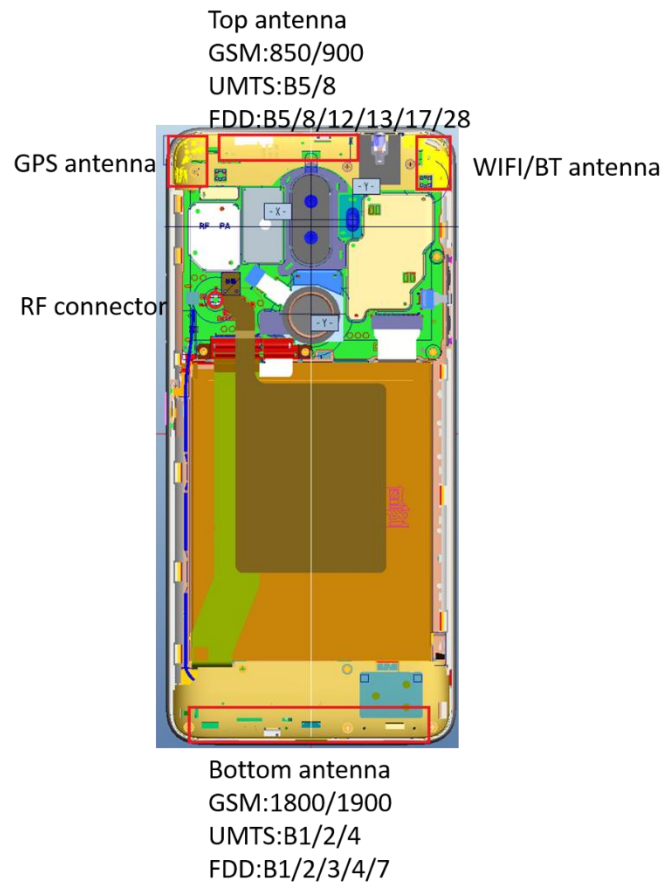
Channel\data rate	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps	Tune up
36	12.43	12.36	12.32	12.25	12.18	11.88	11.83	11.80	13.5
40	12.35	/	/	/	/	/	/	/	13.5
44	12.30	/	/	/	/	/	/	/	13.5
48	12.05	/	/	/	/	/	/	/	13.5
52	11.74	/	/	/	/	/	/	/	13
56	11.64	/	/	/	/	/	/	/	13
60	11.71	/	/	/	/	/	/	/	13
64	12.12	11.86	11.95	11.85	11.53	11.43	11.35	11.23	13

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 v01, 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
Top antenna	Yes	Yes	No	Yes	Yes	No
Bottom antenna	Yes	Yes	Yes	Yes	No	Yes
WLAN	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:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$ 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	6	3.98	Yes
		Body	19.20	6	3.98	Yes
WLAN-2.4G	2.45	Head	9.58	16	39.81	No
		Body	19.17	16	39.81	No
WLAN-5G	5.2	Head	6.58	13.5	22.39	No
	5.2	Body	13.16	13.5	22.39	No
	5.3	Head	6.52	13	19.95	No
	5.3	Body	13.03	13	19.95	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	Right hand, Touch cheek	1.08	0.44	1.52
	Right hand, Tilt 15°	0.72	0.57	1.29
Highest reported SAR value for Body	Rear	1.37	0.17	1.54
	Top	0.23	0.19	0.42

Note: we have evaluated and chose the highest value of WiFi 2.4G and 5G in the above table

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

	Position	Main antenna	BT	Sum
Maximum reported SAR value for Head	Right hand, Touch cheek	1.08	0.17 ^[1]	1.25
Maximum reported SAR value for Body	Rear	1.37	0.08 ^[1]	1.45

[1] - Estimated SAR for Bluetooth (see the table 13.3)

Table 13.3: Estimated SAR for Bluetooth

Mode/Band	F (GHz)	Position	Distance (mm)	Upper limit of power *		Estimated _{1g} (W/kg)
				dBm	mW	
Bluetooth	2.441	Head	5	6	3.98	0.17
Bluetooth	2.441	Body	10	6	3.98	0.08

* - 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 10 mm or 15mm 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-gSAR is the highest measured SAR in each exposure configuration, wireless mode and frequency band combination or more than 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	1:4
WCDMA<E FDD	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 14.1-1: The evaluation of multi-batteries for Head Test

Frequency		Mode/Band	Side	Test Position	Battery Type	SAR(1g)	Power Drift(dB)
MHz	Ch.					(W/kg)	
836.6	190	GSM 850	Right	Touch	TLp029C1	0.686	0.06
836.6	190	GSM 850	Right	Touch	TLp029C7	0.647	0.03

Note: According to the values in the above table, the battery, TLp029C1, is the primary battery.

We'll perform the head measurement with this battery and retest on highest value point with others.

Table 14.1-2: The evaluation of multi-batteries for Body Test

Frequency		Mode/Band	Test Position	Spacing (mm)	Battery Type	SAR(1g)	Power Drift(dB)
MHz	Ch.					(W/kg)	
1732.5	1637	WCDMA 1700	Front	10	TLp029C1	0.477	-0.07
1732.5	1637	WCDMA 1700	Front	10	TLp029C7	0.595	-0.04

Note: According to the values in the above table, the battery, TLp029C7, is the primary battery.

We'll perform the body measurement with this battery and retest on highest value point with others.

Note:

B1: The battery of TLp029C1

H1: The headset of CCB0046A10C4

B2: The battery of TLp029C7

H2: The headset of CCB0046A10C6

14.2 SAR results for Fast SAR

Table 14.2-1: SAR Values (GSM 850 MHz Band - Head)

Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9°C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
251	848.8	Left	Touch	/	31.59	33	0.422	0.58	0.701	0.97	-0.04
190	836.6	Left	Touch	/	31.57	33	0.403	0.56	0.662	0.92	0.01
128	824.2	Left	Touch	/	31.51	33	0.362	0.51	0.601	0.85	0.08
190	836.6	Left	Tilt	/	31.57	33	0.361	0.50	0.543	0.75	-0.05
251	848.8	Right	Touch	Fig.1	31.59	33	0.524	0.72	0.778	1.08	0.10
190	836.6	Right	Touch	/	31.57	33	0.452	0.63	0.686	0.95	0.06
128	824.2	Right	Touch	/	31.51	33	0.359	0.51	0.552	0.78	0.03
190	836.6	Right	Tilt	/	31.57	33	0.344	0.48	0.521	0.72	0.02
251	848.8	Right	Touch	B2	31.59	33	0.509	0.70	0.753	1.04	0.08

Table 14.2-2: SAR Values (GSM 850 MHz Band - Body)

