FCC SAR Test Report

APPLICANT	: Motorola Mobility LLC
EQUIPMENT	: Mobile Cellular Phone
BRAND NAME	: Motorola
MODEL NAME	: XT2301-4
FCC ID	: IHDT56AH3
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.

Si Zhang

Approved by: Si Zhang

ACCREDITED
Cert #5145.02

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Revision History

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FA282619-02	Rev. 01	Initial issue of report.	Dec. 26, 2022

1. Statement of Compliance

The maximum results of Specific Absorption Rate (SAR) found during testing for **Motorola Mobility LLC, Mobile Cellular Phone, XT2301-4,** are as follows.

Highest 1g SAR Summary						
Equipment Class	Frequency Band		Head (Separation 0mm)	Hotspot (Separation 5mm)	Body-worn (Separation 5mm)	Highest Simultaneous Transmission 1g SAR (W/kg)
			1g SAR (W/kg)			
Licensed	GSM	GSM850	1.00	0.84	0.91	1.51
		GSM1900	1.20	**1.22**	1.22	
	WCDMA	WCDMA II	0.86	1.14	1.08	
		WCDMA IV	0.85	0.96	1.21	
		WCDMA V	0.65	0.98	0.98	
	LTE	LTE Band 12/17	0.74	0.65	0.72	
		LTE Band 13	0.66	0.97	0.85	
		LTE Band 26/5	0.59	0.85	0.85	
		LTE Band 66/4	0.94	0.88	1.07	
		LTE Band 25/2	1.07	1.14	**1.24**	
		LTE Band 7	1.01	1.14	1.09	
		LTE Band 41/38	0.82	1.01	1.18	
		LTE Band 42	0.45	0.82	**1.24**	
		LTE Band 48/43/42	0.29	0.94	1.15	
	5G NR	FR1 n2	1.14	0.89	1.15	
		FR1 n5	0.12	0.49	0.49	
		FR1 n7	0.72	1.06	1.12	
		FR1 n66	0.98	0.90	1.09	
		FR1 n41/n38	**1.25**	1.10	1.10	
		FR1 n77/n78	1.23	1.00	**1.24**	
DTS	WLAN	2.4GHz WLAN	0.89	0.32	1.08	1.54
NII		5GHz WLAN	0.84	0.23	0.79	1.54
DSS	Bluetooth	2.4GHz Bluetooth	0.16	0.17	<0.10	1.47

Highest 10g SAR Summary				
Equipment Class	Frequency Band		Product Specific 10g SAR (W/kg) (Separation 0mm)	Highest Simultaneous Transmission 10g SAR (W/kg)
Licensed	GSM	GSM850	**2.56**	3.38
		GSM1900	2.03	
	WCDMA	WCDMA II	2.52	
		WCDMA IV	2.21	
	LTE	LTE Band 66/4	2.40	
		LTE Band 25/2	2.47	
		LTE Band 7	2.37	
		LTE Band 41/38	2.47	
		LTE Band 42	2.14	
		LTE Band 48/43/42	2.40	
	5G NR	FR1 n2	2.45	
		FR1 n7	2.33	
		FR1 n66	2.32	
		FR1 n41/n38	2.52	
		FR1 n77/n78	2.47	
DTS	WLAN	2.4GHz WLAN	2.35	3.39
NII		5GHz WLAN	1.43	3.39
Date of Testing:			2022/12/2 ~ 2022/12/7	

Remark:

1. This device supports LTE B2 / B4 / B5 / B17 / B38 and B25 / B66 / B26 / B12 / B41. Since the supported frequency span for LTE B2 / B4 / B5 / B17 / B38 falls completely within the supports frequency span for LTE B25 / B66 / B26 / B12 / B41, both LTE bands have the same target power, and both LTE bands share the same transmission path; therefore, SAR was only assessed for LTE B25 / B66 / B26 / B12 / B41.
2. LTE B42(3550 MHz ~ 3600MHz) / B43 SAR test was covered by LTE B48, due to the output power level and have duplicate frequency range.
3. This device supports 5GNR n78/n38 and n77/n41. Since the supported frequency span for 5GNR n78/n38 falls completely within the supports frequency span for n77/n41, both 5GNR bands have the same target power, and both 5GNR bands share the same transmission path; therefore, SAR was only assessed for n77/n41.
4. This is a variant report for XT2301-4. For model change note, please refer to the XT2301-4_Class II Permissive Change letter which is exhibited separately. According to the change, reduced 5GNR n77/78 Ant3/7 conducted power by software, so re-measured 5GNR n77/78 Ant3/7 conducted power, and 5GNR n77/78 Ant3/7 performed full SAR testing, other bands only verified the worse cases from original test report (Sporton Report Number FA282619).

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 5145.02.

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 FAX : +86-512-57900958		
Test Site No.	Sporton Site No.	FCC Designation No.	FCC Test Firm Registration No.
	SAR07-KS	CN1257	314309

Applicant	
Company Name	Motorola Mobility LLC
Address	222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

Manufacturer	
Company Name	Motorola Mobility LLC
Address	222 W,Merchandise Mart Plaza, Chicago IL 60654 USA

3. 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 D05A Rel.10 LTE SAR Test Guidance v01r02
- FCC KDB 941225 D06 Hotspot Mode SAR v02r01

4. Equipment Under Test (EUT) Information

4.1 General Information

Product Feature & Specification	
Equipment Name	Mobile Cellular Phone
Brand Name	Motorola
Model Name	XT2301-4
FCC ID	IHDT56AH3
IMEI Code	IMEI 1 : 354336350036471 IMEI 2 : 354336350036489
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 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550MHz, 3550 MHz ~ 3600MHz LTE Band 43: 3600 MHz ~ 3700MHz LTE Band 48: 3550 MHz ~ 3700 MHz LTE Band 66: 1710 MHz ~ 1780 MHz 5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 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 ~ 5720 MHz WLAN 5.8GHz Band: 5745 MHz ~ 5825 MHz WLAN 6E U-NII-5: 5925 MHz ~ 6425 MHz WLAN 6E U-NII-6: 6425 MHz ~ 6525 MHz WLAN 6E U-NII-7: 6525 MHz ~ 6875 MHz WLAN 6E U-NII-8: 6875 MHz ~ 7125 MHz Bluetooth: 2402 MHz ~ 2480 MHz WPT: 111 kHz ~ 148 kHz NFC: 13.56 MHz
Mode	GSM/GPRS/EGPRS RMC/AMR 12.2Kbps HSDPA HSUPA DC-HSDPA HSPA+(16QAM uplink is not supported) LTE: QPSK, 16QAM, 64QAM, 256QAM 5G NR : CP-OFDM / DFT-s-OFDM, PI/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM WLAN 2.4GHz 802.11b/g/n HT20/HT40 WLAN 2.4GHz 802.11ax HE20/HE40

	WLAN 5GHz 802.11a/n HT20/HT40 WLAN 5GHz 802.11ac/ax VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 WLAN 6GHz 802.11a WLAN 6GHz 802.11ax HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE WPT: ASK NFC: ASK
HW Version	PVT
SW Version	TTR33.128
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:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
3. 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). WIFI 6E has no hotspot function.
4. The 2.4GHz/5GHz/6GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
5. This device does not support DTM operation and supports GPRS/EGPRS mode up to multi-slot class 12.
6. This device has NFC operations, the NFC antenna is integrated into the device for this model, therefore, all SAR test were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the antenna can be found in the operational description. According to FCC KDB publication 447498 D01v06, transmitters are consider to be operating simultaneously when there is overlapping transmission, with the exception of transmission during network hand-offs with maximum hand-off duration less than 30 seconds.
7. For dual SIM card mobile has single SIM slots + eSIM (electronic SIM) and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active).
8. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile (Single SIM card slot + eSIM). The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose dual SIM card mobile to perform all tests.
9. The device implements the power management and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
10. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head and Handheld. For WLAN when transmit simultaneous with WWAN and Proximity sensors trigger, power reduction will be activated to body-worn and Handheld.
11. For some WWAN bands, sensor on reduced power level is higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
12. This device implements antenna tuning techniques for several WWAN (cellular) operating modes and frequencies for the purpose of improving antenna efficiency over a broad range of frequencies. Specifically, these techniques are employed in the LTE and 5GNR modes. In this report SAR was measured according to the normally required SAR configurations with the tuner active and worst tune state (auto tune) was used for SAR testing. The detail descriptions of the antenna tuner and supplemental data for additional information can be referred to section 18 and appendix F.
13. This device supports HPUE for LTE Band 38/41 and 5GNR n77/n78 with class 2 level, HPUE power has been measured separately. For HPUE power is higher than power class 3 but with lower duty cycle, the maximum average power for class 2 and class 3 is almost the same, so we chose power class 3 full SAR testing and power class 2 verify the worst case of power class 3 SAR.
14. For 5GNR n77/n78 HPUE, 5GNR n77/n78 PC2 Maximum Duty Cycle is 50%, using FTM (Factory Test Mode) with 50% duty cycle is considered during SAR testing. For 5G NR other bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
15. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
16. 5GNR NSA mode, the power level is the same as 5GNR SA mode, so 5GNR NSA mode and SA mode power table only show one time.
17. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
18. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is

unnecessary.

19. This device supports 5GNR FR1 bands as following table, including NSA mode and SA mode. NSA and SA mode performed SAR separately.
20. 5G NR n41 supports UL MIMO at Antenna 1 and Antenna 2.
21. SAR and Power density test report for WIFI 6E U-NII-5/6/7/8 will be separately submitted. About co-located SAR with WWAN/Bluetooth, always chose higher SAR of WLAN5G U-NII-1/2A/2C/3 and U-NII-5/6/7/8.
22. The device support DBS (Dual Band Simultaneous) function, when the device 2.4GHz and 5GHz or 6GHz transmit at the same time the module will limit different output power for simultaneous transmission compliance.

<5G NR>

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 40
	n66	FDD	15	5, 10, 15, 20, 25, 30, 40
	n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
SA	n2	FDD	15	5, 10, 15, 20
	n5	FDD	15	5, 10, 15, 20
	n7	FDD	15	5, 10, 15, 20, 25, 30, 40
	n66	FDD	15	5, 10, 15, 20, 25, 30, 40
	n38	TDD	30	10, 15, 20, 25, 30, 40
	n41	TDD	30	10, 15, 20, 30, 40, 50, 60, 70, 80, 90, 100
	n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100

4.2 General LTE SAR Test and Reporting Considerations

Summarized necessary items addressed in KDB 941225 D05 v02r05	
FCC ID	IHDT56AH3
Equipment Name	Mobile Cellular 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 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 17: 704 MHz ~ 716 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 38: 2570 MHz ~ 2620 MHz LTE Band 41: 2496 MHz ~ 2690 MHz LTE Band 42: 3450 MHz ~ 3550MHz, 3550 MHz ~ 3600MHz LTE Band 43: 3600 MHz ~ 3700MHz LTE Band 48: 3550 MHz ~ 3700 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 12:1.4MHz, 3MHz, 5MHz, 10MHz LTE Band 13: 5MHz, 10MHz LTE Band 17: 5MHz, 10MHz LTE Band 25:1.4MHz, 3MHz, 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 42: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 43: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 48: 5MHz, 10MHz, 15MHz, 20MHz LTE Band 66:1.4MHz, 3MHz, 5MHz, 10MHz, 15MHz, 20MHz
uplink modulations used	QPSK / 16QAM / 64QAM / 256QAM
LTE Voice / Data requirements	Voice and Data
LTE Release Version	R16, Cat20
CA Support	Supported, Uplink and Downlink
LTE MPR permanently built-in by design	**Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3** 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
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/hotspot detect mechanism, head/body -worn /hotspot/extremity will trigger reduced power for some bands applied to satisfy SAR compliance, the detail please referred to section 14.
LTE Carrier Aggregation Combinations	Inter-Band and Intra-Band possible combinations and the detail power verification please referred to original report.
LTE Carrier Aggregation Additional Information	1. This device supports LTE Carrier Aggregation (CA) in the uplink for intra-band with two component carriers in the uplink. SAR Measurements and conducted powers were evaluated per FCC Guidance. 2. This device supports maximum of 5 carriers in the downlink and 2 carriers in the uplink.

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)
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
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)
L	20775	2502.5	20800	2505	20825	2507.5	20850	2510
M	21100	2535	21100	2535	21100	2535	21100	2535
H	21425	2567.5	21400	2565	21375	2562.5	21350	2560

LTE Band 12

	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)
L	23017	699.7	23025	700.5	23035	701.5	23060	704
M	23095	707.5	23095	707.5	23095	707.5	23095	707.5
H	23173	715.3	23165	714.5	23155	713.5	23130	711

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 17

	Bandwidth 5 MHz		Bandwidth 10 MHz	
	Channel #	Freq.(MHz)	Channel #	Freq. (MHz)
L	23755	706.5	23780	709
M	23790	710	23790	710
H	23825	713.5	23800	711

LTE Band 25

	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	26047	1850.7	26055	1851.5	26065	1852.5	26090	1855	26115	1857.5	26140	1860
M	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880	26340	1880
H	26683	1914.3	26675	1913.5	26665	1912.5	26640	1910	26615	1907.5	26590	1905

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)
L	37775	2572.5	37800	2575	37825	2577.5	37850	2580
M	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)
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 42								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	42115	3452.5	42140	3455	42165	3457.5	42190	3460
M	42590	3500	42590	3500	42590	3500	42590	3500
H	43065	3547.5	43040	3545	43015	3542.5	42990	3540

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

LTE Band 42								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	43115	3552.5	43140	3555	43165	3557.5	43190	3560
M	43340	3575	43340	3575	43340	3575	43340	3575
H	43565	3597.5	43540	3595	43515	3592.5	43490	3590

LTE Band 43								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	43615	3602.5	43640	3605	43665	3607.5	43690	3610
M	44090	3650	44090	3650	44090	3650	44090	3650
H	44565	3697.5	44540	3695	44515	3692.5	44490	3690

LTE Band 48								
	Bandwidth 5 MHz		Bandwidth 10 MHz		Bandwidth 15 MHz		Bandwidth 20 MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	55265	3552.5	55290	3555	55315	3557.5	55340	3560
LM	55810	3607	55815	3607.5	55820	3608	55830	3609
MH	56170	3643	56165	3642.5	56160	3642	56150	3641
H	56715	3697.5	56690	3695	56665	3692.5	56640	3690

4.3 General 5G NR SAR Test and Reporting Considerations

5G NR Information	
Operating Frequency Range of each 5G NR transmission band	5G NR n2 : 1850 MHz ~ 1910 MHz 5G NR n5: 824 MHz ~ 849 MHz 5G NR n7: 2500 MHz ~ 2570 MHz 5G NR n66: 1710 MHz ~ 1780 MHz 5G NR n38 : 2570 MHz ~ 2620 MHz 5G NR n41 : 2496 MHz ~ 2690 MHz 5G NR n77: 3700 MHz ~ 3980 MHz 5G NR n78: 3700 MHz ~ 3800 MHz
Channel Bandwidth	The detail please refers to section 4.1 5GNR FR1 bands table.
SCS	FDD: SCS15KHz, TDD: SCS30KHz
uplink modulations used	DFT-s-OFDM: PI/2 BPSK / QPSK / 16QAM / 64QAM / 256QAM CP-OFDM: QPSK / 16QAM / 64QAM / 256QAM
A-MPR (Additional MPR) disabled for SAR Testing?	Yes
LTE Anchor Bands for n2	LTE B7/66
LTE Anchor Bands for n5	LTE B7
LTE Anchor Bands for n7	LTE B2/4/5/66
LTE Anchor Bands for n66	LTE B2/5/7
LTE Anchor Bands for n77	LTE B41
LTE Anchor Bands for n78	LTE B2/4/5/7/38/41/66

Transmission (H, M, L) channel numbers and frequencies in each 5G NR band

NR Band 2

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	370500	1852.5	371000	1855	371500	1857.5	372000	1860
M	376000	1880	376000	1880	376000	1880	376000	1880
H	381500	1907.5	381000	1905	380500	1902.5	380000	1900

NR Band 5

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	165300	826.5	165800	829	166300	831.5	166800	834
M	167300	836.5	167300	836.5	167300	836.5	167300	836.5
H	169300	846.5	168800	844	168300	841.5	167800	839

NR Band 7

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500500	2502.5	501000	2505	501500	2507.5	502000	2510	502500	2512.5	503000	2515	504000	2520
M	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535	507000	2535
H	513500	2567.5	513000	2565	512500	2562.5	512000	2560	511500	2557.5	511000	2555	510000	2550

NR Band 66

	Bandwidth 5MHz		Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	342500	1712.5	343000	1715	343500	1717.5	344000	1720	344500	1722.5	345000	1725	346000	1730
M	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745	349000	1745
H	355500	1777.5	355000	1775	354500	1772.5	354000	1770	353500	1767.5	353000	1765	352000	1760

NR Band 38

	Bandwidth10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	515004	2575.02	515502	2577.51	516000	2580	516504	2582.52	517002	2585.01	518004	2590.02
M	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595	519000	2595
H	522996	2614.98	522498	2612.49	522000	2610	521496	2607.48	520998	2604.99	519996	2599.98

NR Band 41																						
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	500202	2501.01	500700	2503.5	501204	2506.02	502200	2511	503202	2516.01	504204	2521.02	505200	2526	500202	2501.01	507204	2536.02	508200	2541	509202	2546.01
M	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99	518598	2592.99
H	537000	2685	536496	2682.48	535998	2679.99	534996	2674.98	534000	2670	532998	2664.99	531996	2659.98	537000	2685	529998	2649.99	528996	2644.98	528000	2640

NR Band 77																								
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647000	3705	647168	3707.52	647334	3710.01	647500	3712.5	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02	650000	3750
M	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840	656000	3840
H	665000	3975	664834	3972.51	664666	3970.02	664500	3967.5	664332	3965.01	664000	3960	663668	3955.02	663332	3950.01	663000	3945	662666	3940.02	662332	3935.01	662000	3930

NR Band 78																								
	Bandwidth 10MHz		Bandwidth 15MHz		Bandwidth 20MHz		Bandwidth 25MHz		Bandwidth 30MHz		Bandwidth 40MHz		Bandwidth 50MHz		Bandwidth 60MHz		Bandwidth 70MHz		Bandwidth 80MHz		Bandwidth 90MHz		Bandwidth 100MHz	
	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)			Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)	Ch. #	Freq. (MHz)
L	647000	3705	647168	3707.52	647334	3710.01	647500	3712.5	647668	3715.02	648000	3720	648334	3725.01	648668	3730.02	649000	3735	649334	3740.01	649668	3745.02		
M	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750	650000	3750
H	653000	3795	652834	3792.51	652668	3790.02	652500	3787.5	652334	3785.01	652000	3780	651668	3775.02	651334	3770.01	651000	3765	650668	3760.02	650334	3755.01		

<For NR Overlap Bands Description>

1) NR Bands BW

Mode	Band	Duplex	SCS(KHz)	Bandwidths(BW)
NSA	n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
SA	n77	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100
	n78	TDD	30	10, 15, 20, 25, 30, 40, 50, 60, 70, 80, 90, 100

2) NR Bands Tune up:

Band	Antenna	Head DSI 2 Receiver on Tune-up Limit	Head DSI 2 Simultaneous Tune-up Limit	Body Worn DSI 3 Sensor on Tune-up Limit	Body Worn & Hotspot DSI 3 Simultaneous Tune-up Limit	Extremely DSI 6 Handheld Tune-up Limit	Sensor Off DSI4 Tune-up Limit	Default Tune-up Limit
5G NR n77 SA	Ant 3	19.70	18.20	20.30	19.00	21.70	21.70	24.00
5G NR n78 SA	Ant 3	19.70	18.20	20.30	19.00	21.70	21.70	24.00
5G NR n77 NSA	Ant 3	19.70	18.20	20.30	19.00	21.70	21.70	24.00
5G NR n78 NSA	Ant 3	19.70	18.20	20.30	19.00	21.70	21.70	24.00
5G NR n77HPUE SA	Ant 3	22.70	21.20	23.30	22.00	24.70	24.70	27.00
5G NR n78 HPUE SA	Ant 3	22.70	21.20	23.30	22.00	24.70	24.70	27.00
5G NR n77 HPUE NSA	Ant 3	22.70	21.20	23.30	22.00	24.70	24.70	27.00
5G NR n78 HPUE NSA	Ant 3	22.70	21.20	23.30	22.00	24.70	24.70	27.00

Band	Antenna	Head DSI 2 Receiver on Tune-up Limit	Head DSI 2 Simultaneous Tune-up Limit	Body Worn DSI 3 Sensor on Tune-up Limit	Body Worn & Hotspot DSI 3 Simultaneous Tune-up Limit	Extremely DSI 6 Handheld Tune-up Limit	Sensor Off DSI4 Tune-up Limit	Default Tune-up Limit
5G NR n77 SA	Ant 7	21.00	19.90	21.50	20.50	24.00	24.00	24.00
5G NR n78 SA	Ant 7	21.00	19.90	21.50	20.50	24.00	24.00	24.00
5G NR n77 NSA	Ant 7	21.00	19.90	21.50	20.50	24.00	24.00	24.00
5G NR n78 NSA	Ant 7	21.00	19.90	21.50	20.50	24.00	24.00	24.00

5. Smart Transmit feature for RF Exposure compliance

The RF exposure limit is defined based on time-averaged RF exposure. The product implements Qualcomm Smart Transmit feature which controls the instantaneous transmitting power for WWAN transmitter to ensure the product in compliance with RF exposure limit over a defined time window, for SAR (transmit frequency ≤ 6GHz). To control and manage transmitting power in real time and to ensure at all times the time-averaged RF exposure is compliant to the regulation requirement.

