

FCC SAR Test Report

APPLICANT : Xiaomi Communications Co., Ltd.
EQUIPMENT : Mobile Phone
BRAND NAME : POCO
MODEL NAME : 25062PC34G
FCC ID : 2AFZZPC34G
STANDARD : FCC 47 CFR Part 2 (2.1093)

We, Sporton International Inc. (Kunshan), would like to declare that the tested sample has been evaluated in accordance with the test procedures given in 47 CFR Part 2.1093 and FCC KDB and has been in compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of Sporton International Inc. (Kunshan), the test report shall not be reproduced except in full.



Approved by: Si Zhang

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1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Xiaomi Communications Co., Ltd., Mobile Phone, 25062PC34G**, are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 10mm)	Body-worn (Separation 15mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	0.55	0.18	0.19	1.58
		GSM1900	0.85	0.70	0.21	
	WCDMA	WCDMA II	1.00	1.00	0.56	
		WCDMA IV	1.01	0.80	1.07	
		WCDMA V	1.09	0.48	0.27	
	LTE	LTE Band 2	1.08	1.06	0.60	
		LTE Band 7	1.07	1.09	0.71	
		LTE Band 26/5	1.08	0.47	0.24	
		LTE Band 66/4	1.08	0.99	1.08	
		LTE Band 41/38	1.08	1.09	0.49	
DTS	WLAN	2.4GHz WLAN	1.08	0.53	0.21	1.50
NII		5GHz WLAN	1.08	1.07	0.32	1.58
DSS	Bluetooth	2.4GHz Bluetooth	0.13	0.04	<0.10	1.10
Highest 10g SAR Summary						
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)			Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	WCDMA	WCDMA IV	2.29			3.75
	LTE	LTE Band 66/4	2.38			
NII	WLAN	5GHz WLAN	1.36			3.75
Date of Testing:			2025/5/12 ~ 2025/5/19			

Declaration of Conformity:
 The test results with all measurement uncertainty excluded are presented in accordance with the regulation limits or requirements declared by manufacturers.

Comments and Explanations:
 The declared of product specification for EUT presented in the report are provided by the manufacturer, and the manufacturer takes all the responsibilities for the accuracy of product specification.

This device is in compliance with Specific Absorption Rate (SAR) for general population/uncontrolled exposure limits (1.6 W/kg for Partial-Body 1g SAR, 4.0 W/kg for Product Specific 10g SAR) specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1992, and had been tested in accordance with the measurement methods and procedures specified in IEEE 1528-2013 and FCC KDB publications.

2. Administration Data

Sporton International Inc. (Kunshan) is accredited to ISO/IEC 17025:2017 by American Association for Laboratory Accreditation with Certificate Number 5145.01.

Testing Laboratory			
Test Firm	Sporton International Inc. (Kunshan)		
Test Site Location	No. 1098, Pengxi North Road, Kunshan Economic Development Zone Jiangsu Province 215300 People's Republic of China TEL : +86-512-57900158		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR01-KS	CN1257	314309

Applicant	
Company Name	Xiaomi Communications Co., Ltd.
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

Manufacturer	
Company Name	Xiaomi Communications Co., Ltd.
Address	#019, 9th Floor, Building 6, 33 Xi'erqi Middle Road, Haidian District, Beijing, China, 100085

3. Data Reuse Approach

3.1 Introduction Section

This application re-uses data collected on a similar device, FCC ID: 2AFZZRN2DL (reference model) and FCC ID: 2AFZZPC34G (variant model). Due to the same design are identical between parent model and variant model, SAR data reuse is requested and spot check data in this report is used to justify the SAR data reuse.

Per KDB 484596 D01 v02r03, the deviation of variant model 1g SAR and 10g SAR spot check result was no larger than 3 dB, the WWAN/WLAN/BT max SAR summary was always choose the higher SAR between parent model and variant model.

The applicant should take full responsibility that the test data as referenced in this report represent compliance for this FCC ID: 2AFZZPC34G

3.2 Model Difference Information

The **main** difference between FCC ID: 2AFZZRN2DL and FCC ID: 2AFZZPC34G is as below:

- Removed LTE Band 13.
- Added LTE Band20 and NFC function.

Other differences and all the details of similarity and difference can be found in the confidential documents (25062PC34G_Operational Description of Product Equality Declaration).

3.3 Reference detail Section

Rule Part	Equipment Class	Wireless Technology	Frequency Band (MHz)	FCC ID (Reference)	Type Grant/ Permissive Change	Reference Title	FCC ID Filling (Variant)	Test on the variant
Part 2.1093	PCE	GSM	GSM850/1900	2AFZZRN2DL	Original Grant	FA542103	2AFZZPC34G	Spot check
		WCDMA	B2/4/5	2AFZZRN2DL	Original Grant	FA542103	2AFZZPC34G	Spot check
		LTE	B2/4/5/7/26/38/41/66	2AFZZRN2DL	Original Grant	FA542103	2AFZZPC34G	Spot check
	DTS	BLE/ WiFi	2400~2483.5	2AFZZRN2DL	Original Grant	FA542103	2AFZZPC34G	Spot check
	NII	Wi-Fi	5150 ~ 5250 5250 ~ 5350 5470 ~ 5725 5725 ~ 5850	2AFZZRN2DL	Original Grant	FA542103	2AFZZPC34G	Spot check
	DSS	Bluetooth	2400~2483.5	2AFZZRN2DL	Original Grant	FA542103	2AFZZPC34G	Spot check
	DXX	NFC	13.56				2AFZZPC34G	Full Test

4. Guidance Applied

The Specific Absorption Rate (SAR) testing specification, method, and procedure for this device is in accordance with the following standards:

- FCC 47 CFR Part 2 (2.1093)
- ANSI/IEEE C95.1-1992
- IEEE 1528-2013
- FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz v01r04
- FCC KDB 865664 D02 SAR Reporting v01r02
- FCC KDB 447498 D01 General RF Exposure Guidance v06
- FCC KDB 648474 D04 SAR Evaluation Considerations for Wireless Handsets v01r03
- FCC KDB 248227 D01 802.11 Wi-Fi SAR v02r02
- FCC KDB 616217 D04 SAR for laptop and tablets v01r02
- FCC KDB 941225 D01 3G SAR Procedures v03r01
- FCC KDB 941225 D05 SAR for LTE Devices v02r05
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01
- FCC KDB 484596 D01 Referencing Test Data v02r03

5. Equipment Under Test (EUT) Information

5.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Phone
Brand Name	POCO
Model Name	25062PC34G
FCC ID	2AFZZPC34G
IMEI Code	Sample 1: 866694070007920/866694070007938, 866694070008126/866694070008134, 866694070007680/866694070007698 Sample 2: 866694070011245/866694070011252
Wireless Technology and Frequency Range	GSM850: 824 MHz ~ 849 MHz GSM1900: 1850 MHz ~ 1910 MHz WCDMA Band II: 1850 MHz ~ 1910 MHz WCDMA Band IV: 1710 MHz ~ 1755 MHz WCDMA Band V: 824 MHz ~ 849 MHz LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz WLAN 2.4GHz Band: 2412 MHz ~ 2462 MHz WLAN 5.2GHz Band: 5180 MHz ~ 5240 MHz WLAN 5.3GHz Band: 5260 MHz ~ 5320 MHz WLAN 5.5GHz Band: 5500 MHz ~ 5700 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz Bluetooth: 2402 MHz ~ 2480 MHz NFC : 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is supported) LTE: QPSK, 16QAM, 64QAM WLAN 2.4GHz 802.11b/g/n HT20 WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac VHT20/VHT40/VHT80 Bluetooth BR/EDR/LE NFC:ASK
HW Version	13510O19A
SW Version	Xiaomi HyperOS 2.0
GSM / (E)GPRS Transfer mode	Class B – EUT cannot support Packet Switched and Circuit Switched Network simultaneously but can automatically switch between Packet and Circuit Switched Network.
EUT Stage	Identical Prototype
Remark:	
<ol style="list-style-type: none"> This device supports VoIP in GPRS, EGPRS, WCDMA, LTE and 5GNR (e.g. for 3rd-party VoIP), LTE supports VoLTE operation. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications. This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WiFi Direct (GC/GO), and 5.3GHz / 5.5GHz supports WiFi Direct (GC only). This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 33. This device supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a 	



time (single active).

- 6. The device implements Proximity sensors/receiver detect mechanism/hotspot mode reduced power for the power management for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity). The device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to appendix E. power table.
- 7. For WLAN when transmit simultaneously with each other, or when transmit simultaneous with WWAN/BT, the WLAN power reduction will be activated to head, and hotspot exposure conditions.
- 8. There are three samples and the differences are as the following table shows. According to the difference, sample 1 was chosen to perform full test and sample 2 verified the worst cases. For sample 1 and sample 3, only memory and battery Manufacturer is different, the differences do not affect the test, so sample 3 is not tested.

Sample	Memory	Battery	Screen	Motor
Sample 1	6+128G	Battery 3	1st Screen	1st Motor
Sample 2	8+128G	Battery 2	2nd Screen	2nd Motor
Sample 3	8+256G	Battery 1	1st Screen	1st Motor

- 9. This device has NFC function and the NFC SAR report will be separately submitted.

5.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05																																																															
FCC ID	2AFZZPC34G																																																														
Equipment Name	Mobile Phone																																																														
Operating Frequency Range of each LTE transmission band	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 7: 2500 MHz ~ 2570 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 66: 1710 MHz ~ 1780 MHz																																																														
Channel Bandwidth	LTE Band 2: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 4: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz LTE Band 5: 1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 7: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 26: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz LTE Band 38: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 41: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66: 1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz																																																														
uplink modulations used	QPSK / 16QAM / 64QAM																																																														
LTE Voice / Data requirements	Voice and Data																																																														
LTE Release Version	R10																																																														
CA Support	Not Supported																																																														
LTE MPR permanently built-in by design	<p>Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3</p> <table border="1"> <thead> <tr> <th rowspan="2">Modulation</th> <th colspan="6">Channel bandwidth / Transmission bandwidth (N_{RB})</th> <th rowspan="2">MPR (dB)</th> </tr> <tr> <th>1.4 MHz</th> <th>3.0 MHz</th> <th>5 MHz</th> <th>10 MHz</th> <th>15 MHz</th> <th>20 MHz</th> </tr> </thead> <tbody> <tr> <td>QPSK</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 1</td> </tr> <tr> <td>16 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>≤ 5</td> <td>≤ 4</td> <td>≤ 8</td> <td>≤ 12</td> <td>≤ 16</td> <td>≤ 18</td> <td>≤ 2</td> </tr> <tr> <td>64 QAM</td> <td>> 5</td> <td>> 4</td> <td>> 8</td> <td>> 12</td> <td>> 16</td> <td>> 18</td> <td>≤ 3</td> </tr> <tr> <td>256 QAM</td> <td colspan="6">≥ 1</td> <td>≤ 5</td> </tr> </tbody> </table>	Modulation	Channel bandwidth / Transmission bandwidth (N _{RB})						MPR (dB)	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1	16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1	16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2	64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2	64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3	256 QAM	≥ 1						≤ 5
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256 QAM	≥ 1						≤ 5																																																								
LTE A-MPR	In the base station simulator configuration, Network Setting value is set to NS_01 to disable A-MPR during SAR testing and the LTE SAR tests was transmitting on all TTI frames (Maximum TTI)																																																														
Spectrum plots for RB configuration	A properly configured base station simulator was used for the SAR and power measurement; therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.																																																														
Power reduction applied to satisfy SAR compliance	Yes, when operating in Proximity sensors/receiver detect mechanism/hotspot mode, head/body -worn /hotspot/extremity will trigger reduced power for some bands applied to satisfy SAR compliance, the detail please referred to section 14.																																																														