Frequency		Mode (number of timeslots)	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9°C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
190	836.6	GPRS (2)	Front	/	31.43	32.5	0.108	0.14	0.169	0.22	0.05
251	848.8	GPRS (2)	Rear	Fig.2	31.49	32.5	0.206	0.26	0.371	0.47	-0.08
190	836.6	GPRS (2)	Rear	/	31.43	32.5	0.165	0.21	0.294	0.38	0.12
128	824.2	GPRS (2)	Rear	/	31.36	32.5	0.127	0.17	0.224	0.29	0.04
190	836.6	GPRS (2)	Right	/	31.43	32.5	0.051	0.07	0.077	0.10	-0.05
190	836.6	GPRS (2)	Top	/	31.43	32.5	0.097	0.12	0.178	0.23	0.09
251	848.8	EGPRS (2)	Rear	/	31.39	32.5	0.196	0.25	0.348	0.45	0.03
251	848.8	GPRS (2)	Rear	B1	31.39	32.5	0.195	0.25	0.358	0.46	-0.06

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

Table 14.2-3: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C					
Frequency		Side	Test Position	Figure No./ Note	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)
Ch.	MHz										
661	1880	Left	Touch	/	30.06	31	0.087	0.11	0.144	0.18	0.11
661	1880	Left	Tilt	/	30.06	31	0.041	0.05	0.068	0.08	-0.05
810	1909.8	Right	Touch	/	29.95	31	0.074	0.09	0.118	0.15	0.08
661	1880	Right	Touch	/	30.06	31	0.090	0.11	0.148	0.18	0.02
512	1850.2	Right	Touch	Fig.3	30.16	31	0.092	0.11	0.150	0.18	0.14
661	1880	Right	Tilt	/	30.06	31	0.052	0.06	0.080	0.10	0.16
512	1850.2	Right	Touch	B2	30.16	31	0.082	0.10	0.141	0.17	-0.04

Table 14.2-4: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C					
Frequency		Mode (number of timeslots)	Test Position	Figure No./ Note	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)
Ch.	MHz										
661	1880	GPRS (2)	Front	/	28.51	29.5	0.317	0.40	0.522	0.66	-0.05
810	1909.8	GPRS (2)	Rear	/	28.38	29.5	0.544	0.70	1.01	1.31	0.07
661	1880	GPRS (2)	Rear	Fig.4	28.51	29.5	0.608	0.76	1.09	1.37	0.10
512	1850.2	GPRS (2)	Rear	/	28.58	29.5	0.591	0.73	1.04	1.29	0.02
661	1880	GPRS (2)	Left	/	28.51	29.5	0.078	0.10	0.123	0.15	0.04
661	1880	GPRS (2)	Right	/	28.51	29.5	0.076	0.10	0.120	0.15	-0.03
810	1909.8	GPRS (2)	Bottom	/	28.38	29.5	0.470	0.61	0.848	1.10	0.03
661	1880	GPRS (2)	Bottom	/	28.51	29.5	0.377	0.47	0.695	0.87	0.16
512	1850.2	GPRS (2)	Bottom	/	28.58	29.5	0.449	0.55	0.778	0.96	-0.01
661	1880	EGPRS (2)	Rear	/	28.57	29.5	0.574	0.71	1.03	1.28	0.06
661	1880	GPRS (2)	Rear	B1	28.51	29.5	0.581	0.73	1.04	1.31	0.06
661	1880	Speech	Rear	H1	30.06	31	0.366	0.45	0.653	0.81	0.05
661	1880	Speech	Rear	H2	30.06	31	0.382	0.47	0.675	0.84	0.03

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

Table 14.2-5: SAR Values (WCDMA 850 MHz Band - Head)

Frequency		Side	Test Position	Figure No./Note	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)
Ch.	MHz										
Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C											
4233	846.6	Left	Touch	Fig.5	22.19	24	0.408	0.62	0.644	0.98	-0.07
4182	836.4	Left	Touch	/	22.20	24	0.398	0.60	0.630	0.95	0.05
4132	826.4	Left	Touch	/	22.26	24	0.384	0.57	0.609	0.91	-0.03
4182	836.4	Left	Tilt	/	22.20	24	0.235	0.36	0.411	0.62	-0.09
4182	836.4	Right	Touch	/	22.20	24	0.212	0.32	0.326	0.49	0.10
4182	836.4	Right	Tilt	/	22.20	24	0.214	0.32	0.364	0.55	0.04
4233	846.6	Left	Touch	B2	22.19	24	0.388	0.59	0.619	0.94	-0.02

Table 14.2-6: SAR Values (WCDMA 850 MHz Band - Body)

Frequency		Test Position	Figure No./Note	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)
Ch.	MHz									
Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C										
4182	836.4	Front	/	22.20	24	0.055	0.08	0.079	0.12	0.04
4233	846.6	Rear	Fig.6	22.19	24	0.102	0.15	0.182	0.28	-0.08
4182	836.4	Rear	/	22.20	24	0.082	0.12	0.142	0.21	0.09
4132	826.4	Rear	/	22.26	24	0.087	0.13	0.155	0.23	0.01
4182	836.4	Right	/	22.20	24	0.026	0.04	0.042	0.06	0.04
4182	836.4	Top	/	22.20	24	0.048	0.07	0.076	0.12	-0.08
4233	846.6	Rear	B1	22.19	24	0.091	0.14	0.165	0.25	0.19

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

Table 14.2-7: SAR Values (WCDMA 1700 MHz Band - Head)

Frequency		Side	Test Position	Figure No./Note	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)
Ch.	MHz										
Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C											
1513	1752.6	Left	Touch	Fig.7	23.37	24	0.166	0.19	0.258	0.30	0.09
1412	1732.4	Left	Touch	/	23.40	24	0.160	0.18	0.249	0.29	0.06
1312	1712.4	Left	Touch	/	23.42	24	0.140	0.16	0.214	0.24	0.03
1412	1732.4	Left	Tilt	/	23.40	24	0.027	0.03	0.046	0.05	-0.10
1412	1732.4	Right	Touch	/	23.40	24	0.133	0.15	0.224	0.26	0.15
1412	1732.4	Right	Tilt	/	23.40	24	0.024	0.03	0.044	0.05	0.08
1513	1752.6	Left	Touch	B2	23.37	24	0.157	0.18	0.251	0.29	0.02

Table 14.2-8: SAR Values (WCDMA 1700 MHz Band - Body)

Frequency		Test Position	Figure No./Note	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)
Ch.	MHz									
Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C										
1412	1732.4	Front	/	23.40	24	0.359	0.41	0.595	0.68	-0.04
1513	1752.6	Rear	Fig.8	23.37	24	0.552	0.64	0.944	1.09	-0.03
1412	1732.4	Rear	/	23.40	24	0.468	0.54	0.817	0.94	0.05
1312	1712.4	Rear	/	23.42	24	0.411	0.47	0.701	0.80	0.07
1412	1732.4	Left	/	23.40	24	0.107	0.12	0.179	0.21	0.10
1412	1732.4	Right	/	23.40	24	0.138	0.16	0.226	0.26	-0.05
1412	1732.4	Bottom	/	23.40	24	0.258	0.30	0.480	0.55	0.06
1513	1752.6	Rear	B1	23.37	24	0.522	0.60	0.926	1.07	0.03

