

		2593	22.53	21.65	19.85
		2548.3	22.62	21.73	20.02
		2503.5	22.55	21.64	19.61
20 MHz	1RB High (99)	2680	23.70	22.82	21.53
		2636.5	23.78	22.67	21.30
		2593	23.39	22.98	20.71
		2549.5	23.67	22.81	20.99
		2506	23.37	22.59	20.54
	1RB Middle (50)	2680	23.66	22.89	21.56
		2636.5	23.78	22.92	21.24
		2593	23.58	22.86	20.78
		2549.5	23.61	22.72	20.97
		2506	23.59	22.68	20.49
	1RB Low (0)	2680	23.84	22.85	21.76
		2636.5	23.66	22.91	21.33
		2593	23.62	22.96	21.08
		2549.5	23.70	22.85	21.07
		2506	23.65	22.60	20.56
	50RB High (50)	2680	22.67	21.69	20.66
		2636.5	22.55	21.86	20.36
		2593	22.58	21.69	19.83
		2549.5	22.63	21.64	20.07
		2506	22.52	21.66	19.56
	50RB Middle (25)	2680	22.78	21.81	20.71
		2636.5	22.87	21.88	20.33
		2593	22.62	21.73	19.89
		2549.5	22.62	21.71	20.08
		2506	22.61	21.66	19.59
	50RB Low (0)	2680	22.62	21.84	20.78
		2636.5	22.89	21.99	20.34
		2593	22.63	21.67	19.98
		2549.5	22.66	21.70	20.09
		2506	22.59	21.62	19.62
100RB (0)	2680	22.66	21.74	20.71	
	2636.5	22.72	21.86	20.35	
	2593	22.60	21.67	19.89	
	2549.5	22.63	21.70	20.08	
	2506	22.56	21.63	19.58	



The device supports downlink Release 10 LTE Carrier Aggregation (CA) only. It supports 2 carriers in the downlink. Other Release 10 features are not supported, including Uplink Carrier Aggregation, Enhanced SC-FDMA and Uplink MIMO or other antenna diversity configurations etc. All uplink communications are identical to the Release 8 Specifications.

According to KDB 941225 D05A, the downlink LTE CA SAR test is not required and PAG requirements can be excluded.

The following conducted power measurement results of downlink LTE carrier aggregation are provided to quantify downlink only carrier aggregation SAR test exclusion per KDB 941225 D05A.

Uplink maximum output power is measured with downlink carrier aggregation active, using the channel with highest measured maximum output power when downlink carrier aggregation is inactive, to confirm that when downlink carrier aggregation is active uplink maximum output power remains within the specified tune-up tolerance limits and not more than ¼ dB higher than the maximum output power measured when downlink carrier aggregation inactive.

The conducted power measurement results of downlink LTE CA are as below:

DL LTE CA Class	PCC								SCC			Power	
	PCC Band	PCC Band width (MHz)	PCC UL B size	PCC UL B offset	PCC DL B size	PCC DL B offset	PCC UL Channel	PCC DL Channel	SCC Band	SCC Band width (MHz)	SCC DL Channel	Rel 8 LTE Tx Power (dBm)	Rel 10 DL LTE CA Tx Power (dBm)
7C	7	15	1	74	75	0	20825	2825	7	15	2975	23.59	23.35
7A-7A	7	15	1	74	75	0	20825	2825	7	20	3350	23.59	23.58
7A-1A	7	15	1	74	75	0	20825	2825	1	20	300	23.59	23.26
7A-3A	7	15	1	74	75	0	20825	2825	3	20	1575	23.59	23.57
7A-8A	7	15	1	74	75	0	20825	2825	8	10	3625	23.59	23.59
7A-20A	7	15	1	74	75	0	20825	2825	20	20	6300	23.59	23.30
7A-28A	7	15	1	74	75	0	20825	2825	28	20	9460	23.59	23.57
41C	41	20	1	0	100	0	41490	41490	41	20	41292	23.84	23.86
41A-41A	41	20	1	0	100	0	41490	41490	41	20	39750	23.84	23.57

Note: Testing is not required in bands or modes not intended/allowed for US operation.

11.4 Wi-Fi and BT Measurement result

For WiFi antenna, there are two sets of tune-up power, Normal power and Low power. Normal power status is applied for body test. Low power status is applied for head test.

The output power of BT is 7.28dBm, the tune up of BT is 9.25dBm.

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

Normal Power

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
11	18.73	/	/	/
6	18.32	/	/	/
1	18.77	18.67	18.45	18.41
Tune up	20	20	20	20

802.11g (dBm)

Channel\data rate	Tune up	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
11	16.5	14.89	/	/	14.58	/	/	/	/
6	18	16.04	/	/	16.62	/	/	/	/
1	18	16.48	16.42	16.31	17.09	16.73	16.59	16.43	16.31

802.11n (dBm) - HT20 (2.4G)

Channel\data rate	Tune up	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
11	16	14.68	/	14.39	/	/	/	/	/
6	16	14.94	/	15.51	/	/	/	/	/
1	17	15.16	15.01	15.72	15.55	15.46	15.25	15.21	15.06

802.11n (dBm) – HT40 (2.4G)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
9	15.37	/	/	/	/	/	/	/
6	15.92	/	/	/	/	/	/	/
3	15.96	15.71	15.57	15.33	15.41	15.12	14.99	14.81
Tune up	17	17	17	17	17	17	16	16

802.11a (dBm)

Channel\data rate	Tune up	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
36	16.5	14.67	/	/	14.96	/	/	/	/
40	16.5	14.93	/	/	15.22	/	/	/	/
44	16.5	15.46	/	/	15.71	/	/	/	/
48	16.5	15.78	15.68	15.57	16.03	15.67	15.12	14.87	14.71
52	16.5	16.16	/	/	16.39	/	/	/	/
56	16.5	16.21	16.08	15.97	16.46	16.06	15.58	15.34	15.19
60	16.5	15.93	/	/	16.23	/	/	/	/
64	16.5	15.89	/	/	16.19	/	/	/	/
100	16.5	15.63	/	/	15.92	/	/	/	/
104	16.5	15.42	/	/	15.73	/	/	/	/
108	16.5	15.04	/	/	15.37	/	/	/	/
112	16.5	14.98	/	/	12.36	/	/	/	/
116	16.5	15.06	/	/	15.32	/	/	/	/
120	16.5	15.41	/	/	15.76	/	/	/	/
124	16.5	16.17	/	/	16.37	/	/	/	/
128	17.5	16.88	/	/	17.04	/	/	/	/
132	17.5	16.97	16.94	16.86	17.18	16.86	16.23	16.07	15.97
136	17.5	16.83	/	/	16.97	/	/	/	/
140	17.5	16.25	/	/	16.49	/	/	/	/
144	17.5	16.11	/	/	16.35	/	/	/	/
149	17	15.23	/	/	15.39	/	/	/	/
153	17	15.56	/	/	15.71	/	/	/	/
157	17	16.12	/	/	16.23	/	/	/	/
161	18	16.73	/	/	16.88	/	/	/	/
165	18	17.28	17.23	17.12	17.37	17.05	16.47	16.31	16.12

The Tune up of 802.11n is 16dBm. The Tune up of 802.11ac is 14dBm.
The detail of 5G evaluation is presented in section 14.4.



Low Power

802.11b (dBm)

Channel\data rate	1Mbps	2Mbps	5.5Mbps	11Mbps
11	16.33	/	/	/
6	16.39	/	/	/
1	16.46	16.34	16.15	16.09
Tune up	17	17	17	17

802.11g (dBm)

Channel\data rate	Tune up	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
11	15	14.50	14.37	14.28	14.16	13.82	13.39	13.17	13.09
6	15	13.23	/	/	/	/	/	/	/
1	15	13.45	/	/	/	/	/	/	/

802.11n (dBm) - HT20 (2.4G)

Channel\data rate	Tune up	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
11	14.5	14.22	13.94	13.91	13.77	13.38	13.17	13.09	12.97
6	14	12.17	/	/	/	/	/	/	/
1	14	12.32	/	/	/	/	/	/	/

802.11n (dBm) – HT40 (2.4G)

Channel\data rate	MCS0	MCS1	MCS2	MCS3	MCS4	MCS5	MCS6	MCS7
9	12.57	/	/	/	/	/	/	/
6	12.98	/	/	/	/	/	/	/
3	13.02	12.82	12.66	12.46	12.54	12.27	12.14	11.99
Tune up	14	14	14	14	14	14	14	13

802.11a (dBm)

Channel\data rate	Tune up	6Mbps	9Mbps	12Mbps	18Mbps	24Mbps	36Mbps	48Mbps	54Mbps
36	15.5	13.93	/	/	14.29	/	/	/	/
40	15.5	14.23	/	/	14.59	/	/	/	/
44	15.5	14.60	/	/	14.92	/	/	/	/
48	15.5	14.78	14.61	14.52	15.11	14.78	14.33	14.08	13.99
52	15.5	15.05	/	/	15.41	/	/	/	/
56	15.5	15.09	14.89	14.80	15.45	15.01	14.61	14.41	14.28
60	15.5	14.93	/	/	15.26	/	/	/	/
64	15.5	14.89	/	/	15.20	/	/	/	/
100	15.5	14.88	/	/	15.19	/	/	/	/
104	15.5	14.60	/	/	14.90	/	/	/	/
108	15.5	14.34	/	/	14.64	/	/	/	/
112	15.5	14.20	/	/	14.55	/	/	/	/
116	15.5	14.19	/	/	14.54	/	/	/	/
120	15.5	14.75	/	/	15.09	/	/	/	/
124	15.5	15.30	/	/	15.49	/	/	/	/
128	16.5	15.84	/	/	16.17	/	/	/	/
132	16.5	16.14	16.01	15.90	16.46	16.15	15.72	15.53	15.40
136	16.5	15.90	/	/	16.19	/	/	/	/
140	16.5	15.37	/	/	15.71	/	/	/	/
144	16.5	14.94	/	/	15.31	/	/	/	/
149	16	14.52	/	/	14.87	/	/	/	/
153	16	14.80	/	/	15.18	/	/	/	/
157	16	15.46	/	/	15.69	/	/	/	/
161	17	16.04	/	/	16.34	/	/	/	/
165	17	16.49	16.32	16.23	16.79	16.48	16.11	15.89	15.74

The Tune up of 802.11n is 15dBm. The Tune up of 802.11ac is 14dBm.
The detail of 5G evaluation is presented in section 14.4.