Transmission (H, M, L) channel numbers and frequencies in each LTE band												
LTE Band 2												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	18607	1850.7	18615	1851.5	18625	1852.5	18650	1855	18675	1857.5	18700	1860
M	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880	18900	1880
H	19193	1909.3	19185	1908.5	19175	1907.5	19150	1905	19125	1902.5	19100	1900

LTE Band 4												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	19957	1710.7	19965	1711.5	19975	1712.5	20000	1715	20025	1717.5	20050	1720
M	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5	20175	1732.5
H	20393	1754.3	20385	1753.5	20375	1752.5	20350	1750	20325	1747.5	20300	1745

LTE Band 5										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20407	824.7	20415	825.5	20425	826.5	20450	829		
M	20525	836.5	20525	836.5	20525	836.5	20525	836.5	20525	836.5
H	20643	848.3	20635	847.5	20625	846.5	20600	844		

LTE Band 7										
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510		
M	21100	2535	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560		

LTE Band 13						
	Bandwidth 5 MHz			Bandwidth 10 MHz		
	Channel #	Freq.(MHz)		Channel #	Freq.(MHz)	
L	23205	779.5		23230	782	
M	23230	782				
H	23255	784.5				

LTE Band 26										
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	26697	814.7	26705	815.5	26715	816.5	26740	819	26765	821.5
M	26865	831.5	26865	831.5	26865	831.5	26865	831.5	26865	831.5
H	27033	848.3	27025	847.5	27015	846.5	26990	844	26965	841.5

LTE Band 38										
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz			
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580		
M	38000	2595	38000	2595	38000	2595	38000	2595	38000	2595
H	38225	2617.5	38200	2615	38175	2612.5	38150	2610		

LTE Band 41												
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz					
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	39675	2498.5	39700	2501	39725	2503.5	39750	2506				
LM	40148	2545.8	40160	2547	40173	2548.3	40185	2549.5				
M	40620	2593	40620	2593	40620	2593	40620	2593				
HM	41093	2640.3	41080	2639	41068	2637.8	41055	2636.5				
H	41565	2687.5	41540	2685	41515	2682.5	41490	2680				

LTE Band 66												
	Bandwidth 1.4 MHz		Bandwidth 3 MHz		Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	131979	1710.7	131987	1711.5	131997	1712.5	132022	1715	132047	1717.5	132072	1720
M	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745	132322	1745
H	132665	1779.3	132657	1778.5	132647	1777.5	132622	1775	132597	1772.5	132572	1770

<For LTE Overlap Bands Description>

1) LTE Bands BW

Band	1.4 MHz	3 MHz	5 MHz	10 MHz	15 MHz	20 MHz
LTE Band 4	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 66	Yes	Yes	Yes	Yes	Yes	Yes
LTE Band 5	Yes	Yes	Yes	Yes		
LTE Band 26	Yes	Yes	Yes	Yes	Yes	
LTE Band 38			Yes	Yes	Yes	Yes
LTE Band 41			Yes	Yes	Yes	Yes

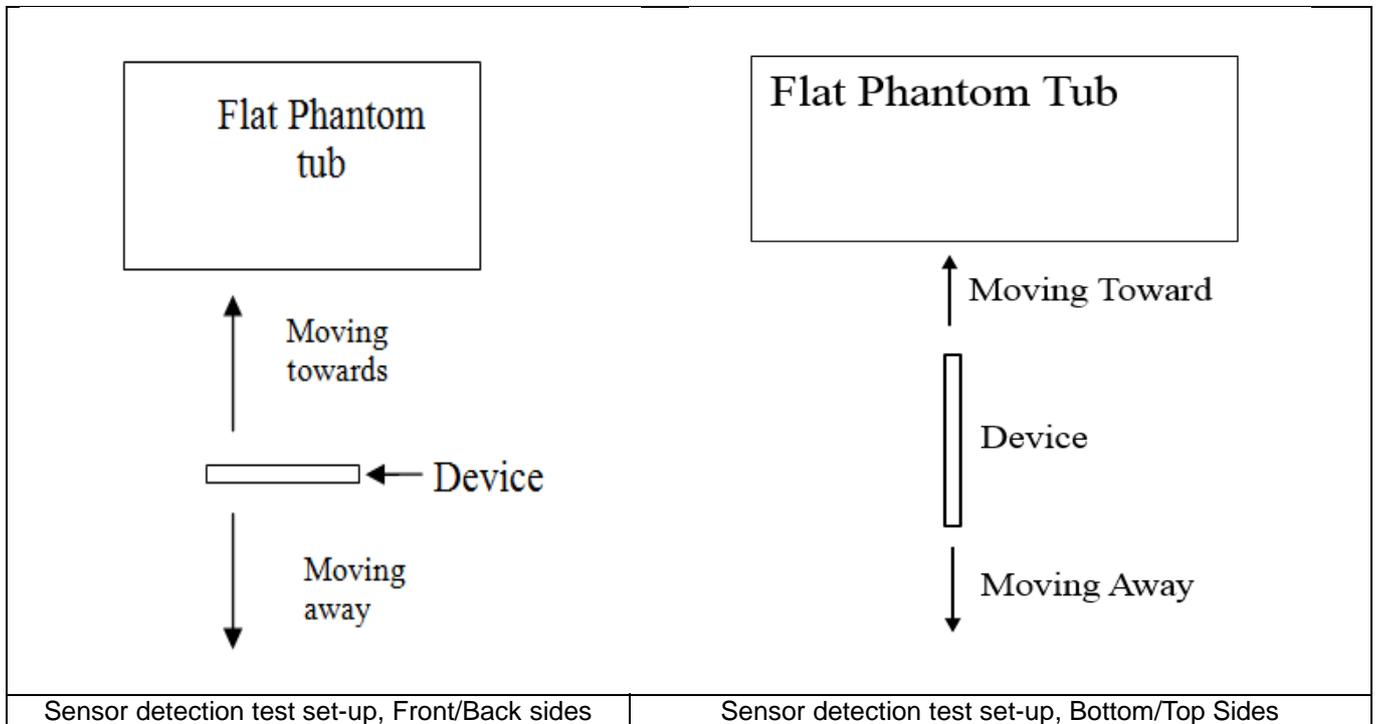
2) LTE Bands tune up:

Band	Antenna	Head	Extremity	Body worn	Hotspot	Default Tune-up Limit
		DSI 1	DSI 3	DSI 4	DSI 5	
		Tune-up Limit	Tune-up Limit	Tune-up Limit	Tune-up Limit	
LTE Band 66(4)	Ant 1	25.5	23.0	25.5	23.0	25.5
LTE Band 66(4)	Ant 4	15.5	18.5	23.5	15.5	25.5
LTE Band 26(5)	Ant 1	25.5	25.5	25.5	25.5	25.5
LTE Band 26(5)	Ant 4	23.5	25.5	25.5	23.5	25.5
LTE Band 41(38)	Ant 1	25.5	24.0	25.5	24.0	25.5
LTE Band 41(38)	Ant 4	21.5	22.0	25.5	22.0	25.5

6. Proximity Sensor Triggering Test

<Proximity Sensor Triggering Distance>:

1. Proximity sensor triggering distance testing was performed according to the procedures outlined in KDB 616217 D04 section 6.2, and EUT moving further away from the flat phantom and EUT moving toward the flat phantom were both assessed and the tissue-equivalent medium for highest frequency (2600MHz) and lowest (835MHz) frequency was used for proximity sensor triggering testing.
2. Capacitive proximity sensors placed coincident with antenna elements at the top and bottom ends of the phone are utilized to determine when the device comes in proximity of the user's body or finger or hand at the back or bottom or top side of the device. There is no need to do sensor coverage testing for the proximity sensor is designed to support sufficient detection range and sensitivity to cover regions of the sensors in all applicable directions since the proximity sensor entirely covers the antenna.
3. The sensors can use to detect the proximity of the user's body or handheld states at the front or back or bottom or top side of the device use a detection threshold distance. When front/back/top/bottom sides of body or handheld condition is detected reduced power will be active. The trigger distance shown in the sections below.
4. For verification of compliance of power reduction scheme, additional SAR testing with EUT transmitting at full RF power at a conservative trigger distance -1mm was performed:



<P-Sensor>

< Sensor for Ant1>

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	12	12	18	18	18	18

< Sensor for Ant4>

Proximity Sensor Triggering Distance (mm)						
Position	Front		Back		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	12	12	18	18	18	18

7. RF Exposure Limits

7.1 Uncontrolled Environment

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure. The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity.

7.2 Controlled Environment

Controlled Environments are defined as locations where there is exposure that may be incurred by persons who are aware of the potential for exposure, (i.e. as a result of employment or occupation). In general, occupational/controlled exposure limits are applicable to situations in which persons are exposed as a consequence of their employment, who have been made fully aware of the potential for exposure and can exercise control over their exposure. The exposure category is also applicable when the exposure is of a transient nature due to incidental passage through a location where the exposure levels may be higher than the general population/uncontrolled limits, but the exposed person is fully aware of the potential for exposure and can exercise control over his or her exposure by leaving the area or by some other appropriate means.

Limits for Occupational/Controlled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.4	8.0	20.0

Limits for General Population/Uncontrolled Exposure (W/kg)

Whole-Body	Partial-Body	Hands, Wrists, Feet and Ankles
0.08	1.6	4.0

Whole-Body SAR is averaged over the entire body, partial-body SAR is averaged over any 1gram of tissue defined as a tissue volume in the shape of a cube. SAR for hands, wrists, feet and ankles is averaged over any 10 grams of tissue defined as a tissue volume in the shape of a cube.

8. Specific Absorption Rate (SAR)

8.1 Introduction

SAR is related to the rate at which energy is absorbed per unit mass in an object exposed to a radio field. The SAR distribution in a biological body is complicated and is usually carried out by experimental techniques or numerical modeling. The standard recommends limits for two tiers of groups, occupational/controlled and general population/uncontrolled, based on a person's awareness and ability to exercise control over his or her exposure. In general, occupational/controlled exposure limits are higher than the limits for general population/uncontrolled.

8.2 SAR Definition

The SAR definition is the time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dv) of a given density (ρ). The equation description is as below:

$$\text{SAR} = \frac{d}{dt} \left(\frac{dW}{dm} \right) = \frac{d}{dt} \left(\frac{dW}{\rho dv} \right)$$

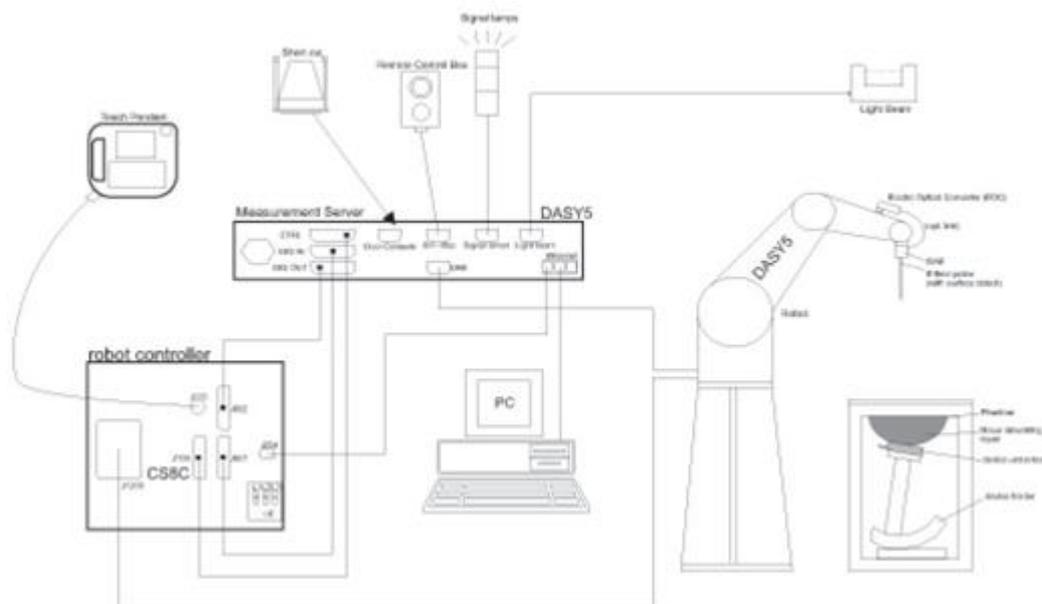
SAR is expressed in units of Watts per kilogram (W/kg)

$$\text{SAR} = \frac{\sigma |E|^2}{\rho}$$

Where: σ is the conductivity of the tissue, ρ is the mass density of the tissue and E is the RMS electrical field strength.