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

Table 14.2-9: SAR Values (WCDMA 1900 MHz Band - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5°C					
Frequency		Side	Test Position	Figure No./ Note	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)
Ch.	MHz										
9800	1880	Left	Touch	/	23.06	24	0.115	0.14	0.187	0.23	0.16
9800	1880	Left	Tilt	/	23.06	24	0.060	0.07	0.101	0.13	0.02
9938	1907.6	Right	Touch	/	23.01	24	0.153	0.19	0.251	0.32	-0.04
9800	1880	Right	Touch	/	23.06	24	0.150	0.19	0.246	0.31	0.16
9662	1852.4	Right	Touch	Fig.9	23.11	24	0.159	0.20	0.261	0.32	0.08
9800	1880	Right	Tilt	/	23.06	24	0.076	0.09	0.119	0.15	0.09
9662	1852.4	Right	Touch	B2	23.11	24	0.154	0.19	0.254	0.31	0.05

Table 14.2-10: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5°C					
Frequency		Test Position	Figure No./ Note	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)	
Ch.	MHz										
9800	1880	Front	/	21.47	22.5	0.139	0.18	0.211	0.27	0.03	
9938	1907.6	Rear	/	21.35	22.5	0.290	0.38	0.481	0.63	-0.11	
9800	1880	Rear	/	21.47	22.5	0.287	0.36	0.477	0.60	0.13	
9662	1852.4	Rear	Fig.10	21.56	22.5	0.308	0.38	0.523	0.65	0.08	
9800	1880	Left	/	21.47	22.5	0.024	0.03	0.035	0.04	0.02	
9800	1880	Right	/	21.47	22.5	0.037	0.05	0.053	0.07	0.17	
9800	1880	Bottom	/	21.47	22.5	0.284	0.36	0.460	0.58	0.09	
9662	1852.4	Rear	B1	21.56	22.5	0.300	0.37	0.511	0.63	0.11	

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

Table 14.2-11: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5°C					
Frequency		Test Position	Figure No./ Note	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)	
Ch.	MHz										
9800	1880	Front	/	23.06	24	0.140	0.17	0.221	0.27	0.03	
9938	1907.6	Rear	Fig.11	23.01	24	0.260	0.33	0.439	0.55	-0.15	
9800	1880	Rear	/	23.06	24	0.244	0.30	0.407	0.51	0.11	
9662	1852.4	Rear	/	23.11	24	0.246	0.30	0.403	0.49	0.07	
9938	1907.6	Rear	B1	23.01	24	0.250	0.31	0.421	0.53	0.09	

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

Table 14.2-12: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No./ Note	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)
Ch.	MHz											
18700	1860	1RB_High	Left	Touch	/	23.16	24	0.106	0.13	0.170	0.21	0.09
18700	1860	1RB_High	Left	Tilt	/	23.16	24	0.063	0.08	0.106	0.13	0.14
18700	1860	1RB_High	Right	Touch	Fig.12	23.16	24	0.120	0.15	0.195	0.24	0.02
18700	1860	1RB_High	Right	Tilt	/	23.16	24	0.076	0.09	0.118	0.14	0.08
18700	1860	50RB_High	Left	Touch	/	22.06	23	0.083	0.10	0.133	0.17	0.02
18700	1860	50RB_High	Left	Tilt	/	22.06	23	0.051	0.06	0.082	0.10	-0.11
18700	1860	50RB_High	Right	Touch	/	22.06	23	0.087	0.11	0.142	0.18	0.09
18700	1860	50RB_High	Right	Tilt	/	22.06	23	0.084	0.10	0.131	0.16	0.15
18700	1860	1RB_High	Right	Touch	B2	23.16	24	0.074	0.09	0.122	0.15	0.07

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-13: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
18700	1860	1RB_High	Front	/	21.10	22	0.130	0.16	0.205	0.25	0.03
18700	1860	1RB_High	Rear	Fig.13	21.10	22	0.262	0.32	0.457	0.56	-0.19
18700	1860	1RB_High	Left	/	21.10	22	0.024	0.03	0.037	0.05	0.13
18700	1860	1RB_High	Right	/	21.10	22	0.035	0.04	0.051	0.06	0.09
18700	1860	1RB_High	Bottom	/	21.10	22	0.249	0.31	0.440	0.54	0.14
18700	1860	50RB_High	Front	/	21.04	22	0.137	0.17	0.218	0.27	-0.04
18700	1860	50RB_High	Rear	/	21.04	22	0.259	0.32	0.444	0.55	0.09
18700	1860	50RB_High	Left	/	21.04	22	<0.01	<0.01	<0.01	<0.01	/
18700	1860	50RB_High	Right	/	21.04	22	0.038	0.05	0.057	0.07	-0.03
18700	1860	50RB_High	Bottom	/	21.04	22	0.207	0.26	0.361	0.45	0.17
18700	1860	1RB_High	Rear	B1	21.10	22	0.260	0.32	0.454	0.56	0.05

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-14: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
18700	1860	1RB_High	Front	/	23.16	24	0.119	0.14	0.188	0.23	0.03
18700	1860	1RB_High	Rear	Fig.14	23.16	24	0.245	0.30	0.418	0.51	-0.05
18700	1860	50RB_High	Front	/	22.06	23	0.090	0.11	0.142	0.18	0.11
18700	1860	50RB_High	Rear	/	22.06	23	0.186	0.23	0.316	0.39	0.06
18700	1860	1RB_High	Rear	B1	23.16	24	0.224	0.27	0.402	0.49	0.03

Note1: The distance between the EUT and the phantom bottom is 15mm. Note2: The LTE mode is QPSK_20MHz.

Table 14.2-15: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No./ Note	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)
Ch.	MHz											
20050	1720	1RB_High	Left	Touch	/	23.37	24	0.113	0.13	0.175	0.20	0.03
20050	1720	1RB_High	Left	Tilt	/	23.37	24	0.061	0.07	0.098	0.11	0.09
20050	1720	1RB_High	Right	Touch	Fig.15	23.37	24	0.130	0.15	0.200	0.23	0.11
20050	1720	1RB_High	Right	Tilt	/	23.37	24	0.100	0.12	0.157	0.18	-0.02
20300	1745	50RB_Low	Left	Touch	/	22.29	23	0.108	0.13	0.164	0.19	0.16
20300	1745	50RB_Low	Left	Tilt	/	22.29	23	0.036	0.04	0.055	0.06	0.05
20300	1745	50RB_Low	Right	Touch	/	22.29	23	0.100	0.12	0.171	0.20	0.02
20300	1745	50RB_Low	Right	Tilt	/	22.29	23	0.083	0.10	0.129	0.15	0.16
20050	1720	1RB_High	Right	Touch	B2	23.37	24	0.117	0.14	0.190	0.22	0.08