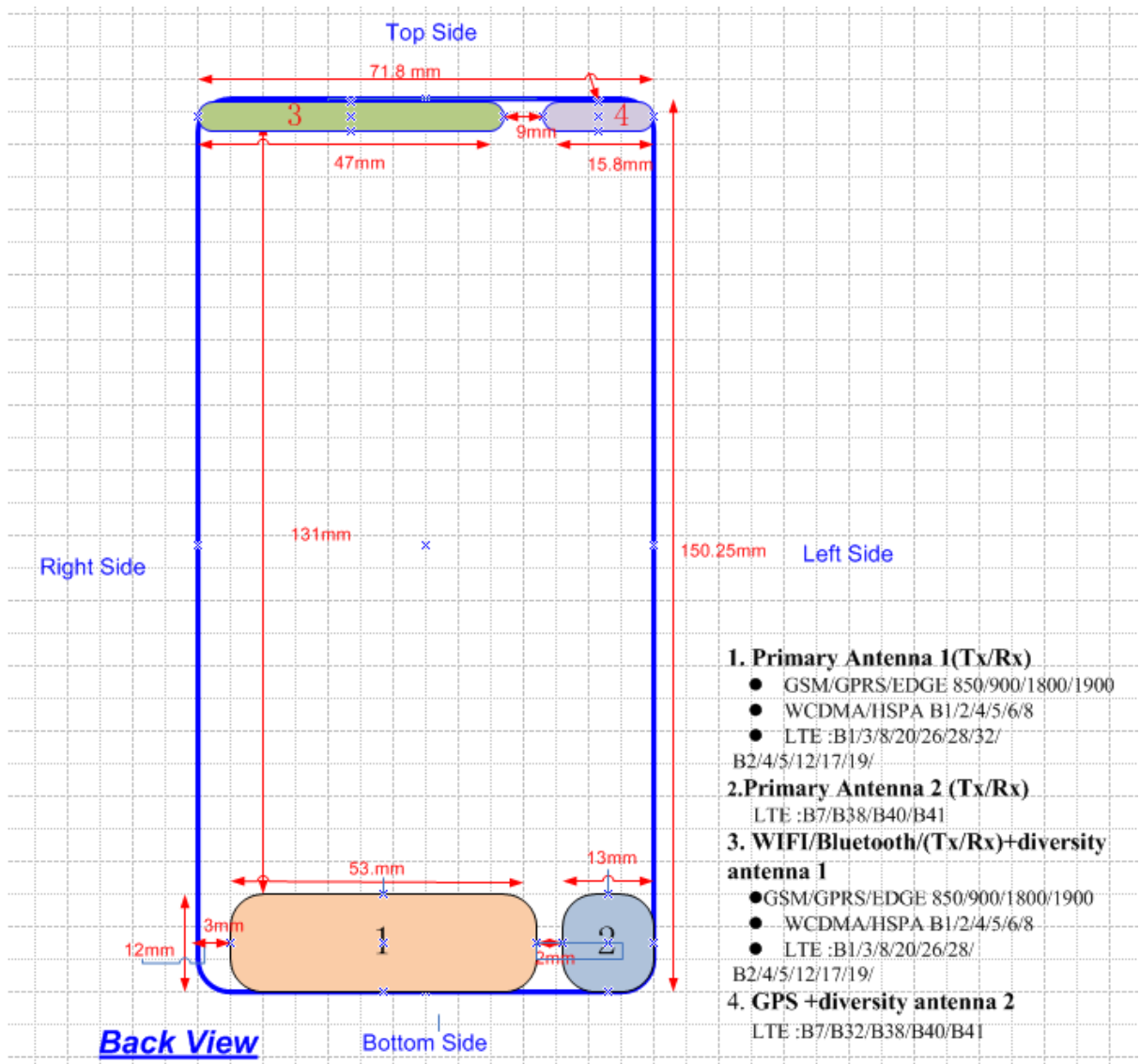
12 Simultaneous TX SAR Considerations

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
Primary antenna 1	Yes	Yes	Yes	Yes	No	Yes
Primary antenna 2	Yes	Yes	Yes	No	No	Yes
WLAN	Yes	Yes	Yes	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(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	9.25	8.41	Yes
		Body	19.20	9.25	8.41	Yes
2.4GHz WLAN	2.45	Head	9.58	20	100	No
		Body	19.17	20	100	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 hand, Touch cheek	0.40	0.84	1.24
	Left hand, Tilt 15°	0.16	0.93	1.09
	Right hand, Touch cheek	0.41	0.57	0.98
Highest reported SAR value for Body	Rear	1.17	0.42	1.59
	Top	/	0.66	0.66

Note1: 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	0.41	0.35 ^[1]	0.76
Maximum reported SAR value for Body	Rear	1.17	0.18 ^[1]	1.35

[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	9.25	8.41	0.35
Bluetooth	2.441	Body	10	9.25	8.41	0.18

* - 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 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	1:2.67
Speech for GSM1900	1:2
GPRS&EGPRS for GSM850	1:2.67
GPRS&EGPRS for GSM1900	1:2
WCDMA<E FDD	1:1
LTE TDD	1:1.58

14.1 SAR results for Fast SAR

Table 14.1-1: SAR Values (GSM 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										
190	836.6	Left	Touch	/	29.58	30.5	0.191	0.24	0.251	0.31	0.05
190	836.6	Left	Tilt	/	29.58	30.5	0.095	0.12	0.118	0.15	-0.02
251	848.8	Right	Touch	Fig.1	29.65	30.5	0.258	0.31	0.340	0.41	-0.12
190	836.6	Right	Touch	/	29.58	30.5	0.225	0.28	0.293	0.36	0.09
128	824.2	Right	Touch	/	29.42	30.5	0.188	0.24	0.247	0.32	0.07
190	836.6	Right	Tilt	/	29.58	30.5	0.100	0.12	0.125	0.15	0.01

Note: the head SAR of GSM850 is tested with GPRS (3Txslots) mode because of VoIP.

Table 14.1-2: 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)	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										
190	836.6	GPRS (3)	Front	/	29.58	30.5	0.148	0.18	0.262	0.32	0.06
251	848.8	GPRS (3)	Rear	Fig.2	29.65	30.5	0.310	0.38	0.544	0.66	-0.05
190	836.6	GPRS (3)	Rear	/	29.58	30.5	0.238	0.29	0.515	0.64	0.11
128	824.2	GPRS (3)	Rear	/	29.42	30.5	0.205	0.26	0.446	0.57	0.04
190	836.6	GPRS (3)	Left	/	29.58	30.5	0.087	0.11	0.168	0.21	0.02
190	836.6	GPRS (3)	Right	/	29.58	30.5	0.176	0.22	0.340	0.42	0.19
190	836.6	GPRS (3)	Bottom	/	29.58	30.5	0.056	0.07	0.128	0.16	0.07
251	848.8	EGPRS (3)	Rear	/	29.73	30.5	0.298	0.36	0.525	0.63	-0.02

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

Table 14.1-3: SAR Values (GSM 1900 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										
661	1880	Left	Touch	/	25.26	26	0.087	0.10	0.137	0.16	0.04
661	1880	Left	Tilt	/	25.26	26	0.071	0.08	0.116	0.14	0.02
810	1909.8	Right	Touch	/	25.42	26	0.109	0.12	0.162	0.19	-0.07
661	1880	Right	Touch	Fig.3	25.26	26	0.115	0.14	0.189	0.22	-0.06
512	1850.2	Right	Touch	/	25.12	26	0.112	0.14	0.173	0.21	0.11
661	1880	Right	Tilt	/	25.26	26	0.049	0.06	0.083	0.10	0.03

Note: the head SAR of GSM1900 is tested with GPRS (4Txslots) mode because of VoIP.