9. System Description and Setup

The DASY5 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win7 or Win10 and the DASY5 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

9.1 E-Field Probe

The SAR measurement is conducted with the dosimetric probe (manufactured by SPEAG).The probe is specially designed and calibrated for use in liquid with high permittivity. The dosimetric probe has special calibration in liquid at different frequency. This probe has a built in optical surface detection system to prevent from collision with phantom.

<ES3DV3 Probe>

Construction	Symmetric design with triangular core Interleaved sensors Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	10 MHz – 4 GHz; Linearity: ±0.2 dB (30 MHz – 4 GHz)	
Directivity	±0.2 dB in TSL (rotation around probe axis) ±0.3 dB in TSL (rotation normal to probe axis)	
Dynamic Range	5 µW/g – >100 mW/g; Linearity: ±0.2 dB	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 3.9 mm (body: 12 mm) Distance from probe tip to dipole centers: 2.0 mm	

<EX3DV4 Probe>

Construction	Symmetric design with triangular core Built-in shielding against static charges PEEK enclosure material (resistant to organic solvents, e.g., DGBE)	
Frequency	4 MHz – 10 GHz Linearity: ±0.2 dB (30 MHz – 10 GHz)	
Directivity	±0.3 dB in TSL (rotation around probe axis) ±0.5 dB in TSL (rotation normal to probe axis)	
Dynamic Range	10 µW/g – >100 mW/g Linearity: ±0.2 dB (noise: typically <1 µW/g)	
Dimensions	Overall length: 337 mm (tip: 20 mm) Tip diameter: 2.5 mm (body: 12 mm) Typical distance from probe tip to dipole centers: 1 mm	

9.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE) consists of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16 bit AD-converter and a command decoder and control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information as well as an optical uplink for commands and the clock.

The input impedance of the DAE is 200 MOhm; the inputs are symmetrical and floating. Common mode rejection is above 80 dB.



Photo of DAE

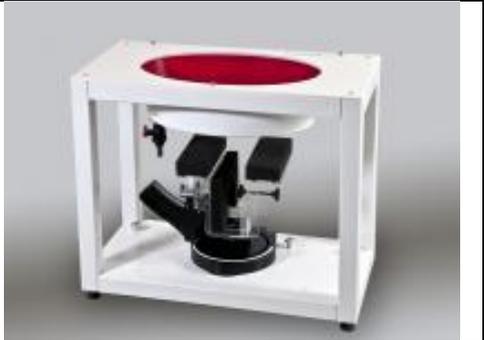
9.3 Phantom

<SAM Twin Phantom>

Shell Thickness	2 ± 0.2 mm; Center ear point: 6 ± 0.2 mm	
Filling Volume	Approx. 25 liters	
Dimensions	Length: 1000 mm; Width: 500 mm; Height: adjustable feet	
Measurement Areas	Left Hand, Right Hand, Flat Phantom	

The bottom plate contains three pair of bolts for locking the device holder. The device holder positions are adjusted to the standard measurement positions in the three sections. A white cover is provided to tap the phantom during off-periods to prevent water evaporation and changes in the liquid parameters. On the phantom top, three reference markers are provided to identify the phantom position with respect to the robot.

<ELI Phantom>

Shell Thickness	2 ± 0.2 mm (sagging: <1%)	
Filling Volume	Approx. 30 liters	
Dimensions	Major ellipse axis: 600 mm Minor axis: 400 mm	

The ELI phantom is intended for compliance testing of handheld and body-mounted wireless devices or for evaluating transmitters operating at low frequencies. ELI is fully compatible with standard and all known tissue simulating liquids.

9.4 Device Holder

<Mounting Device for Hand-Held Transmitter>

In combination with the Twin SAM V5.0/V5.0c or ELI phantoms, the Mounting Device for Hand-Held Transmitters enables rotation of the mounted transmitter device to specified spherical coordinates. At the heads, the rotation axis is at the ear opening. Transmitter devices can be easily and accurately positioned according to IEC 62209-1, IEEE 1528, FCC, or other specifications. The device holder can be locked for positioning at different phantom sections (left head, right head, flat). And upgrade kit to Mounting Device to enable easy mounting of wider devices like big smart-phones, e-books, small tablets, etc. It holds devices with width up to 140 mm.



Mounting Device for Hand-Held Transmitters



Mounting Device Adaptor for Wide-Phones

<Mounting Device for Laptops and other Body-Worn Transmitters>

The extension is lightweight and made of POM, acrylic glass and foam. It fits easily on the upper part of the mounting device in place of the phone positioned. The extension is fully compatible with the SAM Twin and ELI phantoms.



Mounting Device for Laptops

10. Measurement Procedures

The measurement procedures are as follows:

<Conducted power measurement>

- (a) For WWAN power measurement, use base station simulator to configure EUT WWAN transmission in conducted connection with RF cable, at maximum power in each supported wireless interface and frequency band.
- (b) Read the WWAN RF power level from the base station simulator.
- (c) For WLAN/BT power measurement, use engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power in each supported wireless interface and frequency band
- (d) Connect EUT RF port through RF cable to the power meter, and measure WLAN/BT output power

<SAR measurement>

- (a) Use base station simulator to configure EUT WWAN transmission in radiated connection, and engineering software to configure EUT WLAN/BT continuously transmission, at maximum RF power, in the highest power channel.
- (b) Place the EUT in the positions as Appendix D demonstrates.
- (c) Set scan area, grid size and other setting on the DASY software.
- (d) Measure SAR results for the highest power channel on each testing position.
- (e) Find out the largest SAR result on these testing positions of each band
- (f) Measure SAR results for other channels in worst SAR testing position if the reported SAR of highest power channel is larger than 0.8 W/kg

According to the test standard, the recommended procedure for assessing the peak spatial-average SAR value consists of the following steps:

- (a) Power reference measurement
- (b) Area scan
- (c) Zoom scan
- (d) Power drift measurement

10.1 Spatial Peak SAR Evaluation

The procedure for spatial peak SAR evaluation has been implemented according to the test standard. It can be conducted for 1g and 10g, as well as for user-specific masses. The DASY software includes all numerical procedures necessary to evaluate the spatial peak SAR value.

The base for the evaluation is a "cube" measurement. The measured volume must include the 1g and 10g cubes with the highest averaged SAR values. For that purpose, the center of the measured volume is aligned to the interpolated peak SAR value of a previously performed area scan.

The entire evaluation of the spatial peak values is performed within the post-processing engine (SEMCAD). The system always gives the maximum values for the 1g and 10g cubes. The algorithm to find the cube with highest averaged SAR is divided into the following stages:

- (a) Extraction of the measured data (grid and values) from the Zoom Scan
- (b) Calculation of the SAR value at every measurement point based on all stored data (A/D values and measurement parameters)
- (c) Generation of a high-resolution mesh within the measured volume
- (d) Interpolation of all measured values from the measurement grid to the high-resolution grid
- (e) Extrapolation of the entire 3-D field distribution to the phantom surface over the distance from sensor to surface
- (f) Calculation of the averaged SAR within masses of 1g and 10g

10.2 Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

10.3 Area Scan

The area scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum found in the scanned area, within a range of the global maximum. The range (in dB0 is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan), if only one zoom scan follows the area scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of zoom scans has to be increased accordingly.

Area scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	$\frac{1}{2} \cdot \delta \cdot \ln(2) \pm 0.5$ mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	$30^\circ \pm 1^\circ$	$20^\circ \pm 1^\circ$
Maximum area scan spatial resolution: $\Delta x_{Area}, \Delta y_{Area}$	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be \leq the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

10.4 Zoom Scan

Zoom scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 gram and 10 gram of simulated tissue. The zoom scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the zoom scan evaluates the averaged SAR for 1 gram and 10 gram and displays these values next to the job's label.

Zoom scan parameters extracted from FCC KDB 865664 D01v01r04 SAR measurement 100 MHz to 6 GHz.

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: $\Delta x_{Zoom}, \Delta y_{Zoom}$			≤ 2 GHz: ≤ 8 mm $2 - 3$ GHz: ≤ 5 mm*	$3 - 4$ GHz: ≤ 5 mm* $4 - 6$ GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	$3 - 4$ GHz: ≤ 4 mm $4 - 5$ GHz: ≤ 3 mm $5 - 6$ GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1 st two points closest to phantom surface	≤ 4 mm	$3 - 4$ GHz: ≤ 3 mm $4 - 5$ GHz: ≤ 2.5 mm $5 - 6$ GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	$\leq 1.5 \cdot \Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	$3 - 4$ GHz: ≥ 28 mm $4 - 5$ GHz: ≥ 25 mm $5 - 6$ GHz: ≥ 22 mm
Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details. * When zoom scan is required and the <i>reported</i> SAR from the <i>area scan based 1-g SAR estimation</i> procedures of KDB 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.				

10.5 Volume Scan Procedures

The volume scan is used to assess overlapping SAR distributions for antennas transmitting in different frequency bands. It is equivalent to an oversized zoom scan used in standalone measurements. The measurement volume will be used to enclose all the simultaneous transmitting antennas. For antennas transmitting simultaneously in different frequency bands, the volume scan is measured separately in each frequency band. In order to sum correctly to compute the 1g aggregate SAR, the EUT remain in the same test position for all measurements and all volume scan use the same spatial resolution and grid spacing. When all volume scan were completed, the software, SEMCAD postprocessor can combine and subsequently superpose these measurement data to calculating the multiband SAR.

10.6 Power Drift Monitoring

All SAR testing is under the EUT install full charged battery and transmit maximum output power. In DASYS measurement software, the power reference measurement and power drift measurement procedures are used for monitoring the power drift of EUT during SAR test. Both these procedures measure the field at a specified reference position before and after the SAR testing. The software will calculate the field difference in dB. If the power drifts more than 5%, the SAR will be retested.