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-16: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
20050	1720	1RB_High	Front	/	23.37	24	0.259	0.30	0.418	0.48	0.09
20300	1745	1RB_Low	Rear	/	23.34	24	0.427	0.50	0.725	0.84	0.12
20175	1732.5	1RB_Mid	Rear	/	23.26	24	0.432	0.51	0.737	0.87	0.03
20050	1720	1RB_High	Rear	Fig.16	23.37	24	0.440	0.51	0.749	0.87	-0.11
20050	1720	1RB_High	Left	/	23.37	24	0.076	0.09	0.120	0.14	0.09
20050	1720	1RB_High	Right	/	23.37	24	0.191	0.22	0.299	0.35	0.02
20050	1720	1RB_High	Bottom	/	23.37	24	0.233	0.27	0.390	0.45	-0.15

20300	1745	50RB_Low	Front	/	22.29	23	0.229	0.27	0.366	0.43	0.08
20300	1745	50RB_Low	Rear	/	22.29	23	0.364	0.43	0.597	0.70	0.11
20300	1745	50RB_Low	Left	/	22.29	23	0.056	0.07	0.088	0.10	0.06
20300	1745	50RB_Low	Right	/	22.29	23	0.095	0.11	0.147	0.17	0.09
20300	1745	50RB_Low	Bottom	/	22.29	23	0.226	0.27	0.372	0.44	-0.04
20300	1745	100RB	Rear		22.23	23	0.326	0.39	0.631	0.75	0.12
20050	1720	1RB_High	Rear	B1	23.37	24	0.430	0.50	0.735	0.85	0.16

Note1: The distance between the EUT and the phantom bottom is 10mm. Note2: The LTE mode is QPSK_20MHz.

Table 14.2-17: SAR Values (LTE Band5 - Head)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C						
Frequency		Mode	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)
Ch.	MHz											
20450	829	1RB_Low	Left	Touch	/	23.32	24	0.291	0.34	0.423	0.49	-0.04
20450	829	1RB_Low	Left	Tilt	/	23.32	24	0.264	0.31	0.431	0.50	0.01
20450	829	1RB_Low	Right	Touch	/	23.32	24	0.344	0.40	0.475	0.56	-0.01
20450	829	1RB_Low	Right	Tilt	Fig.17	23.32	24	0.348	0.41	0.578	0.68	0.03
20600	844	25RB_High	Left	Touch	/	22.44	23	0.317	0.36	0.521	0.59	0.12
20600	844	25RB_High	Left	Tilt	/	22.44	23	0.224	0.25	0.333	0.38	0.05
20600	844	25RB_High	Right	Touch	/	22.44	23	0.209	0.24	0.297	0.34	0.10
20600	844	25RB_High	Right	Tilt	/	22.44	23	0.313	0.36	0.481	0.55	-0.05
20450	829	1RB_Low	Right	Tilt	B2	23.32	24	0.326	0.38	0.555	0.65	-0.08

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-18: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.9°C						Liquid Temperature: 22.5°C					
Frequency		Mode	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)
Ch.	MHz										
20450	829	1RB_Low	Front	/	23.32	24	0.074	0.09	0.105	0.12	0.08
20450	829	1RB_Low	Rear	Fig.18	23.32	24	0.099	0.12	0.181	0.21	-0.01
20450	829	1RB_Low	Right	/	23.32	24	0.047	0.05	0.074	0.09	0.01
20450	829	1RB_Low	Top	/	23.32	24	0.049	0.06	0.085	0.10	-0.06
20600	844	25RB_High	Front	/	22.44	23	0.059	0.07	0.092	0.10	0.13
20600	844	25RB_High	Rear	/	22.44	23	0.087	0.10	0.159	0.18	0.01
20600	844	25RB_High	Right	/	22.44	23	0.037	0.04	0.058	0.07	0.03
20600	844	25RB_High	Top	/	22.44	23	0.048	0.05	0.083	0.09	-0.08
20450	829	1RB_Low	Rear	B1	23.32	24	0.087	0.10	0.158	0.18	0.03

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-19: SAR Values (LTE Band7 - Head)

Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz							Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
21350	2560	1RB_High	Left	Touch	/	22.81	23	0.024	0.03	0.040	0.04	0.09
21350	2560	1RB_High	Left	Tilt	/	22.81	23	0.024	0.02	0.046	0.05	0.02
21350	2560	1RB_High	Right	Touch	Fig.19	22.81	23	0.033	0.03	0.061	0.06	-0.09
21350	2560	1RB_High	Right	Tilt	/	22.81	23	0.022	0.02	0.043	0.04	0.05
21350	2560	50RB_High	Left	Touch	/	21.62	22	0.015	0.02	0.026	0.03	0.07
21350	2560	50RB_High	Left	Tilt	/	21.62	22	0.018	0.02	0.034	0.04	0.09
21350	2560	50RB_High	Right	Touch	/	21.62	22	0.029	0.03	0.053	0.06	-0.13
21350	2560	50RB_High	Right	Tilt	/	21.62	22	0.016	0.02	0.033	0.04	0.06
21350	2560	1RB_High	Right	Touch	B2	22.81	23	0.031	0.03	0.058	0.06	-0.05

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-20: SAR Values (LTE Band7 - Body)

Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
21350	2560	1RB_High	Front	/	22.81	23	0.114	0.12	0.228	0.24	0.02
21350	2560	1RB_High	Rear	/	22.81	23	0.226	0.24	0.458	0.48	0.13
21350	2560	1RB_High	Left	/	22.81	23	<0.01	<0.01	<0.01	<0.01	/
21350	2560	1RB_High	Right	/	22.81	23	0.048	0.05	0.089	0.09	0.09
21350	2560	1RB_High	Bottom	Fig.20	22.81	23	0.300	0.31	0.662	0.69	-0.06
21350	2560	50RB_High	Front	/	21.62	22	0.094	0.10	0.198	0.22	0.03
21350	2560	50RB_High	Rear	/	21.62	22	0.182	0.20	0.375	0.41	0.04
21350	2560	50RB_High	Left	/	21.62	22	<0.01	<0.01	<0.01	<0.01	/
21350	2560	50RB_High	Right	/	21.62	22	0.037	0.04	0.067	0.07	-0.02
21350	2560	50RB_High	Bottom	/	21.62	22	0.233	0.25	0.522	0.57	0.11
21350	2560	1RB_High	Bottom	B1	22.81	23	0.297	0.31	0.651	0.68	0.02

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-21: SAR Values (LTE Band12 - Head)

Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz							Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
23130	711	1RB_Low	Left	Touch	Fig.21	23.76	24	0.338	0.36	0.570	0.60	0.07
23130	711	1RB_Low	Left	Tilt	/	23.76	24	0.306	0.32	0.488	0.52	0.03
23130	711	1RB_Low	Right	Touch	/	23.76	24	0.262	0.28	0.387	0.41	-0.05
23130	711	1RB_Low	Right	Tilt	/	23.76	24	0.237	0.25	0.331	0.35	0.04
23095	707.5	25RB_Mid	Left	Touch	/	22.65	23	0.290	0.31	0.456	0.49	0.06
23095	707.5	25RB_Mid	Left	Tilt	/	22.65	23	0.237	0.26	0.381	0.41	0.08
23095	707.5	25RB_Mid	Right	Touch	/	22.65	23	0.225	0.24	0.310	0.34	0.04
23095	707.5	25RB_Mid	Right	Tilt	/	22.65	23	0.184	0.20	0.258	0.28	-0.02
23130	711	1RB_Low	Left	Touch	B2	23.76	24	0.324	0.34	0.549	0.58	0.02