This report describes the procedures for the SAR char generation, and the parameters obtained from SAR characterization (referred to as SAR char, respectively) will be used as input for Smart Transmit. SAR char will be entered via the Embedded File System (EFS) to enable the Smart Transmit Feature.

<Terminologies in this report>

P_{limit}	The time-averaged RF power which corresponds to SAR_design_target.
P_{max}	Maximum target power level
SAR_design_target:	The design target for SAR compliance. It should be less than regulatory SAR limit to account for all device design related uncertainty.
SAR char	P_{limit} for all the technologies/bands for all applicable DSI

<SAR Characterization>

SAR char must be generated to cover all radio configurations and usage scenarios that the wireless device supports for operating at 6 GHz or below. It will then be used as input for Smart Transmit to control and manage RF exposure for f < 6 GHz.

<SAR design target and uncertainty>

Item	Uncertainty dB (k=2)
Total uncertainty	1.5

To account for total uncertainty, SAR_design_target should be determined as:

$$SAR_design_target < SAR_{regulatory_limit} \times 10^{\frac{-total\ uncertainty}{10}}$$

The Smart Transmit algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target, below the predefined time-averaged power limit, for each characterized technology and band.

Smart Transmit allows the device to transmit at higher power instantaneously, as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to Plimit. Below table shows Plimit EFS settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (Device State Index DSI).

<P_{limit} for supported technologies and bands (P_{limit} in EFS file)>

Band	Antenna	Head DSI 2 Standalone Power	Head DSI 2 Simultaneous	Body Worn DSI 3 Standalone Power	Body Worn & Hotspot DSI 3 Simultaneous	Extremity DSI6 Power	Sensor Off DSI4	Pmax*
5G NR n77	3	18.7	17.2	19.3	18.0	20.7	20.7	23.0
5G NR n77	7	20.0	18.9	20.5	19.5	24.0	23.0	23.0
5G NR n77 HPUE	3	18.7	17.2	19.3	18.0	20.7	20.7	23.0
5G NR n78	3	18.7	17.2	19.3	18.0	20.7	20.7	23.0
5G NR n78	7	20.0	18.9	20.5	19.5	24.0	23.0	23.0
5G NR n78 HPUE	3	18.7	17.2	19.3	18.0	20.7	20.7	23.0

Note:

1) *P_{max} is used for RF tune up procedure. The maximum allowed output power is equal to Pmax + 1.0 dB device uncertainty.

2) All P_{limit} power levels entered in the Table correspond to average power levels after accounting for duty cycle in the case TDD modulation schemes (for e.g., NR TDD).

3) The max allowed output power is the Plimit + 1.0 dB device uncertainty, and if Plimit is higher than Pmax, the device output power will be Pmax instead.

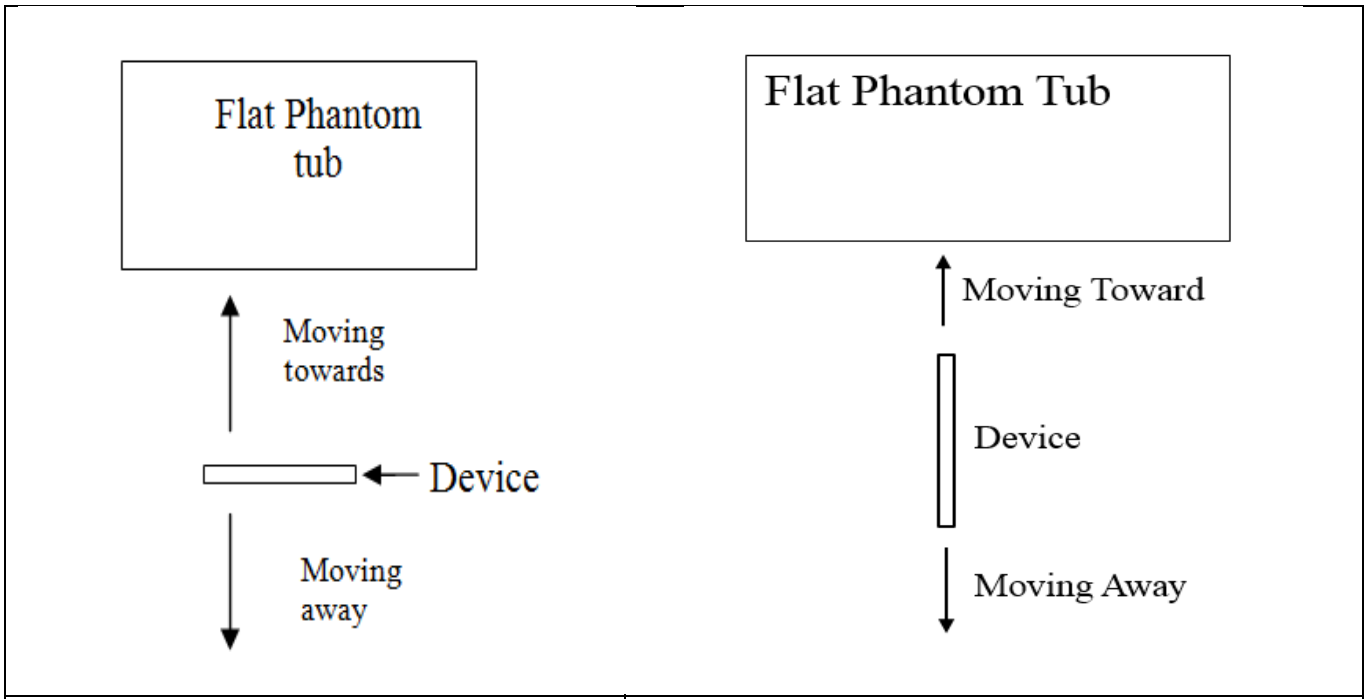
4) For 5GNR n77/n78 HPUE, 5GNR n77/n78 PC2 Maximum Duty Cycle is 50%, using FTM (Factory Test Mode) with 50% duty cycle is considered during SAR testing. For 5G NR other bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.

5) Only operations relevant to this permissive change were evaluated for compliance, Plimit only for 5GNR n77/n78 at ant 3/7 are change, and no other target have been made. Plimt for all other bands/exposure conditions can be referred to the original report.

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 (5825MHz) 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 at the front or back of the device.
3. The output power will reduce to body worn power level when top and bottom sensor pad be detected.
4. The sensors used to detect the proximity of the user's body at the front or back surface of the device use a detection threshold distance. The data shown in the sections below shows the distance(s). When front or back body worn condition is detected reduced power will be active.
5. The device employs proximity sensors also can detect the presence of the user's a finger or hand when handheld state at the front/back/top/bottom/left/right sides of the device. When front/back/top/bottom/left/right sides of handheld condition is detected reduced power will be active.
6. 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:



Sensor/Handheld detection test set-up, Front and Back sides	Handheld detection test set-up, Left Side, Right Side, Bottom Side and Top Side

<P-Sensor>

Proximity Sensor Triggering Distance (mm)				
Position	Front		Back	
	Moving towards	Moving away	Moving towards	Moving away
Minimum	17	16	20	20

<Handheld for ANT0>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	13	13	20	21	15	18	17	20

<Handheld for ANT 1>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Left Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	10	11	15	17	18	20	13	15

<Handheld for ANT 2>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Bottom Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	10	13	13	15	10	12	16	20

<Handheld for ANT 3&8>

Proximity Sensor Triggering Distance (mm)		
Position	Back	
	Moving towards	Moving away
Minimum	10	11

<Handheld for ANT 4&5&7>

Proximity Sensor Triggering Distance (mm)								
Position	Front		Back		Right Side		Top Side	
	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away	Moving towards	Moving away
Minimum	12	14	19	20	19	20	20	21

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:

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

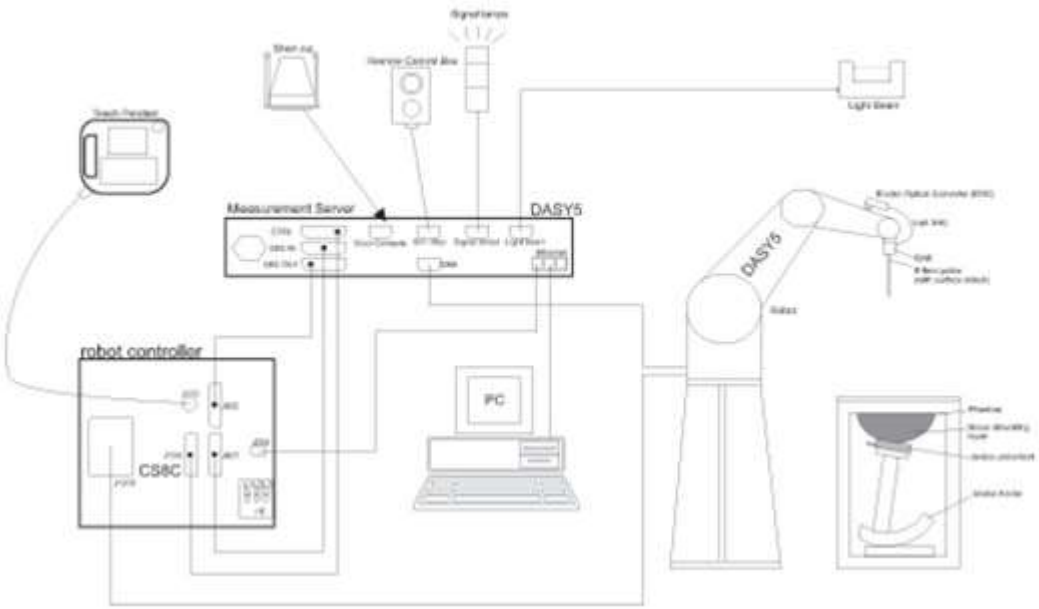
SAR is expressed in units of Watts per kilogram (W/kg)

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

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 WinXP 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.

<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	10 MHz – >6 GHz Linearity: ±0.2 dB (30 MHz – 6 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 in the frequency range of 30 MHz to 6 GHz. ELI4 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 form 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	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{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 ≤ 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 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 shoes 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: Δx_{Zoom}, Δy_{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 1st 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 *reported* SAR from the *area scan based 1-g SAR estimation* 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 for 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 DASY 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	750MHz System Validation Kit	D750V3	1087	2022/2/24	2023/2/23
SPEAG	835MHz System Validation Kit	D835V2	4d091	2022/8/19	2023/8/18
SPEAG	1750MHz System Validation Kit	D1750V2	1090	2022/2/24	2023/2/23
SPEAG	1900MHz System Validation Kit	D1900V2	5d182	2021/12/20	2022/12/19
SPEAG	2450MHz System Validation Kit	D2450V2	1040	2020/5/6	2023/5/4
SPEAG	2600MHz System Validation Kit	D2600V2	1061	2020/11/26	2023/11/24
SPEAG	3500MHz System Validation Kit	D3500V2	1037	2020/11/25	2023/11/23
SPEAG	3700MHz System Validation Kit	D3700V2	1008	2020/11/25	2023/11/23
SPEAG	3900MHz System Validation Kit	D3900V2	1048	2020/5/14	2023/5/12
SPEAG	5000MHz System Validation Kit	D5GHzV2	1113	2022/9/23	2023/9/22
SPEAG	Data Acquisition Electronics	DAE4	1305	2022/4/27	2023/4/26
SPEAG	Data Acquisition Electronics	DAE4	1279	2022/10/26	2023/10/25
SPEAG	Dosimetric E-Field Probe	EX3DV4	7630	2022/3/4	2023/3/3
SPEAG	Dosimetric E-Field Probe	EX3DV4	7706	2022/1/20	2023/1/19
SPEAG	SAM Twin Phantom	SAM Twin	TP-2024	NCR	NCR
SPEAG	SAM Twin Phantom	SAM Twin	TP-2022	NCR	NCR
Testo	Thermo-Hygrometer	608-H1	1241332102	2022/1/6	2023/1/5
SPEAG	Phone Positioner	N/A	N/A	NCR	NCR
Rohde & Schwarz	Signal Generator	SMB100A	100455	2022/1/5	2023/1/4
Keysight	Preamplifier	83017A	MY57280111	2022/7/11	2023/7/10
Anritsu	Radio Communication Analyzer	MT8821C	6262306175	2022/7/14	2023/7/13
Agilent	ENA Series Network Analyzer	E5071C	MY46104587	2022/5/24	2023/5/23
SPEAG	Dielectric Probe Kit	DAK-3.5	1071	2022/1/24	2023/1/23
Anritsu	Vector Signal Generator	MG3710A	6201682672	2022/1/6	2023/1/5
Rohde & Schwarz	Power Meter	NRVD	102081	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100538	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRV-Z5	100539	2022/7/14	2023/7/13
Rohde & Schwarz	Power Sensor	NRP50S	101254	2022/4/7	2023/4/6
EXA	Spectrum Analyzer	FSV7	101631	2022/10/12	2023/10/11
TES	DIGITAC THERMOMETER	1310	200505600	2022/7/12	2023/7/11
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	
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	

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 (εr)
For Head								
750	41.1	57.0	0.2	1.4	0.2	0	0.89	41.9
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)	Head	Liquid Temp. (℃)	Conductivity (σ)	Permittivity (ε_r)	Conductivity Target (σ)	Permittivity Target (ε_r)	Delta (σ) (%)	Delta (ε_r) (%)	Limit (%)	Date
750	Head	22.7	0.909	42.696	0.89	41.90	2.13	1.90	±5	2022/12/2
835	Head	22.9	0.938	42.455	0.90	41.50	4.22	2.30	±5	2022/12/2
1750	Head	22.6	1.359	40.945	1.37	40.10	-0.80	2.11	±5	2022/12/3
1900	Head	22.8	1.456	40.692	1.40	40.00	4.00	1.73	±5	2022/12/3
2450	Head	22.9	1.856	39.106	1.80	39.20	3.11	-0.24	±5	2022/12/4
2600	Head	22.7	1.980	38.980	1.96	39.00	1.02	-0.05	±5	2022/12/4
3500	Head	22.6	2.782	39.163	2.91	37.90	-4.40	3.33	±5	2022/12/5
3700	Head	22.8	3.044	38.164	3.12	37.70	-2.44	1.23	±5	2022/12/5
3900	Head	22.8	3.172	39.024	3.32	37.50	-4.46	4.06	±5	2022/12/6
5250	Head	22.6	4.622	35.850	4.71	35.90	-1.87	-0.14	±5	2022/12/6
5600	Head	22.8	5.023	35.304	5.07	35.50	-0.93	-0.55	±5	2022/12/7
5750	Head	22.9	5.187	35.151	5.22	35.40	-0.63	-0.70	±5	2022/12/7

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.

<1g SAR>

Date	Frequency (MHz)	Head	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 (%)
2022/12/2	750	Head	50	1087	7630	1305	0.451	8.58	9.02	5.13
2022/12/2	835	Head	50	4d091	7630	1305	0.491	9.45	9.82	3.92
2022/12/3	1750	Head	50	1090	7630	1305	1.860	37.00	37.2	0.54
2022/12/3	1900	Head	50	5d182	7630	1305	1.950	39.60	39	-1.52
2022/12/4	2450	Head	50	1040	7630	1305	2.750	51.80	55	6.18
2022/12/4	2600	Head	50	1061	7630	1305	2.770	56.60	55.4	-2.12
2022/12/5	3500	Head	50	1037	7630	1305	3.220	68.00	64.4	-5.29
2022/12/5	3700	Head	50	1008	7630	1305	3.280	67.60	65.6	-2.96
2022/12/6	3900	Head	50	1048	7706	1279	3.350	70.20	67	-4.56
2022/12/6	5250	Head	50	1113	7630	1305	3.860	81.50	77.2	-5.28
2022/12/7	5600	Head	50	1113	7630	1305	4.270	82.60	85.4	3.39
2022/12/7	5750	Head	50	1113	7630	1305	3.790	80.80	75.8	-6.19

<10g SAR>

Date	Frequency (MHz)	Head	Input Power (mW)	Dipole S/N	Probe S/N	DAE S/N	Measured 10g SAR (W/kg)	Targeted 10g SAR (W/kg)	Normalized 10g SAR (W/kg)	Deviation (%)
2022/12/2	750	Head	50	1087	7630	1305	0.297	5.65	5.94	5.13
2022/12/2	835	Head	50	4d091	7630	1305	0.318	6.22	6.36	2.25
2022/12/3	1750	Head	50	1090	7630	1305	0.993	19.50	19.86	1.85
2022/12/3	1900	Head	50	5d182	7630	1305	0.998	20.20	19.96	-1.19
2022/12/4	2450	Head	50	1040	7630	1305	1.280	24.00	25.6	6.67
2022/12/4	2600	Head	50	1061	7630	1305	1.290	25.10	25.8	2.79
2022/12/5	3500	Head	50	1037	7630	1305	1.350	25.40	27	6.30
2022/12/5	3700	Head	50	1008	7630	1305	1.290	24.40	25.8	5.74
2022/12/6	3900	Head	50	1048	7706	1279	1.290	24.40	25.8	5.74
2022/12/6	5250	Head	50	1113	7630	1305	1.100	23.30	22	-5.58
2022/12/7	5600	Head	50	1113	7630	1305	1.220	23.70	24.4	2.95
2022/12/7	5750	Head	50	1113	7630	1305	1.080	23.00	21.6	-6.09

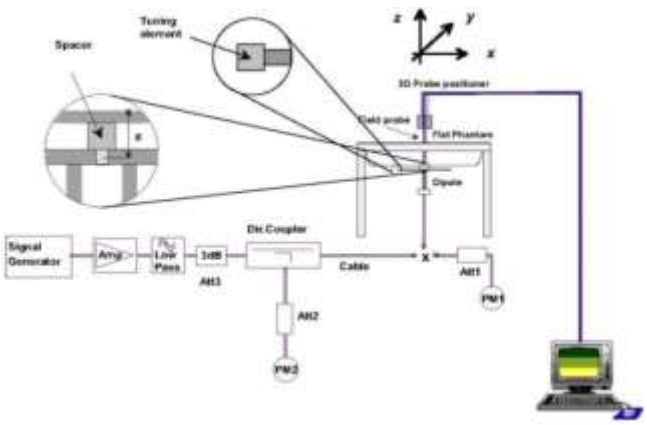


Fig 11.3.1 System Performance Check Setup

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.

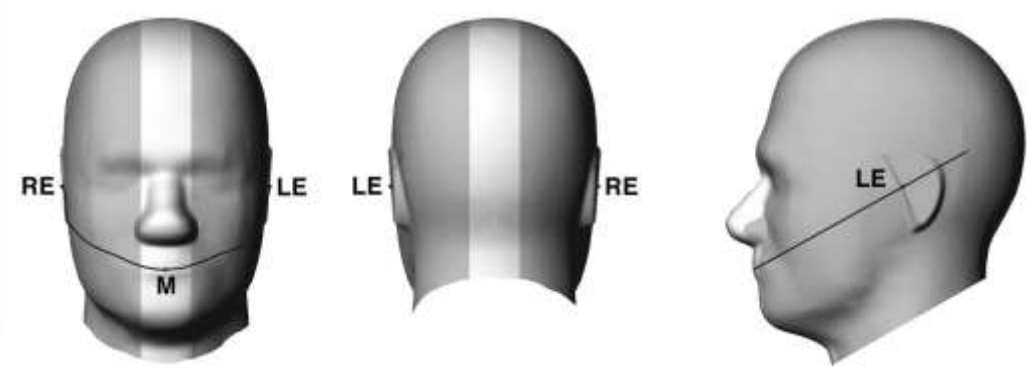


Fig 12.1.1 Front, back, and side views of SAM twin phantom

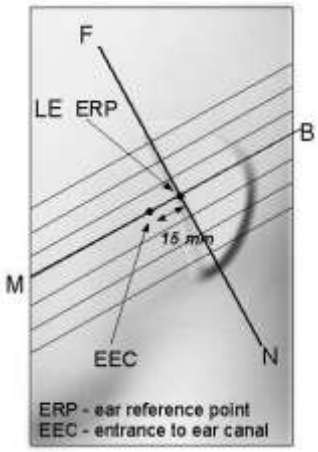


Fig 12.1.2 Close-up side view of phantom showing the ear region.

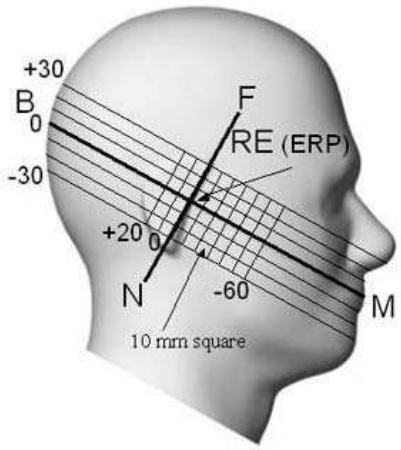


Fig 12.1.3 Side view of the phantom showing relevant markings and seven cross-sectional plane locations

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 wt 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 wb 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.