11. Test Equipment List

Manufacturer	Name of Equipment	Type/Model	Serial Number	Calibration	
				Last Cal.	Due Date
SPEAG	835MHz System Validation Kit	D835V2	4d298	2024/1/26	2026/1/24
SPEAG	1750MHz System Validation Kit	D1750V2	1137	2024/10/15	2025/10/14
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	2024/12/16	2025/12/15
SPEAG	2450MHz System Validation Kit	D2450V2	1095	2024/2/8	2026/2/6
SPEAG	2600MHz System Validation Kit	D2600V2	1112	2023/12/18	2025/12/16
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2022/9/23	2025/9/21
SPEAG	Data Acquisition Electronics	DAE4	1303	2024/12/6	2025/12/5
SPEAG	Data Acquisition Electronics	DAE4	1279	2024/8/20	2025/8/19
SPEAG	Dosimetric E-Field Probe	ES3DV3	3282	2025/1/23	2026/1/22
SPEAG	Dosimetric E-Field Probe	EX3DV4	3857	2025/2/19	2026/2/18
SPEAG	SAM Twin Phantom	SAM Twin	TP-1754	NCR	NCR
SPEAG	SAM Twin Phantom	SAM Twin	TP-1842	NCR	NCR
Beichuang	Thermo-Hygrometer	HTC-1	1949250	2025/1/11	2026/1/10
Beichuang	Thermo-Hygrometer	HTC-1	1949246	2025/1/11	2026/1/10
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2024/7/4	2025/7/3
Agilent	ENA Series Network Analyzer	E5071C	MY46112129	2024/7/4	2025/7/3
SPEAG	Dielectric Probe Kit	DAK-3.5	1144	2024/8/20	2025/8/19
Anritsu	Vector Signal Generator	MG3710A	6201682672	2025/1/3	2026/1/2
Rohde & Schwarz	Power Meter	NRVD	102081	2024/7/4	2025/7/3
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2024/7/4	2025/7/3
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2024/7/4	2025/7/3
R&S	BLUETOOTH TESTER	CBT	101246	2024/7/4	2025/7/3
Rohde & Schwarz	Spectrum Analyzer	FSV7	101631	2024/10/11	2025/10/10
TES	DIGITAC THERMOMETER	TYPE-K	220305411	2025/1/2	2026/1/1
BONN Elektronik	Power Amplifier	BSA 0125-150	076577A	2025/1/6	2026/1/5
ARRA	Power Divider	A3200-2	N/A	Note 1	
MCL	Attenuation1	BW-S10W5+	N/A	Note 1	
MCL	Attenuation2	BW-S10W5+	N/A	Note 1	
MCL	Attenuation3	BW-S10W5+	N/A	Note 1	
BONN	POWER AMPLIFIER	BLMA 0830-3	087193A	Note 1	
BONN	POWER AMPLIFIER	BLMA 2060-2	087193B	Note 1	
Agilent	Dual Directional Coupler	778D	20500	Note 1	
Agilent	Dual Directional Coupler	11691D	MY48151020	Note 1	

Note:

1. Prior to system verification and validation, the path loss from the signal generator to the system check source and the power meter, which includes the amplifier, cable, attenuator and directional coupler, was measured by the network analyzer. The reading of the power meter was offset by the path loss difference between the path to the power meter and the path to the system check source to monitor the actual power level fed to the system check.
2. Referring to KDB 865664 D01v01r04, the dipole calibration interval can be extended to 3 years with justification. The dipoles are also not physically damaged, or repaired during the interval.
3. The justification data of dipole can be found in appendix C. The return loss is < -20dB, within 20% of prior calibration, the impedance is within 5 ohm of prior calibration.

12. System Verification

12.1 Tissue Simulating Liquids

For the measurement of the field distribution inside the SAM phantom with DASY, the phantom must be filled with around 25 liters of homogeneous body tissue simulating liquid. For head SAR testing, the liquid height from the ear reference point (ERP) of the phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.1. For body SAR testing, the liquid height from the center of the flat phantom to the liquid top surface is larger than 15 cm, which is shown in Fig. 11.2.



Fig 11.1 Photo of Liquid Height for Head SAR



Fig 11.2 Photo of Liquid Height for Body SAR

12.2 Tissue Verification

The following tissue formulations are provided for reference only as some of the parameters have not been thoroughly verified. The composition of ingredients may be modified accordingly to achieve the desired target tissue parameters required for routine SAR evaluation.

Frequency (MHz)	Water (%)	Sugar (%)	Cellulose (%)	Salt (%)	Preventol (%)	DGBE (%)	Conductivity (σ)	Permittivity (ϵ_r)
For Head								
835	40.3	57.9	0.2	1.4	0.2	0	0.90	41.5
1800, 1900, 2000	55.2	0	0	0.3	0	44.5	1.40	40.0
2450	55.0	0	0	0	0	45.0	1.80	39.2
2600	54.8	0	0	0.1	0	45.1	1.96	39.0

Simulating Liquid for 5GHz, Manufactured by SPEAG

Ingredients	(% by weight)
Water	64~78%
Mineral oil	11~18%
Emulsifiers	9~15%
Additives and Salt	2~3%

<Tissue Dielectric Parameter Check Results>

Frequency (MHz)	Tissue Type	Liquid Temp. (°C)	Conductivity (σ)	Permittivity (ε _r)	Conductivity Target (σ)	Permittivity Target (ε _r)	Delta (σ) (%)	Delta (ε _r) (%)	Limit (%)	Date
835	Head	22.7	0.921	42.577	0.90	41.50	2.33	2.60	±5	2025/5/12
1750	Head	22.7	1.376	40.633	1.37	40.10	0.44	1.33	±5	2025/5/13
1900	Head	22.7	1.439	39.212	1.40	40.00	2.79	-1.97	±5	2025/5/14
2450	Head	22.6	1.769	39.31	1.80	39.20	-1.72	0.28	±5	2025/5/15
2600	Head	22.6	1.909	38.825	1.96	39.00	-2.60	-0.45	±5	2025/5/16
5250	Head	22.9	4.701	36.368	4.71	35.95	-0.19	1.16	±5	2025/5/17
5600	Head	22.7	5.012	35.962	5.07	35.50	-1.14	1.30	±5	2025/5/18
5750	Head	22.7	5.207	35.734	5.22	35.35	-0.25	1.09	±5	2025/5/19

12.3 System Performance Check Results

Comparing to the original SAR value provided by SPEAG, the verification data should be within its specification of 10 %. Below table shows the target SAR and measured SAR after normalized to 1W input power. The table below indicates the system performance check can meet the variation criterion and the plots can be referred to Appendix A of this report.

Date	Frequency (MHz)	Tissue Type	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 1g SAR (W/kg)	Targeted 1g SAR (W/kg)	Normalized 1g SAR (W/kg)	Deviation (%)	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2025/5/12	835	Head	50	4d298	3282	1303	0.502	9.890	10.04	1.52	0.335	6.450	6.7	3.88
2025/5/13	1750	Head	50	1137	3282	1303	1.670	36.800	33.4	-9.24	0.907	19.600	18.14	-7.45
2025/5/14	1900	Head	50	5d182	3282	1303	1.900	39.800	38	-4.52	1.010	21.000	20.2	-3.81
2025/5/15	2450	Head	50	1095	3282	1303	2.520	52.600	50.4	-4.18	1.180	24.700	23.6	-4.45
2025/5/16	2600	Head	50	1112	3282	1303	2.590	55.100	51.8	-5.99	1.210	24.800	24.2	-2.42
2025/5/17	5250	Head	50	1113	3857	1279	3.950	81.500	79	-3.07	1.130	23.300	22.6	-3.00
2025/5/18	5600	Head	50	1113	3857	1279	3.850	82.600	77	-6.78	1.100	23.700	22	-7.17
2025/5/19	5750	Head	50	1113	3857	1279	4.090	80.800	81.8	1.24	1.170	23.000	23.4	1.74

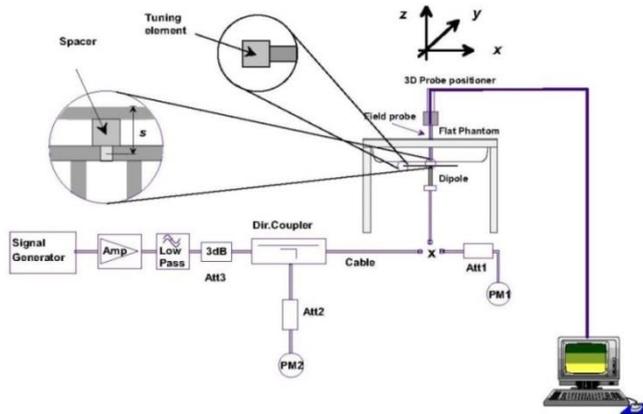


Fig 11.3.1 System Performance Check Setup



Fig 11.3.2 Setup Photo

13. RF Exposure Positions

13.1 Ear and handset reference point

Figure 12.1.1 shows the front, back, and side views of the SAM phantom. The center-of-mouth reference point is labeled “M,” the left ear reference point (ERP) is marked “LE,” and the right ERP is marked “RE.” Each ERP is 15 mm along the B-M (back-mouth) line behind the entrance-to-ear-canal (EEC) point, as shown in Figure 12.1.2 The Reference Plane is defined as passing through the two ear reference points and point M. The line N-F (neck-front), also called the reference pivoting line, is normal to the Reference Plane and perpendicular to both a line passing through RE and LE and the B-M line (see Figure 12.1.3). Both N-F and B-M lines should be marked on the exterior of the phantom shell to facilitate handset positioning. Posterior to the N-F line the ear shape is a flat surface with 6 mm thickness at each ERP, and forward of the N-F line the ear is truncated, as illustrated in Figure 12.1.2. The ear truncation is introduced to preclude the ear lobe from interfering with handset tilt, which could lead to unstable positioning at the cheek.

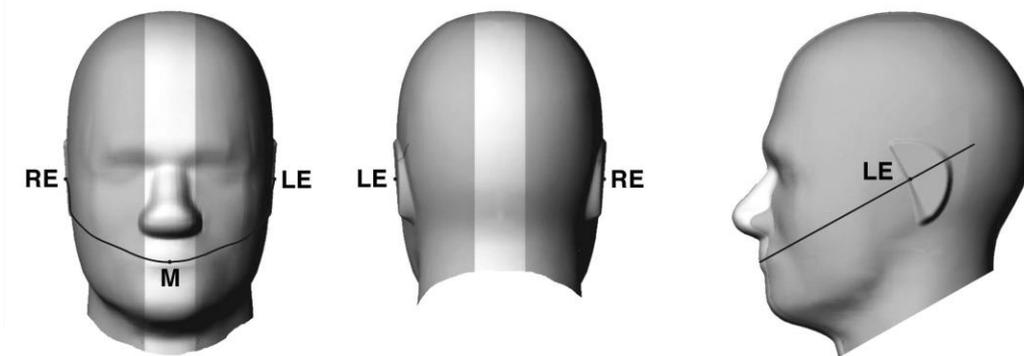


Fig 12.1.1 Front, back, and side views of SAM twin phantom

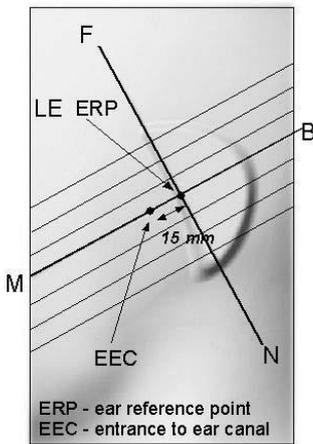


Fig 12.1.2 Close-up side view of phantom showing the ear region.

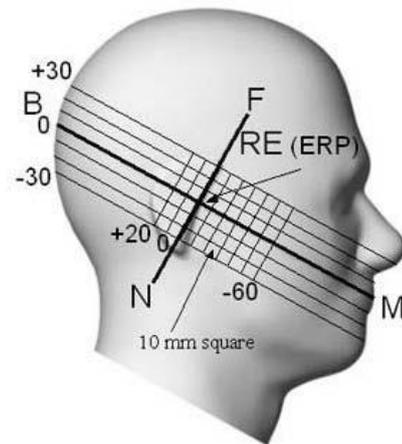


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

13.2 Definition of the cheek position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. Define two imaginary lines on the handset—the vertical centerline and the horizontal line. The vertical centerline passes through two points on the front side of the handset—the midpoint of the width w_t of the handset at the level of the acoustic output (point A in Figure 12.2.1 and Figure 12.2.2), and the midpoint of the width w_b of the bottom of the handset (point B). The horizontal line is perpendicular to the vertical centerline and passes through the center of the acoustic output (see Figure 12.2.1). The two lines intersect at point A. Note that for many handsets, point A coincides with the center of the acoustic output; however, the acoustic output may be located elsewhere on the horizontal line. Also note that the vertical centerline is not necessarily parallel to the front face of the handset (see Figure 12.2.2), especially for clamshell handsets, handsets with flip covers, and other irregularly-shaped handsets.
3. Position the handset close to the surface of the phantom such that point A is on the (virtual) extension of the line passing through points RE and LE on the phantom (see Figure 12.2.3), such that the plane defined by the vertical centerline and the horizontal line of the handset is approximately parallel to the sagittal plane of the phantom.
4. Translate the handset towards the phantom along the line passing through RE and LE until handset point A touches the pinna at the ERP.
5. While maintaining the handset in this plane, rotate it around the LE-RE line until the vertical centerline is in the plane normal to the plane containing B-M and N-F lines, i.e., the Reference Plane.
6. Rotate the handset around the vertical centerline until the handset (horizontal line) is parallel to the N-F line.
7. While maintaining the vertical centerline in the Reference Plane, keeping point A on the line passing through RE and LE, and maintaining the handset contact with the pinna, rotate the handset about the N-F line until any point on the handset is in contact with a phantom point below the pinna on the cheek. See Figure 12.2.3. The actual rotation angles should be documented in the test report.