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-22: SAR Values (LTE Band12 - Body)

Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
23130	711	1RB_Low	Front	/	23.76	24	0.038	0.04	0.071	0.08	0.03
23130	711	1RB_Low	Rear	Fig.22	23.76	24	0.056	0.06	0.104	0.11	0.10
23130	711	1RB_Low	Right	/	23.76	24	0.007	0.01	0.058	0.06	0.05
23130	711	1RB_Low	Top	/	23.76	24	0.012	0.01	0.030	0.03	0.03
23095	707.5	25RB_Mid	Front	/	22.65	23	0.029	0.03	0.054	0.06	0.02
23095	707.5	25RB_Mid	Rear	/	22.65	23	0.042	0.05	0.080	0.09	0.01
23095	707.5	25RB_Mid	Right	/	22.65	23	0.014	0.02	0.028	0.03	0.08
23095	707.5	25RB_Mid	Top	/	22.65	23	0.009	0.01	0.025	0.03	0.05
23130	711	1RB_Low	Rear	B1	23.76	24	0.052	0.05	0.101	0.11	0.09

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.2-23: SAR Values (LTE Band13 - Head)

Frequency		Mode	Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9°C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz							Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
23230	782	1RB_Low	Left	Touch	/	23.69	24	0.083	0.09	0.141	0.15	0.04
23230	782	1RB_Low	Left	Tilt	/	23.69	24	0.133	0.14	0.225	0.24	0.01
23230	782	1RB_Low	Right	Touch	Fig.23	23.69	24	0.215	0.23	0.313	0.34	-0.08
23230	782	1RB_Low	Right	Tilt	/	23.69	24	0.167	0.18	0.261	0.28	-0.05
23230	782	25RB_Low	Left	Touch	/	22.54	23	0.067	0.07	0.113	0.13	-0.01
23230	782	25RB_Low	Left	Tilt	/	22.54	23	0.107	0.12	0.181	0.20	0.12
23230	782	25RB_Low	Right	Touch	/	22.54	23	0.169	0.19	0.245	0.27	0.08
23230	782	25RB_Low	Right	Tilt	/	22.54	23	0.130	0.14	0.204	0.23	0.03
23230	782	1RB_Low	Right	Touch	B2	23.69	24	0.196	0.21	0.302	0.32	-0.03

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-24: SAR Values (LTE Band13 - Body)

Frequency		Mode	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9°C		Liquid Temperature: 22.5°C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
23230	782	1RB_Low	Front	/	23.69	24	0.035	0.04	0.056	0.06	0.09
23230	782	1RB_Low	Rear	Fig.24	23.69	24	0.040	0.04	0.077	0.08	-0.14
23230	782	1RB_Low	Right	/	23.69	24	0.022	0.02	0.036	0.04	0.03
23230	782	1RB_Low	Top	/	23.69	24	0.018	0.02	0.032	0.03	0.04
23230	782	25RB_Low	Front	/	22.54	23	0.028	0.03	0.043	0.05	0.06
23230	782	25RB_Low	Rear	/	22.54	23	0.035	0.04	0.072	0.08	-0.07
23230	782	25RB_Low	Right	/	22.54	23	0.019	0.02	0.032	0.04	0.06
23230	782	25RB_Low	Top	/	22.54	23	0.009	0.01	0.015	0.02	-0.08
23230	782	1RB_Low	Rear	B1	23.69	24	0.038	0.04	0.076	0.08	0.06

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

Note2: The LTE mode is QPSK_10MHz.

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 14.3-1: SAR Values (GSM 850 MHz Band - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No./Note	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)
Ch.	MHz										
251	848.8	Right	Touch	Fig.1	31.59	33	0.524	0.72	0.778	1.08	0.10

Table 14.3-2: SAR Values (GSM 850 MHz Band - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode (number of timeslots)	Test Position	Figure No./Note	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)
Ch.	MHz										
251	848.8	GPRS (2)	Rear	Fig.2	31.49	32.5	0.206	0.26	0.371	0.47	-0.08

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

Table 14.3-3: SAR Values (GSM 1900 MHz Band - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No./Note	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)
Ch.	MHz										
512	1850.2	Right	Touch	Fig.3	30.16	31	0.092	0.11	0.150	0.18	0.14

Table 14.3-4: SAR Values (GSM 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode (number of timeslots)	Test Position	Figure No./Note	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)
Ch.	MHz										
661	1880	GPRS (2)	Rear	Fig.4	28.51	29.5	0.608	0.76	1.09	1.37	0.10

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

Table 14.3-5: SAR Values (WCDMA 850 MHz Band - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Side	Test Position	Figure No./Note	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)
Ch.	MHz										
4233	846.6	Left	Touch	Fig.5	22.19	24	0.408	0.62	0.644	0.98	-0.07

Table 14.3-6: SAR Values (WCDMA 850 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
4233	846.6	Rear	Fig.6	22.19	24	0.102	0.15	0.182	0.28	-0.08

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

Table 14.3-7: SAR Values (WCDMA 1700 MHz Band - Head)

Frequency		Side	Test Position	Figure No./Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
1513	1752.6	Left	Touch	Fig.7	23.37	24	0.166	0.19	0.258	0.30	0.09

Table 14.3-8: SAR Values (WCDMA 1700 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
1513	1752.6	Rear	Fig.8	23.37	24	0.552	0.64	0.944	1.09	-0.03

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

Table 14.3-9: SAR Values (WCDMA 1900 MHz Band - Head)

Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
9662	1852.4	Right	Touch	Fig.9	23.11	24	0.159	0.20	0.261	0.32	0.08

Table 14.3-10: SAR Values (WCDMA 1900 MHz Band - Body)

Frequency		Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
Ch.	MHz					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g) (W/kg)	
9662	1852.4	Rear	Fig.10	21.56	22.5	0.308	0.38	0.523	0.65	0.08

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

Table 14.3-11: SAR Values (WCDMA 1900 MHz Band - Body)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C					
Frequency		Test Position	Figure No./ Note	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)
Ch.	MHz									
9938	1907.6	Rear	Fig.11	23.01	24	0.260	0.33	0.439	0.55	-0.15

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

Table 14.3-12: SAR Values (LTE Band2 - Head)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C							
Frequency		Mode	Side	Test Position	Figure No./ Note	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)
Ch.	MHz											
18700	1860	1RB_High	Right	Touch	Fig.12	23.16	24	0.120	0.15	0.195	0.24	0.02

Note1: The LTE mode is QPSK_20MHz.

Table 14.3-13: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C						
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
18700	1860	1RB_High	Rear	Fig.13	21.10	22	0.262	0.32	0.457	0.56	-0.19

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.3-14: SAR Values (LTE Band2 - Body)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C						
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
18700	1860	1RB_High	Rear	Fig.14	23.16	24	0.245	0.30	0.418	0.51	-0.05

Note1: The distance between the EUT and the phantom bottom is 15mm. Note2: The LTE mode is QPSK_20MHz.