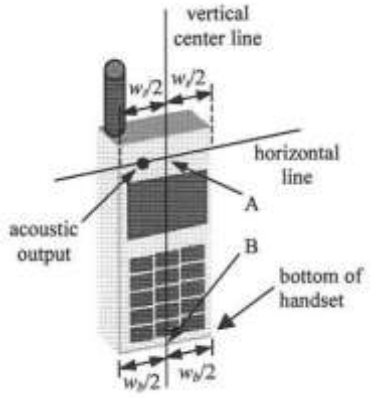


Fig 12.2.1 Handset vertical and horizontal reference lines—"fixed case

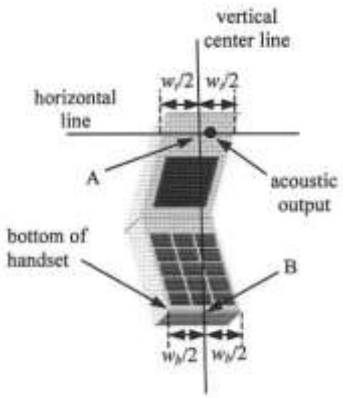


Fig 12.2.2 Handset vertical and horizontal reference lines—"clam-shell case"

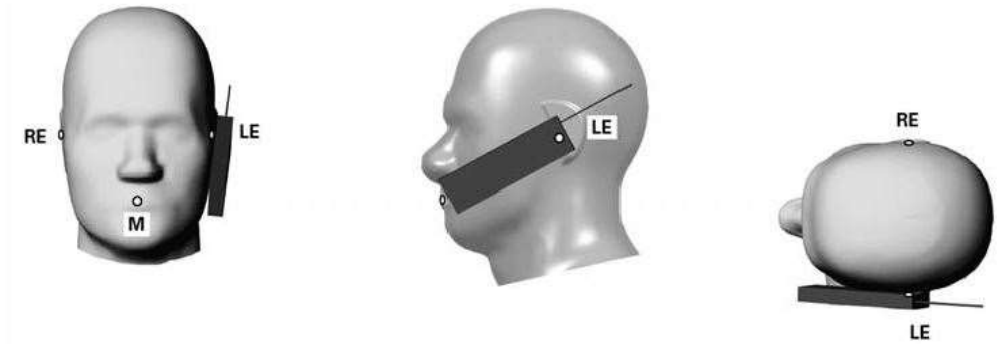


Fig 12.2.3 cheek or touch position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which establish the Reference Plane for handset positioning, are indicated.

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

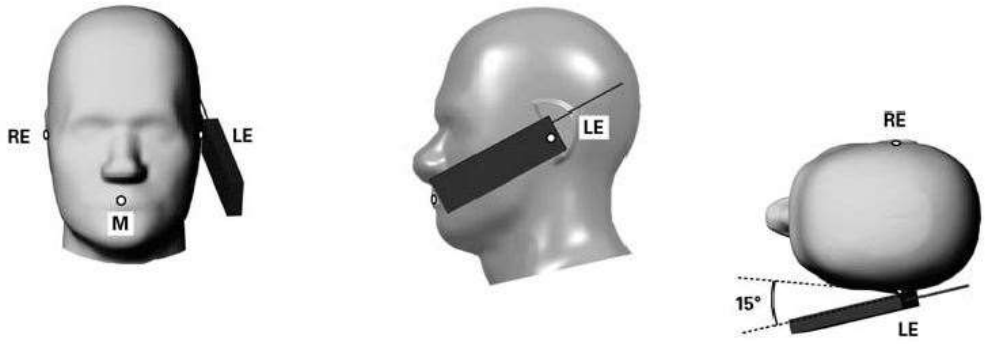


Fig 12.3.1 Tilt position. The reference points for the right ear (RE), left ear (LE), and mouth (M), which define the Reference Plane for handset positioning, are indicated.

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 handset 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.

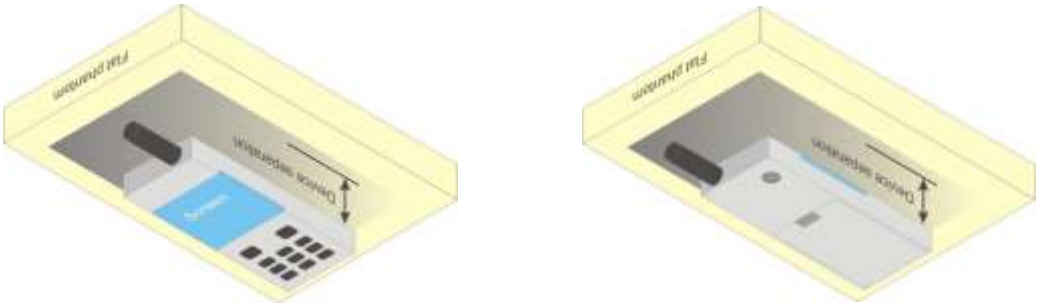


Fig 12.4 Body Worn Position

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 x W ≥ 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 form 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.

5G NR Output Power (Unit: dBm)

General Note:

1. 5G NR n2 / n5 / n7 / n66 / n77 / n78 is NSA mode.
2. 5G NR n2 / n5 / n7 / n66 / n38 / n41 / n77 / n78 is SA mode.
3. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
   a. For DFT-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, the CP-OFDM mode will not higher than DFT-OFDM mode, therefore, similar FCC KDB 941225 D05 procedure for other modulation output power for each RB allocation configuration is > not ½ dB higher than the same configuration in DFT-s QPSK and the reported SAR for the DFT-s QPSK configuration is ≤ 1.45 W/kg; CP-OFDM testing is not required.
   b. For DFT-OFDM output power measurement reduction, according to 38.101 maximum power reduction for power class2 and 3, for 16QAM/64QAM/256QAM and smaller bandwidth output power will spot check largest channel bandwidth worst RB configuration to ensure the 16QAM/64QAM/256QAM and smaller bandwidth output power will not ½ dB higher than the same configuration in the largest supported bandwidth.
   c. SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel
   d. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
   e. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested
   f. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /16QAM/64QAM/256QAM SAR testing are not required.
   g. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
4. This device supports HPUE for 5GNR n77/n78 with class 2 level, HPUE power has been measured separately. For HPUE power is higher than power class 3 but with lower duty cycle, the maximum average power for class 2 and class 3 is almost the same, so we chose power class 3 full SAR testing and power class 2 verify the worst case of power class 3 SAR.
5. For 5GNR n77/n78 HPUE, 5GNR n77/n78 PC2 Maximum Duty Cycle is 50%, using FTM (Factory Test Mode) with 50% duty cycle is considered during SAR testing. For 5G NR other bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
6. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
7. 5GNR NSA mode, the power level is the same as 5GNR SA mode, so 5GNR NSA mode and SA mode power table only show one time.
8. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
9. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
10. 5G NR n41 supports MIMO mode at Antenna 1 and Antenna 2.

<3GPP 38.101 MPR for EN-DC>

Table 6.2.2-1 Maximum power reduction (MPR) for power class 3

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
		≤ 0.5[2]	≤ 0.5[2]	0[2]
	QPSK	≤ 1		0
	16 QAM	≤ 2		≤ 1
	64 QAM	≤ 2.5		
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3		≤ 1.5
	16 QAM	≤ 3		≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with Pi/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0 dB MPR is 26 dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 with Pi/2 BPSK modulation and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40 % of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

Table 6.2.2-2 Maximum power reduction (MPR) for power class 2

Modulation		MPR (dB)		
		Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM	Pi/2 BPSK	≤ 3.5	≤ 0.5	0
	QPSK	≤ 3.5	≤ 1	0
	16 QAM	≤ 3.5	≤ 2	≤ 1
	64 QAM	≤ 3.5	≤ 2.5	
	256 QAM	≤ 4.5		
CP-OFDM	QPSK	≤ 3.5	≤ 3	≤ 1.5
	16 QAM	≤ 3.5	≤ 3	≤ 2
	64 QAM	≤ 3.5		
	256 QAM	≤ 6.5		

Inter Band EN-DC Configuration

ENDC	Main Antenna Tx		ASDiv Tx	
	LTE TX	NR TX	LTE TX	NR TX
DC_2A_n78A	Ant 2	Ant 3	Ant 1	Ant 8/ Ant 9/Ant 7
DC_4A_n78A	Ant 2	Ant 3	Ant 1	Ant 8/ Ant 9/Ant 7
DC_5A_n78A	Ant 0	Ant3	Ant 1	Ant 8/ Ant 9/Ant 7
DC_7A_n78A	Ant 2	Ant 3	Ant 1	Ant 8/ Ant 9/Ant 7
DC_38A_n78A	Ant 2	Ant 3	Ant 1	Ant 8/ Ant 9/Ant 7
DC_41A_n77A	Ant 2	Ant 3	Ant 1	Ant 8/ Ant 9/Ant 7
DC_41A_n78A	Ant 2	Ant 3	Ant 1	Ant 8/ Ant 9/Ant 7
DC_66A_n78A	Ant 2	Ant 3	Ant 1	Ant 8/ Ant 9/Ant 7

Note: Only operations relevant to this permissive change were evaluated for compliance, no other changes have been made. EN-DC combination for all other bands/exposure conditions can be referred to the original report.

15. SAR Test Results

General Note:

1. Per KDB 447498 D01v06, the reported SAR is the measured SAR value adjusted for maximum tune-up tolerance.
   a. Tune-up scaling Factor = tune-up limit power (mW) / EUT RF power (mW), where tune-up limit is the maximum rated power among all production units.
   b. For SAR testing of BT/WLAN signal with non-100% duty cycle, the measured SAR is scaled-up by the duty cycle scaling factor which is equal to "1/(duty cycle)"
   c. For WWAN: Reported SAR(W/kg)= Measured SAR(W/kg)*Tune-up Scaling Factor
   d. For BT/WLAN: Reported SAR(W/kg)= Measured SAR(W/kg)* Duty Cycle scaling factor * Tune-up scaling factor
   e. For TDD LTE SAR measurement of power class 3, the duty cycle 1:1.59 (62.9 %) was used perform testing and considering the theoretical duty cycle of 63.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 62.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 63.3%/62.9% = 1.006 is applied to scale-up the measured SAR result. The reported TDD LTE SAR (W/kg) = Measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
   f. For TDD LTE SAR measurement of power class 2, the duty cycle 1:2.33 (42.9 %) was used perform testing and considering the theoretical duty cycle of 43.3% for extended cyclic prefix in the uplink, and the theoretical duty cycle of 42.9% for normal cyclic prefix in uplink, a scaling factor of extended cyclic prefix 43.3%/42.9% = 1.009 is applied to scale-up the measured SAR result. The reported TDD LTE SAR (W/kg) = measured SAR (W/kg)* Tune-up Scaling Factor* scaling factor for extended cyclic prefix.
2. Per KDB 447498 D01v06, for each exposure position, testing of other required channels within the operating mode of a frequency band is not required when the *reported* 1-g or 10-g SAR for the mid-band or highest output power channel is:
   - ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
   - ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
   - ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz
3. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required when the measured SAR is ≥ 0.8W/kg. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. For dual SIM card mobile has single SIM slots + eSIM (electronic SIM) and supports dual SIM dual standby. The WWAN radio transmission will be enabled by either one SIM at a time (single active).
5. There are two different types of EUT. They are single SIM card mobile and dual SIM card mobile (Single SIM card slot + eSIM). The others are the same including circuit design, PCB board, structure and all components. It is special to declare. After pre-scan two types of EUT, we found test result of the sample that dual SIM was the worst, so we chose dual SIM card mobile to perform all tests.
6. The device implements the power management and proximity sensor /receiver detection/hotspot mode for SAR compliance at different exposure conditions (head, body-worn, hotspot, extremity) and the Qualcomm smart transmit will manage to ensure the power level not exceeding the associated power table. Details about the power management decision and sensor detection are provided in the operational description. And the device will invoke corresponding work scenarios power level base on frequency bands/antennas, which can refer to power table at appendix E.
7. For WLAN when transmit simultaneous with WWAN, power reduction will be activated to head and Handheld. For WLAN when transmit simultaneous with WWAN and Proximity sensors trigger, power reduction will be activated to body-worn and Handheld.
8. For some WWAN bands, sensor on reduced power level is higher than hotspot reduced power level, so front/back sensor on SAR can represent hotspot conservatively.
9. This device supports HPUE for LTE Band 38/41 and 5GNR n77/n78 with class 2 level, HPUE power has been measured separately. For HPUE power is higher than power class 3 but with lower duty cycle, the maximum average power for class 2 and class 3 is almost the same, so we chose power class 3 full SAR testing and power class 2 verify the worst case of power class 3 SAR.
10. For 5GNR n77/n78 HPUE, 5GNR n77/n78 PC2 Maximum Duty Cycle is 50%, using FTM (Factory Test Mode) with 50% duty cycle is considered during SAR testing. For 5G NR other bands test, using FTM (Factory Test Mode) with default 100% duty cycle transmission to perform SAR testing.
11. NSA and SA mode should perform SAR separately. For the maximum power of NSA mode is the same as SA total power level, so SA SAR can represent NSA mode SAR.
12. 5GNR NSA mode, the power level is the same as 5GNR SA mode, so 5GNR NSA mode and SA mode power table

only show one time.

13. 5G NR supports CP-OFDM and DFT-s-OFDM modulation, for DFT-s-OFDM power is higher than CP-OFDM, so only show DFT-s-OFDM power table and chose DFT-s-OFDM to perform SAR testing.
14. For DFT-s-OFDM and CP-OFDM output power measurement reduction, according to 38.101 maximum power reduction for the CP-OFDM mode will not higher than DFT-s-OFDM mode, therefore, CP-OFDM measurement is unnecessary.
15. Per KDB648474 D04v01r03, for smart phones with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm, 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, however, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.
    a. For this device SAR for WWAN/WLAN transmitter scaled to maximum output power mode for product specific 10g SAR is higher than 1.2W/kg of GSM850/1900, WCDMA Band II/IV, LTE Band 2/4/7/25/66/38/41/42/43/48, 5GNR n2/n7/n66/n38/n41/n77/n78, WLAN2.4/5.2/5.8GHz, therefore product specific 10g SAR is necessary.
    b. WLAN 5.3/5.5GHz tested the product specific 10g SAR since it has no hotspot mode.
    c. When 10-g product specific 10g SAR is considered, SAR thresholds is specified in the procedures for SAR test reduction and exclusion should be multiplied by 2.5.
16. For distance SAR and non-distance SAR in body-worn, always chose higher SAR to do co-located analysis.
17. For ANT6 which support WLAN2.4GHz MIMO, there is no cap sensor on ANT6, thus the power of ANT6 will force cutback at all exposure conditions to meet the SAR is compliance on WLAN transmit simultaneously with WWAN.

5G NR Note:

1. For 5G NR test procedure was following step similar FCC KDB 941225 D05:
    a. SAR testing start with the largest channel bandwidth and measure SAR for QPSK with 1 RB allocation, using the RB offset and required test channel combination with the highest maximum output power for RB offsets at the upper edge, middle and lower edge of each required test channel.
    b. 50% RB allocation for QPSK SAR testing follows 1RB QPSK allocation procedure
    c. QPSK with 100% RB allocation, SAR is not required when the highest maximum output power for 100 % RB allocation is less than the highest maximum output power in 50% and 1 RB allocations and the highest reported SAR for 1 RB and 50% RB allocation are ≤ 0.8 W/kg. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
    d. PI/2 BPSK/16QAM/64QAM/256QAM output powers according to 3GPP MPR will not ½ dB higher than the same configuration in QPSK, also reported SAR for the QPSK configuration is less than 1.45 W/kg, PI/2 BPSK /16QAM/64QAM/256QAM SAR testing are not required.
    e. Smaller bandwidth output power for each RB allocation configuration for this device will not ½ dB higher than the same configuration in the largest supported bandwidth, and the reported SAR for the largest supported bandwidth is ≤ 1.45 W/kg, smaller bandwidth SAR testing is not required for this device
    f. For 5G FR1 n5 /n7/n41/n66/n77 the maximum bandwidth does not support three non-overlapping channels, when a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing.

15.1 Head SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	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)	Reported 1g SAR (W/kg)
750MHz																		
	LTE Band 12	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI 2	23095	707.5	22.98	24.00	1.265	0.03	0.130	0.164
01	LTE Band 12	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 2	23095	707.5	22.79	24.00	1.321	0.12	0.557	**0.736**
	LTE Band 13	10M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI 2	23230	782	22.72	24.00	1.343	0.01	0.159	0.213
02	LTE Band 13	10M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 2	23230	782	22.52	24.00	1.406	0.01	0.471	**0.662**
835MHz																		
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Left Cheek	0mm	Ant 0	DSI 2	189	836.4	28.36	29.00	1.159	0.03	0.121	0.140
03	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Tilted	0mm	Ant 1	DSI 2	251	848.8	28.15	29.00	1.216	0.03	0.823	**1.001**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 0	DSI 2	4182	836.4	24.22	25.00	1.197	0.08	0.188	0.225
04	WCDMA V	-	-	-	-	RMC 12.2Kbps	Right Tilted	0mm	Ant 1	DSI 2	4233	846.6	23.90	25.00	1.288	-0.04	0.508	**0.654**
	LTE Band 26	15M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI 2	26865	831.5	22.77	24.00	1.327	0.06	0.166	0.220
05	LTE Band 26	15M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 2	26865	831.5	22.51	24.00	1.409	-0.06	0.421	**0.593**
06	FR1 n5	20M	QPSK	1	1	DFT-SCS-15KHz	Left Cheek	0mm	Ant 0	DSI 2	167300	836.5	23.19	24.00	1.205	-0.03	0.101	**0.122**
1750MHz																		
07	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI 2	1513	1752.6	16.88	18.00	1.294	0.03	0.656	**0.849**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 2	DSI 2	1413	1732.6	24.12	25.00	1.225	0.09	0.179	0.219
08	LTE Band 66	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 2	132572	1770	17.24	18.40	1.306	0.01	0.718	**0.938**
	LTE Band 66	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI 2	132322	1745	22.95	24.00	1.274	0.07	0.099	0.126
09	FR1 n66	40M	QPSK	216	0	DFT-SCS-15KHz	Right Cheek	0mm	Ant 1	DSI 2	349000	1745	17.47	18.60	1.297	-0.03	0.756	**0.981**
1900MHz																		
10	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Right Cheek	0mm	Ant 1	DSI 2	661	1880	22.03	23.30	1.340	0.03	0.897	**1.202**
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Right Cheek	0mm	Ant 2	DSI 2	661	1880	29.47	30.50	1.268	0.03	0.087	0.110
11	WCDMA II	-	-	-	-	RMC 12.2Kbps	Right Cheek	0mm	Ant 1	DSI 2	9538	1907.6	15.96	17.20	1.330	-0.16	0.647	**0.861**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Cheek	0mm	Ant 2	DSI 2	9400	1880	24.06	25.00	1.242	0.06	0.166	0.206
12	LTE Band 25	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 1	DSI 2	26590	1905	17.22	18.40	1.312	0.01	0.814	**1.068**
	LTE Band 25	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 2	DSI 2	26340	1880	22.72	24.00	1.343	0.06	0.119	0.160
13	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Right Cheek	0mm	Ant 1	DSI 2	372000	1860	17.92	18.90	1.253	-0.06	0.909	**1.139**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	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)
2600MHz																				
14	LTE Band 7	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 1	DSI 2	21100	2535	17.54	18.80	1.337	-	-	0.02	0.754	**1.008**
	LTE Band 7	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 2	DSI 2	21100	2535	23.04	24.00	1.247	-	-	0.01	0.429	0.535
15	FR1 n7	40M	QPSK	108	54	DFT-SCS-15KHz	Right Tilted	0mm	Ant 1	DSI 2	507000	2535	15.90	16.90	1.259	-	-	-0.04	0.570	**0.718**
	FR1 n7	40M	QPSK	108	54	DFT-SCS-15KHz	Right Cheek	0mm	Ant 2	DSI 2	507000	2535	22.19	24.00	1.517	-	-	0.07	0.244	0.370
16	LTE Band 41 HPUE	20M	QPSK	50	0	-	Right Tilted	0mm	Ant 1	DSI 2	41055	2636.5	19.36	20.50	1.300	42.9	1.009	0.04	0.623	**0.817**
	LTE Band 41 HPUE	20M	QPSK	50	0	-	Right Cheek	0mm	Ant 2	DSI 2	40620	2593	24.94	25.50	1.138	42.9	1.009	0.01	0.349	0.401
	LTE Band 41	20M	QPSK	1	0	-	Left Cheek	0mm	Ant 0	DSI 2	40620	2593	22.36	23.00	1.159	62.9	1.006	0.01	0.071	0.083
	LTE Band 41	20M	QPSK	1	0	-	Left Tilted	0mm	Ant 4	DSI 2	40620	2593	19.25	19.50	1.059	62.9	1.006	-0.07	0.566	0.603
	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Right Tilted	0mm	Ant 1	DSI 2	518598	2592.99	15.98	16.70	1.180	-	-	-0.1	0.647	0.764
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 2	DSI 2	518598	2592.99	22.97	24.00	1.268	-	-	0.08	0.331	0.420
	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 0	DSI 2	518598	2592.99	23.18	24.00	1.208	-	-	0.01	0.121	0.146
17	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 4	DSI 2	518598	2592.99	17.44	18.50	1.276	-	-	0.06	0.977	**1.247**
3500MHz																				
	LTE Band 42	20M	QPSK	1	0	-	Right Cheek	0mm	Ant 3	DSI 2	42590	3500	21.18	21.50	1.076	62.9	1.006	0.04	0.310	0.336
18	LTE Band 42	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 8	DSI 2	42590	3500	19.61	20.00	1.094	62.9	1.006	-0.05	0.408	**0.449**
	LTE Band 48	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 3	DSI 2	55830	3609	20.60	21.50	1.230	62.9	1.006	0.09	0.209	0.259
19	LTE Band 48	20M	QPSK	1	0	-	Right Tilted	0mm	Ant 8	DSI 2	55830	3609	19.32	20.00	1.169	62.9	1.006	0.08	0.249	**0.293**
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Cheek	0mm	Ant 3	DSI 2	656000	3840	18.88	19.70	1.208	-	-	0.09	0.845	1.021
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 3	DSI 2	656000	3840	18.82	19.70	1.225	-	-	-0.18	0.887	1.086