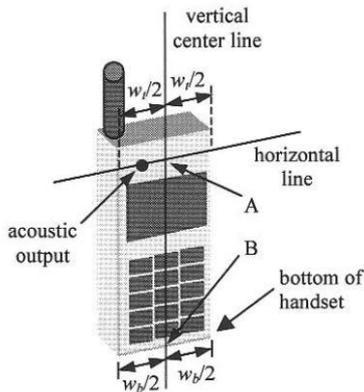


Fig 12.2.1 Handset vertical and horizontal reference lines—“fixed case”

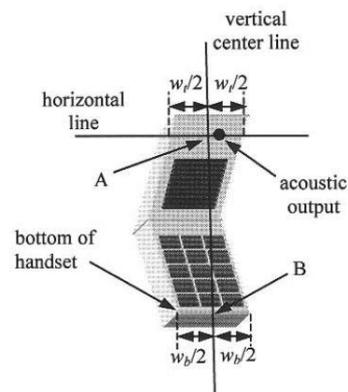


Fig 12.2.2 Handset vertical and horizontal reference lines—“clam-shell case”

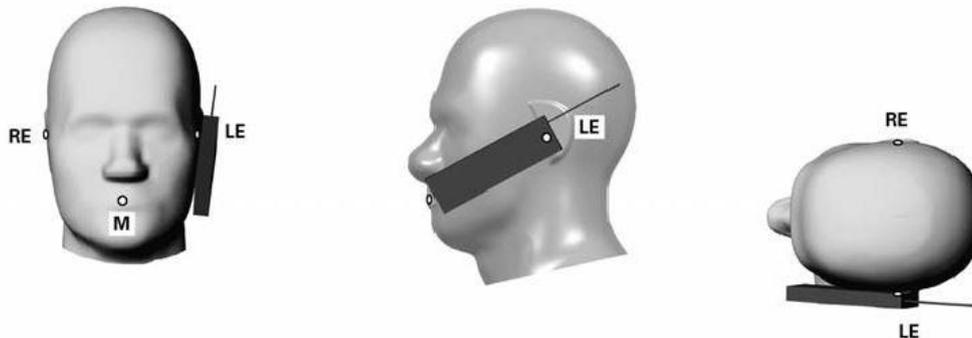


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

13.3 Definition of the tilt position

1. Ready the handset for talk operation, if necessary. For example, for handsets with a cover piece (flip cover), open the cover. If the handset can transmit with the cover closed, both configurations must be tested.
2. While maintaining the orientation of the handset, move the handset away from the pinna along the line passing through RE and LE far enough to allow a rotation of the handset away from the cheek by 15°.
3. Rotate the handset around the horizontal line by 15°.
4. While maintaining the orientation of the handset, move the handset towards the phantom on the line passing through RE and LE until any part of the handset touches the ear. The tilt position is obtained when the contact point is on the pinna. See Figure 12.3.1. If contact occurs at any location other than the pinna, e.g., the antenna at the back of the phantom head, the angle of the handset should be reduced. In this case, the tilt position is obtained if any point on the handset is in contact with the pinna and a second point

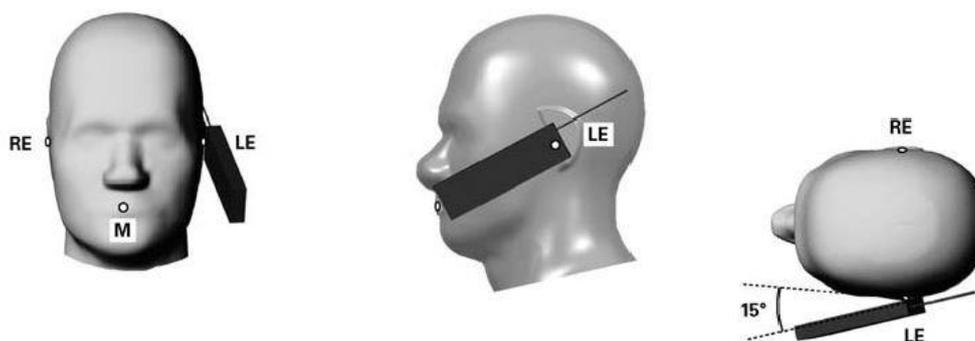


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

13.4 Body Worn Accessory

Body-worn operating configurations are tested with the belt-clips and holsters attached to the device and positioned against a flat phantom in a normal use configuration (see Figure 11.4). Per KDB648474 D04v01r03, body-worn accessory exposure is typically related to voice mode operations when handsets are carried in body-worn accessories. The body-worn accessory procedures in FCC KDB 447498 D01v06 should be used to test for body-worn accessory SAR compliance, without a headset connected to it. This enables the test results for such configuration to be compatible with that required for hotspot mode when the body-worn accessory test separation distance is greater than or equal to that required for hotspot mode, when applicable. When the reported SAR for body-worn accessory, measured without a headset connected to the handset is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

Accessories for body-worn operation configurations are divided into two categories: those that do not contain metallic components and those that do contain metallic components. When multiple accessories that do not contain metallic components are supplied with the device, the device is tested with only the accessory that dictates the closest spacing to the body. Then multiple accessories that contain metallic components are test with the device with each accessory. If multiple accessories share an identical metallic component (i.e. the same metallic belt-chip used with different holsters with no other metallic components) only the accessory that dictates the closest spacing to the body is tested.

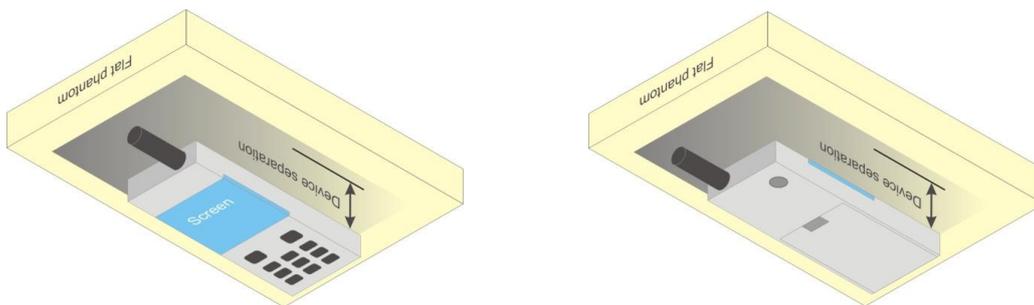


Fig 12.4 Body Worn Position

13.5 Product Specific 10g SAR Exposure

For smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, that can provide similar mobile web access and multimedia support found in mini-tablets or UMPC mini-tablets and support voice calls next to the ear, According to KDB648474 D04v01r03, the following phablet procedures should be applied to evaluate SAR compliance for each applicable wireless modes and frequency band. Devices marketed as phablets, regardless of form factors and operating characteristics must be tested as a phablet to determine SAR compliance

1. The normally required head and body-worn accessory SAR test procedures for handsets, including hotspot mode, must be applied.
2. The UMPC mini-tablet procedures must also be applied to test the SAR of all surfaces and edges with an antenna located at ≤ 25 mm from that surface or edge, in direct contact with a flat phantom, for 10-g extremity SAR according to the body-equivalent tissue dielectric parameters in KDB 865664 to address interactive hand use exposure conditions.6 The UMPC mini-tablet 1-g SAR at 5 mm is not required. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg.

13.6 Wireless Router

Some battery-operated handsets have the capability to transmit and receive user through simultaneous transmission of WIFI simultaneously with a separate licensed transmitter. The FCC has provided guidance in FCC KDB Publication 941225 D06 v02r01 where SAR test considerations for handsets ($L \times W \geq 9$ cm x 5 cm) are based on a composite test separation distance of 10mm from the front, back and edges of the device containing transmitting antennas within 2.5cm of their edges, determined from general mixed use conditions for this type of devices. Since the hotspot SAR results may overlap with the body-worn accessory SAR requirements, the more conservative configurations can be considered, thus excluding some body-worn accessory SAR tests.

When the user enables the personal wireless router functions for the handset, actual operations include simultaneous transmission of both the WIFI transmitter and another licensed transmitter. Both transmitters often do not transmit at the same transmitting frequency and thus cannot be evaluated for SAR under actual use conditions due to the limitations of the SAR assessment probes. Therefore, SAR must be evaluated for each frequency transmission and mode separately and spatially summed with the WIFI transmitter according to FCC KDB Publication 447498 D01v06 publication procedures. The "Portable Hotspot" feature on the handset was NOT activated during SAR assessments, to ensure the SAR measurements were evaluated for a single transmission frequency RF signal at a time.



14. Conducted RF Output Power (Unit: dBm)

The detailed conducted power table can refer to Appendix E.



15. Antenna Location

The detailed antenna location information can refer to SAR Test Setup Photos.



16. Spot Check SAR Test Results

General Note:

- According to section 3.3, spot check conducted power test against the variant project based on the worst-case SAR condition from the original project was performed in this filing to demonstrate the test data from original project remains representative for the variant project. Detail Conducted power measurement referred to appendix E.
- SAR spot check verification on the worst cases from the original model was performed to demonstrate the test data from original model remains representative for the variant model.
- Per KDB 484596 D01 v02r03, the variant filings must demonstrate that the referenced test data remain valid for the variant device by including spot-check measurements that meet the following criteria:
 - Spot-check measurements shall be made in correspondence to the worst-case scenario reported in the reference device filing, i.e., for those conditions that are the closest to non-compliance
 - Spot-check measurements, while being always compliant with the applicable rule part(s) for the test under consideration, may show a deviation dB from the reference data no larger than 3 dB:

$$d_{dB} = |V_{dB} - R_{dB}| \leq 3 \text{ dB} \quad (1)$$
 where between V_{dB} , the variant spot-check level in dB, and R_{dB} is the corresponding measurement level in dB for the reference model.
- The Spot check results showed that Deviation of the SAR results did not exceed 3 dB, therefore referring to the guidance in the KDB inquiry, SAR data reuse is justified.
- 1st as parent model, 2nd as variant model.