Table 14.1-4: SAR Values (GSM 1900 MHz Band - Body)

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										
Ambient Temperature: 22.9 °C Liquid Temperature: 22.5 °C											
661	1880	GPRS (4)	Front	/	25.26	26	0.167	0.20	0.283	0.34	0.03
810	1909.8	GPRS (4)	Rear	Fig.4	25.42	26	0.387	0.44	0.738	0.84	0.06
661	1880	GPRS (4)	Rear	/	25.26	26	0.354	0.42	0.636	0.75	0.12
512	1850.2	GPRS (4)	Rear	/	25.12	26	0.236	0.29	0.499	0.61	0.01
661	1880	GPRS (4)	Left	/	25.26	26	0.061	0.07	0.100	0.12	0.09
661	1880	GPRS (4)	Right	/	25.26	26	0.064	0.08	0.106	0.13	0.05
661	1880	GPRS (4)	Bottom	/	25.26	26	0.235	0.28	0.457	0.54	-0.04
810	1909.8	EGPRS (4)	Rear	/	25.39	26	0.381	0.44	0.731	0.84	0.04

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

Table 14.1-5: 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											
4182	836.4	Left	Touch	/	23.48	24	0.124	0.14	0.162	0.18	0.04
4182	836.4	Left	Tilt	/	23.48	24	0.065	0.07	0.082	0.09	-0.01
4233	846.6	Right	Touch	/	23.44	24	0.147	0.17	0.191	0.22	0.03
4182	836.4	Right	Touch	Fig.5	23.48	24	0.151	0.17	0.201	0.23	0.12
4132	826.4	Right	Touch	/	23.52	24	0.149	0.17	0.196	0.22	0.08
4182	836.4	Right	Tilt	/	23.48	24	0.076	0.09	0.096	0.11	0.04

Table 14.1-6: 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	/	23.48	24	0.143	0.16	0.199	0.22	0.04
4233	846.6	Rear	/	23.44	24	0.226	0.26	0.318	0.36	-0.02
4182	836.4	Rear	/	23.48	24	0.219	0.25	0.313	0.35	0.12
4132	826.4	Rear	Fig.6	23.52	24	0.190	0.21	0.328	0.37	0.05
4182	836.4	Left	/	23.48	24	0.090	0.10	0.140	0.16	-0.09
4182	836.4	Right	/	23.48	24	0.105	0.12	0.170	0.19	0.03
4182	836.4	Bottom	/	23.48	24	0.040	0.05	0.081	0.09	0.15

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

Table 14.1-7: 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											
1738	1752.6	Left	Touch	/	23.72	24	0.096	0.10	0.151	0.16	0.04
1637	1732.4	Left	Touch	/	23.85	24	0.112	0.12	0.175	0.18	0.03
1537	1712.4	Left	Touch	Fig.7	23.86	24	0.129	0.13	0.203	0.21	-0.10
1637	1732.4	Left	Tilt	/	23.85	24	0.044	0.05	0.068	0.07	0.03
1637	1732.4	Right	Touch	/	23.85	24	0.110	0.11	0.170	0.18	0.11
1637	1732.4	Right	Tilt	/	23.85	24	0.048	0.05	0.080	0.08	0.03

Table 14.1-8: 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										
1637	1732.4	Front	/	23.85	24	0.317	0.33	0.503	0.52	0.04
1738	1752.6	Rear	/	23.72	24	0.525	0.56	0.952	1.02	-0.01
1637	1732.4	Rear	/	23.85	24	0.576	0.60	1.06	1.10	0.19
1537	1712.4	Rear	Fig.8	23.86	24	0.582	0.60	1.07	1.11	-0.02
1637	1732.4	Left	/	23.85	24	0.113	0.12	0.186	0.19	0.08
1637	1732.4	Right	/	23.85	24	0.094	0.10	0.148	0.15	0.05
1738	1752.6	Bottom	/	23.72	24	0.455	0.49	0.864	0.92	0.06
1637	1732.4	Bottom	/	23.85	24	0.410	0.42	0.793	0.82	0.01
1537	1712.4	Bottom	/	23.86	24	0.473	0.49	0.898	0.93	-0.04

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

Table 14.1-9: SAR Values (WCDMA 1900 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											
9800	1880	Left	Touch	/	23.70	24	0.089	0.10	0.131	0.14	0.04
9800	1880	Left	Tilt	/	23.70	24	0.062	0.07	0.099	0.11	-0.01
9938	1907.6	Right	Touch	/	23.75	24	0.122	0.13	0.196	0.21	0.03
9800	1880	Right	Touch	Fig.9	23.70	24	0.129	0.14	0.210	0.23	0.10
9662	1852.4	Right	Touch	/	23.74	24	0.127	0.13	0.201	0.21	-0.09
9800	1880	Right	Tilt	/	23.70	24	0.049	0.05	0.081	0.09	0.13

Table 14.1-10: 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	/	23.70	24	0.268	0.29	0.433	0.46	0.09
9938	1907.6	Rear	Fig.10	23.75	24	0.570	0.60	1.08	1.14	0.15
9800	1880	Rear	/	23.70	24	0.479	0.51	0.892	0.96	-0.02
9662	1852.4	Rear	/	23.74	24	0.486	0.52	0.888	0.94	0.08
9800	1880	Left	/	23.70	24	0.087	0.09	0.139	0.15	-0.03
9800	1880	Right	/	23.70	24	0.097	0.10	0.154	0.17	0.19
9800	1880	Bottom	/	23.70	24	0.372	0.40	0.651	0.70	0.11

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

Table 14.1-11: 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											
19100	1900	1RB_Mid	Left	Touch	/	23.45	24	0.080	0.09	0.131	0.15	0.08
19100	1900	1RB_Mid	Left	Tilt	/	23.45	24	0.059	0.07	0.098	0.11	-0.02
19100	1900	1RB_Mid	Right	Touch	Fig.11	23.45	24	0.113	0.13	0.187	0.21	0.07
19100	1900	1RB_Mid	Right	Tilt	/	23.45	24	0.046	0.05	0.081	0.09	-0.01
19100	1900	50RB_Mid	Left	Touch	/	22.49	23	0.067	0.08	0.106	0.12	0.19
19100	1900	50RB_Mid	Left	Tilt	/	22.49	23	0.054	0.06	0.091	0.10	0.03
19100	1900	50RB_Mid	Right	Touch	/	22.49	23	0.093	0.10	0.157	0.18	0.02
19100	1900	50RB_Mid	Right	Tilt	/	22.49	23	0.039	0.04	0.071	0.08	0.01

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-12: 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										
19100	1900	1RB_Mid	Front	/	23.45	24	0.265	0.30	0.467	0.53	0.06
19100	1900	1RB_Mid	Rear	Fig.12	23.45	24	0.539	0.61	1.03	1.17	-0.06
18900	1880	1RB_Low	Rear	/	23.40	24	0.525	0.60	1.00	1.15	0.03
18700	1860	1RB_High	Rear	/	23.37	24	0.508	0.59	0.961	1.11	0.01
19100	1900	1RB_Mid	Left	/	23.45	24	0.082	0.09	0.141	0.16	0.12
19100	1900	1RB_Mid	Right	/	23.45	24	0.092	0.10	0.155	0.18	0.01
19100	1900	1RB_Mid	Bottom	/	23.45	24	0.345	0.39	0.658	0.75	0.09
19100	1900	50RB_Mid	Front	/	22.49	23	0.215	0.24	0.379	0.43	0.18
19100	1900	50RB_Mid	Rear	/	22.49	23	0.401	0.45	0.747	0.84	0.06

18900	1880	50RB_High	Rear	/	22.45	23	0.429	0.49	0.823	0.93	-0.08
18700	1860	50RB_High	Rear	/	22.41	23	0.413	0.47	0.784	0.90	0.02
19100	1900	50RB_Mid	Left	/	22.49	23	0.067	0.08	0.114	0.13	0.08
19100	1900	50RB_Mid	Right	/	22.49	23	0.076	0.09	0.130	0.15	0.04
19100	1900	50RB_Mid	Bottom	/	22.49	23	0.285	0.32	0.540	0.61	0.13
18700	1860	100RB	Rear	/	22.41	23	0.410	0.47	0.778	0.89	0.03

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-13: 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											
20175	1732.5	1RB_High	Left	Touch	/	23.21	24	0.141	0.17	0.221	0.27	0.09
20175	1732.5	1RB_High	Left	Tilt	/	23.21	24	0.056	0.07	0.087	0.10	0.03
20175	1732.5	1RB_High	Right	Touch	Fig.13	23.21	24	0.146	0.18	0.230	0.28	0.00
20175	1732.5	1RB_High	Right	Tilt	/	23.21	24	0.078	0.09	0.128	0.15	-0.01
20050	1720	50RB_Mid	Left	Touch	/	22.32	23	0.119	0.14	0.186	0.22	0.12
20050	1720	50RB_Mid	Left	Tilt	/	22.32	23	0.047	0.05	0.072	0.08	0.17
20050	1720	50RB_Mid	Right	Touch	/	22.32	23	0.121	0.14	0.191	0.22	0.09
20050	1720	50RB_Mid	Right	Tilt	/	22.32	23	0.055	0.06	0.088	0.10	-0.03