	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Right Cheek	0mm	Ant 3	DSI 2	656000	3840	18.72	19.70	1.253	-	-	0.05	0.862	1.080
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Tilted	0mm	Ant 3	DSI 2	656000	3840	18.88	19.70	1.208	-	-	0.02	0.512	0.618
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 3	DSI 2	656000	3840	18.82	19.70	1.225	-	-	-0.04	0.527	0.645
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 3	DSI 2	656000	3840	18.88	19.70	1.208	-	-	0.19	0.167	0.202
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 3	DSI 2	656000	3840	18.82	19.70	1.225	-	-	0.02	0.215	0.263
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 3	DSI 2	656000	3840	18.88	19.70	1.208	-	-	-0.1	0.149	0.180
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 3	DSI 2	656000	3840	18.82	19.70	1.225	-	-	0.05	0.175	0.214
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 3	DSI 2 Simultaneous	656000	3840	17.35	18.20	1.216	-	-	0.02	0.699	0.850
	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 3	DSI 2	656000	3840	22.18	22.70	1.127	50	1.000	0.05	0.979	1.104
	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 3	DSI 2 Simultaneous	656000	3840	20.35	21.20	1.216	50	1.000	-0.18	0.772	0.939
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Cheek	0mm	Ant 7	DSI 2	656000	3840	20.14	21.00	1.219	-	-	-0.19	0.287	0.350
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 7	DSI 2	656000	3840	20.10	21.00	1.230	-	-	0.06	0.314	0.386
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Tilted	0mm	Ant 7	DSI 2	656000	3840	20.14	21.00	1.219	-	-	0.07	0.374	0.456
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Tilted	0mm	Ant 7	DSI 2	656000	3840	20.10	21.00	1.230	-	-	0.07	0.376	0.463
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Cheek	0mm	Ant 7	DSI 2	656000	3840	20.14	21.00	1.219	-	-	-0.08	0.682	0.831
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Cheek	0mm	Ant 7	DSI 2	656000	3840	20.10	21.00	1.230	-	-	0.04	0.672	0.827
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Cheek	0mm	Ant 7	DSI 2	656000	3840	19.98	21.00	1.265	-	-	0.07	0.758	0.959
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Tilted	0mm	Ant 7	DSI 2	656000	3840	20.14	21.00	1.219	-	-	0.08	0.723	0.881
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Tilted	0mm	Ant 7	DSI 2	656000	3840	20.10	21.00	1.230	-	-	0.07	0.904	1.112
20	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Tilted	0mm	Ant 7	DSI 2	656000	3840	19.98	21.00	1.265	-	-	0.13	0.973	**1.231**
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Tilted	0mm	Ant 7	DSI 2 Simultaneous	656000	3840	18.77	19.90	1.297	-	-	0.05	0.701	0.909
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Tilted	0mm	Ant 8	DSI 2	656000	3840	23.33	24.00	1.167	-	-	0.01	0.169	0.197
	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Cheek	0mm	Ant 9	DSI 2	656000	3840	25.45	27.00	1.429	50	1.000	0.02	0.162	0.231

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	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)
WIFI/BT																
21	WLAN2.4GHz	802.11b 1Mbps	Left Tilted	0mm	Ant 4+6	Standalone	11	2462	20.73	22.50	1.503	97.86	1.022	0.05	0.582	**0.894**
22	Bluetooth	1Mbps	Left Cheek	0mm	Ant 4	Full Power	39	2441	13.82	14.50	1.169	76.99	1.299	0.05	0.103	**0.156**
	Bluetooth	1Mbps	Left Cheek	0mm	Ant 6	Full Power	39	2441	13.83	14.50	1.167	76.85	1.301	0.01	0.059	0.090
23	WLAN5.3GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+7	Standalone	58	5290	19.32	20.00	1.169	100	1.000	-0.01	0.687	**0.803**
24	WLAN5.5GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+7	Standalone	122	5610	20.15	21.00	1.216	100	1.000	0.08	0.694	**0.844**
25	WLAN5.8GHz	802.11ac-VHT80 MCS0	Left Cheek	0mm	Ant 5+7	Standalone	155	5775	20.01	21.00	1.256	100	1.000	0.02	0.570	**0.716**

15.2 Hotspot SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	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)	Reported 1g SAR (W/kg)
750MHz																		
26	LTE Band 12	10M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI 3	23095	707.5	22.98	24.00	1.265	0.02	0.512	**0.648**
	LTE Band 12	10M	QPSK	1	0	-	Top Side	5mm	Ant 1	DSI 3	23095	707.5	22.79	24.00	1.321	0.02	0.455	0.601
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 0	DSI 3	23230	782	22.72	24.00	1.343	0.03	0.533	0.716
27	LTE Band 13	10M	QPSK	1	0	-	Top Side	5mm	Ant 1	DSI 3	23230	782	22.52	24.00	1.406	0.02	0.688	**0.967**
835MHz																		
	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 0	DSI 3	189	836.4	28.36	29.00	1.159	0.01	0.311	0.360
28	GSM850	-	-	-	-	GPRS (3 Tx slots)	Top Side	5mm	Ant 1	DSI 3	251	848.8	27.91	28.50	1.146	0.02	0.736	**0.843**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	DSI 3	4182	836.4	24.22	25.00	1.197	0.05	0.609	0.729
29	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	DSI 3	4182	836.4	24.03	25.00	1.250	0.06	0.780	**0.975**
	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	DSI 3	26865	831.5	22.77	24.00	1.327	0.09	0.577	0.766
30	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	DSI 3	26865	831.5	22.51	24.00	1.409	0.14	0.603	**0.850**
31	FR1 n5	20M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	DSI 3	167300	836.5	23.19	24.00	1.205	-0.17	0.404	**0.487**
1750MHz																		
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	DSI 3	1513	1752.6	15.52	16.50	1.253	0.01	0.617	0.773
32	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI 3	1513	1752.6	19.31	20.50	1.315	0.09	0.726	**0.955**
33	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI 3	132322	1745	16.62	17.80	1.312	0.05	0.673	**0.883**
	LTE Band 66	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI 3	132072	1720	19.28	20.40	1.294	0.08	0.671	0.868
34	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	DSI 3	349000	1745	15.89	17.20	1.352	0.02	0.668	**0.903**
1900MHz																		
	GSM1900	-	-	-	-	GPRS (3 Tx slot)	Left Side	5mm	Ant 1	DSI 3	661	1880	20.67	21.70	1.268	0.06	0.577	0.731
35	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 2	DSI 3	512	1850.2	21.72	22.50	1.197	0.05	1.020	**1.221**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	DSI 3	9538	1907.6	16.13	17.30	1.309	0.01	0.562	0.736
36	WCDMA II	-	-	-	-	RMC 12.2Kbps	Bottom Side	5mm	Ant 2	DSI 3	9400	1880	19.71	20.90	1.315	-0.01	0.863	**1.135**
	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 1	DSI 3	26590	1905	16.13	17.40	1.340	0.05	0.629	0.843
37	LTE Band 25	20M	QPSK	1	0	-	Bottom Side	5mm	Ant 2	DSI 3	26340	1880	18.94	20.10	1.306	0.04	0.871	**1.138**
38	FR1 n2	20M	QPSK	100	0	-	Back	5mm	Ant 1	DSI 3	376000	1880	16.46	17.50	1.271	0.02	0.701	**0.891**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	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)
2600MHz																				
	LTE Band 7	20M	QPSK	1	0	-	Top Side	5mm	Ant 1	DSI 3	21100	2535	15.45	16.60	1.303	-	-	0.01	0.737	0.960
39	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 2	DSI 3	21100	2535	20.48	21.80	1.355	-	-	-0.05	0.840	**1.138**
	FR1 n7	40M	QPSK	108	54	DFT-SCS-15KHz	Top Side	5mm	Ant 1	DSI 3	507000	2535	14.41	15.50	1.285	-	-	-0.01	0.699	0.898
40	FR1 n7	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 2	DSI 3	507000	2535	20.32	21.50	1.312	-	-	0.02	0.805	**1.056**
	LTE Band 41	20M	QPSK	1	0	-	Left Side	5mm	Ant 0	DSI 3	41490	2680	19.76	20.50	1.186	62.9	1.006	0.02	0.811	0.967
	LTE Band 41 HPUE	20M	QPSK	1	0	-	Top Side	5mm	Ant 1	DSI 3	41490	2680	17.70	18.80	1.288	42.9	1.009	0.01	0.662	0.860
41	LTE Band 41 HPUE	20M	QPSK	1	0	-	Back	5mm	Ant 2	DSI 3	41490	2680	24.06	25.10	1.271	42.9	1.009	0.02	0.789	**1.012**
	LTE Band 41	20M	QPSK	1	0	-	Top Side	5mm	Ant 4	DSI 3	41490	2680	16.84	18.00	1.306	62.9	1.006	0.02	0.611	0.803
	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 1	DSI 3	518598	2592.99	14.96	16.30	1.361	-	-	0.08	0.645	0.878
42	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 2	DSI 3	518598	2592.99	20.51	21.10	1.146	-	-	-0.19	0.958	**1.097**
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 0	DSI 3	518598	2592.99	19.51	20.20	1.172	-	-	0.01	0.818	0.959
	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 4	DSI 3	518598	2592.99	16.96	18.20	1.330	-	-	0.02	0.633	0.842
3500MHz																				
43	LTE Band 42	20M	QPSK	1	0	-	Left Side	5mm	Ant 3	DSI 3	42190	3460	19.48	20.60	1.294	62.9	1.006	0.01	0.629	**0.819**
	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 8	DSI 3	42990	3540	15.47	16.40	1.239	62.9	1.006	0.01	0.542	0.675
	LTE Band 48	20M	QPSK	1	0	-	Left Side	5mm	Ant 3	DSI 3	56150	3641	20.53	21.50	1.250	62.9	1.006	0.02	0.633	0.796
44	LTE Band 48	20M	QPSK	1	0	-	Back	5mm	Ant 8	DSI 3	56150	3641	17.31	18.10	1.199	62.9	1.006	0.01	0.781	**0.942**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	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)
3500MHz																				
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3	DSI 3	656000	3840	18.03	19.00	1.250	-	-	0.09	0.279	0.349
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3	DSI 3	656000	3840	17.99	19.00	1.262	-	-	0.08	0.300	0.379
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 3	DSI 3	656000	3840	18.03	19.00	1.250	-	-	0.12	0.567	0.709
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3	DSI 3	656000	3840	17.99	19.00	1.262	-	-	0.13	0.644	0.813
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 3	DSI 3	656000	3840	17.97	19.00	1.268	-	-	-0.11	0.687	0.871
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 3	DSI 3	656000	3840	18.03	19.00	1.250	-	-	0.12	0.620	0.775
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 3	DSI 3	656000	3840	17.99	19.00	1.262	-	-	0.12	0.754	0.951
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Side	5mm	Ant 3	DSI 3	656000	3840	17.97	19.00	1.268	-	-	0.03	0.706	0.895
	FR1 n77	100M	QPSK	1	0	DFT-SCS-30KHz	Right Side	5mm	Ant 3	DSI 3	656000	3840	18.03	19.00	1.250	-	-	0.02	0.035	0.044
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 3	DSI 3	656000	3840	17.99	19.00	1.262	-	-	-0.06	0.036	0.045
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 3	DSI 3	656000	3840	18.03	19.00	1.250	-	-	0.07	0.065	0.081
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 3	DSI 3	656000	3840	17.99	19.00	1.262	-	-	0.08	0.068	0.086
	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 3	DSI 3	656000	3840	20.79	22.00	1.321	50	1.000	0.06	0.715	0.945
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 7	DSI 3	656000	3840	19.43	20.50	1.279	-	-	0.07	0.236	0.302
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 7	DSI 3	656000	3840	19.39	20.50	1.291	-	-	-0.15	0.247	0.319
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 7	DSI 3	656000	3840	19.43	20.50	1.279	-	-	-0.09	0.518	0.663
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 7	DSI 3	656000	3840	19.39	20.50	1.291	-	-	0.09	0.598	0.772
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	5mm	Ant 7	DSI 3	656000	3840	19.43	20.50	1.279	-	-	0.17	0.036	0.046
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	5mm	Ant 7	DSI 3	656000	3840	19.39	20.50	1.291	-	-	0.17	0.045	0.058
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 7	DSI 3	656000	3840	19.43	20.50	1.279	-	-	-0.14	0.562	0.719
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	5mm	Ant 7	DSI 3	656000	3840	19.39	20.50	1.291	-	-	0.1	0.545	0.704
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	5mm	Ant 7	DSI 3	656000	3840	19.43	20.50	1.279	-	-	0.03	0.625	0.800
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	5mm	Ant 7	DSI 3	656000	3840	19.39	20.50	1.291	-	-	0.06	0.701	0.905
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Top Side	5mm	Ant 7	DSI 3	656000	3840	19.37	20.50	1.297	-	-	0.12	0.741	0.961
	FR1 n77 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 8	DSI 3	656000	3840	16.95	18.20	1.334	50	1.000	0.01	0.409	0.545
45	FR1 n77 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	5mm	Ant 9	DSI 3	656000	3840	20.11	20.90	1.199	50	1.000	0.02	0.832	**0.998**

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	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)
WIFI/BT																
46	WLAN2.4GHz	802.11b 1Mbps	Top Side	5mm	Ant 4+6	WWAN+non DBS	1	2412	16.29	18.00	1.483	97.86	1.022	0.05	0.211	**0.320**
	Bluetooth	1Mbps	Right Side	5mm	Ant 4	Full Power	39	2441	13.82	14.50	1.169	76.99	1.299	0.02	0.019	0.029
47	Bluetooth	1Mbps	Right Side	5mm	Ant 6	Full Power	39	2441	13.83	14.50	1.167	76.85	1.301	0.08	0.111	**0.169**
48	WLAN5.2GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+7	WWAN+non DBS	42	5210	16.18	17.00	1.208	100	1.000	0.02	0.193	**0.233**
49	WLAN5.8GHz	802.11ac-VHT80 MCS0	Right Side	5mm	Ant 5+7	WWAN+non DBS	155	5775	13.52	14.50	1.253	100	1.000	0.02	0.124	**0.155**

15.3 Body Worn Accessory SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Headset	Power State	Ch.	Freq. (MHz)	Average Power (dBm)	Tune-Up Limit (dBm)	Tune-up Scaling Factor	Power Drift (dB)	Measured 1g SAR (W/kg)	Reported 1g SAR (W/kg)
750MHz																			
	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI 3	23095	707.5	22.98	24.00	1.265	0.01	0.371	0.469
50	LTE Band 12	10M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI 3	23095	707.5	22.79	24.00	1.321	-0.02	0.543	**0.717**
	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI 3	23230	782	22.72	24.00	1.343	0.03	0.533	0.716
51	LTE Band 13	10M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI 3	23230	782	22.52	24.00	1.406	0.09	0.606	**0.852**
835MHz																			
	GSM850	-	-	-	-	GPRS (3 Tx slot)	Back	5mm	Ant 0	-	DSI 3	189	836.4	28.36	29.00	1.159	0.01	0.311	0.360
52	GSM850	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 1	-	DSI 3	251	848.8	28.15	29.00	1.216	-0.01	0.749	**0.911**
	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 0	-	DSI 3	4182	836.4	24.22	25.00	1.197	0.05	0.609	0.729
53	WCDMA V	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	-	DSI 3	4182	836.4	24.03	25.00	1.250	0.06	0.780	**0.975**
	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 0	-	DSI 3	26865	831.5	22.77	24.00	1.327	0.09	0.577	0.766
54	LTE Band 26	15M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI 3	26865	831.5	22.51	24.00	1.409	0.14	0.603	**0.850**
55	FR1 n5	20M	QPSK	1	1	DFT-SCS-15KHz	Back	5mm	Ant 0	-	DSI 3	167300	836.5	23.19	24.00	1.205	-0.17	0.404	**0.487**
1750MHz																			
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	-	DSI 3	1513	1752.6	16.38	17.50	1.294	0.07	0.698	0.903
56	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI 3	1513	1752.6	21.82	22.80	1.253	0.09	0.969	**1.214**
	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI 3	132322	1745	17.66	18.80	1.300	-0.09	0.771	1.002
57	LTE Band 66	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI 3	132322	1745	21.81	23.00	1.315	-0.08	0.815	**1.072**
58	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	-	DSI 3	349000	1745	16.91	18.20	1.346	0.09	0.809	**1.089**
1900MHz																			
59	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Back	5mm	Ant 1	-	DSI 3	661	1880	21.82	22.90	1.282	0.04	0.948	**1.216**
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Back	5mm	Ant 2	-	DSI 3	512	1850.2	29.34	30.50	1.306	0.02	0.682	0.891
60	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 1	-	DSI 3	9538	1907.6	17.17	18.30	1.297	0.04	0.831	**1.078**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	-	DSI 3	9262	1852.4	21.84	23.20	1.368	-0.03	0.745	1.019
	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI 3	26590	1905	17.13	18.40	1.340	0.07	0.699	0.936
61	LTE Band 25	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI 3	26140	1860	21.25	22.60	1.365	0.05	0.905	**1.235**
62	FR1 n2	20M	QPSK	100	0	DFT-SCS-15KHz	Back	5mm	Ant 1	-	DSI 3	376000	1880	17.46	18.50	1.271	0.07	0.901	**1.145**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Headset	Power State	Ch.	Freq. (MHz)	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)
2600MHz																					
63	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 1	-	DSI 3	21100	2535	19.71	20.80	1.285	-	-	-0.01	0.849	**1.091**
	LTE Band 7	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI 3	21100	2535	20.48	21.80	1.355	-	-	-0.11	0.795	1.077
64	FR1 n7	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 1	-	DSI 3	507000	2535	18.92	19.70	1.197	-	-	0.09	0.932	**1.115**
	FR1 n7	40M	QPSK	108	54	DFT-SCS-15KHz	Back	5mm	Ant 2	-	DSI 3	507000	2535	20.32	21.50	1.312	-	-	0.02	0.808	1.060
	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant 1	-	DSI 3	41490	2680	20.07	21.20	1.297	62.9	1.006	0.05	0.795	1.037
	LTE Band 41 HPUE	20M	QPSK	1	0	-	Back	5mm	Ant 2	-	DSI 3	41490	2680	24.06	25.10	1.271	42.9	1.009	0.05	0.772	0.990
65	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant 0	-	DSI 3	41490	2680	20.98	21.60	1.153	62.9	1.006	0.06	1.020	**1.184**
	LTE Band 41	20M	QPSK	1	0	-	Back	5mm	Ant 4	-	DSI 3	39750	2506	18.92	20.00	1.282	62.9	1.006	0.05	0.582	0.751
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 1	-	DSI 3	518598	2592.99	18.89	20.20	1.352	-	-	0.05	0.718	0.971
66	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 2	-	DSI 3	518598	2592.99	20.51	21.10	1.146	-	-	-0.19	0.958	**1.097**
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 0	-	DSI 3	518598	2592.99	22.11	23.40	1.346	-	-	0.02	0.803	1.081
	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 4	-	DSI 3	518598	2592.99	22.43	22.50	1.016	-	-	-0.02	0.793	0.806
3500MHz																					
	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 3	-	DSI 3	42190	3460	20.22	21.50	1.343	62.9	1.006	0.04	0.901	1.217
67	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 8	-	DSI 3	42990	3540	16.52	17.40	1.225	62.9	1.006	0.02	1.010	**1.244**
	LTE Band 48	20M	QPSK	1	0	-	Back	5mm	Ant 3	-	DSI 3	55340	3560	20.46	21.50	1.271	62.9	1.006	0.05	0.340	0.435
68	LTE Band 48	20M	QPSK	1	0	-	Back	5mm	Ant 8	-	DSI 3	56150	3641	18.36	19.10	1.186	62.9	1.006	0.01	0.960	**1.145**
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 3		DSI 3	656000	3840	19.66	20.30	1.159		-	0.01	0.420	0.487

	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 3		DSI 3	656000	3840	19.59	20.30	1.178		-	-0.04	0.413	0.486
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 3		DSI 3	656000	3840	19.66	20.30	1.159		-	0.02	0.867	1.005
69	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3		DSI 3	656000	3840	19.59	20.30	1.178		-	0.06	1.050	**1.236**
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3	Headset	DSI 3	656000	3840	19.59	20.30	1.178		-	0.06	1.010	1.189
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 3		DSI 3	656000	3840	19.58	20.30	1.180		-	0.04	0.911	1.075
	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3		DSI 3	656000	3840	22.59	23.30	1.178	50	1.000	0.1	0.970	1.142
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3		DSI 3 Simultaneous	656000	3840	17.99	19.00	1.262		-	0.06	0.741	0.935
	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3		DSI 3 Simultaneous	656000	3840	20.79	22.00	1.321	50	1.000	0.01	0.701	0.926
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	15mm	Ant 3		DSI 3	656000	3840	22.81	24.00	1.315		-	0.03	0.363	0.477
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	19mm	Ant 3		DSI 3	656000	3840	22.78	24.00	1.324		-	-0.05	0.552	0.731
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Front	5mm	Ant 7		DSI 3	656000	3840	20.55	21.50	1.245	-	-	0.04	0.387	0.482
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	5mm	Ant 7		DSI 3	656000	3840	20.49	21.50	1.262	-	-	0.07	0.442	0.558
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Back	5mm	Ant 7		DSI 3	656000	3840	20.55	21.50	1.245	-	-	0.16	0.845	1.052
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 7		DSI 3	656000	3840	20.49	21.50	1.262	-	-	0.08	0.968	1.221
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 7	Headset	DSI 3	656000	3840	20.49	21.50	1.262	-	-	0.03	0.941	1.187
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 7		DSI 3	656000	3840	20.48	21.50	1.265	-	-	-0.03	0.918	1.161
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 7		DSI 3 Simultaneous	656000	3840	19.39	20.50	1.291	-	-	0.03	0.721	0.931
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Front	15mm	Ant 7		DSI 3	656000	3840	23.58	24.00	1.102	-	-	0.06	0.354	0.390
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	19mm	Ant 7		DSI 3	656000	3840	23.58	24.00	1.102	-	-	-0.02	0.523	0.576
	FR1 n77 HPUE	100M	QPSK	270	0	DFT-SCS-30KHz	Back	5mm	Ant 8	-	DSI 3	656000	3840	18.51	19.20	1.172	50	1.000	0.06	0.669	0.784
	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 9	-	DSI 3	656000	3840	23.72	24.50	1.197	50	1.000	0.01	0.958	1.146