16.1 Head SAR

Plot No.	Plot	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
835MHz																							
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	DSI 1	189	836.4	1	26.74	27.50	1.191	-	-	-0.17	0.101	0.120	0.2
	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 1	DSI 1	189	836.4	1	26.58	27.50	1.236	-	-	0.08	0.092	0.114	
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 4	DSI 1	189	836.4	1	22.57	24.50	1.560	-	-	0.1	0.352	0.549	0.1
01	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Right Cheek	0mm	Ant 4	DSI 1	189	836.4	1	23.46	24.50	1.271	-	-	-0.13	0.419	0.533	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI 1	4182	836.4	1	23.69	25.00	1.352	-	-	0.05	0.167	0.226	0.3
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI 1	4182	836.4	1	23.83	25.00	1.309	-	-	0.01	0.162	0.212	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 4	DSI 1	4182	836.4	1	22.40	23.50	1.288	-	-	-0.02	0.848	1.092	1.2
02	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 4	DSI 1	4182	836.4	1	22.58	23.50	1.236	-	-	0.08	0.676	0.836	
	1st	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 1	26865	831.5	1	24.41	25.50	1.285	-	-	0.07	0.173	0.222	0.2
	2nd	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 1	26865	831.5	1	24.02	25.50	1.406	-	-	0.03	0.165	0.232	
	1st	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 4	DSI 1	26865	831.5	1	22.09	23.50	1.384	-	-	-0.01	0.779	1.078	0.1
03	2nd	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 4	DSI 1	26865	831.5	1	22.08	23.50	1.387	-	-	0.09	0.756	1.049	
	2nd	LTE Band 26	15M	QPSK	36	0	-	Right Cheek	0mm	Ant 4	DSI 1	26865	831.5	2	22.08	23.50	1.387	-	-	0.06	0.723	1.003	
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI 1	1413	1732.6	1	23.77	25.00	1.327	-	-	0.08	0.136	0.180	0.5
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI 1	1413	1732.6	1	23.83	25.00	1.309	-	-	-0.08	0.124	0.162	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 4	DSI 1	1312	1712.4	1	14.03	15.50	1.403	-	-	0.01	0.720	1.010	0.7
04	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 4	DSI 1	1312	1712.4	1	14.29	15.50	1.321	-	-	0.01	0.649	0.857	
	1st	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 1	132322	1745	1	24.27	25.50	1.327	-	-	-0.15	0.144	0.191	0.3
	2nd	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 1	132322	1745	1	24.38	25.50	1.294	-	-	-0.08	0.137	0.177	
	1st	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	132072	1720	1	14.21	15.50	1.346	-	-	-0.02	0.795	1.070	0.0
05	2nd	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	132072	1720	1	14.29	15.50	1.321	-	-	-0.06	0.816	1.078	
	2nd	LTE Band 66	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	132072	1720	2	14.29	15.50	1.321	-	-	-0.13	0.802	1.059	
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 1	DSI 1	661	1880	1	23.44	24.50	1.276	-	-	0.13	0.063	0.080	0.2
	2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Left Cheek	0mm	Ant 1	DSI 1	661	1880	1	23.61	24.50	1.227	-	-	0.1	0.068	0.083	
	1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Right Tilted	0mm	Ant 4	DSI 1	661	1880	1	26.49	27.50	1.262	-	-	-0.05	0.602	0.760	0.5



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06	2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Right Tilted	0mm	Ant 4	DSI 1	661	1880	1	26.57	27.50	1.239	-	-	0.09	0.686	0.850	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI 1	9400	1880	1	23.65	25.00	1.365	-	-	0.01	0.168	0.229	0.5
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 1	DSI 1	9400	1880	1	23.66	25.00	1.361	-	-	-0.18	0.151	0.206	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 4	DSI 1	9262	1852.4	1	17.80	19.00	1.318	-	-	-0.08	0.759	1.000	0.7
07	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 4	DSI 1	9262	1852.4	1	17.76	19.00	1.330	-	-	-0.02	0.643	0.855	
	1st	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI 1	18900	1880	1	24.27	25.50	1.327	-	-	-0.06	0.180	0.239	0.4
	2nd	LTE Band 2	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI 1	18900	1880	1	24.46	25.50	1.271	-	-	0.1	0.173	0.220	
	1st	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	18700	1860	1	18.04	19.50	1.400	-	-	-0.08	0.760	1.064	
08	2nd	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	18700	1860	1	18.20	19.50	1.349	-	-	0.09	0.802	1.082	0.1
	2nd	LTE Band 2	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	18700	1860	2	18.20	19.50	1.349	-	-	0.04	0.779	1.051	
2600MHz																							
	1st	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI 1	21100	2535	1	24.27	25.50	1.327	-	-	0.05	0.149	0.198	0.2
	2nd	LTE Band 7	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI 1	21100	2535	1	23.88	25.50	1.452	-	-	0.12	0.144	0.209	
	1st	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	21350	2560	1	17.18	18.50	1.355	-	-	-0.14	0.756	1.024	
09	2nd	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	21350	2560	1	17.35	18.50	1.303	-	-	-0.05	0.821	1.070	0.2
	2nd	LTE Band 7	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	21350	2560	2	17.35	18.50	1.303	-	-	0.05	0.814	1.061	
	1st	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI 1	40620	2593	1	24.15	25.50	1.365	62.9	1.006	-0.08	0.100	0.137	0.2
	2nd	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 1	DSI 1	40620	2593	1	23.75	25.00	1.334	62.9	1.006	0.08	0.097	0.130	
	1st	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	41490	2680	1	20.32	21.50	1.312	62.9	1.006	0.13	0.818	1.080	
10	2nd	LTE Band 41	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 4	DSI 1	41490	2680	1	19.83	21.00	1.309	62.9	1.006	0.09	0.728	0.959	0.5

Plot No.	Plot	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB	
2450MHz																				
	1st	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Full Power	1	2412	1	17.70	19.50	1.514	98.95	1.011	0.01	0.661	1.011		
11	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Full Power	1	2412	1	17.72	19.50	1.507	98.95	1.011	0.04	0.708	1.078	0.3	
	2nd	WLAN2.4GHz	802.11b 1Mbps	Left Cheek	0mm	Ant 6	Full Power	1	2412	2	17.72	19.50	1.507	98.95	1.011	-0.06	0.673	1.025		
	1st	Bluetooth	1Mbps	Left Cheek	0mm	Ant 6	Full Power	39	2441	1	8.80	10.50	1.479	76.8	1.085	0.03	0.049	0.079		
12	2nd	Bluetooth	1Mbps	Left Cheek	0mm	Ant 6	Full Power	39	2441	1	8.76	10.50	1.493	76.8	1.085	-0.03	0.079	0.128	2.1	
5000MHz																				
	1st	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Standalone	58	5290	1	10.25	12.00	1.496	92.34	1.083	-0.06	0.624	1.011		
13	2nd	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Standalone	58	5290	1	10.17	12.00	1.524	92.34	1.083	-0.02	0.437	0.721	1.5	
	1st	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Standalone	106	5530	1	11.21	13.00	1.510	92.34	1.083	0.02	0.662	1.083		
14	2nd	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Tilted	0mm	Ant 6	Standalone	106	5530	1	11.17	13.00	1.524	92.34	1.083	0.08	0.446	0.736	1.7	
	1st	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 6	Full Power	165	5825	1	13.59	15.50	1.552	98.09	1.019	-0.05	0.519	0.821		
15	2nd	WLAN5.8GHz	802.11a 6Mbps	Left Tilted	0mm	Ant 6	Full Power	165	5825	1	13.50	15.50	1.585	98.09	1.019	0.01	0.441	0.712	0.6	



16.2 Hotspot SAR

Plot No.	Plot	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
835MHz																							
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 1	DSI 5	189	836.4	1	21.52	23.00	1.406	-	-	-0.07	0.088	0.124	0.1
	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 1	DSI 5	189	836.4	1	21.44	23.00	1.432	-	-	0.02	0.085	0.121	
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 4	DSI 5	189	836.4	1	22.57	24.50	1.560	-	-	0.04	0.111	0.173	0.1
16	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Back	10mm	Ant 4	DSI 5	189	836.4	1	23.46	24.50	1.271	-	-	0.04	0.139	0.177	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 5	4182	836.4	1	23.69	25.00	1.352	-	-	0.06	0.352	0.476	0.3
17	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 5	4182	836.4	1	23.76	25.00	1.330	-	-	-0.05	0.335	0.446	
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 1	DSI 5	4182	836.4	2	23.76	25.00	1.330	-	-	0.02	0.321	0.427	0.9
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 4	DSI 5	4182	836.4	1	22.33	23.50	1.309	-	-	0.01	0.264	0.346	
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	10mm	Ant 4	DSI 5	4182	836.4	1	22.58	23.50	1.236	-	-	0.13	0.345	0.426	0.7
18	1st	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 5	26865	831.5	1	24.41	25.50	1.285	-	-	0.09	0.364	0.468	
	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	10mm	Ant 1	DSI 5	26865	831.5	1	24.02	25.50	1.406	-	-	-0.05	0.282	0.396	
	1st	LTE Band 26	15M	QPSK	36	0	-	Top Side	10mm	Ant 4	DSI 5	26865	831.5	1	22.09	23.50	1.384	-	-	0.01	0.159	0.220	0.6
	2nd	LTE Band 26	15M	QPSK	36	0	-	Top Side	10mm	Ant 4	DSI 5	26865	831.5	1	22.08	23.50	1.387	-	-	-0.04	0.183	0.254	
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 1	DSI 5	1413	1732.6	1	21.43	22.50	1.279	-	-	0.1	0.595	0.761	0.7
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 1	DSI 5	1413	1732.6	1	21.77	22.50	1.183	-	-	0.01	0.546	0.646	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 4	DSI 5	1413	1732.6	1	14.23	15.50	1.340	-	-	0.07	0.596	0.799	0.5
19	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 4	DSI 5	1413	1732.6	1	14.29	15.50	1.321	-	-	0.04	0.541	0.715	
	1st	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 1	DSI 5	132322	1745	1	22.43	23.50	1.279	-	-	0.06	0.716	0.916	0.3
20	2nd	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 1	DSI 5	132322	1745	1	22.15	23.50	1.365	-	-	0.01	0.723	0.987	
	2nd	LTE Band 66	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 1	DSI 5	132322	1745	2	22.15	23.50	1.365	-	-	0.02	0.718	0.980	0.4
	1st	LTE Band 66	20M	QPSK	50	0	-	Top Side	10mm	Ant 4	DSI 5	132322	1745	1	14.31	15.50	1.315	-	-	0.05	0.539	0.709	
	2nd	LTE Band 66	20M	QPSK	50	0	-	Top Side	10mm	Ant 4	DSI 5	132322	1745	1	14.12	15.50	1.374	-	-	0.16	0.468	0.643	
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	10mm	Ant 1	DSI 5	661	1880	1	22.61	23.00	1.094	-	-	0.02	0.282	0.309	1.3
	2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Bottom Side	10mm	Ant 1	DSI 5	661	1880	1	22.54	23.00	1.112	-	-	0.01	0.375	0.417	
	1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Top Side	10mm	Ant 4	DSI 5	661	1880	1	26.05	27.00	1.245	-	-	-0.01	0.335	0.417	2.2
21	2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Top Side	10mm	Ant 4	DSI 5	661	1880	1	26.02	27.00	1.253	-	-	0.02	0.555	0.695	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 1	DSI 5	9262	1852.4	1	21.24	22.50	1.337	-	-	0.08	0.749	1.001	0.6
22	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	10mm	Ant 1	DSI 5	9262	1852.4	1	21.36	22.50	1.300	-	-	-0.07	0.671	0.872	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 4	DSI 5	9400	1880	1	17.85	19.00	1.303	-	-	-0.04	0.558	0.727	0.5
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Top Side	10mm	Ant 4	DSI 5	9400	1880	1	17.93	19.00	1.279	-	-	-0.05	0.512	0.655	
	1st	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 1	DSI 5	18700	1860	1	21.59	23.00	1.384	-	-	-0.08	0.768	1.063	0.3
23	2nd	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 1	DSI 5	18700	1860	1	21.64	23.00	1.368	-	-	0.13	0.728	0.996	
	2nd	LTE Band 2	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 1	DSI 5	18700	1860	2	21.64	23.00	1.368	-	-	-0.14	0.709	0.970	0.6
	1st	LTE Band 2	20M	QPSK	50	0	-	Top Side	10mm	Ant 4	DSI 5	18900	1880	1	18.12	19.50	1.374	-	-	0.14	0.585	0.804	
	2nd	LTE Band 2	20M	QPSK	50	0	-	Top Side	10mm	Ant 4	DSI 5	18900	1880	1	18.24	19.50	1.337	-	-	-0.02	0.523	0.699	
2600MHz																							
	1st	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 1	DSI 5	20850	2510	1	19.81	21.00	1.315	-	-	0.04	0.827	1.088	0.0
24	2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 1	DSI 5	20850	2510	1	19.26	21.00	1.493	-	-	0.17	0.730	1.090	
	2nd	LTE Band 7	20M	QPSK	1	0	-	Bottom Side	10mm	Ant 1	DSI 5	20850	2510	2	19.26	21.00	1.493	-	-	0.08	0.711	1.062	0.3
	1st	LTE Band 7	20M	QPSK	50	0	-	Top Side	10mm	Ant 4	DSI 5	21100	2535	1	17.19	18.50	1.352	-	-	0.02	0.426	0.576	
	2nd	LTE Band 7	20M	QPSK	50	0	-	Top Side	10mm	Ant 4	DSI 5	21100	2535	1	17.37	18.50	1.296	-	-	0.03	0.413	0.535	
	1st	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 1	DSI 5	39750	2506	1	22.79	24.00	1.321	62.9	1.006	-0.05	0.823	1.094	0.4
25	2nd	LTE Band 41	20M	QPSK	50	0	-	Bottom Side	10mm	Ant 1	DSI 5	39750	2506	1	22.36	23.50	1.300	62.9	1.006	-0.1	0.766	1.002	
	1st	LTE Band 41	20M	QPSK	100	0	-	Top Side	10mm	Ant 4	DSI 5	40620	2593	1	20.73	22.00	1.340	62.9	1.006	-0.18	0.555	0.748	0.6
	2nd	LTE Band 41	20M	QPSK	100	0	-	Top Side	10mm	Ant 4	DSI 5	40620	2593	1	20.45	21.50	1.274	62.9	1.006	0.15	0.503	0.645	