Table 14.3-15: SAR Values (LTE Band4 - Head)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C							
Frequency		Mode	Side	Test Position	Figure No./ Note	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)
Ch.	MHz											
20050	1720	1RB_High	Right	Touch	Fig.15	23.37	24	0.130	0.15	0.200	0.23	0.11

Note1: The LTE mode is QPSK_20MHz.

Table 14.3-16: SAR Values (LTE Band4 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
20050	1720	1RB_High	Rear	Fig.16	23.37	24	0.440	0.51	0.749	0.87	-0.11

Note1: The distance between the EUT and the phantom bottom is 10mm. Note2: The LTE mode is QPSK_20MHz.

Table 14.3-17: SAR Values (LTE Band5 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	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)
Ch.	MHz											
20450	829	1RB_Low	Right	Tilt	Fig.17	23.32	24	0.348	0.41	0.578	0.68	0.03

Note1: The LTE mode is QPSK_10MHz.

Table 14.3-18: SAR Values (LTE Band5 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	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)
Ch.	MHz										
20450	829	1RB_Low	Rear	Fig.18	23.32	24	0.099	0.12	0.181	0.21	-0.01

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.3-19: SAR Values (LTE Band7 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No./ Note	Conduct ed 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)
Ch.	MHz											
21350	2560	1RB_High	Right	Touch	Fig.19	22.81	23	0.033	0.03	0.061	0.06	-0.09

Note1: The LTE mode is QPSK_20MHz.

Table 14.3-20: SAR Values (LTE Band7 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
21350	2560	1RB_High	Bottom	Fig.20	22.81	23	0.300	0.31	0.662	0.69	-0.06

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.3-21: SAR Values (LTE Band12 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No./ Note	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)
Ch.	MHz											
23130	711	1RB_Low	Left	Touch	Fig.21	23.76	24	0.338	0.36	0.570	0.60	0.07

Note1: The LTE mode is QPSK_10MHz.

Table 14.3-22: SAR Values (LTE Band12 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
23130	711	1RB_Low	Rear	Fig.22	23.76	24	0.056	0.06	0.104	0.11	0.10

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.3-23: SAR Values (LTE Band13 - Head)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C						
Frequency		Mode	Side	Test Position	Figure No./ Note	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)
Ch.	MHz											
23230	782	1RB_Low	Right	Touch	Fig.23	23.69	24	0.215	0.23	0.313	0.34	-0.08

Note1: The LTE mode is QPSK_10MHz.

Table 14.3-24: SAR Values (LTE Band13 - Body)

Ambient Temperature: 22.9 °C						Liquid Temperature: 22.5 °C					
Frequency		Mode	Test Position	Figure No./ Note	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)
Ch.	MHz										
23230	782	1RB_Low	Rear	Fig.24	23.69	24	0.040	0.04	0.077	0.08	-0.14

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

Note2: The LTE mode is QPSK_10MHz.

14.4 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.

Head Evaluation

Table 14.4-1: SAR Values (WLAN - Head)– 802.11b (Fast SAR)

Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
MHz	Ch.						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	
2437	6	Left	Touch	/	14.48	16	0.096	0.14	0.176	0.25	0.14
2437	6	Left	Tilt	/	14.48	16	0.096	0.14	0.184	0.26	0.06
2437	6	Right	Touch	/	14.48	16	0.169	0.24	0.351	0.50	0.01
2437	6	Right	Tilt	/	14.48	16	0.166	0.24	0.356	0.51	0.15
2437	6	Right	Tilt	B2	14.48	16	0.091	0.13	0.199	0.28	0.13

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

Table 14.4-2: SAR Values (WLAN - Head)– 802.11b (Full SAR)

Frequency		Side	Test Position	Figure No./ Note	Conducted Power (dBm)	Max. tune-up Power (dBm)	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C		Power Drift (dB)
MHz	Ch.						Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	
2437	6	Right	Touch	/	14.48	16	0.155	0.22	0.312	0.44	0.01
2437	6	Right	Tilt	Fig.25	14.48	16	0.148	0.21	0.327	0.46	0.15

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is \leq 0.8 W/kg.

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 \leq 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. The scaled reported SAR is presented as below.

Table 14.4-3: SAR Values (WLAN - Head) – 802.11b (Scaled Reported SAR)

Frequency		Side	Test Position	Ambient Temperature: 22.9 °C		Liquid Temperature: 22.5 °C	
MHz	Ch.			Actual duty factor	maximum duty factor	Reported SAR (1g)(W/kg)	Scaled reported SAR (1g)(W/kg)
2437	6	Right	Touch	99.53%	100%	0.44	0.44
2437	6	Right	Tilt	99.53%	100%	0.46	0.46

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

Body Evaluation

Table 14.4-4: SAR Values (WLAN - Body)– 802.11b (Fast SAR)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C					
Frequency		Test Position	Figure No./ Note	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.									
2437	6	Front	/	14.48	16	0.050	0.07	0.094	0.13	0.11
2437	6	Rear	/	14.48	16	0.043	0.06	0.082	0.12	0.03
2437	6	Left	/	14.48	16	0.037	0.05	0.073	0.10	-0.04
2437	6	Top	/	14.48	16	0.058	0.08	0.110	0.16	-0.02
2437	6	Top	B1	14.48	16	0.041	0.06	0.078	0.11	0.05

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

Table 14.4-5: SAR Values (WLAN - Body)– 802.11b (Full SAR)

Ambient Temperature: 22.9 °C					Liquid Temperature: 22.5 °C					
Frequency		Test Position	Figure No./ Note	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.									
2437	6	Top	Fig.26	14.48	16	0.063	0.09	0.115	0.16	-0.02

Note1: When the reported SAR of the initial test position is > 0.4 W/kg, SAR is repeated for the 802.11 transmission mode configuration tested in the initial test position using subsequent highest estimated 1-g SAR conditions determined by area scans, on the highest maximum output power channel, until the reported SAR is ≤ 0.8 W/kg.