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Headset	Power Reduction	Ch.	Freq. (MHz)	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)
WIFI/BT																	
70	WLAN2.4GHz	802.11b 1Mbps	Back	5mm	Ant 4+6	-	Full Power	1	2412	23.84	25.50	1.466	97.86	1.022	0.02	0.721	**1.080**
71	Bluetooth	1Mbps	Front	5mm	Ant 4	-	Full Power	39	2441	13.82	14.50	1.169	76.99	1.299	0.05	0.059	**0.090**
	Bluetooth	1Mbps	Front	5mm	Ant 6	-	Full Power	39	2441	13.83	14.50	1.167	76.85	1.301	-0.02	0.042	0.064
72	WLAN5.3GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+7	-	Standalone	58	5290	21.30	22.00	1.175	100	1.000	0.05	0.566	**0.665**
73	WLAN5.5GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+7	-	Standalone	122	5610	20.15	21.00	1.216	100	1.000	0.08	0.525	**0.638**
74	WLAN5.8GHz	802.11ac-VHT80 MCS0	Back	5mm	Ant 5+7	-	Standalone	155	5775	20.99	22.00	1.262	100	1.000	0.07	0.625	**0.789**

15.4 Product specific 10g SAR

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	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 10g SAR (W/kg)	Reported 10g SAR (W/kg)
835MHz																		
75	GSM850	-	-	-	-	GPRS (3 Tx slots)	Top Side	0mm	Ant 1	DSI 6	189	836.4	28.03	29.00	1.250	0.01	2.050	**2.563**
1750MHz																		
76	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Top Side	0mm	Ant 1	DSI 6	1513	1752.6	20.84	21.80	1.247	0.04	1.770	**2.208**
	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 2	DSI 6	1513	1752.6	21.76	23.30	1.426	0.02	1.400	1.996
77	LTE Band 66	20M	QPSK	1	0	-	Top Side	0mm	Ant 1	DSI 6	132322	1745	19.91	21.00	1.285	0.02	1.870	**2.403**
	LTE Band 66	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSI 6	132322	1745	21.96	23.10	1.300	0.07	1.580	2.054
78	FR1 n66	40M	QPSK	108	54	DFT-SCS-15KHz	Top Side	0mm	Ant 1	DSI 6	349000	1745	20.91	21.80	1.227	0.06	1.890	**2.320**
1900MHz																		
79	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Left Side	0mm	Ant 1	DSI 6	661	1880	29.45	30.50	1.274	0.02	1.550	1.974
	GSM1900	-	-	-	-	GPRS (1 Tx slot)	Bottom Side	0mm	Ant 2	DSI 6	810	1909.8	29.35	30.50	1.303	0.04	1.560	**2.033**
80	WCDMA II	-	-	-	-	RMC 12.2Kbps	Left Side	0mm	Ant 1	DSI 6	9262	1852.4	20.14	21.50	1.368	0.02	1.840	**2.517**
	WCDMA II	-	-	-	-	RMC 12.2Kbps	Back	0mm	Ant 2	DSI 6	9262	1852.4	21.25	22.80	1.429	-0.09	1.730	2.472
81	LTE Band 25	20M	QPSK	1	0	-	Left Side	0mm	Ant 1	DSI 6	26340	1880	20.34	21.50	1.306	0.08	1.890	**2.469**
	LTE Band 25	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSI 6	26140	1860	20.97	21.80	1.211	0.01	1.750	2.119
82	FR1 n2	20M	QPSK	50	28	DFT-SCS-15KHz	Left Side	0mm	Ant 1	DSI 6	372000	1860	20.32	21.50	1.312	0.09	1.870	**2.454**

Plot No.	Band	BW (MHz)	Modulation	RB Size	RB offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	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)
2600MHz																				
	LTE Band 7	20M	QPSK	1	0	-	Top Side	0mm	Ant 1	DSI 6	21100	2535	20.56	21.40	1.213	-	-	0.02	1.770	2.148
83	LTE Band 7	20M	QPSK	1	0	-	Back	0mm	Ant 2	DSI 6	21100	2535	21.83	23.10	1.340	-	-	0.19	1.770	**2.371**
	FR1 n7	40M	QPSK	108	54	DFT-SCS-15KHz	Top Side	0mm	Ant 1	DSI 6	507000	2535	19.39	20.80	1.384	-	-	0.02	1.650	2.283
84	FR1 n7	40M	QPSK	108	54	DFT-SCS-15KHz	Back	0mm	Ant 2	DSI 6	507000	2535	21.40	22.40	1.259	-	-	0.01	1.850	**2.329**
85	LTE Band 41 HPUE	20M	QPSK	1	0	-	Top Side	0mm	Ant 1	DSI 6	40185	2549.5	22.40	23.90	1.413	42.9	1.009	0.09	1.730	**2.466**
	LTE Band 41	20M	QPSK	50	0	-	Back	0mm	Ant 2	DSI 6	40185	2549.5	21.60	23.00	1.380	62.9	1.006	0.08	1.630	2.264
	LTE Band 41 HPUE	20M	QPSK	50	0	-	Left Side	0mm	Ant 0	DSI 6	39750	2506	22.01	23.60	1.442	42.9	1.009	0.01	1.490	2.168
	LTE Band 41 HPUE	20M	QPSK	1	0	-	Top Side	0mm	Ant 4	DSI 6	39750	2506	21.11	21.50	1.094	42.9	1.009	0.01	1.770	1.954
	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	0mm	Ant 1	DSI 6	518598	2592.99	19.51	20.60	1.285	-	-	0.01	1.620	2.082
	FR1 n41	100M	QPSK	135	69	DFT-SCS-30KHz	Back	0mm	Ant 2	DSI 6	518598	2592.99	20.97	22.10	1.297	-	-	0.05	1.780	2.309
86	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	0mm	Ant 0	DSI 6	518598	2592.99	19.47	20.50	1.268	-	-	0.08	1.990	**2.523**
	FR1 n41	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	0mm	Ant 4	DSI 6	518598	2592.99	20.42	21.60	1.312	-	-	0.01	1.710	2.244
3500MHz																				
87	LTE Band 42	20M	QPSK	1	0	-	Left Side	0mm	Ant 3	DSI 4	42190	3460	20.91	21.50	1.146	62.9	1.006	0.05	1.860	**2.143**
	LTE Band 42	20M	QPSK	1	0	-	Back	0mm	Ant 8	DSI 6	42590	3500	19.61	20.00	1.094	62.9	1.006	0.08	1.530	1.684
88	LTE Band 48	20M	QPSK	1	0	-	Back	0mm	Ant 8	DSI 6	55830	3609	18.32	20.00	1.472	62.9	1.006	-0.09	1.620	**2.399**
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Back	0mm	Ant 3	DSI 4	656000	3840	21.05	21.70	1.161	-	-	0.11	1.280	1.487
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	0mm	Ant 3	DSI 4	656000	3840	20.96	21.70	1.186	-	-	0.09	1.430	1.696
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	0mm	Ant 3	DSI 4	656000	3840	21.05	21.70	1.161	-	-	0.03	2.120	2.462
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Left Side	0mm	Ant 3	DSI 4	656000	3840	20.96	21.70	1.186	-	-	-0.03	1.990	2.360
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Left Side	0mm	Ant 3	DSI 4	656000	3840	20.91	21.70	1.199	-	-	0.05	2.010	2.411
	FR1 n77 HPUE	100M	QPSK	1	1	DFT-SCS-30KHz	Left Side	0mm	Ant 3	DSI 4	656000	3840	24.02	24.70	1.169	50	1.000	0.04	2.090	2.444
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Back	0mm	Ant 7	DSI 6	656000	3840	23.65	24.00	1.084	-	-	-0.02	0.653	0.708
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	0mm	Ant 7	DSI 6	656000	3840	23.58	24.00	1.102	-	-	0.03	0.722	0.795
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Right Side	0mm	Ant 7	DSI 6	656000	3840	23.65	24.00	1.084	-	-	0.02	1.890	2.049
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	0mm	Ant 7	DSI 6	656000	3840	23.58	24.00	1.102	-	-	0.02	1.920	2.115
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Right Side	0mm	Ant 7	DSI 6	656000	3840	23.45	24.00	1.135	-	-	0.04	1.930	2.191
	FR1 n77	100M	QPSK	1	1	DFT-SCS-30KHz	Top Side	0mm	Ant 7	DSI 6	656000	3840	23.65	24.00	1.084	-	-	0.07	1.480	1.604
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	0mm	Ant 7	DSI 6	656000	3840	23.58	24.00	1.102	-	-	0.08	1.540	1.696

	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	18mm	Ant 7	DSI 6	656000	3840	23.58	24.00	1.102	-	-	0.06	0.130	0.143
	FR1 n77	100M	QPSK	270	0	DFT-SCS-30KHz	Right Side	18mm	Ant 7	DSI 6	656000	3840	23.45	24.00	1.135	-	-	0.01	0.096	0.109
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Top Side	19mm	Ant 7	DSI 6	656000	3840	23.58	24.00	1.102	-	-	0.03	0.123	0.135
	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	0mm	Ant 8	DSI 6	656000	3840	20.94	22.50	1.432	-	-	0.02	1.340	1.919
89	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	0mm	Ant 9	DSI 4	656000	3840	23.90	24.50	1.148	50	1.000	0.02	2.150	**2.469**

Plot No.	Band	Mode	Test Position	Gap (mm)	Antenna	Power Reduction	Ch.	Freq. (MHz)	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)
WIFI/BT																
90	WLAN2.4GHz	802.11b 1Mbps	Top Side	0mm	Ant 4+6	Full Power	1	2412	23.84	25.50	1.466	97.86	1.022	-0.14	1.570	**2.352**
91	WLAN5.2GHz	802.11a 6Mbps	Top Side	0mm	Ant 5+7	Full Power	40	5200	21.68	23.00	1.355	99.25	1.008	0.08	0.921	**1.258**
92	WLAN5.3GHz	802.11ac-VHT80 MCS0	Right Side	0mm	Ant 5+7	DBS Only	58	5290	21.30	22.00	1.175	100	1.000	0.02	0.592	**0.696**
93	WLAN5.5GHz	802.11a 6Mbps	Right Side	0mm	Ant 5+7	Full Power	140	5700	21.55	23.00	1.396	99.25	1.008	-0.06	0.699	**0.984**
94	WLAN5.8GHz	802.11a 6Mbps	Right Side	0mm	Ant 5+7	Full Power	165	5825	22.53	24.00	1.403	99.25	1.008	0.02	1.010	**1.428**

15.5 Repeated SAR Measurement

<1g>

No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	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)	Ratio	Reported 1g SAR (W/kg)
1st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3	DSI 3	656000	3840	19.59	20.30	1.178	-	-	0.06	1.050	1	1.236
2st	FR1 n77	100M	QPSK	135	69	DFT-SCS-30KHz	Back	5mm	Ant 3	DSI 3	656000	3840	19.59	20.30	1.178	-	-	0.03	1.020	1.029	1.201
1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Tilted	0mm	Ant 1	DSI 2	251	848.8	28.15	29.00	1.216	-	-	0.03	0.823	1	1.001
2st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Right Tilted	0mm	Ant 1	DSI 2	251	848.8	28.15	29.00	1.216	-	-	0.01	0.815	1.010	0.991
1st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	DSI 3	1513	1752.6	21.82	22.80	1.253	-	-	0.09	0.969	1	1.214
2st	WCDMA IV	-	-	-	-	RMC 12.2Kbps	Back	5mm	Ant 2	DSI 3	1513	1752.6	21.82	22.80	1.253	-	-	0.07	0.957	1.013	1.199
1st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 2	DSI 3	512	1850.2	21.72	22.50	1.197	-	-	0.05	1.020	1	1.221
2st	GSM1900	-	-	-	-	GPRS (3 Tx slots)	Bottom Side	5mm	Ant 2	DSI 3	512	1850.2	21.72	22.50	1.197	-	-	0.01	0.998	1.022	1.194
1st	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI 3	41490	2680	20.98	21.60	1.153	62.9	1.006	0.06	1.020	1	1.184
2st	LTE Band 41	20M	QPSK	50	0	-	Back	5mm	Ant 0	DSI 3	41490	2680	20.98	21.60	1.153	62.9	1.006	0.13	0.997	1.023	1.157
1st	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 8	DSI 3	42990	3540	16.52	17.40	1.225	62.9	1.006	0.02	1.010	1	1.244
2st	LTE Band 42	20M	QPSK	1	0	-	Back	5mm	Ant 8	DSI 3	42990	3540	16.52	17.40	1.225	62.9	1.006	-0.08	0.978	1.033	1.205
1st	LTE Band 48	20M	QPSK	1	0	-	Back	5mm	Ant 8	DSI 3	56150	3641	18.36	19.10	1.186	62.9	1.006	0.01	0.960	1	1.145
2st	LTE Band 48	20M	QPSK	1	0	-	Back	5mm	Ant 8	DSI 3	56150	3641	18.36	19.10	1.186	62.9	1.006	0.04	0.944	1.017	1.126

<10g>

No.	Band	BW (MHz)	Modulation	RB Size	RB Offset	Mode	Test Position	Gap (mm)	Antenna	Power State	Ch.	Freq. (MHz)	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)	Ratio	Reported 10g SAR (W/kg)
1st	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	0mm	Ant 9	DSI 4	656000	3840	23.90	24.50	1.148	50	1.000	0.02	2.150	1	2.469
2st	FR1 n77 HPUE	100M	QPSK	135	69	DFT-SCS-30KHz	Right Side	0mm	Ant 9	DSI 4	656000	3840	23.90	24.50	1.148	50	1.000	0.17	2.090	1.029	2.400
1st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Top Side	0mm	Ant 1	DSI 6	189	836.4	28.03	29.00	1.250	-	-	0.01	2.050	1	2.563
2st	GSM850	-	-	-	-	GPRS (3 Tx slots)	Top Side	0mm	Ant 1	DSI 6	189	836.4	28.03	29.00	1.250	-	-	0.05	1.999	1.026	2.499

General Note:

1. Per KDB 865664 D01v01r04, for each frequency band, repeated SAR measurement is required only when the measured SAR is ≥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. Per KDB 865664 D01v01r04, if the extremity repeated SAR is necessary, the same procedures should be adapted for measurements according to extremity and occupational exposure limits by applying a factor of 2.5 for extremity exposure and a factor of 5 for occupational exposure to the corresponding SAR thresholds.
4. The ratio is the difference in percentage between original and repeated *measured SAR*.
5. All measurement SAR result is scaled-up to account for tune-up tolerance and is compliant.

15.6 TDD LTE and NR Linearity Data Analysis

General Note:
This device support Power Class 2 and Power Class 3 operations for 5GNR n77 . The highest available duty cycle for Power Class 2 operation is 43.3% using UL-DL configuration 1. Per FCC Guidance based on the device behavior, all SAR tests were performed using Power Class 3. Power Class 2 is tested using the highest SAR test configuration in Power Class 3 for each LTE configuration and exposure condition combination, according to the highest time averaged power for all applicable uplink-downlink configurations in Power Class 2. When the reported SAR vs. output power is linearly scaled with < 10% discrepancy between power classes and all reported SAR are < 1.4 W/kg for 1g and < 3.5 W/kg for 10g, Separate SAR testing for Power Class 2 is not required.

5G NR n 77(HPUE) Ant 3-Linearity Data for Head		
	5G NR n 77 (Power Class 3)	5G NR n 77 (Power Class 2)
Maximum Tune up Power (dBm)	19.70	22.70
Reported 1g SAR (W/kg)	1.086	1.104
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	93.33	93.10
Linearity SAR (W/kg)	1.083	
% deviation from expected linearity		1.90%
5G NR n77(HPUE) Ant 3-Linearity Data for Hotspot		
	5G NR n 77 (Power Class 3)	5G NR n 77 (Power Class 2)
Maximum Tune up Power (dBm)	19.00	22.00
Reported 1g SAR (W/kg)	0.951	0.945
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	79.43	79.24
Linearity SAR (W/kg)	0.949	
% deviation from expected linearity		-0.39%
5G NR n77(HPUE) Ant 3-Linearity Data for Body-worn		
	5G NR n 77 (Power Class 3)	5G NR n 77 (Power Class 2)
Maximum Tune up Power (dBm)	20.30	23.30
Reported 1g SAR (W/kg)	1.236	1.142
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	107.15	106.90
Linearity SAR (W/kg)	1.233	
% deviation from expected linearity		-7.39%
5G NR n77(HPUE) Ant 3-Linearity Data for Extremity SAR		
	5G NR n 77 (Power Class 3)	5G NR n 77 (Power Class 2)
Maximum Tune up Power (dBm)	21.70	24.70
Reported 10g SAR (W/kg)	2.462	2.444
Duty Cycle	100.00%	50.00%
Frame Averaged (mW)	147.91	147.56
Linearity SAR (W/kg)	2.456	
% deviation from expected linearity		-0.50%

16. Simultaneous Transmission Analysis

No.	Simultaneous Transmission Configurations	Portable Handset			
		Head	Body-worn	Hotspot	Product specific 10g SAR
1.	WWAN + WLAN2.4GHz	Yes	Yes	Yes	Yes
2.	WWAN + WLAN5GHz	Yes	Yes	Yes	Yes
3.	WWAN + WLAN6GHz	Yes	Yes	Yes	Yes
4.	WWAN + Bluetooth	Yes	Yes	Yes	Yes
5.	WLAN2.4GHz + WLAN5GHz	Yes	Yes	Yes	Yes
6.	WLAN2.4GHz + WLAN6GHz	Yes	Yes	Yes	Yes
7.	WLAN5GHz+ Bluetooth	Yes	Yes	Yes	Yes
8.	WLAN6GHz+ Bluetooth	Yes	Yes	Yes	Yes
9.	WWAN + WLAN2.4GHz + WLAN5GHz	Yes	Yes	Yes	Yes
10.	WWAN + WLAN2.4GHz + WLAN6GHz	Yes	Yes	Yes	Yes
11.	WWAN + WLAN5GHz+ Bluetooth	Yes	Yes	Yes	Yes
12.	WWAN + WLAN6GHz+ Bluetooth	Yes	Yes	Yes	Yes

General Note:

1. This device supports VoIP in GPRS, EGPRS, WCDMA and LTE (e.g. for 3rd-party VoIP), LTE supports VoLTE operation.
2. WWAN above includes 5G NR bands.
3. The 2.4GHz/5GHz/6GHz WLAN can transmit in MIMO antenna mode only and it has no SISO antenna mode.
4. EUT will choose each GSM, WCDMA, LTE and 5GNR according to the network signal condition; therefore, they will not operate simultaneously at any moment.
5. For EN-DC mode, Qualcomm Smart Transmit algorithm in WWAN adds directly the time-averaged RF exposure from 4G(LTE) and time-averaged RF exposure from 5G NR. Smart Transmit algorithm controls the total RF exposure from both 4G and 5G NR to not exceed FCC limit. Therefore, simultaneous transmission compliance between 4G+5G NR operation is demonstrated in the Part 2 Report during algorithm validation. In Part 1 Report, simultaneous transmission compliance was evaluated individually with other Radios (WLAN or BT) using one of 4G or 5G NR.
6. This device 2.4GHz WLAN support hotspot operation and Bluetooth support tethering applications.
7. 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). WIFI 6E has no hotspot function.
8. The worst case 5 GHz WLAN SAR for each configuration was used for SAR summation.
9. WLAN 2.4GHz and Bluetooth share the same antenna, and they cannot transmit simultaneously each other.
10. According to the EUT characteristic, WLAN 5GHz/6GHz and Bluetooth can transmit simultaneously.
11. According to the EUT characteristic, WLAN 5GHz/6GHz and WLAN 2.4GHz can transmit simultaneously.
12. According to the EUT characteristic, WLAN 5GHz and WLAN 6GHz can't transmit simultaneously.
13. The maximum SAR summation is calculated based on the same configuration and test position.
14. For simultaneously analysis, since the SAR summation of 3 transmitters can cover others combination of 2 transmitters, therefore in this section did not additional to evaluate 2TX combination of simultaneously transmission.
15. For simultaneously transmission SAR analysis, BT/WLAN test results are leveraged from original report which can be referred to Sporton Report Number FA282619 to do co-located analysis.And only 5GNR n77/n78 at ant3/7 is considered to simultaneous transmission analysis with WLAN/BT in this report. The verified maximum SAR of all other bands from chapter 15.1 to 15.4 are all less than original report, so no need to consider co-located SAR for original report has been performed conservatively.
16. Per KDB 447498 D01v06, simultaneous transmission SAR is compliant if,
    i) 1g Scalar SAR summation < 1.6W/kg and 10g Scalar SAR summation < 4.0W/kg.
    ii) SPLSR = (SAR1 + SAR2)^1.5 / (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.
    iii) If SPLSR ≤ 0.04 for 1g SAR and SPLSR≤ 0.10 for 10g SAR , simultaneously transmission SAR measurement is not necessary.
    iv) Simultaneously transmission SAR measurement, and the reported multi-band 1g SAR < 1.6W/kg and 10g SAR < 4.0W/kg.

16.1 5G NR + LTE + WLAN + BT Sim-Tx analysis

In 5G NR + LTE + WLAN + BT simultaneous transmission, 5G NR and LTE transmission are managed and controlled by Qualcomm® Smart Transmit, while the RF exposure from WLAN and BT radios is managed using legacy approach, i.e., through a fixed power back-off if needed.