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-14: 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										
20175	1732.5	1RB_High	Front	/	23.21	24	0.267	0.32	0.456	0.55	0.08
20300	1745	1RB_Low	Rear	/	23.18	24	0.503	0.61	0.933	1.13	0.05
20175	1732.5	1RB_High	Rear	/	23.21	24	0.471	0.56	0.853	1.02	-0.08
20050	1720	1RB_Low	Rear	Fig.14	23.20	24	0.515	0.62	0.952	1.14	-0.08
20175	1732.5	1RB_High	Left	/	23.21	24	0.103	0.12	0.166	0.20	0.03
20175	1732.5	1RB_High	Right	/	23.21	24	0.086	0.10	0.135	0.16	0.12
20300	1745	1RB_Low	Bottom	/	23.18	24	0.411	0.50	0.744	0.90	0.09
20175	1732.5	1RB_High	Bottom	/	23.21	24	0.406	0.49	0.729	0.87	0.05
20050	1720	1RB_Low	Bottom	/	23.20	24	0.426	0.51	0.774	0.93	0.08
20050	1720	50RB_Mid	Front	/	22.32	23	0.230	0.27	0.393	0.46	0.17
20300	1745	50RB_Mid	Rear	/	22.12	23	0.400	0.49	0.737	0.90	0.04
20175	1732.5	50RB_Low	Rear	/	22.23	23	0.413	0.49	0.759	0.91	-0.09
20050	1720	50RB_Mid	Rear	/	22.32	23	0.395	0.46	0.715	0.84	0.03
20050	1720	50RB_Mid	Left	/	22.32	23	0.090	0.11	0.144	0.17	0.08

20050	1720	50RB_Mid	Right	/	22.32	23	0.078	0.09	0.122	0.14	-0.01
20050	1720	50RB_Mid	Bottom	/	22.32	23	0.328	0.38	0.590	0.69	0.01
20050	1720	100RB	Rear	/	22.23	23	0.412	0.49	0.757	0.90	0.02
20050	1720	100RB	Bottom	/	22.23	23	0.338	0.40	0.612	0.73	-0.03

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-15: SAR Values (LTE Band7 - 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											
21100	2535	1RB_High	Left	Touch	Fig.15	23.53	24	0.188	0.21	0.362	0.40	0.08
21100	2535	1RB_High	Left	Tilt	/	23.53	24	0.072	0.08	0.141	0.16	-0.03
21100	2535	1RB_High	Right	Touch	/	23.53	24	0.151	0.17	0.275	0.31	0.01
21100	2535	1RB_High	Right	Tilt	/	23.53	24	0.124	0.14	0.257	0.29	0.06
21100	2535	50RB_Mid	Left	Touch	/	22.57	23	0.160	0.18	0.307	0.34	0.09
21100	2535	50RB_Mid	Left	Tilt	/	22.57	23	0.059	0.07	0.118	0.13	0.03
21100	2535	50RB_Mid	Right	Touch	/	22.57	23	0.130	0.14	0.238	0.26	-0.01
21100	2535	50RB_Mid	Right	Tilt	/	22.57	23	0.104	0.11	0.219	0.24	0.04

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-16: 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										
21100	2535	1RB_High	Front	/	23.53	24	0.349	0.39	0.652	0.73	-0.01
21350	2560	1RB_High	Rear	/	23.41	24	0.333	0.38	0.594	0.68	0.03
21100	2535	1RB_High	Rear	Fig.16	23.53	24	0.442	0.49	0.808	0.90	0.03
20850	2510	1RB_Low	Rear	/	23.42	24	0.440	0.50	0.765	0.87	-0.07
21100	2535	1RB_High	Left	/	23.53	24	0.257	0.29	0.495	0.55	0.06
21100	2535	1RB_High	Bottom	/	23.53	24	0.237	0.26	0.450	0.50	-0.03
21100	2535	50RB_Mid	Front	/	22.57	23	0.292	0.32	0.539	0.60	0.09
21100	2535	50RB_Mid	Rear	/	22.57	23	0.375	0.41	0.692	0.76	0.03
21100	2535	50RB_Mid	Left	/	22.57	23	0.197	0.22	0.377	0.42	0.14
21100	2535	50RB_Mid	Bottom	/	22.57	23	0.191	0.21	0.364	0.40	0.08
21100	2535	100RB	Rear	/	22.50	23	0.333	0.37	0.589	0.66	-0.01

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.1-17: 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_High	Left	Touch	/	23.06	24	0.106	0.13	0.130	0.16	-0.03
23130	711	1RB_High	Left	Tilt	/	23.06	24	0.077	0.10	0.094	0.12	0.19
23130	711	1RB_High	Right	Touch	Fig.17	23.06	24	0.126	0.16	0.159	0.20	0.01
23130	711	1RB_High	Right	Tilt	/	23.06	24	0.097	0.12	0.121	0.15	0.04
23060	704	25RB_Mid	Left	Touch	/	22.17	23	0.109	0.13	0.134	0.16	0.08
23060	704	25RB_Mid	Left	Tilt	/	22.17	23	0.078	0.09	0.094	0.11	0.17
23060	704	25RB_Mid	Right	Touch	/	22.17	23	0.085	0.10	0.111	0.13	0.12
23060	704	25RB_Mid	Right	Tilt	/	22.17	23	0.060	0.07	0.079	0.10	0.01

Note1: The LTE mode is QPSK_10MHz.

Table 14.1-18: 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_High	Front	/	23.06	24	0.107	0.13	0.137	0.17	0.03
23130	711	1RB_High	Rear	Fig.18	23.06	24	0.244	0.30	0.317	0.39	0.02
23130	711	1RB_High	Left	/	23.06	24	0.154	0.19	0.211	0.26	-0.01
23130	711	1RB_High	Right	/	23.06	24	0.183	0.23	0.254	0.32	0.19
23130	711	1RB_High	Bottom	/	23.06	24	0.030	0.04	0.048	0.06	0.03
23060	704	25RB_Mid	Front	/	22.17	23	0.103	0.12	0.135	0.16	-0.01
23060	704	25RB_Mid	Rear	/	22.17	23	0.212	0.26	0.277	0.34	0.18
23060	704	25RB_Mid	Left	/	22.17	23	0.123	0.15	0.169	0.20	0.03
23060	704	25RB_Mid	Right	/	22.17	23	0.145	0.18	0.201	0.24	0.08
23060	704	25RB_Mid	Bottom	/	22.17	23	0.023	0.03	0.038	0.05	-0.09

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

Note2: The LTE mode is QPSK_10MHz.

Table 14.1-19: SAR Values (LTE band26 - 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											
26965	841.5	1RB_High	Left	Touch	/	23.21	24	0.140	0.17	0.174	0.21	0.03
26965	841.5	1RB_High	Left	Tilt	/	23.21	24	0.080	0.10	0.097	0.12	-0.09
26965	841.5	1RB_High	Right	Touch	Fig.19	23.21	24	0.153	0.18	0.200	0.24	0.03
26965	841.5	1RB_High	Right	Tilt	/	23.21	24	0.077	0.09	0.093	0.11	-0.01
26775	822.5	36RB_High	Left	Touch	/	22.20	23	0.114	0.14	0.140	0.17	0.04
26775	822.5	36RB_High	Left	Tilt	/	22.20	23	0.062	0.07	0.076	0.09	0.03
26775	822.5	36RB_High	Right	Touch	/	22.20	23	0.132	0.16	0.171	0.21	0.07
26775	822.5	36RB_High	Right	Tilt	/	22.20	23	0.060	0.07	0.073	0.09	0.02

Note1: The LTE mode is QPSK_15MHz.

Table 14.1-20: SAR Values (LTE band26 - 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										
26965	841.5	1RB_High	Front	/	23.21	24	0.136	0.16	0.175	0.21	0.09
26965	841.5	1RB_High	Rear	Fig.20	23.21	24	0.277	0.33	0.358	0.43	-0.02
26965	841.5	1RB_High	Left	/	23.21	24	0.126	0.15	0.182	0.22	0.19
26965	841.5	1RB_High	Right	/	23.21	24	0.218	0.26	0.314	0.38	0.04
26965	841.5	1RB_High	Bottom	/	23.21	24	0.060	0.07	0.101	0.12	-0.01
26775	822.5	36RB_High	Front	/	22.20	23	0.122	0.15	0.156	0.19	0.19
26775	822.5	36RB_High	Rear	/	22.20	23	0.264	0.32	0.335	0.40	0.02
26775	822.5	36RB_High	Left	/	22.20	23	0.114	0.14	0.165	0.20	-0.07
26775	822.5	36RB_High	Right	/	22.20	23	0.191	0.23	0.274	0.33	0.08
26775	822.5	36RB_High	Bottom	/	22.20	23	0.053	0.06	0.089	0.11	0.12

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

Note2: The LTE mode is QPSK_15MHz.

Table 14.1-21: SAR Values (LTE Band41 - 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)	
41490	2680	1RB_Low	Left	Touch	Fig.21	23.84	24	0.077	0.08	0.155	0.16	-0.02
41490	2680	1RB_Low	Left	Tilt	/	23.84	24	0.029	0.03	0.053	0.05	-0.01
41490	2680	1RB_Low	Right	Touch	/	23.84	24	0.046	0.05	0.082	0.09	0.09
41490	2680	1RB_Low	Right	Tilt	/	23.84	24	0.043	0.04	0.083	0.09	0.03
41055	2636.5	50RB_Low	Left	Touch	/	22.89	23	0.054	0.06	0.104	0.11	0.17
41055	2636.5	50RB_Low	Left	Tilt	/	22.89	23	0.028	0.03	0.045	0.05	-0.01
41055	2636.5	50RB_Low	Right	Touch	/	22.89	23	0.036	0.04	0.065	0.07	0.03
41055	2636.5	50RB_Low	Right	Tilt	/	22.89	23	0.023	0.02	0.040	0.04	0.05

Note1: The LTE mode is QPSK_20MHz.