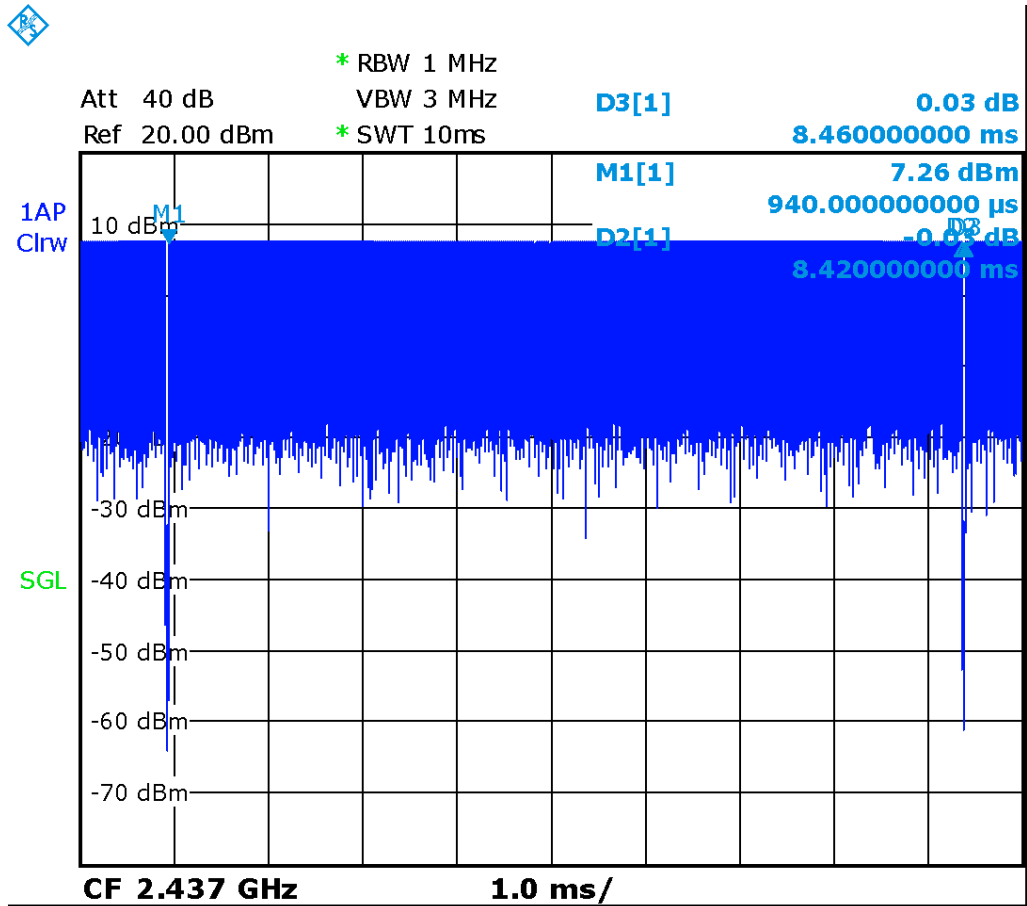
Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg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

Table 14.3-6: SAR Values (WLAN - Body) – 802.11b (Scaled Reported SAR)

Ambient Temperature: 22.9 °C				Liquid Temperature: 22.5 °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	99.53%	100%	0.12	0.12
2437	6	Top	99.53%	100%	0.16	0.16

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



Picture 14.1 Duty factor plot for 2.4G

14.5 WLAN Evaluation For 5G

Table 14.5-1: OFDM mode specified maximum output power of WLAN antenna

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	X		X	X				
U-NII-2A	X		X	X				
U-NII-2C	X		X	X				
U-NII-3	X		X	X				
§ 15.247 (5.8 GHz)								

X: maximum(conducted) output power(mW), including tolerance, specified for production units

Table 14.5-2: Maximum output power specified of WLAN antenna

802.11 mode	a	n	
Ch. BW(MHz)	20	20	40
U-NII-1	25	22	18
U-NII-2A	20	20	18

- The maximum output power specified for production units is the same for all channels, modulations and data rates in each channel bandwidth configuration of the 802.11a/g/n modes.
- The **blue highlighted** cells represent highest output configurations in each standalone or aggregated frequency band, with tune-up tolerance included.

Table 14.5-3: Maximum output power measured of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations

802.11 mode	a	n	
BW(MHz)	20	20	40
U-NII-1	36/40/44/48 17/17/17/17	36/40/44/48 Lower power	38/46 Lower power
U-NII-2A	52/56/60/64 15/15/15/16	52/56/60/64 Lower power	54/62 Lower power

- Channels with measured maximum power within 0.25dB are considered to have the same measured output. Channels selected for initial test configuration are **highlighted in yellow**.

Table 14.5-4: Reported SAR of initial test configuration for Head

802.11 mode	a	n	
BW(MHz)	20	20	40
U-NII-1	36/40/44/48 U-NII-2A exclusion applied	36/40/44/48	38/46
U-NII-2A	52/56/60/64 0.57	52/56/60/64	54/62

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 $\leq 1.2\text{W/kg}$, SAR is not required for U-NII-1 band.

Table 14.5-5: Reported SAR of initial test configuration for Body

802.11 mode	a	n	
BW(MHz)	20	20	40
U-NII-1	36/40/44/48 U-NII-2A exclusion applied	36/40/44/48	38/46
U-NII-2A	52/56/60/64 0.19	52/56/60/64	54/62

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 $\leq 1.2\text{W/kg}$, SAR is not required for U-NII-1 band.

Table 14.5-6: SAR Values (WLAN - Head) – 802.11a 6Mbps

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.										
5320	64	Left	Touch	/	12.12	13	0.044	0.05	0.154	0.19	0.06
5320	64	Left	Tilt	/	12.12	13	0.065	0.08	0.218	0.27	0.07
5320	64	Right	Touch	/	12.12	13	0.078	0.10	0.314	0.38	-0.04
5320	64	Right	Tilt	Fig.27	12.12	13	0.113	0.14	0.452	0.55	-0.06
5320	64	Right	Tilt	B2	12.12	13	0.095	0.12	0.370	0.45	0.08

Table 14.5-7: SAR Values (WLAN - Body) – 802.11a 6Mbps

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.									
5320	64	Front	/	12.12	13	0.018	0.02	0.064	0.08	0.07
5320	64	Rear	/	12.12	13	0.049	0.06	0.132	0.16	0.09
5320	64	Left	/	12.12	13	0.014	0.02	0.045	0.05	0.11
5320	64	Top	Fig.28	12.12	13	0.053	0.06	0.146	0.18	0.12
5320	64	Top	B1	12.12	13	0.049	0.06	0.135	0.17	0.08