Since WLAN and BT do not employ time-averaging, 1gSAR and 10gSAR measurement for WLAN and BT need to be conducted at their corresponding rated power following current FCC test procedures to determine reported SAR values.

Smart Transmit current implementation assumes hotspots from 5G NR and LTE are collocated. Therefore, for a total of 100% exposure margin, if LTE uses x%, then the exposure margin left for 5G NR is capped to (100-x)%. Thus, the compliance equation for LTE + 5G NR is

$x\% * A + (100-x)\% * B \leq 1.0,$

Where, A is normalized reported time-averaged SAR exposure ratio from LTE, and A ≤ 1.0; B is normalized reported time-averaged exposure ratio from 5G NR (i.e. SAR exposure for 5G FR1), and B ≤1.0.

Let C = normalized reported SAR exposure ratio from WLAN+BT, then for compliance,

$x\% * A + (100-x)\% * B + C \leq 1.0$ (1)

$x\% * A + (100-x)\% * B \leq x\% * \max(A, B) + (100-x)\% * \max(A, B) \leq \max(A, B)$

$x\% * A + (100-x)\% * B + C \leq \max(A, B) + C \leq 1.0$ (2)

if A + C ≤ 1.0 and B + C ≤ 1.0 can be proven, then “x% * A + (100-x)% * B + C ≤ 1.0”. Therefore simultaneous transmission analysis for 5G NR + LTE + WLAN + BT can be performed in two steps

Step 1: Prove total exposure ratio (TER) of LTE + WLAN + BT < 1

Step 2: Prove total exposure ratio (TER) of 5G NR + WLAN + BT < 1

.

16.2 Head Exposure Conditions

FR1 Band	Exposure Position	1	2	3	4	5	6	7	8	9	10	1+3	1+6+8	1+6+9	1+8+10	1+9+10	2+5	2+10	1+4+7	1+4+10
		FR1	WLAN2.4GHz Ant 4+6 DBS only	WLAN2.4GHz Ant 4+6 non DBS	WLAN2.4GHz Ant 4+6 WWAN+DBS	WLAN5GHz Ant 5+7 DBS only	WLAN5GHz Ant 5+7 non DBS	WLAN5GHz Ant 5+7 WWAN+DBS	Bluetooth Ant 4	Bluetooth Ant 6	WLAN6E Ant 5+7	Summed	Summed	Summed	Summed	Summed	Summed	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)	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)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
FR1 n77 Ant 3	Right Cheek	0.939	0.776	0.349	0.155	0.734	0.365	0.171	0.093	0.049	0.061	1.29	1.40	1.35	1.09	1.05	1.51	0.84	1.27	1.16
	Right Tilted	0.939	0.776	0.349	0.155	0.734	0.365	0.171	0.077	0.032	0.064	1.29	1.38	1.34	1.08	1.04	1.51	0.84	1.27	1.16
	Left Cheek	0.939	0.776	0.349	0.155	0.734	0.365	0.171	0.170	0.097	0.187	1.29	**1.47**	1.40	1.30	1.22	1.51	0.96	1.27	1.28
	Left Tilted	0.939	0.776	0.349	0.155	0.734	0.365	0.171	0.131	0.076	0.191	1.29	1.44	1.38	1.26	1.21	1.51	0.97	1.27	1.29
FR1 n77 Ant 7	Right Cheek	0.909	0.776	0.349	0.155	0.734	0.365	0.171	0.093	0.049	0.061	1.26	1.37	1.32	1.06	1.02	1.51	0.84	1.24	1.13
	Right Tilted	0.909	0.776	0.349	0.155	0.734	0.365	0.171	0.077	0.032	0.064	1.26	1.35	1.31	1.05	1.01	1.51	0.84	1.24	1.13
	Left Cheek	0.909	0.776	0.349	0.155	0.734	0.365	0.171	0.170	0.097	0.187	1.26	1.44	1.37	1.27	1.19	1.51	0.96	1.24	1.25
	Left Tilted	0.909	0.776	0.349	0.155	0.734	0.365	0.171	0.131	0.076	0.191	1.26	1.41	1.35	1.23	1.18	1.51	0.97	1.24	1.26

16.3 Hotspot Exposure Conditions

FR1 Band	Exposure Position	1	2	3	4	5	6	7	1+2	1+4+6	1+4+7	1+3+5
		FR1	WLAN2.4GHz Ant 4+6 non DBS	WLAN2.4GHz Ant 4+6 WWAN+DBS	WLAN5GHz Ant 5+7 non DBS	WLAN5GHz Ant 5+7 WWAN+DBS	Bluetooth Ant 4	Bluetooth Ant 6	Summed	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)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
FR1 n77 Ant 3	Front	0.379	0.376	0.172	0.366	0.190	0.023	0.041	0.76	0.77	0.79	0.74
	Back	0.871	0.376	0.172	0.366	0.190	0.017	0.038	1.25	1.25	1.28	1.23
	Left side	0.951	0.376	0.172	0.366	0.190	0.002	0.002	1.33	1.32	1.32	1.31
	Right side	0.045	0.376	0.172	0.366	0.190	0.039	0.173	0.42	0.45	0.58	0.41
	Top side	0.086	0.376	0.172	0.366	0.190	0.021	0.021	0.46	0.47	0.47	0.45
FR1 n77 Ant 7	Front	0.319	0.376	0.172	0.366	0.190	0.023	0.041	0.70	0.71	0.73	0.68
	Back	0.772	0.376	0.172	0.366	0.190	0.017	0.038	1.15	1.16	1.18	1.13
	Left side	0.058	0.376	0.172	0.366	0.190	0.002	0.002	0.43	0.43	0.43	0.42
	Right side	0.719	0.376	0.172	0.366	0.190	0.039	0.173	1.10	1.12	1.26	1.08
	Top side	0.961	0.376	0.172	0.366	0.190	0.021	0.021	1.34	1.35	1.35	1.32

16.4 Body-Worn Accessory Exposure Conditions

FR1 Band	Exposure Position	1	2	3	4	5	6	7	8	9	1+3	1+6+8	1+6+9	1+8+10	1+9+10	2+5	2+10	1+4+7	1+4+10
		FR1	WLAN2.4GHz Ant 4+6 DBS only	WLAN2.4GHz Ant 4+6 non DBS	WLAN2.4GHz Ant 4+6 WWAN+DBS	WLAN5GHz Ant 5+7 DBS only	WLAN5GHz Ant 5+7 non DBS	WLAN5GHz Ant 5+7 WWAN+DBS	Bluetooth Ant 4	Bluetooth Ant 6	Summed	Summed	Summed	Summed	Summed	Summed	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)	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)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)
FR1 n77 Ant 3	Front	0.935	0.785	0.379	0.184	0.752	0.382	0.188	0.088	0.069	1.31	1.41	1.39	1.17	1.15	**1.54**	0.93	1.31	1.27
	Back	0.935	0.785	0.379	0.184	0.752	0.382	0.188	0.068	0.038	1.31	1.39	1.36	1.20	1.17	1.54	0.98	1.31	1.32
FR1 n77 Ant 7	Front	0.931	0.785	0.379	0.184	0.752	0.382	0.188	0.088	0.069	1.31	1.40	1.38	1.17	1.15	1.54	0.93	1.30	1.26
	Back	0.931	0.785	0.379	0.184	0.752	0.382	0.188	0.068	0.038	1.31	1.38	1.35	1.20	1.17	1.54	0.98	1.30	1.31

<Sensor off>

FR1 Band	Exposure Position	1	2	3	**1+2+3**
		FR1	WLAN2.4GHz Ant 4+6	WLAN5GHz Ant 5+7	**Summed**
		1g SAR (W/kg)	1g SAR (W/kg)	1g SAR (W/kg)	**1g SAR (W/kg)**
FR1 n77 Ant 3	Front	0.477	0.344	0.286	1.11
	Back	0.731	0.324	0.455	**1.51**
FR1 n77 Ant 7	Front	0.390	0.344	0.286	1.02
	Back	0.576	0.324	0.455	1.36

16.5 Product specific 10g SAR Exposure Conditions

Remark:

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

FR1 Band	Exposure Position	1	2	3	4	5	6	7	8	1+3	1+6+8	1+6	1+8	2+5	2+8	1+4+7	1+4+8
		FR1	WLAN2.4GHz Ant 4+6 DBS only	WLAN2.4GHz Ant 4+6 non DBS	WLAN2.4GHz Ant 4+6 WWAN+DBS	WLAN5GHz Ant 5+7 DBS only	WLAN5GHz Ant 5+7 non DBS	WLAN5GHz Ant 5+7 WWAN+DBS	WLAN6E Ant 5+7	Summed	Summed	Summed	Summed	Summed	Summed	Summed	Summed
		10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)	10g SAR (W/kg)
FR1 n77 Ant 3	Back	1.696	1.745	0.769	0.356	1.640	0.760	0.341	0.347	2.47	2.80	2.46	2.04	**3.39**	2.09	2.39	2.40
	Left side	2.462	1.745	0.769	0.356	1.640	0.760	0.341	0.023	3.23	3.25	3.22	2.49	3.39	1.77	3.16	2.84
FR1 n77 Ant 7	Back	0.795	1.745	0.769	0.356	1.640	0.760	0.341	0.347	1.56	1.90	1.56	1.14	3.39	2.09	1.49	1.50
	Right side	2.191	1.745	0.769	0.356	1.640	0.760	0.341	0.429	2.96	**3.38**	2.95	2.62	3.39	2.17	2.89	2.98
	Top side	1.696	1.745	0.769	0.356	1.640	0.760	0.341	0.537	2.47	2.99	2.46	2.23	3.39	2.28	2.39	2.59

Test Engineer : Martin Li, Varus Wang, Ricky Gu, Light Wang

17. 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 ≤ 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.

18. References

[1] FCC 47 CFR Part 2 “Frequency Allocations and Radio Treaty Matters; General Rules and Regulations”

[2] ANSI/IEEE Std. C95.1-1992, “IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz”, September 1992

[3] IEEE Std. 1528-2013, “IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques”, Sep 2013

[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.

[9] FCC KDB 616217 D04 v01r02, “SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers”, Oct 2015

[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 D05A v01r02, “Rel. 10 LTE SAR Test Guidance and KDB Inquiries”, Oct 2015

[13] FCC KDB 941225 D06 v02r01, "SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities", Oct 2015.

[14] FCC KDB 447498 D01 v06, “Mobile and Portable Device RF Exposure Procedures and Equipment Authorization Policies”, Oct 2015

------THE END------

Appendix A. Plots of System Performance Check

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

System Check_Head_750MHz

DUT: D750V3 - SN:1087

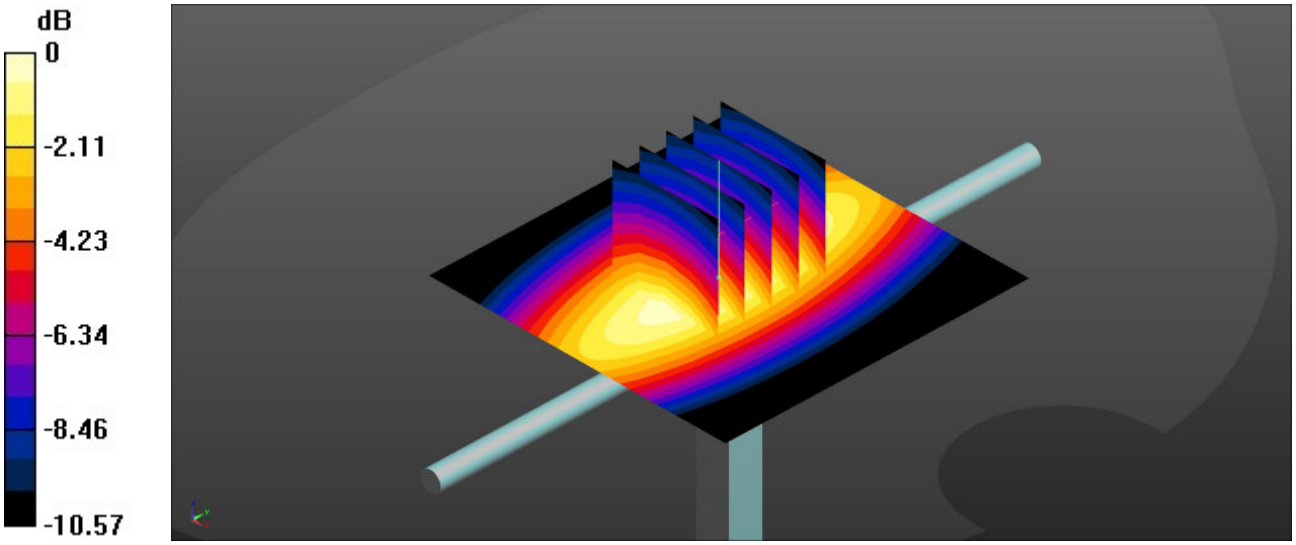
Communication System: UID 0, CW (0); Frequency: 750 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 750 MHz; σ = 0.909 S/m; ε_r = 42.696; ρ = 1000 kg/m^3

Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.35, 10.35, 10.35); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.604 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 27.09 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 0.680 W/kg
SAR(1 g) = 0.451 W/kg; SAR(10 g) = 0.297 W/kg
Maximum value of SAR (measured) = 0.601 W/kg



0 dB = 0.601 W/kg = -2.21 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

System Check_Head_835MHz

DUT: D835V2 - SN:4d091

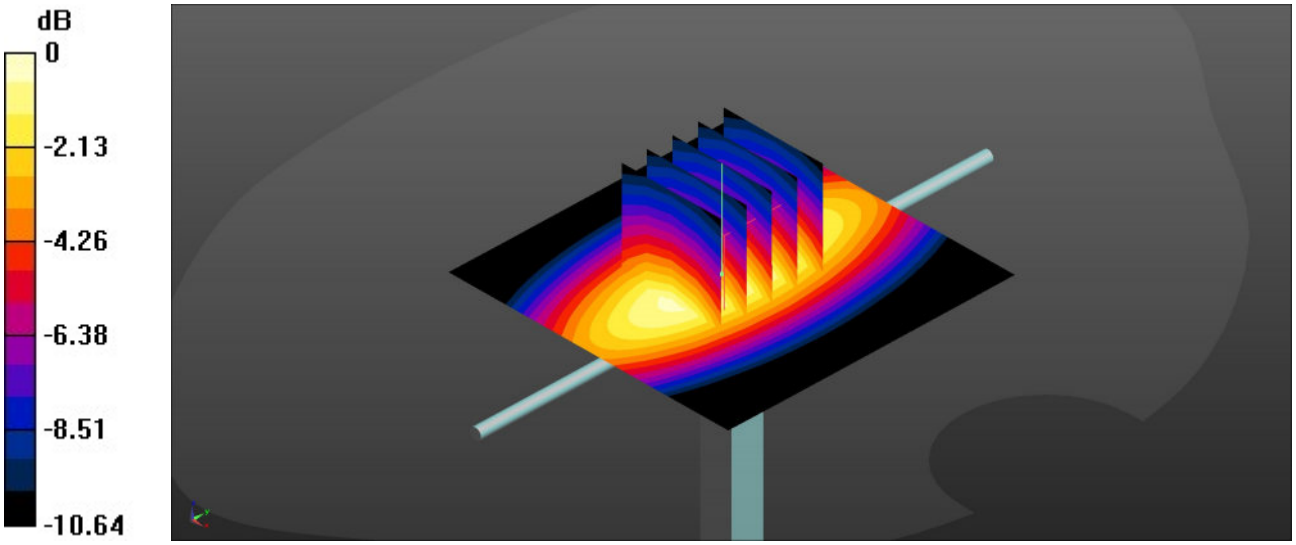
Communication System: UID 0, CW (0); Frequency: 835 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 835 MHz; σ = 0.938 S/m; ε_r = 42.455; ρ = 1000 kg/m^3

Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.05, 10.05, 10.05); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.727 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 29.17 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 0.834 W/kg
SAR(1 g) = 0.491 W/kg; SAR(10 g) = 0.318 W/kg
Maximum value of SAR (measured) = 0.736 W/kg



0 dB = 0.736 W/kg = -1.33 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

System Check_Head_1750MHz

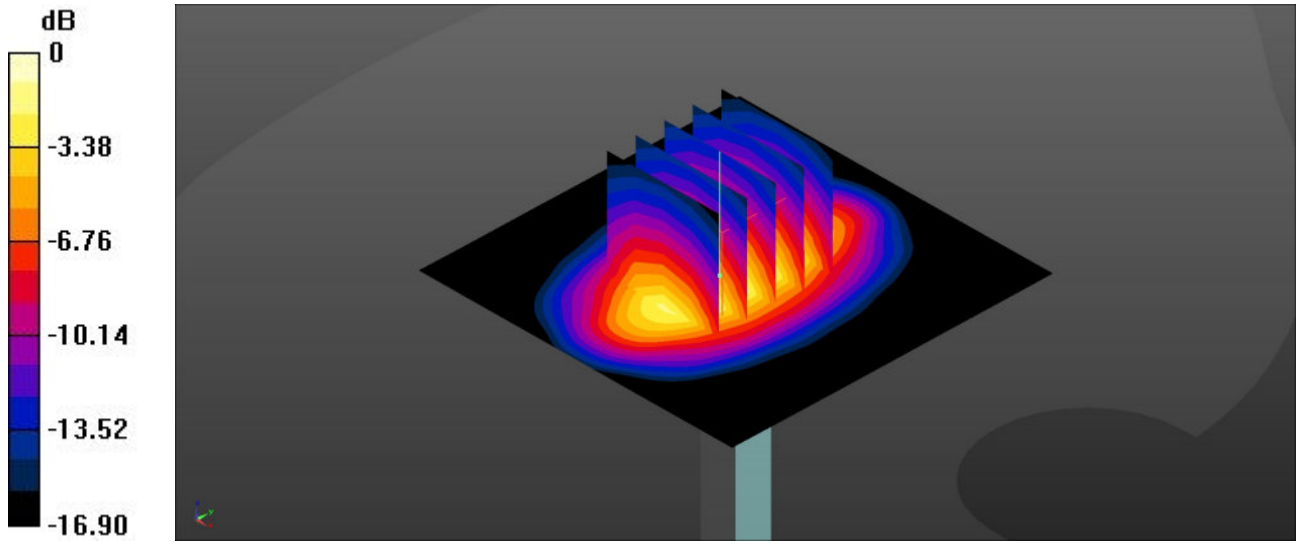
DUT: D1750V2 - SN:1090

Communication System: UID 0, CW (0); Frequency: 1750 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1750 MHz; σ = 1.359 S/m; ε_r = 40.945; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.97, 8.97, 8.97); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.88 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 47.33 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 3.44 W/kg
SAR(1 g) = 1.86 W/kg; SAR(10 g) = 0.993 W/kg
Maximum value of SAR (measured) = 2.88 W/kg



0 dB = 2.88 W/kg = 4.59 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

System Check_Head_1900MHz

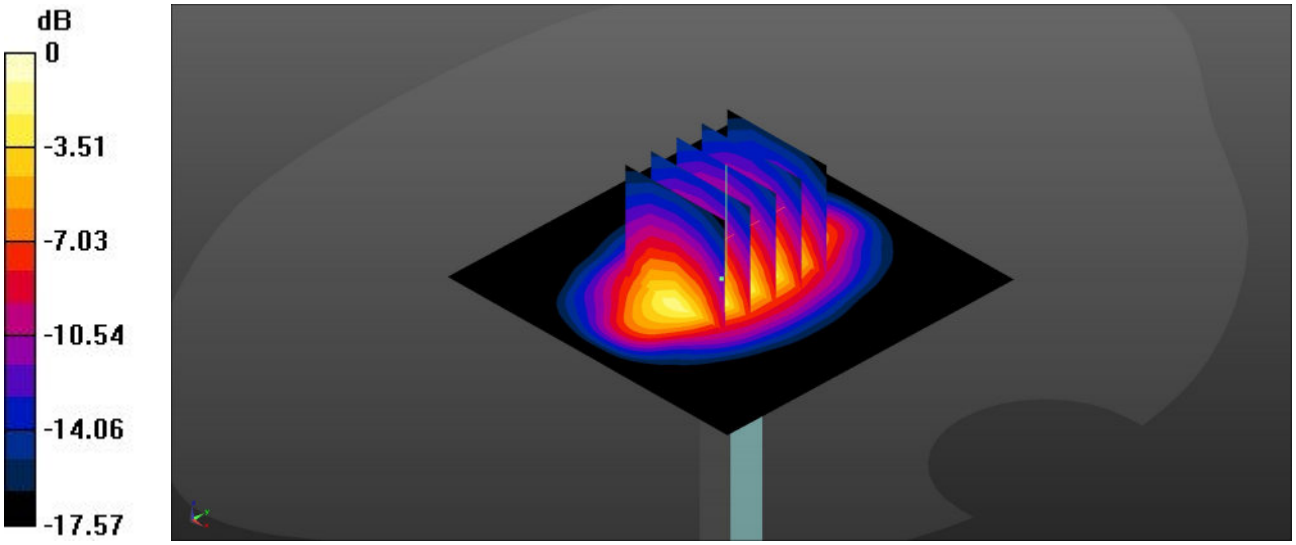
DUT: D1900V2 - SN:5d182

Communication System: UID 0, CW (0); Frequency: 1900 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1900 MHz; σ = 1.456 S/m; ε_r = 40.692; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.51, 8.51, 8.51); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (61x61x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 2.62 W/kg

Pin=50mW/Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 43.21 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 3.11 W/kg
SAR(1 g) = 1.95 W/kg; SAR(10 g) = 0.998 W/kg
Maximum value of SAR (measured) = 2.61 W/kg