Table 14.1-22: SAR Values (LTE Band41 - 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)	
41490	2680	1RB_Low	Front	/	23.84	24	0.129	0.13	0.251	0.26	0.05
41490	2680	1RB_Low	Rear	/	23.84	24	0.155	0.16	0.314	0.33	-0.09
41490	2680	1RB_Low	Left	/	23.84	24	0.086	0.09	0.167	0.17	0.13
41490	2680	1RB_Low	Bottom	Fig.22	23.84	24	0.163	0.17	0.333	0.35	0.13
41055	2636.5	50RB_Low	Front	/	22.89	23	0.097	0.10	0.185	0.19	-0.09
41055	2636.5	50RB_Low	Rear	/	22.89	23	0.113	0.12	0.228	0.23	0.01
41055	2636.5	50RB_Low	Left	/	22.89	23	0.070	0.07	0.134	0.14	0.19
41055	2636.5	50RB_Low	Bottom	/	22.89	23	0.150	0.15	0.306	0.31	0.08

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

Note2: The LTE mode is QPSK_20MHz.

14.2 SAR results for Standard procedure

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

Table 14.2-1: 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	29.65	30.5	0.258	0.31	0.340	0.41	-0.12

Note: the head SAR of GSM850 is tested with GPRS (3Txslots) mode because of VoIP.

Table 14.2-2: 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 (3)	Rear	Fig.2	29.65	30.5	0.310	0.38	0.544	0.66	-0.05

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	Right	Touch	Fig.3	25.26	26	0.115	0.14	0.189	0.22	-0.06

Note: the head SAR of GSM1900 is tested with GPRS (4Txslots) mode because of VoIP.

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										
810	1909.8	GPRS (4)	Rear	Fig.4	25.42	26	0.387	0.44	0.738	0.84	0.06

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

Table 14.2-5: 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										
4182	836.4	Right	Touch	Fig.5	23.48	24	0.151	0.17	0.201	0.23	0.12

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)	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)	
4132	826.4	Rear	Fig.6	23.52	24	0.190	0.21	0.328	0.37	0.05

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)	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)	
1537	1712.4	Left	Touch	Fig.7	23.86	24	0.129	0.13	0.203	0.21	-0.10

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)	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)	
1537	1712.4	Rear	Fig.8	23.86	24	0.582	0.60	1.07	1.11	-0.02

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

Table 14.2-9: 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)	
9800	1880	Right	Touch	Fig.9	23.70	24	0.129	0.14	0.210	0.23	0.10

Table 14.2-10: 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)	
9938	1907.6	Rear	Fig.10	23.75	24	0.570	0.60	1.08	1.14	0.15

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

Table 14.2-11: 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											
19100	1900	1RB_Mid	Right	Touch	Fig.11	23.45	24	0.113	0.13	0.187	0.21	0.07

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-12: 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										
19100	1900	1RB_Mid	Rear	Fig.12	23.45	24	0.539	0.61	1.03	1.17	-0.06

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-13: 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											
20175	1732.5	1RB_High	Right	Touch	Fig.13	23.21	24	0.146	0.18	0.230	0.28	0.00

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-14: 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_Low	Rear	Fig.14	23.20	24	0.515	0.62	0.952	1.14	-0.08

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

Note2: The LTE mode is QPSK_20MHz.

Table 14.2-15: SAR Values (LTE Band7 - 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											
21100	2535	1RB_High	Left	Touch	Fig.15	23.53	24	0.188	0.21	0.362	0.40	0.08

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-16: 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										
21100	2535	1RB_High	Rear	Fig.16	23.53	24	0.442	0.49	0.808	0.90	0.03

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 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_High	Right	Touch	Fig.17	23.06	24	0.126	0.16	0.159	0.20	0.01

Note1: The LTE mode is QPSK_10MHz.

Table 14.2-18: 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_High	Rear	Fig.18	23.06	24	0.244	0.30	0.317	0.39	0.02

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 band26 - 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											
26965	841.5	1RB_High	Right	Touch	Fig.19	23.21	24	0.153	0.18	0.200	0.24	0.03

Note1: The LTE mode is QPSK_15MHz.

Table 14.2-20: SAR Values (LTE band26 - 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											
26965	841.5	1RB_High	Rear	Fig.20	23.21	24	0.277	0.33	0.358	0.43	-0.02	

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

Note2: The LTE mode is QPSK_15MHz.

Table 14.2-21: SAR Values (LTE Band41 - 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											
41490	2680	1RB_Low	Left	Touch	Fig.21	23.84	24	0.077	0.08	0.155	0.16	-0.02

Note1: The LTE mode is QPSK_20MHz.

Table 14.2-22: SAR Values (LTE Band41 - 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											
41490	2680	1RB_Low	Bottom	Fig.22	23.84	24	0.163	0.17	0.333	0.35	0.13	

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

Note2: The LTE mode is QPSK_20MHz.

14.3 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 14.3-1: 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)	
2412	1	Left	Touch	/	16.46	17	0.292	0.33	0.662	0.75	0.03
2412	1	Left	Tilt	/	16.46	17	0.315	0.36	0.677	0.77	-0.14
2412	1	Right	Touch	/	16.46	17	0.220	0.25	0.474	0.54	-0.01
2412	1	Right	Tilt	/	16.46	17	0.206	0.23	0.460	0.52	-0.12

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

Table 14.3-2: 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)	
2412	1	Left	Touch	/	16.46	17	0.307	0.35	0.733	0.83	0.03
2412	1	Left	Tilt	Fig.23	16.46	17	0.341	0.39	0.812	0.92	-0.14
2412	1	Right	Touch	/	16.46	17	0.225	0.25	0.494	0.56	-0.01
2437	6	Left	Touch	/	16.39	17	0.244	0.28	0.590	0.68	-0.02
2437	6	Left	Tilt	/	16.39	17	0.242	0.28	0.583	0.67	-0.16

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 14.3-3: 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)
2412	1	Left	Touch	99.05%	100%	0.83	0.84
2412	1	Left	Tilt	99.05%	100%	0.92	0.93
2412	1	Right	Touch	99.05%	100%	0.56	0.57

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

Body Evaluation

Table 14.3-4: SAR Values (WLAN - Body)– 802.11b (Fast SAR)

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)
MHz	Ch.					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	
2412	1	Front	/	18.77	20	0.125	0.17	0.254	0.34	0.04
2412	1	Rear	/	18.77	20	0.137	0.18	0.288	0.38	0.07
2412	1	Left	/	18.77	20	0.009	0.01	0.018	0.02	0.02
2412	1	Right	/	18.77	20	0.018	0.02	0.031	0.04	0.03
2412	1	Top	/	18.77	20	0.224	0.30	0.490	0.65	-0.06

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

Table 14.3-5: SAR Values (WLAN - Body)– 802.11b (Full SAR)

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)
MHz	Ch.					Measured SAR(10g) (W/kg)	Reported SAR(10g) (W/kg)	Measured SAR(1g) (W/kg)	Reported SAR(1g)(W/kg)	
2412	1	Top	Fig.24	18.77	20	0.230	0.31	0.487	0.65	-0.06
2412	1	Rear	/	18.77	20	0.141	0.19	0.290	0.38	0.07

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.

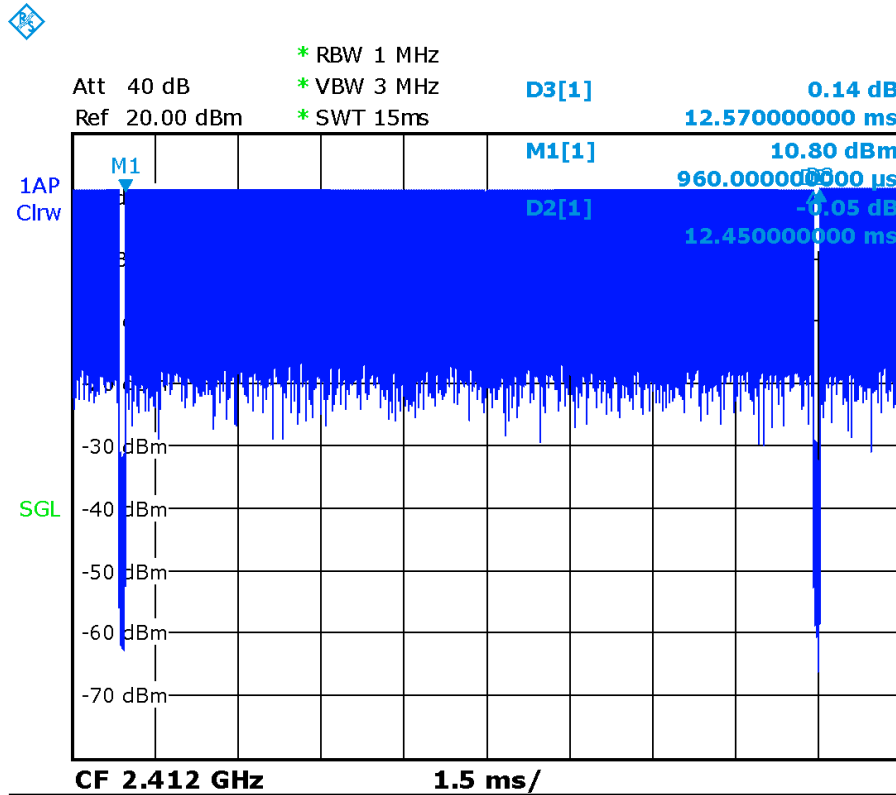
Note2: For all positions/configurations tested using the initial test position and subsequent test positions, when the reported SAR is > 0.8 W/kg, SAR is measured for these test positions/configurations on the subsequent next highest measured output power channel until the reported SAR is ≤ 1.2 W/kg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