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

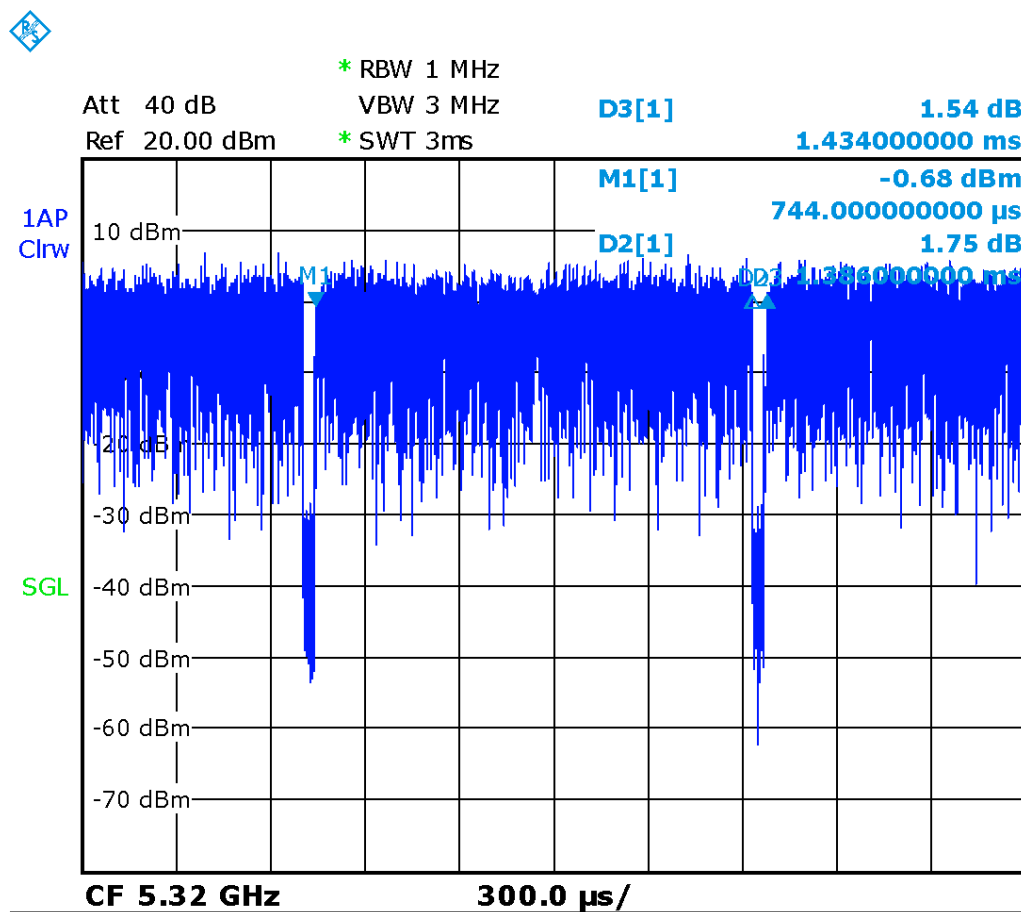
According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Table 14.5-8: SAR Values (WLAN - Head) – 802.11a 6Mbps (Scaled Reported SAR)

Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
MHz	Ch.						
5320	64	Right	Cheek	96.65%	100%	0.38	0.39
5320	64	Right	Tilt	96.65%	100%	0.55	0.57

Table 14.5-9: SAR Values (WLAN - Body) – 802.11a 6Mbps (Scaled Reported SAR)

Frequency		Test Position	D (mm)	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
MHz	Ch.						
5320	64	Rear	10	96.65%	100%	0.16	0.17
5320	64	Top	10	96.65%	100%	0.18	0.19



Picture 14.2 The plot of duty factor for 5G

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 ($\sim 10\%$ 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 PCS1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
661	1880	Rear	10	1.09	1.07	1.02	/

Table 15.2: SAR Measurement Variability for Body W1700 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
1513	1752.6	Rear	10	0.944	0.935	1.01	/

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	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	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	N	1	1	1	0.6	0.6	∞
6	Readout electronics	B	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RF ambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.4	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	71
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	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
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	1.0	0.8	521

Combined standard uncertainty	$u_c = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						9.55	9.43	257
Expanded uncertainty (confidence interval of 95 %)	$u_e = 2u_c$						19.1	18.9	

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

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	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
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	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
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	71
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	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
18	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
19	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	43
20	Liquid permittivity	B	5.0	R	$\sqrt{3}$	0.6	0.49	1.7	1.4	∞

	(target)									
21	Liquid permittivity (meas.)	A	1.6	N	1	0.6	0.49	1.0	0.8	521
Combined standard uncertainty		$u_c = \sqrt{\sum_{i=1}^{21} c_i^2 u_i^2}$						10.7	10.6	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						21.4	21.1	

16.3 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	6.0	N	1	1	1	6.0	6.0	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	1.0	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	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.4	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	71
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	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞

19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	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	1.0	0.8	521
Combined standard uncertainty		$u_c = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						10.4	10.3	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						20.8	20.6	

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

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	6.55	N	1	1	1	6.55	6.55	∞
2	Isotropy	B	4.7	R	$\sqrt{3}$	0.7	0.7	1.9	1.9	∞
3	Boundary effect	B	2.0	R	$\sqrt{3}$	1	1	1.2	1.2	∞
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	0.3	R	$\sqrt{3}$	1	1	0.3	0.3	∞
7	Response time	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
8	Integration time	B	2.6	R	$\sqrt{3}$	1	1	1.5	1.5	∞
9	RF ambient conditions-noise	B	0	R	$\sqrt{3}$	1	1	0	0	∞
10	RFambient conditions-reflection	B	0	R	$\sqrt{3}$	1	1	0	0	∞
11	Probe positioned mech. Restrictions	B	0.8	R	$\sqrt{3}$	1	1	0.5	0.5	∞
12	Probe positioning with respect to phantom shell	B	6.7	R	$\sqrt{3}$	1	1	3.9	3.9	∞
13	Post-processing	B	1.0	R	$\sqrt{3}$	1	1	0.6	0.6	∞
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	71
16	Device holder	A	3.4	N	1	1	1	3.4	3.4	5

	uncertainty									
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	4.0	R	$\sqrt{3}$	1	1	2.3	2.3	∞
19	Liquid conductivity (target)	B	5.0	R	$\sqrt{3}$	0.64	0.43	1.8	1.2	∞
20	Liquid conductivity (meas.)	A	2.06	N	1	0.64	0.43	1.32	0.89	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	1.0	0.8	521
Combined standard uncertainty		$u_c = \sqrt{\sum_{i=1}^{22} c_i^2 u_i^2}$						13.5	13.4	257
Expanded uncertainty (confidence interval of 95 %)		$u_e = 2u_c$						27.0	26.8	

17 MAIN TEST INSTRUMENTS

Table 17.1: List of Main Instruments

No.	Name	Type	Serial Number	Calibration Date	Valid Period
01	Network analyzer	E5071C	MY46110673	January 13, 2017	One year
02	Power meter	NRVD	102196	March 02, 2017	One year
03	Power sensor	NRV-Z5	100596		
04	Signal Generator	E4438C	MY49071430	January 13, 2017	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 16, 2017	One year
07	BTS	CMW500	149646	October 31, 2017	One year
08	E-field Probe	SPEAG EX3DV4	3846	January 13, 2017	One year
09	DAE	SPEAG DAE4	1331	January 19, 2017	One year
10	Dipole Validation Kit	SPEAG D750V3	1017	July 19, 2017	One year
11	Dipole Validation Kit	SPEAG D835V2	4d069	July 19, 2017	One year
12	Dipole Validation Kit	SPEAG D1750V2	1003	July 21, 2017	One year
13	Dipole Validation Kit	SPEAG D1900V2	5d101	July 26, 2017	One year
14	Dipole Validation Kit	SPEAG D2450V2	853	July 21, 2017	One year
15	Dipole Validation Kit	SPEAG D2600V2	1012	July 21, 2017	One year
16	Dipole Validation Kit	SPEAG D5GHZV2	1262	September 06, 2017	One year

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