0 dB = 2.61 W/kg = 4.17 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/4

System Check_Head_2450MHz

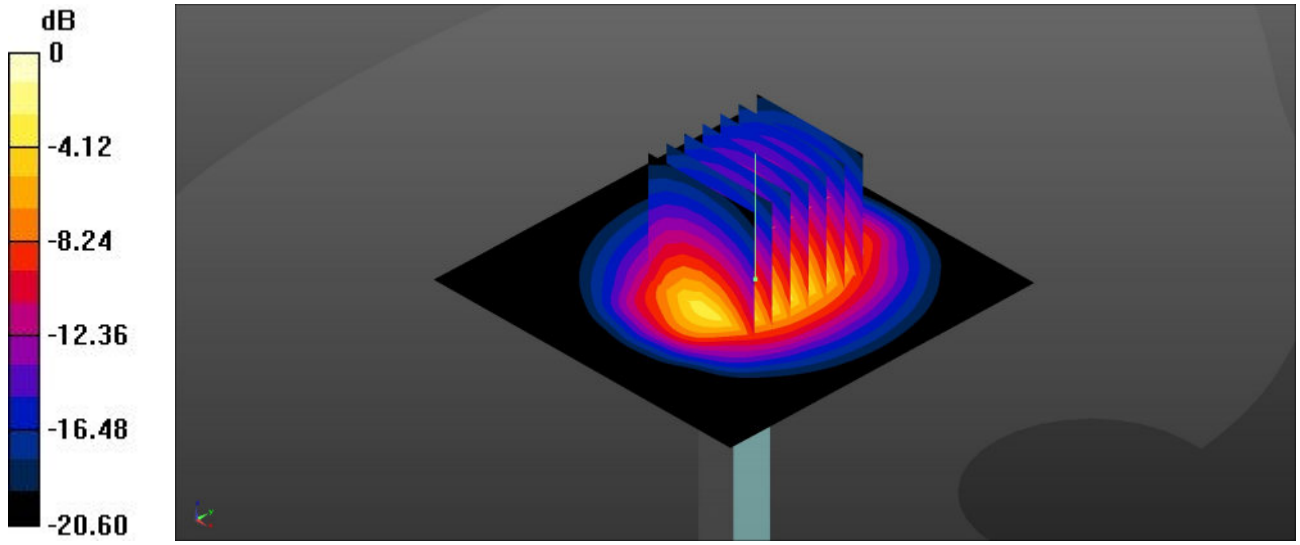
DUT: D2450V2 - SN:1040

Communication System: UID 0, CW (0); Frequency: 2450 MHz;Duty Cycle: 1:1
Medium: HSL_2450 Medium parameters used: f = 2450 MHz; σ = 1.856 S/m; ε_r = 39.106; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.13, 8.13, 8.13); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 4.53 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 47.57 V/m; Power Drift = -0.15 dB
Peak SAR (extrapolated) = 5.61 W/kg
SAR(1 g) = 2.75 W/kg; SAR(10 g) = 1.28 W/kg
Maximum value of SAR (measured) = 4.57 W/kg



0 dB = 4.57 W/kg = 6.60 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/4

System Check_Head_2600MHz

DUT: D2600V2 - SN:1061

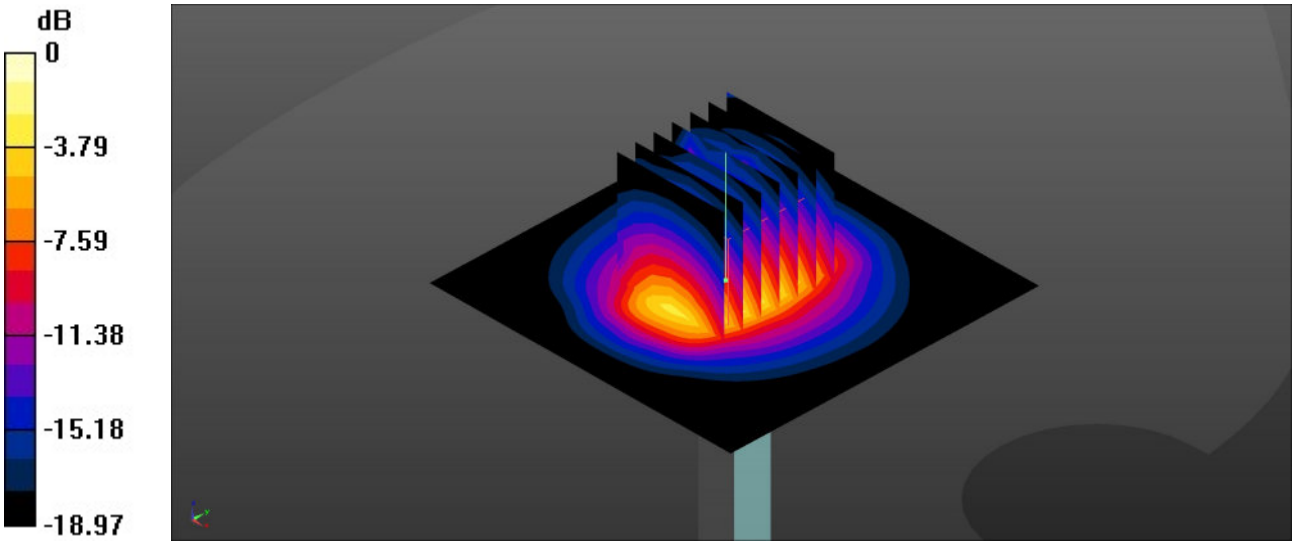
Communication System: UID 0, CW (0); Frequency: 2600 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2600 MHz; σ = 1.98 S/m; ε_r = 38.98; ρ = 1000 kg/m^3

Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.82, 7.82, 7.82); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (71x71x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 3.60 W/kg

Pin=50mW/Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 44.82 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 4.40 W/kg
SAR(1 g) = 2.77 W/kg; SAR(10 g) = 1.29 W/kg
Maximum value of SAR (measured) = 3.54 W/kg



0 dB = 3.54 W/kg = 5.49 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/5

System Check_Head_3500MHz

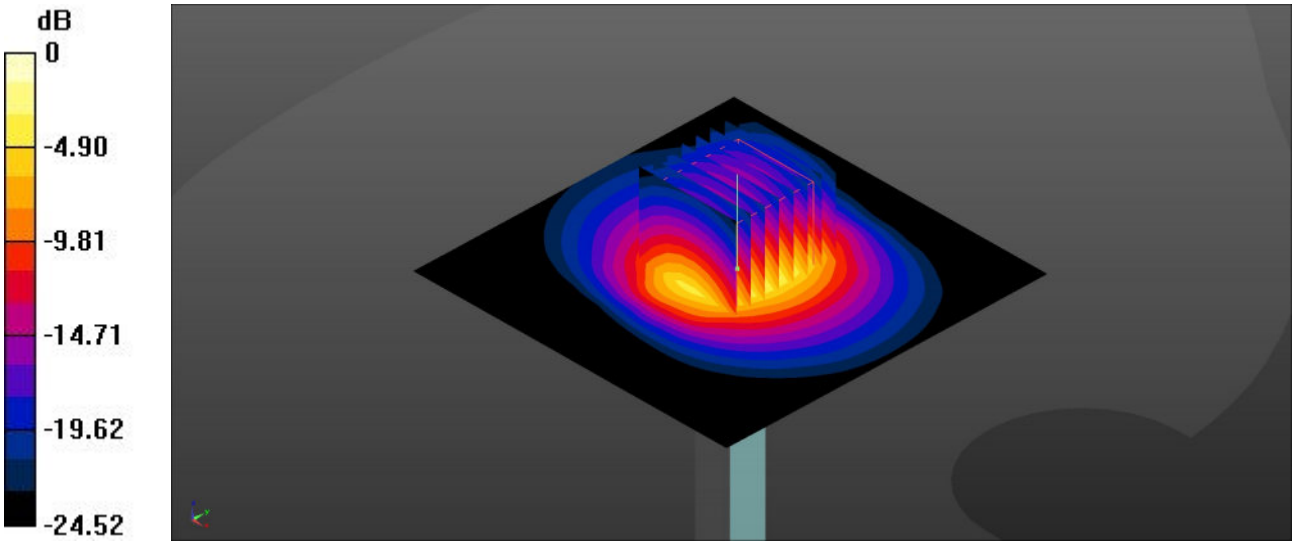
DUT: D3500V2 - SN:1037

Communication System: UID 0, CW (0); Frequency: 3500 MHz;Duty Cycle: 1:1
Medium: HSL_3500 Medium parameters used: f = 3500 MHz; σ = 2.782 S/m; ε_r = 39.163; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.34, 7.34, 7.34); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 5.40 W/kg

Pin=50mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 45.90 V/m; Power Drift = 0.07 dB
Peak SAR (extrapolated) = 7.33 W/kg
SAR(1 g) = 3.22 W/kg; SAR(10 g) = 1.35 W/kg
Maximum value of SAR (measured) = 5.42 W/kg



0 dB = 5.42 W/kg = 7.34 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/5

System Check_Head_3700MHz

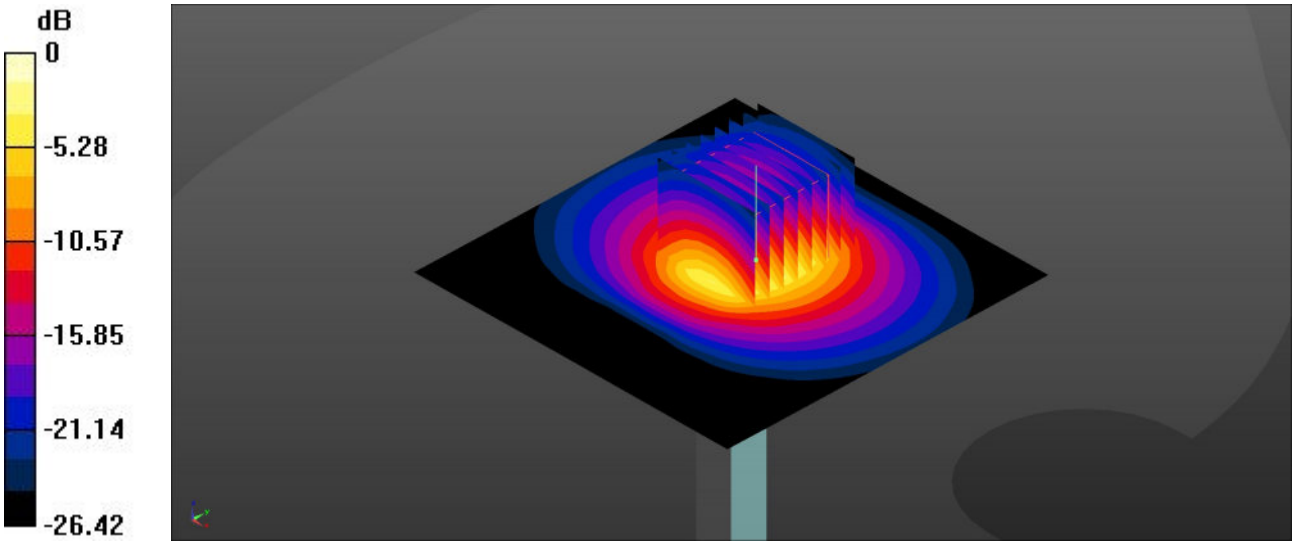
DUT: D3700V2 - SN:1008

Communication System: UID 0, CW (0); Frequency: 3700 MHz;Duty Cycle: 1:1
Medium: HSL_3700 Medium parameters used: f = 3700 MHz; σ = 3.044 S/m; ε_r = 38.164; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.33, 7.33, 7.33); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 5.72 W/kg

Pin=50mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 40.92 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 8.03 W/kg
SAR(1 g) = 3.28 W/kg; SAR(10 g) = 1.29 W/kg
Maximum value of SAR (measured) = 5.86 W/kg



0 dB = 5.86 W/kg = 7.68 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/6

System Check_Head_3900MHz

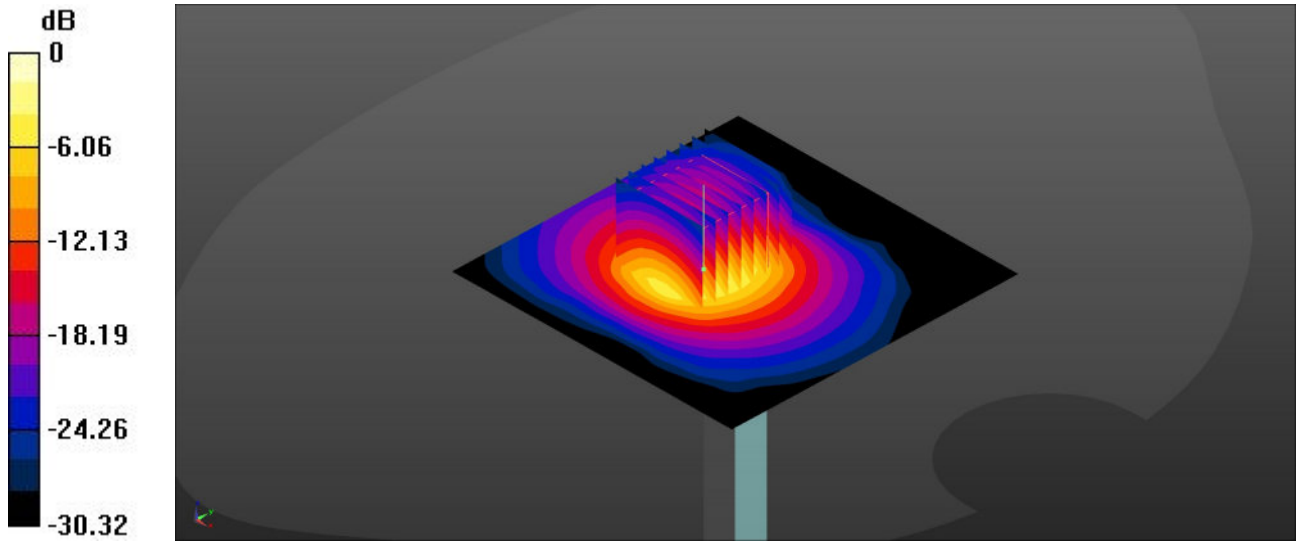
DUT: D3900V2 - SN:1048

Communication System: UID 0, CW (0); Frequency: 3900 MHz;Duty Cycle: 1:1
Medium: HSL_3900 Medium parameters used: f = 3900 MHz; σ = 3.172 S/m; ε_r = 39.024; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7706; ConvF(7.2, 7.2, 7.2); Calibrated: 2022/1/20
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2022/10/26
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2022
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 5.33 W/kg

Pin=50mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 33.58 V/m; Power Drift = 0.16 dB
Peak SAR (extrapolated) = 7.13 W/kg
SAR(1 g) = 3.35 W/kg; SAR(10 g) = 1.29 W/kg
Maximum value of SAR (measured) = 5.38 W/kg



0 dB = 5.38 W/kg = 7.31 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/6

System Check_Head_5250MHz

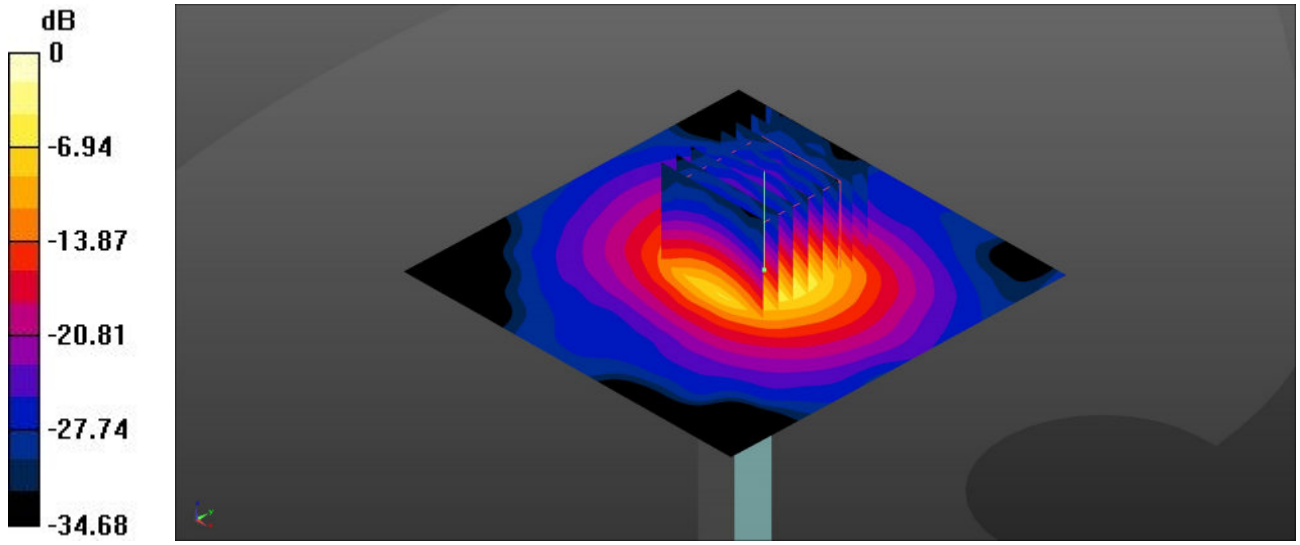
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5250 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5250 MHz; σ = 4.622 S/m; ε_r = 35.85; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(5.7, 5.7, 5.7); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 8.89 W/kg

Pin=50mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 42.44 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 14.9 W/kg
SAR(1 g) = 3.86 W/kg; SAR(10 g) = 1.1 W/kg
Maximum value of SAR (measured) = 9.47 W/kg



0 dB = 9.47 W/kg = 9.76 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/7

System Check_Head_5600MHz

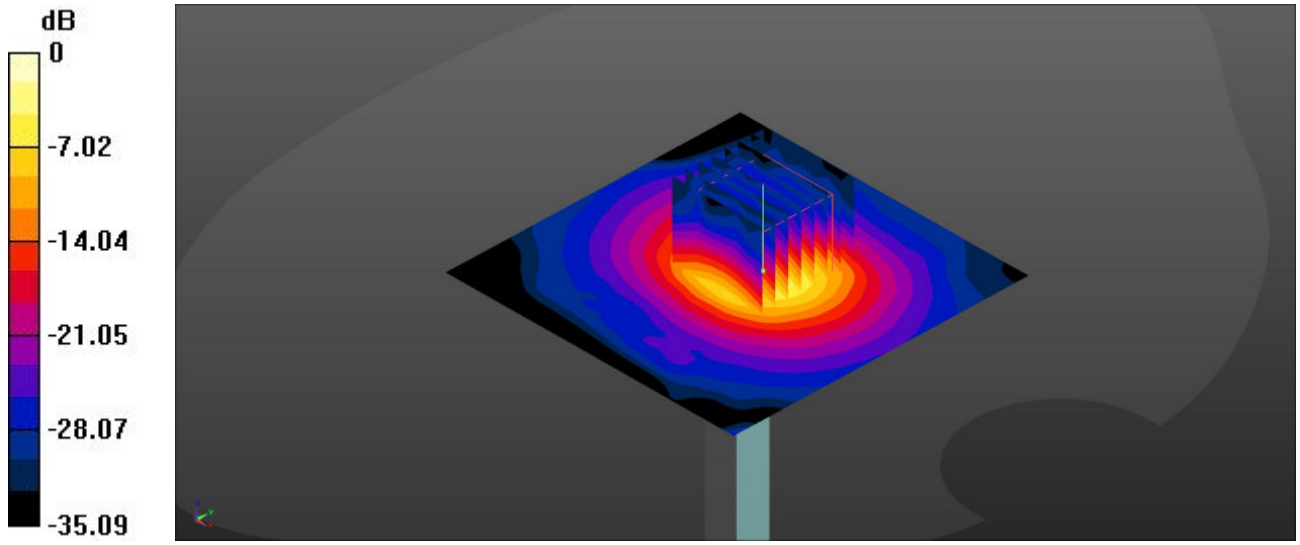
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5600 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5600 MHz; σ = 5.023 S/m; ε_r = 35.304; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(4.95, 4.95, 4.95); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 10.3 W/kg

Pin=50mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 9.012 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 17.9 W/kg
SAR(1 g) = 4.27 W/kg; SAR(10 g) = 1.22 W/kg
Maximum value of SAR (measured) = 10.8 W/kg



0 dB = 10.8 W/kg = 10.33 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/7

System Check_Head_5750MHz

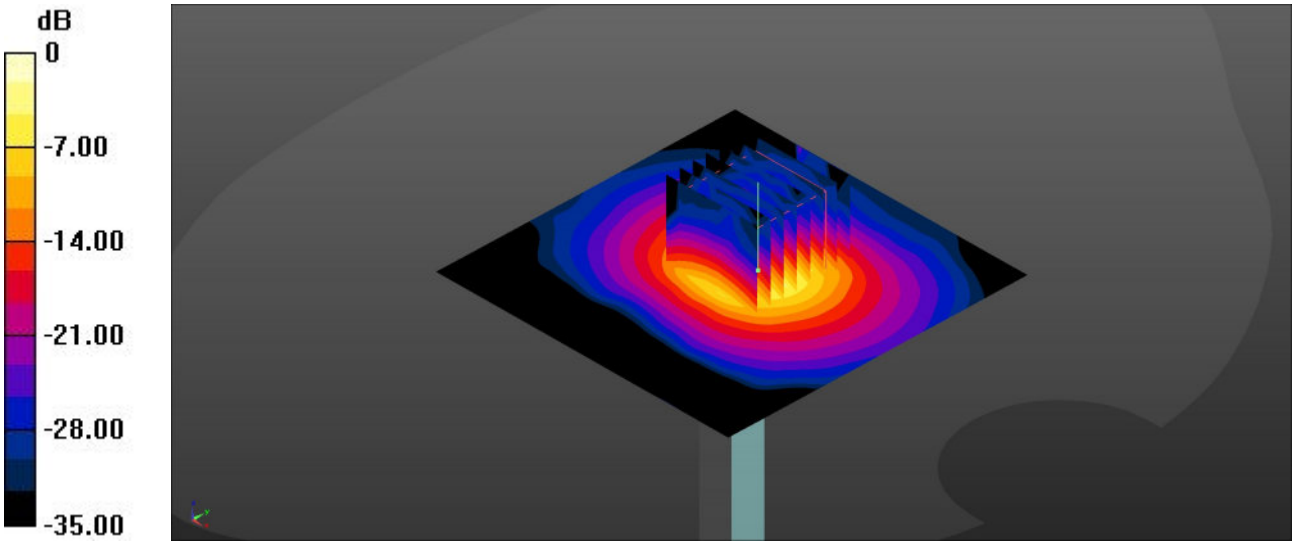
DUT: D5GHzV2 - SN:1113

Communication System: UID 0, CW (0); Frequency: 5750 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5750 MHz; σ = 5.187 S/m; ε_r = 35.151; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(5.15, 5.15, 5.15); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Pin=50mW/Area Scan (91x91x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 9.22 W/kg

Pin=50mW/Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 0.7200 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 16.8 W/kg
SAR(1 g) = 3.79 W/kg; SAR(10 g) = 1.08 W/kg
Maximum value of SAR (measured) = 9.74 W/kg



0 dB = 9.74 W/kg = 9.89 dBW/kg

Appendix B. Plots of High SAR Measurement

The plots are shown as follows.