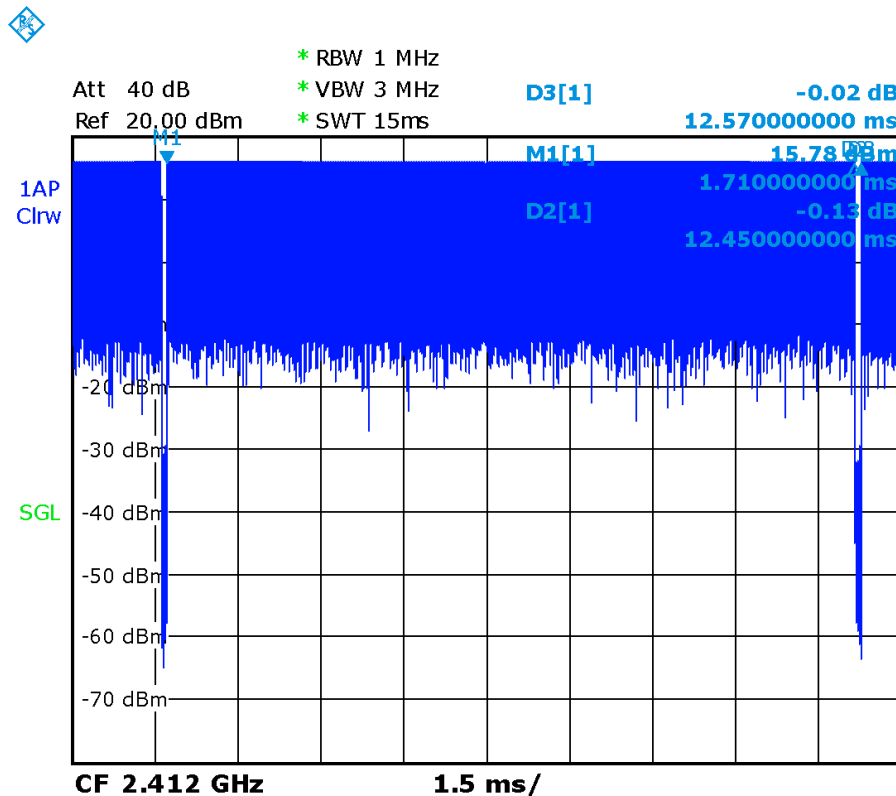
Table 14.3-6: SAR Values (WLAN - Body) – 802.11b (Scaled Reported SAR)

Frequency		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)
2412	1	Top	99.05%	100%	0.65	0.66
2412	1	Rear	99.05%	100%	0.38	0.38

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



Picture 14.1 Duty factor plot for head



Picture 14.2 Duty factor plot for body

14.4 WLAN Evaluation For 5G

Table 14.4-1: 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	X	X	X	
U-NII-2A	X		X	X	X	X	X	
U-NII-2C	X		X	X	X	X	X	
U-NII-3	X		X	X	X	X	X	
§ 15.247 (5.8 GHz)								

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

Table 14.4-2: Maximum output power specified of WLAN antenna for Head

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	35		32	32	25	25	25	
U-NII-2A	35		32	32	25	25	25	
U-NII-2C	45		32	32	25	25	25	
U-NII-3	50		32	32	25	25	25	
§ 15.247 (5.8 GHz)								

- 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/ac modes.
- The blue highlighted cells represent highest output configurations in each standalone or aggregated frequency band, with tune-up tolerance included.

Table 14.4-3: Maximum output power specified of WLAN antenna for Body

802.11 mode	a	g	n		ac			
Ch. BW(MHz)	20	20	20	40	20	40	80	160
U-NII-1	45		40	40	25	25	25	
U-NII-2A	45		40	40	25	25	25	
U-NII-2C	56		40	40	25	25	25	
U-NII-3	63		40	40	25	25	25	
§ 15.247 (5.8 GHz)								

- 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/ac modes.
- The blue highlighted cells represent highest output configurations in each standalone or aggregated frequency band, with tune-up tolerance included.

Table 14.4-4: Maximum output power measured of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations (Head)

802.11 mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
U-NII-1	36/40/44/48 27/29/31/32	36/40/44/48 Lower power	38/46 Lower power	36/40/44/48 Lower power	38/46 Lower power	42 Lower power
U-NII-2A	52/56/60/64 35/35/34/33	52/56/60/64 Lower power	54/62 Lower power	52/56/60/64 Lower power	54/62 Lower power	58 Lower power
U-NII-2C	100/104/108/112 33/31/29/29 116/120/124/128 28/32/35/41 132/136/140/144 44/42/37/34	100/104/108/112 116/132/136/140 Lower power	102/110/134 Lower power	100/104/108 /112 116/132/136/ 140 Lower power	102/110/134 Lower power	106 Lower power
U-NII-3	149/153/157/161/165 31/33/37/43/48	149/153/157/16 1/165 Lower power	151/159 Lower power	149/153/157 /161/165 Lower power	151/159 Lower power	155 Lower power

- The **bold numbers** is the maximum output measured power (mW).
- 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 14.4-5: Maximum output power measured of WLAN antenna, for the applicable OFDM configurations according to the default power measurement procedures for selection initial test configurations (Body)

802.11 mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
U-NII-1	36/40/44/48 31/33/37/40	36/40/44/48 Lower power	38/46 Lower power	36/40/44/48 Lower power	38/46 Lower power	42 Lower power
U-NII-2A	52/56/60/64 44/44/42/42	52/56/60/64 Lower power	54/62 Lower power	52/56/60/64 Lower power	54/62 Lower power	58 Lower power
U-NII-2C	100/104/108/112 39/37/34/34 116/120/124/128 34/38/43/51 132/136/140/144 52/50/45/43	100/104/108/112 116/132/136/140 Lower power	102/110/134 Lower power	100/104/108 /112 116/132/136/ 140 Lower power	102/110/134 Lower power	106 Lower power
U-NII-3	149/153/157/161/165 35/37/42/49/55	149/153/157/16 1/165 Lower power	151/159 Lower power	149/153/157 /161/165 Lower power	151/159 Lower power	155 Lower power

- The **bold numbers** is the maximum output measured power (mW).
- 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 14.4-6: Reported SAR of initial test configuration for Head

802.11 mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
U-NII-1	36/40/44/48	36/40/44/48	38/46	36/40/44/48	38/46	42
U-NII-2A	52/56/60/64 0.56	52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112/116/120/124 /128/132/136/140/144 0.30	100/104/108/112 116/132/136/140	102/110/118/ 126/134	100/104/108/112 116/132/136/140	102/110 /134	106
U-NII-3	149/153/157/161/165 0.09	149/153/157/161/ 165	151/159	149/153/157/161 /165	151/159	155

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. Highest measured output power channel tested initially are in yellow highlight.

Table 14.4-7: Reported SAR of initial test configuration for Body

802.11 mode	a	n		ac		
BW(MHz)	20	20	40	20	40	80
U-NII-1	36/40/44/48	36/40/44/48	38/46	36/40/44/48	38/46	42
U-NII-2A	52/56/60/64 0.42	52/56/60/64	54/62	52/56/60/64	54/62	58
U-NII-2C	100/104/108/112/116/120/124 /128/132/136/140/144 0.57	100/104/108/112 116/132/136/140	102/110/118/ 126/134	100/104/108/112 116/132/136/140	102/110 /134	106
U-NII-3	149/153/157/161/165 0.24	149/153/157/161/ 165	151/159	149/153/157/161 /165	151/159	155

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. Highest measured output power channel tested initially are in yellow highlight.