Plot No.	Plot	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
2450MHz																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 6	Full Power	1	2412	1	17.70	19.50	1.514	98.95	1.011	0.11	0.185	0.283	2.7
26	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	10mm	Ant 6	Full Power	1	2412	1	17.64	19.50	1.535	98.95	1.011	0.07	0.342	0.531	
	1st	Bluetooth	1Mbps	Back	10mm	Ant 6	Full Power	39	2441	1	8.80	10.50	1.479	76.8	1.085	-0.01	0.022	0.035	0.7
27	2nd	Bluetooth	1Mbps	Back	10mm	Ant 6	Full Power	39	2441	1	8.76	10.50	1.493	76.8	1.085	0.07	0.025	0.041	
5000MHz																			
	1st	WLAN5.2GHz	802.11a 6Mbps	Top Side	10mm	Ant 6	Standalone	44	5220	1	13.17	15.00	1.524	98.09	1.019	0.12	0.690	1.072	0.9
28	2nd	WLAN5.2GHz	802.11a 6Mbps	Top Side	10mm	Ant 6	Standalone	44	5220	1	13.04	15.00	1.570	98.09	1.019	0.08	0.550	0.880	
	2nd	WLAN5.2GHz	802.11a 6Mbps	Top Side	10mm	Ant 6	Standalone	44	5220	2	13.04	15.00	1.570	98.09	1.019	-0.11	0.531	0.850	0.4
	1st	WLAN5.8GHz	802.11a 6Mbps	Top Side	10mm	Ant 6	Full Power	165	5825	1	13.59	15.50	1.552	98.09	1.019	0.07	0.356	0.563	
29	2nd	WLAN5.8GHz	802.11a 6Mbps	Top Side	10mm	Ant 6	Full Power	165	5825	1	13.50	15.50	1.585	98.09	1.019	0.04	0.385	0.622	



16.3 Body Worn Accessory SAR

Plot No.	Plot	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB
835MHz																							
	1st	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	15mm	Ant 1	DSI 4	189	836.4	1	26.74	27.50	1.191	-	-	-0.18	0.001	0.001	0.0
	2nd	GSM850	-	-	-	-	GPRS (4 Tx slots)	Front	15mm	Ant 1	DSI 4	189	836.4	1	26.58	27.50	1.236	-	-	0.02	0.001	0.001	
	1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	15mm	Ant 4	DSI 4	189	836.4	1	28.49	29.50	1.262	-	-	0.09	0.135	0.170	0.4
30	2nd	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	15mm	Ant 4	DSI 4	189	836.4	1	27.76	29.50	1.493	-	-	-0.01	0.124	0.185	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	DSI 4	4182	836.4	1	23.69	25.00	1.352	-	-	0.01	0.160	0.216	0.4
	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	DSI 4	4182	836.4	1	23.84	25.00	1.306	-	-	0.13	0.152	0.199	
	1st	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 4	DSI 4	4182	836.4	1	23.73	25.00	1.340	-	-	0.08	0.204	0.273	0.4
31	2nd	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 4	DSI 4	4182	836.4	1	23.57	25.00	1.390	-	-	-0.01	0.179	0.249	
	1st	LTE Band 26	15M	QPSK	1	0	-	Front	15mm	Ant 1	DSI 4	26865	831.5	1	24.41	25.50	1.285	-	-	0.11	0.150	0.193	0.3
	2nd	LTE Band 26	15M	QPSK	1	0	-	Front	15mm	Ant 1	DSI 4	26865	831.5	1	24.02	25.50	1.406	-	-	0.05	0.127	0.179	
	1st	LTE Band 26	15M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	26865	831.5	1	24.28	25.50	1.324	-	-	0.03	0.181	0.240	0.1
32	2nd	LTE Band 26	15M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	26865	831.5	1	24.12	25.50	1.374	-	-	-0.04	0.170	0.234	
1750MHz																							
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	DSI 4	1413	1732.6	1	23.77	25.00	1.327	-	-	-0.17	0.203	0.269	0.4
	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	DSI 4	1413	1732.6	1	23.83	25.00	1.309	-	-	-0.03	0.228	0.298	
	1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 4	DSI 4	1413	1732.6	1	21.93	23.00	1.279	-	-	0.07	0.839	1.073	1.0
33	2nd	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 4	DSI 4	1413	1732.6	1	21.87	23.00	1.297	-	-	0.02	0.659	0.855	
	1st	LTE Band 66	20M	QPSK	50	0	-	Back	15mm	Ant 1	DSI 4	132322	1745	1	23.21	24.50	1.346	-	-	0.03	0.299	0.402	1.5
	2nd	LTE Band 66	20M	QPSK	50	0	-	Back	15mm	Ant 1	DSI 4	132322	1745	1	23.55	24.50	1.245	-	-	0.04	0.230	0.286	
	1st	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	132322	1745	1	22.25	23.50	1.334	-	-	0.09	0.807	1.077	1.0
34	2nd	LTE Band 66	20M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	132322	1745	1	22.05	23.50	1.396	-	-	0.03	0.610	0.852	
1900MHz																							
	1st	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	15mm	Ant 1	DSI 4	661	1880	1	23.44	24.50	1.276	-	-	0.06	0.154	0.197	0.3
35	2nd	GSM1900	-	-	-	-	GPRS (4 Tx slots)	Back	15mm	Ant 1	DSI 4	661	1880	1	23.61	24.50	1.227	-	-	-0.14	0.173	0.212	
	1st	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Back	15mm	Ant 4	DSI 4	661	1880	1	26.49	27.50	1.262	-	-	0.16	0.115	0.145	1.2
	2nd	GSM1900	-	-	-	-	GPRS (2 Tx slots)	Back	15mm	Ant 4	DSI 4	661	1880	1	26.57	27.50	1.239	-	-	-0.02	0.090	0.111	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	DSI 4	9400	1880	1	23.65	25.00	1.365	-	-	-0.08	0.250	0.341	0.6
	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 1	DSI 4	9400	1880	1	23.66	25.00	1.361	-	-	0.05	0.285	0.388	
	1st	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 4	DSI 4	9400	1880	1	23.71	25.00	1.346	-	-	0.01	0.413	0.556	0.5
36	2nd	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	15mm	Ant 4	DSI 4	9400	1880	1	23.36	25.00	1.459	-	-	0.02	0.336	0.490	
	1st	LTE Band 2	20M	QPSK	50	0	-	Back	15mm	Ant 1	DSI 4	18900	1880	1	23.25	24.50	1.334	-	-	-0.13	0.271	0.362	0.1
	2nd	LTE Band 2	20M	QPSK	50	0	-	Back	15mm	Ant 1	DSI 4	18900	1880	1	23.37	24.50	1.297	-	-	-0.03	0.274	0.355	
	1st	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	18900	1880	1	24.25	25.50	1.334	-	-	-0.18	0.451	0.602	0.8
37	2nd	LTE Band 2	20M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	18900	1880	1	24.17	25.50	1.358	-	-	-0.01	0.369	0.501	
2600MHz																							
	1st	LTE Band 7	20M	QPSK	50	0	-	Back	15mm	Ant 1	DSI 4	21100	2535	1	23.29	24.50	1.321	-	-	0.03	0.330	0.436	1.2
	2nd	LTE Band 7	20M	QPSK	50	0	-	Back	15mm	Ant 1	DSI 4	21100	2535	1	22.78	24.50	1.486	-	-	0.03	0.385	0.572	
	1st	LTE Band 7	20M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	21100	2535	1	24.40	25.50	1.288	-	-	0.18	0.550	0.708	0.5
38	2nd	LTE Band 7	20M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	21100	2535	1	24.01	25.50	1.409	-	-	0.08	0.453	0.638	
	1st	LTE Band 41	20M	QPSK	1	0	-	Back	15mm	Ant 1	DSI 4	40620	2593	1	24.15	25.50	1.365	62.9	1.006	0.16	0.176	0.242	0.2
	2nd	LTE Band 41	20M	QPSK	1	0	-	Back	15mm	Ant 1	DSI 4	40620	2593	1	23.75	25.00	1.334	62.9	1.006	0.01	0.187	0.251	
	1st	LTE Band 41	20M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	40620	2593	1	24.20	25.50	1.349	62.9	1.006	0.07	0.364	0.494	1.6
39	2nd	LTE Band 41	20M	QPSK	1	0	-	Back	15mm	Ant 4	DSI 4	40620	2593	1	23.94	25.00	1.276	62.9	1.006	0.05	0.267	0.343	



Plot No.	Plot	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)	Deviation dB	
2450MHz																			
	1st	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 6	Full Power	1	2412	1	17.70	19.50	1.514	98.95	1.011	0.13	0.096	0.146	1.6
40	2nd	WLAN2.4GHz	802.11b 1Mbps	Back	15mm	Ant 6	Full Power	1	2412	1	17.72	19.50	1.507	98.95	1.011	0.08	0.137	0.209	
	1st	Bluetooth	1Mbps	Back	15mm	Ant 6	Full Power	39	2441	1	8.80	10.50	1.479	76.8	1.085	0.09	0.006	0.010	2.6
41	2nd	Bluetooth	1Mbps	Back	15mm	Ant 6	Full Power	39	2441	1	8.76	10.50	1.493	76.8	1.085	-0.03	0.011	0.018	
5000MHz																			
	1st	WLAN5.3GHz	802.11a 6Mbps	Back	15mm	Ant 6	Full Power	64	5320	1	13.60	15.50	1.549	98.09	1.019	-0.02	0.181	0.286	0.4
42	2nd	WLAN5.3GHz	802.11a 6Mbps	Back	15mm	Ant 6	Full Power	64	5320	1	13.58	15.50	1.556	98.09	1.019	0.02	0.199	0.316	
	1st	WLAN5.5GHz	802.11a 6Mbps	Back	15mm	Ant 6	Full Power	100	5500	1	13.58	15.50	1.556	98.09	1.019	0	0.178	0.282	1.2
43	2nd	WLAN5.5GHz	802.11a 6Mbps	Back	15mm	Ant 6	Full Power	100	5500	1	13.50	15.50	1.585	98.09	1.019	0.09	0.133	0.215	
	1st	WLAN5.8GHz	802.11a 6Mbps	Back	15mm	Ant 6	Full Power	165	5825	1	13.59	15.50	1.552	98.09	1.019	0.03	0.179	0.283	0.3
44	2nd	WLAN5.8GHz	802.11a 6Mbps	Back	15mm	Ant 6	Full Power	165	5825	1	13.50	15.50	1.585	98.09	1.019	0.03	0.189	0.305	