Table 14.4-8: SAR Values (WLAN - Head) – 802.11a 18Mbps

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.										
56	5280	Left	Touch	/	15.45	15.5	0.130	0.13	0.335	0.34	0.03
56	5280	Left	Tilt	/	15.45	15.5	0.128	0.13	0.340	0.34	0.14
56	5280	Right	Touch	Fig.25	15.45	15.5	0.153	0.15	0.479	0.48	-0.06
56	5280	Right	Tilt	/	15.45	15.5	0.132	0.13	0.384	0.39	0.03
132	5660	Left	Touch	/	16.46	16.5	0.072	0.07	0.192	0.19	-0.13
132	5660	Left	Tilt	/	16.46	16.5	0.067	0.07	0.186	0.19	0.03
132	5660	Right	Touch	/	16.46	16.5	0.081	0.08	0.262	0.26	0.03
132	5660	Right	Tilt	/	16.46	16.5	0.069	0.07	0.210	0.21	0.06
128	5640	Left	Touch	/	16.79	17	0.023	0.02	0.075	0.08	0.13
165	5825	Left	Touch	/	16.79	17	0.021	0.02	0.071	0.07	0.06
165	5825	Left	Tilt	/	16.79	17	0.018	0.02	0.065	0.07	-0.12
165	5825	Right	Touch	/	16.79	17	0.016	0.02	0.052	0.05	0.04
165	5825	Right	Tilt	/	15.45	15.5	0.130	0.13	0.335	0.34	0.03

Table 14.4-9: SAR Values (WLAN - Body) – 802.11a 18Mbps

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.									
56	5280	Front	/	16.46	16.5	0.047	0.05	0.127	0.13	0.00
56	5280	Rear	/	16.46	16.5	0.110	0.11	0.355	0.36	0.08
56	5280	Left	/	16.46	16.5	0.019	0.02	0.042	0.04	-0.04
56	5280	Right	/	16.46	16.5	0.015	0.02	0.045	0.05	0.07
56	5280	Top	/	16.46	16.5	0.086	0.09	0.224	0.23	0.05
132	5660	Front	/	17.18	17.5	0.098	0.11	0.284	0.31	0.04
132	5660	Rear	/	17.18	17.5	0.107	0.12	0.302	0.33	-0.07
132	5660	Left	/	17.18	17.5	0.071	0.08	0.176	0.19	0.11
132	5660	Right	/	17.18	17.5	0.073	0.08	0.187	0.20	0.13
132	5660	Top	Fig.26	17.18	17.5	0.169	0.18	0.467	0.50	-0.05
165	5825	Front	/	17.37	18	0.032	0.04	0.066	0.08	-0.05
165	5825	Rear	/	17.37	18	0.035	0.04	0.126	0.15	0.09
165	5825	Left	/	17.37	18	0.021	0.02	0.039	0.04	0.06
165	5825	Right	/	17.37	18	0.025	0.03	0.049	0.06	-0.12
165	5825	Top	/	17.37	18	0.062	0.07	0.182	0.21	0.09

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

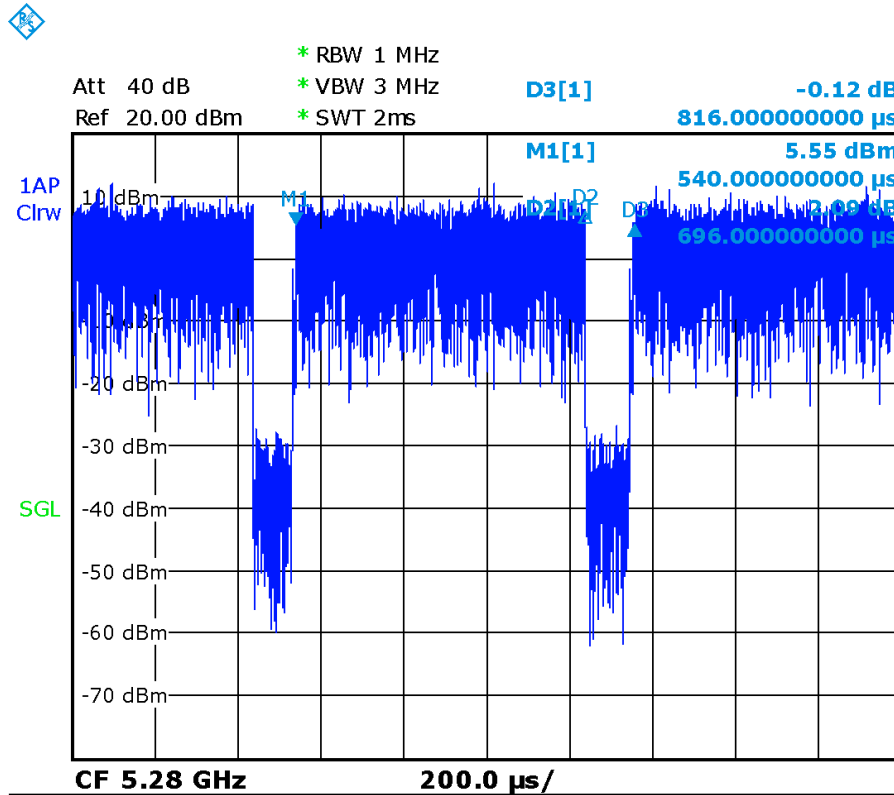
According to the KDB248227 D01, The reported SAR must be scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit. The scaled reported SAR is presented as below.

Table 14.4-10: SAR Values (WLAN - Head) – 802.11a 18Mbps (Scaled Reported SAR)

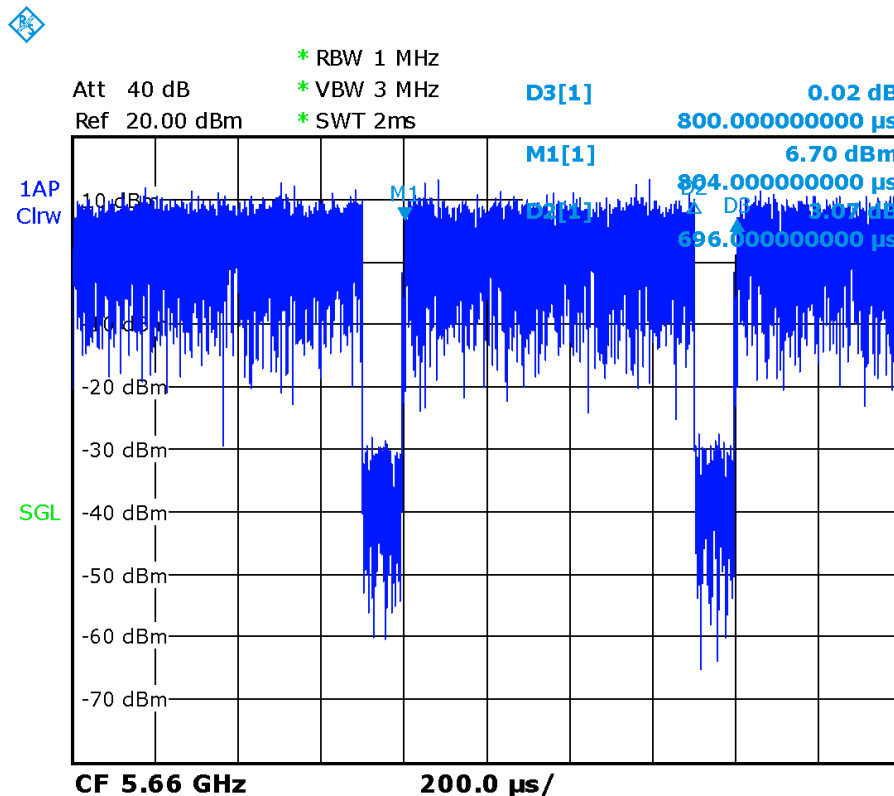
Frequency		Side	Test Position	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
MHz	Ch.						
5280	56	Right	Touch	85.29%	100%	0.48	0.56
5660	132	Right	Touch	87%	100%	0.26	0.30
5825	165	Left	Touch	86.93%	100%	0.08	0.09

Table 14.4-11: SAR Values (WLAN - Body) – 802.11a 18Mbps (Scaled Reported SAR)

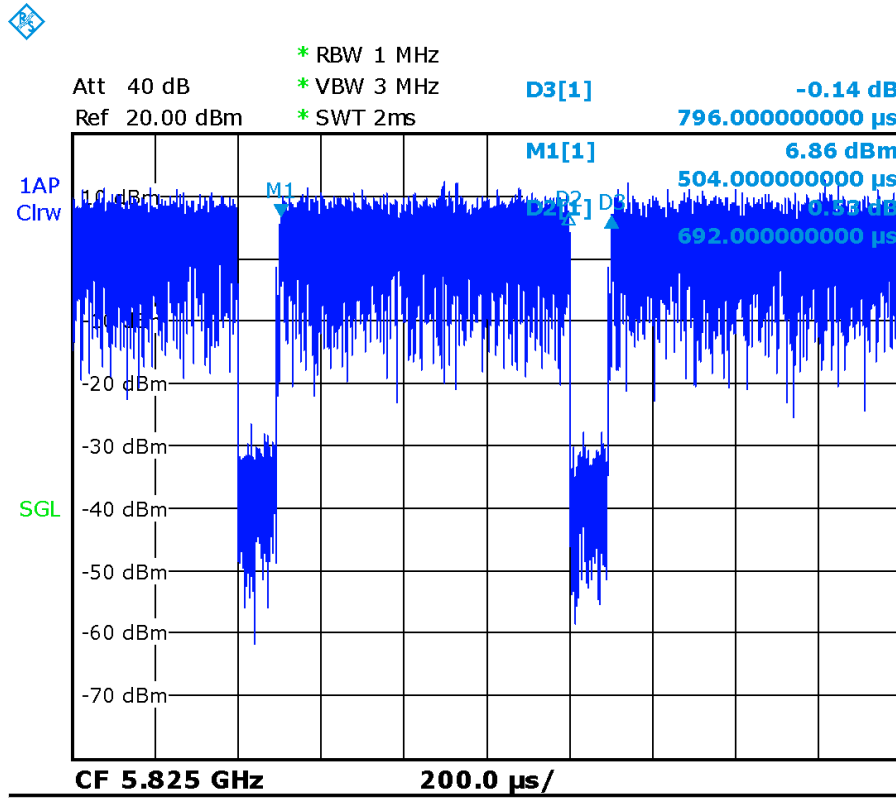
Frequency		Test Position	D (mm)	Actual duty factor	maximum duty factor	Reported SAR (1g) (W/kg)	Scaled reported SAR (1g) (W/kg)
MHz	Ch.						
5280	56	Rear	10	86.43%	100%	0.36	0.42
5660	132	Top	10	87.44%	100%	0.50	0.57
5825	165	Top	10	86.93%	100%	0.21	0.24



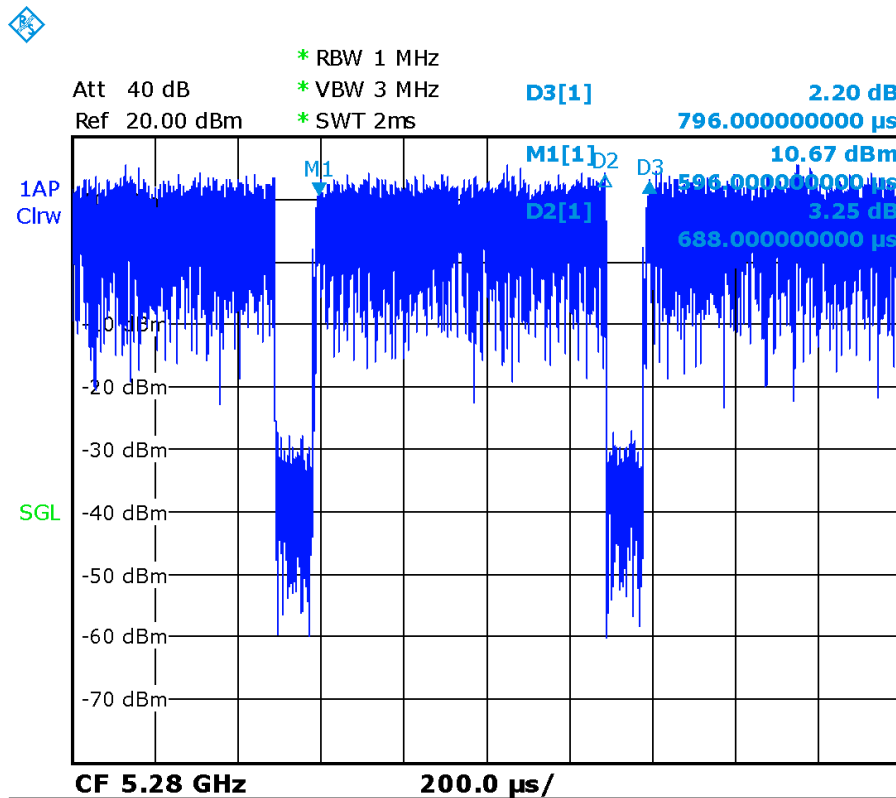
Picture 14.3 The plot of duty factor for U-NII-2A (Head)



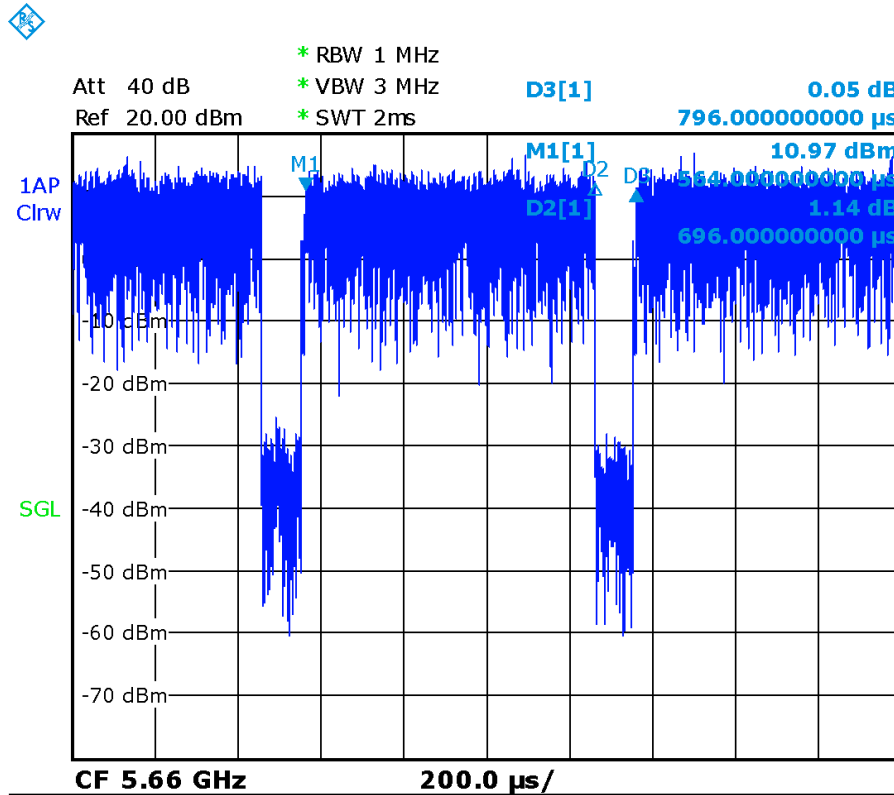
Picture 14.4 The plot of duty factor for U-NII-2C (Head)



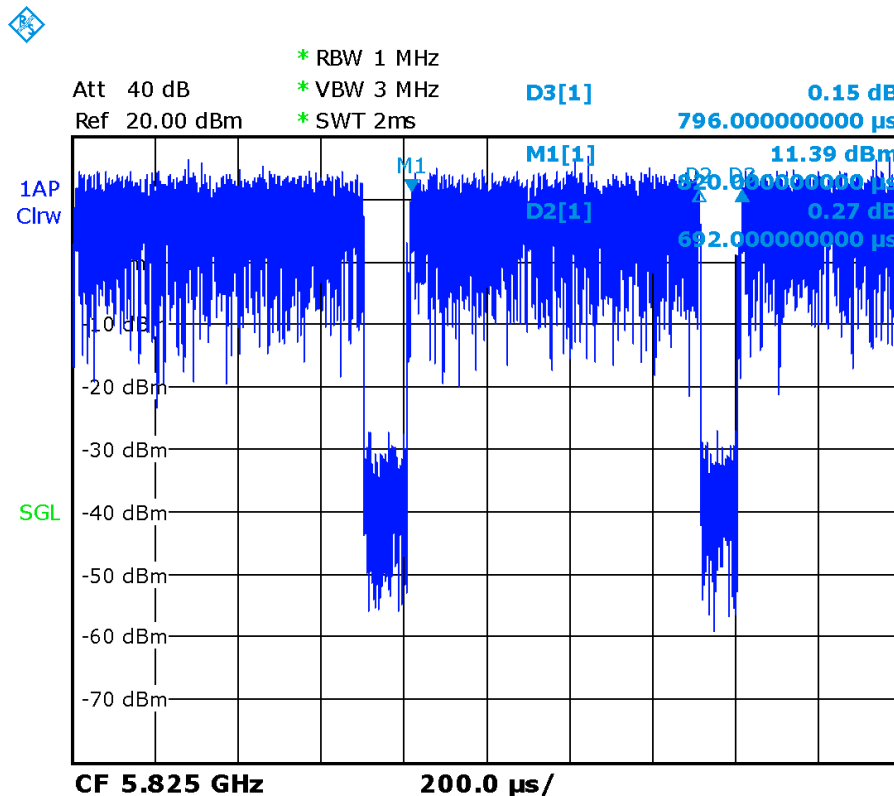
Picture 14.5 The plot of duty factor for U-NII-3 (Head)



Picture 14.6 The plot of duty factor for U-NII-2A (Body)



Picture 14.7 The plot of duty factor for U-NII-2C (Body)



Picture 14.8 The plot of duty factor for U-NII-3 (Body)

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 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						
1537	1712.4	Rear	10	1.07	1.06	1.01	/

Table 15.2: SAR Measurement Variability for Body W1900 (1g)

Frequency		Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz						
9938	1907.6	Rear	10	1.08	1.06	1.02	/

Table 15.3: SAR Measurement Variability for Body LTE B2 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
19100	1900	1RB_Mid	Rear	10	1.03	1.02	1.01	/

Table 15.4: SAR Measurement Variability for Body LTE B4 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
20050	1720	1RB_Low	Rear	10	0.952	0.945	1.01	/

Table 15.5: SAR Measurement Variability for Body LTE B7 (1g)

Frequency		Mode	Test Position	Spacing (mm)	Original SAR (W/kg)	First Repeated SAR (W/kg)	The Ratio	Second Repeated SAR (W/kg)
Ch.	MHz							
21100	2535	1RB_High	Rear	10	0.808	0.801	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 24, 2018	One year
02	Power meter	NRVD	102083	November 01, 2017	One year
03	Power sensor	NRV-Z5	100542		
04	Signal Generator	E4438C	MY49071430	January 2, 2018	One Year
05	Amplifier	60S1G4	0331848	No Calibration Requested	
06	BTS	E5515C	MY50263375	January 23, 2018	One year
07	BTS	CMW500	149646	October 31, 2017	One year
08	E-field Probe	SPEAG EX3DV4	7464	September 12, 2017	One year
09	DAE	SPEAG DAE4	1525	October 2, 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	1060	July 25, 2017	One year

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