16.4 Product specific 10g SAR

Plot No.	Plot	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	Deviation dB
1750MHz																					
	1st	WCDMA IV					RMC 12.2Kbps	Top Side	0mm	Ant 4	DSI 3	1413	1732.6	1	17.84	19.00	1.306	0.05	1.75	2.286	0.4
45	2nd	WCDMA IV					RMC 12.2Kbps	Top Side	0mm	Ant 4	DSI 3	1413	1732.6	1	17.85	19.00	1.303	0.02	1.61	2.098	
	1st	LTE Band 66	20M	QPSK	1	0		Top Side	0mm	Ant 4	DSI 3	132322	1745	1	18.40	19.50	1.288	-0.09	1.85	2.383	0.0
46	2nd	LTE Band 66	20M	QPSK	1	0		Top Side	0mm	Ant 4	DSI 3	132322	1745	1	18.12	19.50	1.374	-0.01	1.72	2.363	
	2nd	LTE Band 66	20M	QPSK	1	0		Top Side	0mm	Ant 4	DSI 3	132322	1745	2	18.12	19.50	1.374	0.09	1.67	2.295	

Plot No.	Plot	Band	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Sample	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Duty Cycle %	Duty Cycle Scaling Factor	Power Drift (dB)	Measured 10g SAR (W/kg)	Reported 10g SAR (W/kg)	Deviation dB
5000MHz																			
	1st	WLAN5.2GHz	802.11a 6Mbps	Top Side	0mm	Ant 6	Full Power	44	5220	1	13.59	15.50	1.551	98.09	1.019	0.09	0.852	1.347	0.6
47	2nd	WLAN5.2GHz	802.11a 6Mbps	Top Side	0mm	Ant 6	Full Power	44	5220	1	13.51	15.50	1.581	98.09	1.019	0.01	0.728	1.173	
	2nd	WLAN5.2GHz	802.11a 6Mbps	Top Side	0mm	Ant 6	Full Power	44	5220	2	13.51	15.50	1.581	98.09	1.019	0.07	0.704	1.134	
	1st	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 6	Full Power	64	5320	1	13.60	15.50	1.549	98.09	1.019	0.04	0.864	1.364	0.8
48	2nd	WLAN5.3GHz	802.11a 6Mbps	Top Side	0mm	Ant 6	Full Power	64	5320	1	13.58	15.50	1.556	98.09	1.019	0.06	0.717	1.137	
	1st	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 6	Full Power	100	5500	1	13.58	15.50	1.556	98.09	1.019	0.01	0.852	1.351	1.1
49	2nd	WLAN5.5GHz	802.11a 6Mbps	Top Side	0mm	Ant 6	Full Power	100	5500	1	13.50	15.50	1.585	98.09	1.019	0.01	0.655	1.058	

16.5 Repeated SAR Measurement

<1g>

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Ratio	Reported 1g SAR (W/kg)
1st	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	Ant 4	DSI 1	132072	1720	14.29	15.50	1.321	-0.06	0.816	1	1.078
2nd	LTE Band 66	20M	QPSK	50	0	Right Tilted	0mm	Ant 4	DSI 1	132072	1720	14.29	15.50	1.321	0.02	0.798	1.023	1.054
1st	LTE Band 2	20M	QPSK	50	0	Right Tilted	0mm	Ant 4	DSI 1	18700	1860	18.20	19.50	1.349	0.09	0.802	1	1.082
2nd	LTE Band 2	20M	QPSK	50	0	Right Tilted	0mm	Ant 4	DSI 1	18700	1860	18.20	19.50	1.349	0.03	0.787	1.019	1.062
1st	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Ant 4	DSI 1	21350	2560	17.35	18.50	1.303	-0.05	0.821	1	1.070
2nd	LTE Band 7	20M	QPSK	50	0	Right Tilted	0mm	Ant 4	DSI 1	21350	2560	17.35	18.50	1.303	0.01	0.803	1.022	1.046

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is $\geq 0.8W/kg$.
2. Per KDB 865664 D01v01r04, if the ratio among the repeated measurement is ≤ 1.2 and the measured SAR $< 1.45W/kg$, only one repeated measurement is required.
3. The ratio is the difference in percentage between original and repeated *measured SAR*.
4. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

17. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN 2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN 5GHz	Yes	Yes	Yes	Yes
3.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
4.	WWAN + WLAN 2.4GHz + NFC				Yes
5.	WWAN + WLAN 5GHz + NFC				Yes
6.	WWAN + Bluetooth + NFC				Yes

General Note:

- This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
- EUT will choose each GSM, WCDMA, LTE and 5GNR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
- This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
- This device 5.2GHz WLAN/5.8GHz WLAN support hotspot operation, and 5.2GHz WLAN/5.8GHz WLAN supports WLAN Direct (GC/GO), and 5.3GHz / 5.5GHz supports WLAN Direct (GC only).
- According to the EUT characteristic, WLAN5GHz and Bluetooth can't transmit simultaneously.
- According to the EUT characteristic, WLAN2.4GHz and Bluetooth share the same antenna so can't transmit simultaneously.
- According to the EUT characteristic, WLAN2.4GHz and WLAN5GHz can't transmit simultaneously.
- The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
- NFC can transmit simultaneously with other Radios in extremity exposure condition.
- When stand-alone SAR is not required for a transmitter or antenna, its SAR is considered zero in the SAR summing process to assess Multi-band transmission SAR compliance.
- For standalone WWAN, always choose the highest SAR among all WWAN bands within all antennas for each exposure position to perform simultaneous transmission analysis with WLAN/BT. This is the worst co-located analysis and can represent each band.
- The maximum SAR summation is calculated based on the same configuration and test position.
- Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
 - 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
 - $SPLSR = (SAR1 + SAR2)^{1.5} / (\text{min. separation distance, mm})$, and the peak separation distance is determined from the square root of $[(x1-x2)^2 + (y1-y2)^2 + (z1-z2)^2]$, where (x1, y1, z1) and (x2, y2, z2) are the coordinates of the extrapolated peak SAR locations in the zoom scan.
 - If $SPLSR \leq 0.04$ for 1g SAR and $SPLSR \leq 0.10$ for 10g SAR, simultaneously transmission SAR measurement is not necessary.
 - Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

Conclusion:

- The Spot check results from chapter 16.1 to 16.4, showed that Deviation of the SAR results did not exceed 3 dB, SAR data reuse is justified.
- For simultaneously transmission SAR analysis, Simultaneous transmission analysis for the WWAN/WLAN/BT bands and each position are based on maximum SAR results chosen between the original SAR results (Sporton SAR report no.: FA542103) and Spot check results.

17.1 Head Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
All Bands Ant 1	Right Cheek	0.232	0.406	0.486		0.64	0.72	0.23
	Right Tilted	0.145	0.396	0.395		0.54	0.54	0.15
	Left Cheek	0.239	0.488	0.472	0.128	0.73	0.71	0.37
	Left Tilted	0.211	0.389	0.575	0.063	0.60	0.79	0.27
All Bands Ant 4	Right Cheek	1.092	0.406	0.486		1.50	1.58	1.09
	Right Tilted	1.082	0.396	0.395		1.48	1.48	1.08
	Left Cheek	0.970	0.488	0.472	0.128	1.46	1.44	1.10
	Left Tilted	0.963	0.389	0.575	0.063	1.35	1.54	1.03

17.2 Hotspot Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
All Bands Ant 1	Front	0.504	0.213	0.298	0.014	0.72	0.80	0.52
	Back	0.720	0.283	0.427	0.035	1.00	1.15	0.76
	Left side	0.320				0.32	0.32	0.32
	Right side	0.291	0.161	0.203	0.006	0.45	0.49	0.30
	Top side		0.158	0.764	0.021	0.16	0.76	0.02
	Bottom side	1.094				1.09	1.09	1.09
All Bands Ant 4	Front	0.360	0.213	0.298	0.014	0.57	0.66	0.37
	Back	0.437	0.283	0.427	0.035	0.72	0.86	0.47
	Left side	0.193				0.19	0.19	0.19
	Right side	0.214	0.161	0.203	0.006	0.38	0.42	0.22
	Top side	0.804	0.158	0.764	0.021	0.96	1.57	0.83
	Bottom side					0.00	0.00	0.00

17.3 Body-Worn Accessory Exposure Conditions

WWAN Band	Exposure Position	1	2	3	4	1+2	1+3	1+4
		WWAN	WLAN2.4GHz Ant 6	WLAN5GHz Ant 6	Bluetooth Ant 6	Summed	Summed	Summed
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
All Bands Ant 1	Front	0.316	0.124	0.176	0.002	0.44	0.49	0.32
	Back	0.572	0.209	0.316	0.018	0.78	0.89	0.59
All Bands Ant 4	Front	0.816	0.124	0.176	0.002	0.94	0.99	0.82
	Back	1.077	0.209	0.316	0.018	1.29	1.39	1.10

17.4 Product specific 10g SAR Exposure Conditions

Remark:

- For WLAN2.4G/Bluetooth Product specific 10g stand-alone SAR is not required for a transmitter or antenna, due to 1g hotspot SAR is <1.2W/kg.

WWAN Band	Exposure Position	1	2	3	1+2+3
		WWAN	WLAN5GHz Ant 6	NFC	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
All Bands Ant 4	Front		0.805	0.002	0.81
	Back		0.582	0.026	0.61
	Left side			0.002	0.00
	Right side		0.260	0.002	0.26
	Top side	2.383	1.364	0.002	3.75
	Bottom side			0.002	0.00

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18. Uncertainty Assessment

Per KDB 865664 D01 SAR measurement 100MHz to 6GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be $\leq 30\%$, for a confidence interval of $k = 2$. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval. For this device, the highest measured 1-g SAR is less 1.5W/kg and highest measured 10-g SAR is less 3.75W/kg. Therefore, the measurement uncertainty table is not required in this report.

19. References

- [1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”
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- [4] SPEAG DASY System Handbook
- [5] FCC KDB 865664 D01 v01r04, “SAR Measurement Requirements for 100 MHz to 6 GHz”, Aug 2015.
- [6] FCC KDB 865664 D02 v01r02, “RF Exposure Compliance Reporting and Documentation Considerations” Oct 2015.
- [7] FCC KDB 648474 D04 v01r03, “SAR Evaluation Considerations for Wireless Handsets”, Oct 2015.
- [8] FCC KDB 248227 D01 v02r02, “SAR Guidance for IEEE 802.11 (WiFi) Transmitters”, Oct 2015.
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- [10] FCC KDB 941225 D01 v03r01, “3G SAR MEAUREMENT PROCEDURES”, Oct 2015
- [11] FCC KDB 941225 D05 v02r05, “SAR Evaluation Considerations for LTE Devices”, Dec 2015
- [12] FCC KDB 941225 D06 v02r01, “SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities”, Oct 2015.
- [13] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015
- [14] FCC KDB 484596 D01 v02r03, “Test Reductions Via Data Referencing”, Mar. 2024



Appendixes

Please refer to separated files for the following appendixes

Appendix A. Plots of System Performance Check

Appendix B. Plots of High SAR Measurement

Appendix C. DASYS Calibration Certificate

Appendix D. Test Setup Photos

Appendix E. Conducted RF Output Power Table

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