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

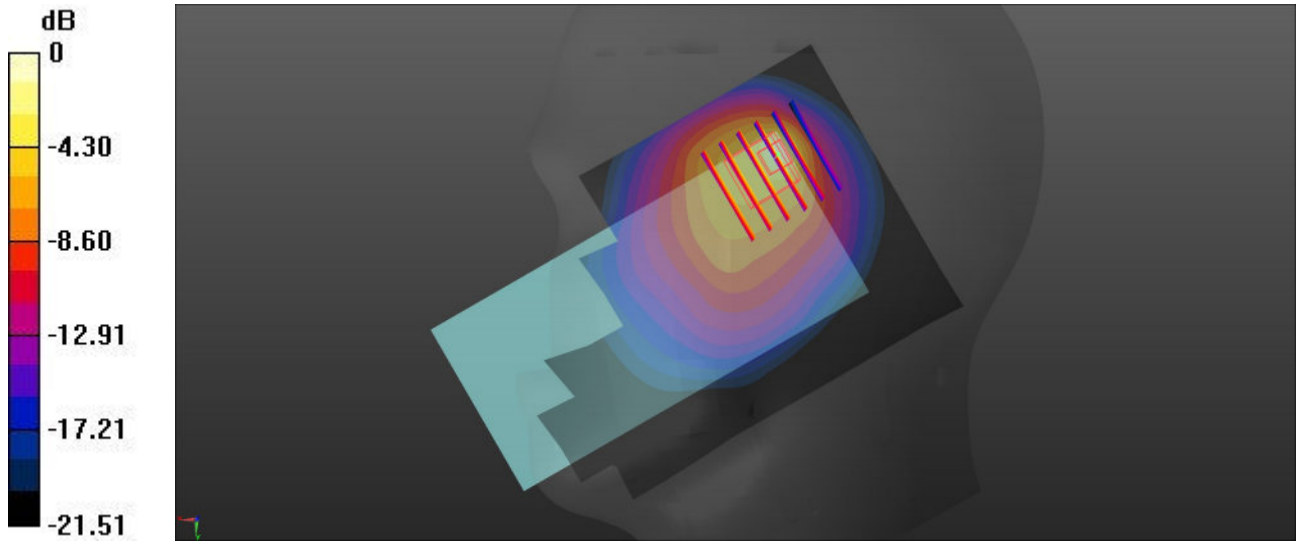
01_LTE Band 12_10M_QPSK_1RB_0Offset_Right Cheek_0mm_Ch23095

Communication System: UID 0, LTE-FDD (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 707.5 MHz; σ = 0.891 S/m; ε_r = 42.809; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.35, 10.35, 10.35); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x121x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.17 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 12.16 V/m; Power Drift = 0.12 dB
Peak SAR (extrapolated) = 1.81 W/kg
SAR(1 g) = 0.557 W/kg; SAR(10 g) = 0.287 W/kg
Maximum value of SAR (measured) = 1.32 W/kg



0 dB = 1.32 W/kg = 1.20 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

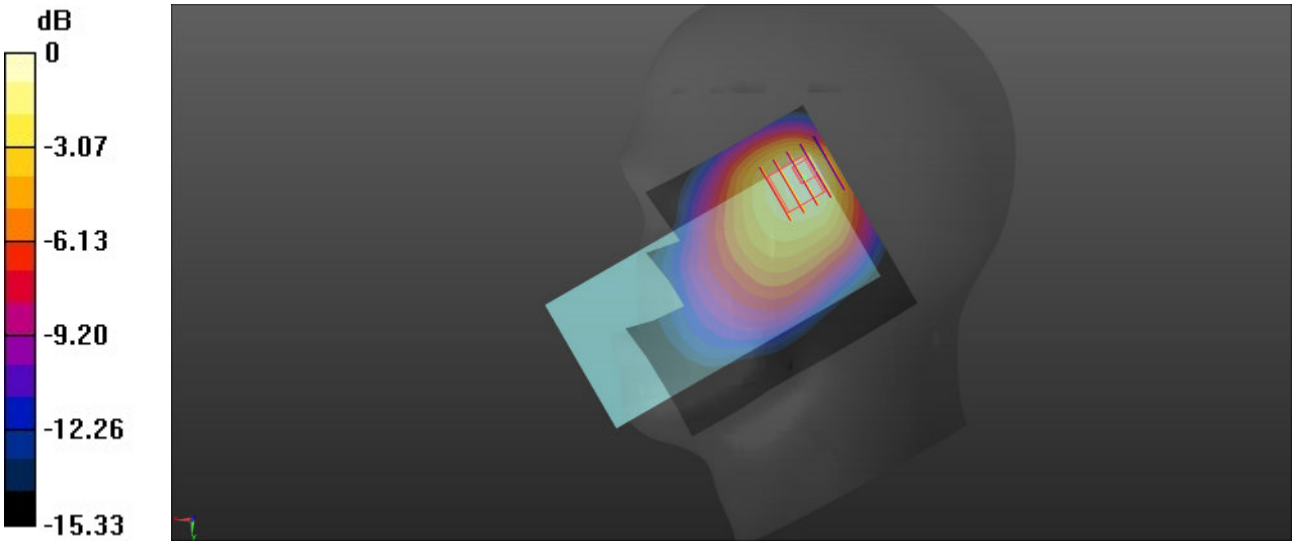
02_LTE Band 13_10M_QPSK_1RB_0Offset_Right Cheek_0mm_Ch23230

Communication System: UID 0, LTE-FDD (0); Frequency: 782 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 782 MHz; σ = 0.9 S/m; ε_r = 40.783; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.35, 10.35, 10.35); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x91x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.902 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.88 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 0.944 W/kg
SAR(1 g) = 0.471 W/kg; SAR(10 g) = 0.306 W/kg
Maximum value of SAR (measured) = 0.708 W/kg



0 dB = 0.708 W/kg = -1.50 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

03_GSM850_GPRS (3 Tx slots)_Right Tilted_0mm_Ch251

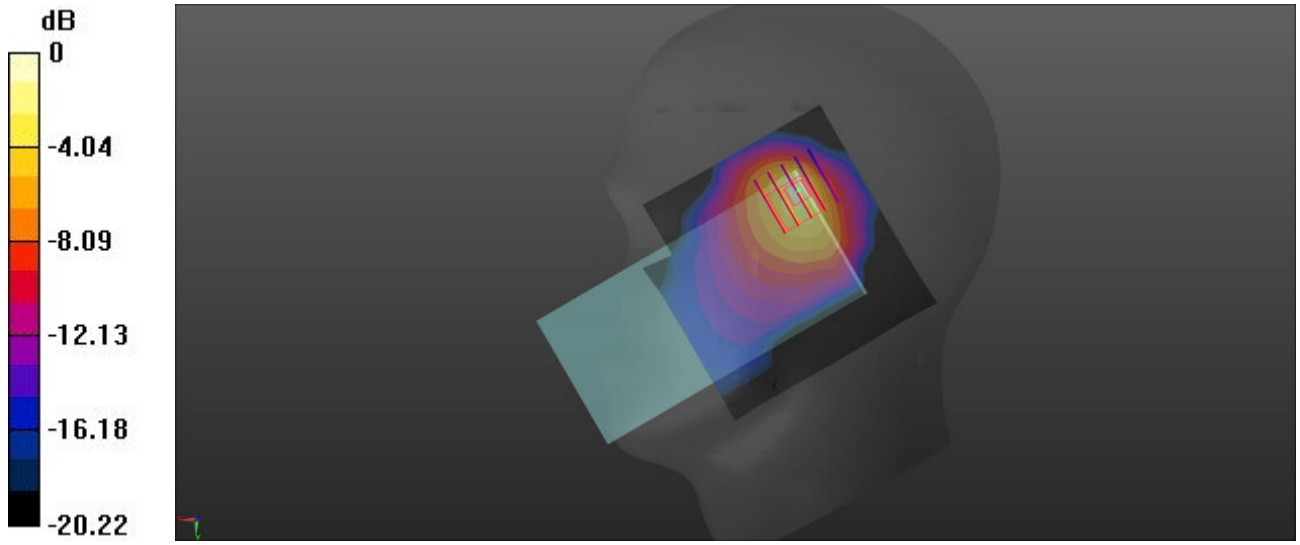
Communication System: UID 0, GSM850 (0); Frequency: 848.8 MHz;Duty Cycle: 1:2.77
Medium: HSL_835 Medium parameters used: f = 849 MHz; σ = 0.945 S/m; ε_r = 42.436; ρ = 1000 kg/m^3

Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.05, 10.05, 10.05); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.30 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 22.69 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.76 W/kg
SAR(1 g) = 0.823 W/kg; SAR(10 g) = 0.285 W/kg
Maximum value of SAR (measured) = 1.34 W/kg



0 dB = 1.34 W/kg = 1.27 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

04_WCDMA V_RMC 12.2Kbps_Right Tilted_0mm_Ch4233

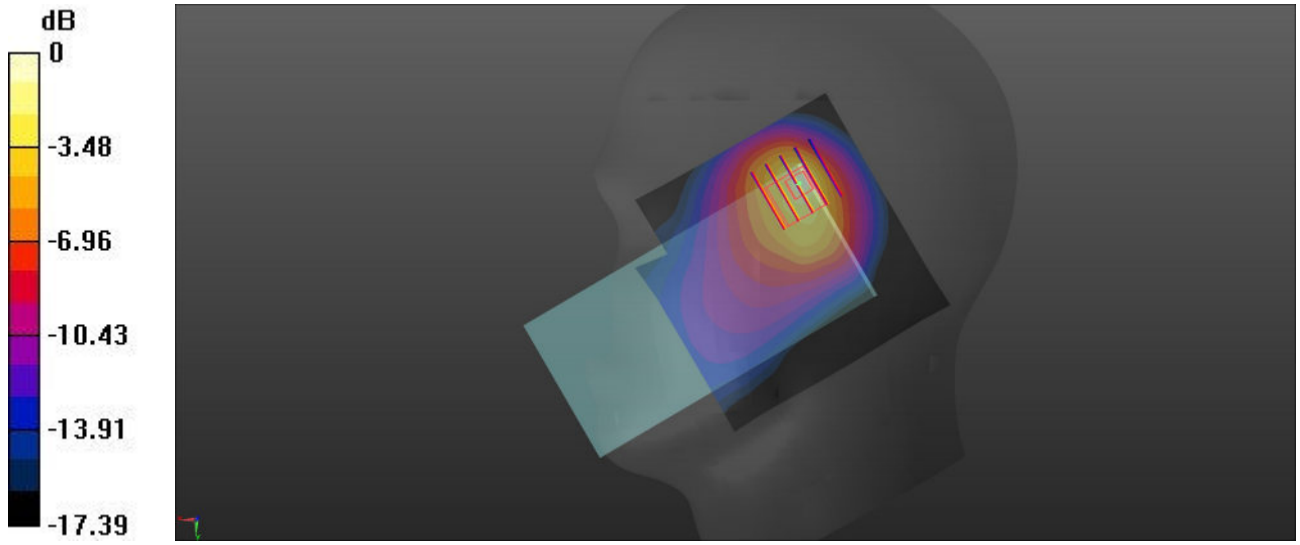
Communication System: UID 0, WCDMA (0); Frequency: 846.6 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 847 MHz; σ = 0.943 S/m; ε_r = 42.425; ρ = 1000 kg/m^3

Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.05, 10.05, 10.05); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.776 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.11 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.09 W/kg
SAR(1 g) = 0.508 W/kg; SAR(10 g) = 0.292 W/kg
Maximum value of SAR (measured) = 0.888 W/kg



0 dB = 0.888 W/kg = -0.52 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

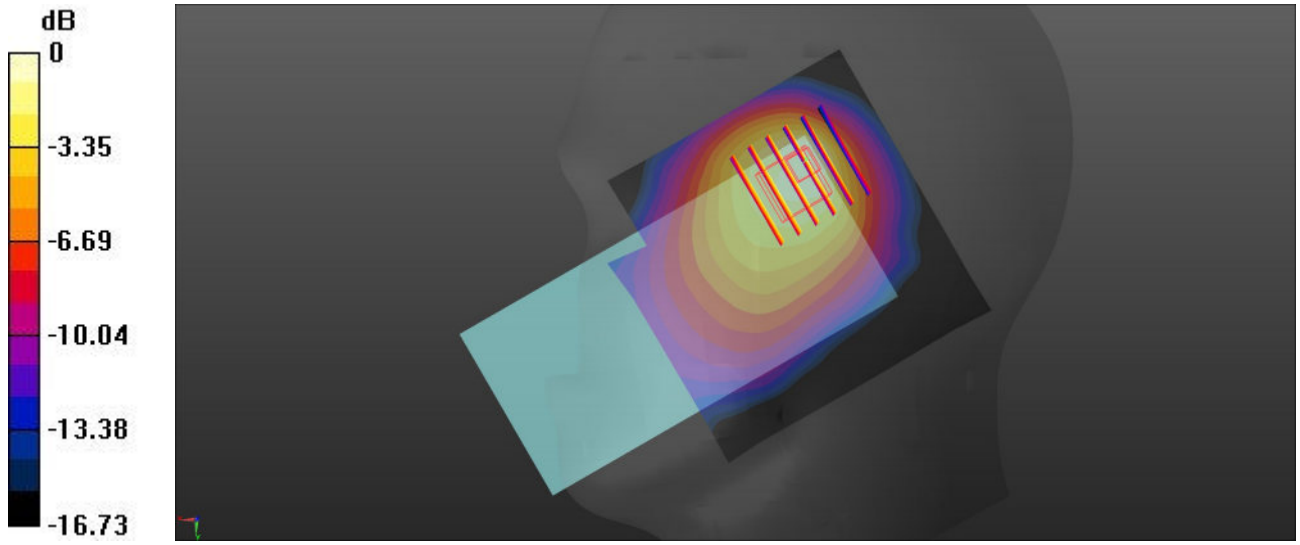
05_LTE Band 26_15M_QPSK_1RB_0Offset_Right Cheek_0mm_Ch26865

Communication System: UID 0, LTE-FDD (0); Frequency: 831.5 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 831.5 MHz; σ = 0.936 S/m; ε_r = 42.462; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.05, 10.05, 10.05); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.881 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 18.01 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 0.870 W/kg
SAR(1 g) = 0.421 W/kg; SAR(10 g) = 0.278 W/kg
Maximum value of SAR (measured) = 0.675 W/kg



0 dB = 0.675 W/kg = -1.71 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

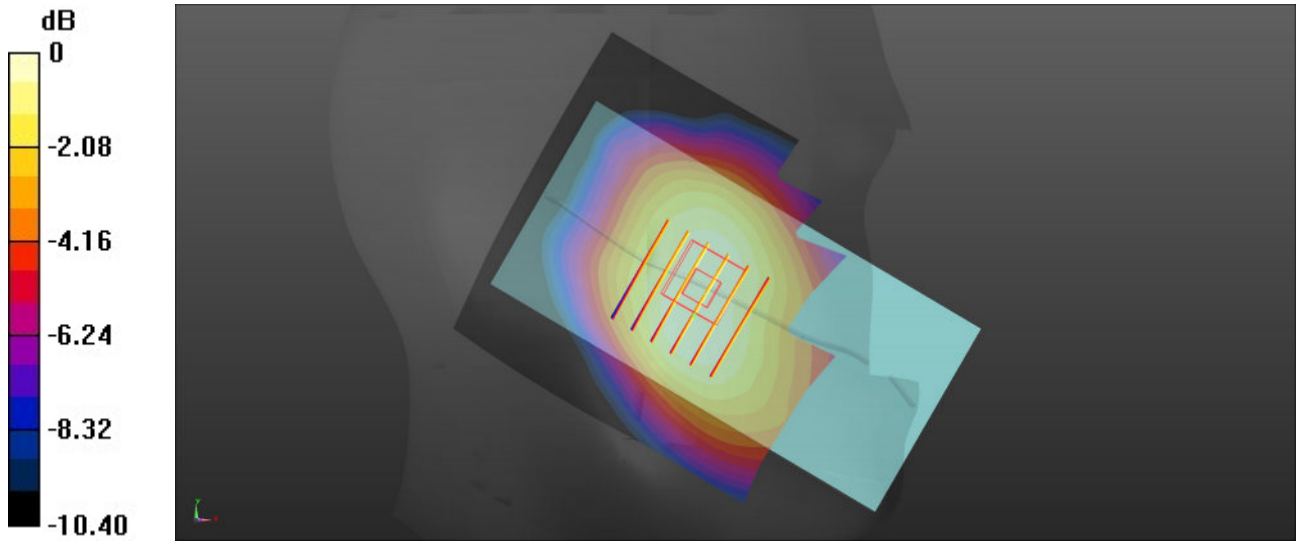
06_FR1 n5_20M_QPSK_1RB_1Offset_Left Cheek_0mm_Ch167300

Communication System: UID 0, 5G NR (0); Frequency: 836.5 MHz;Duty Cycle: 1:1
Medium: HSL_835 Medium parameters used: f = 836.5 MHz; σ = 0.939 S/m; ε_r = 42.435; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.05, 10.05, 10.05); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.120 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 2.947 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 0.120 W/kg
SAR(1 g) = 0.101 W/kg; SAR(10 g) = 0.083 W/kg
Maximum value of SAR (measured) = 0.114 W/kg



0 dB = 0.114 W/kg = -9.43 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

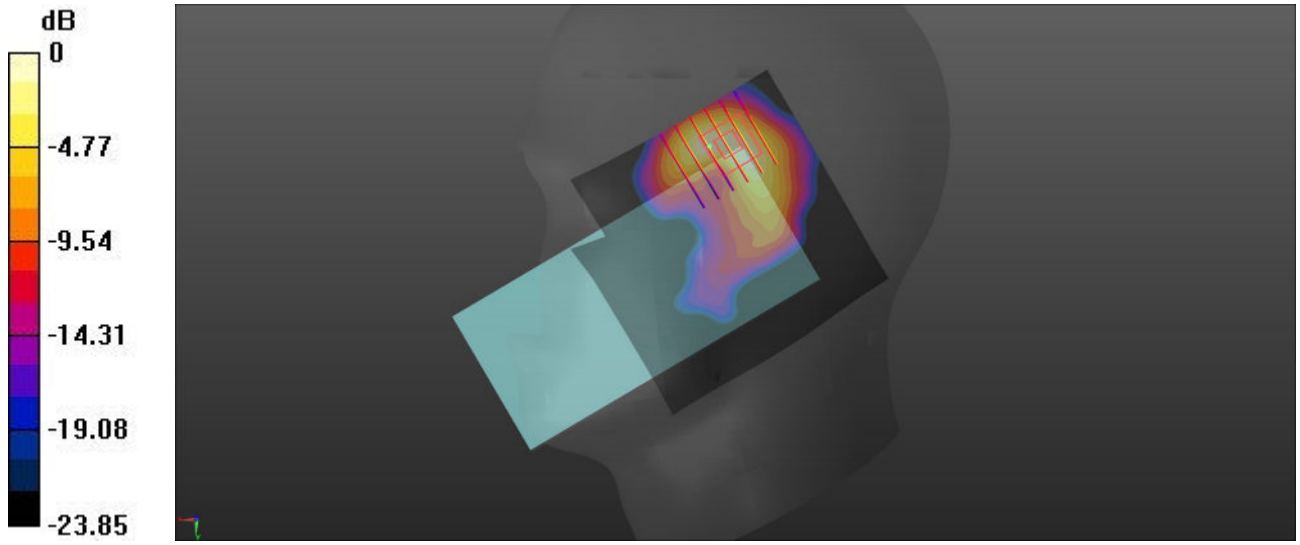
07_WCDMA IV_RMC 12.2Kbps_Right Cheek_0mm_Ch1513

Communication System: UID 0, WCDMA (0); Frequency: 1752.6 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1753 MHz; σ = 1.361 S/m; ε_r = 40.943; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.97, 8.97, 8.97); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.986 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 13.10 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.38 W/kg
SAR(1 g) = 0.656 W/kg; SAR(10 g) = 0.320 W/kg
Maximum value of SAR (measured) = 1.05 W/kg



0 dB = 1.05 W/kg = 0.21 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

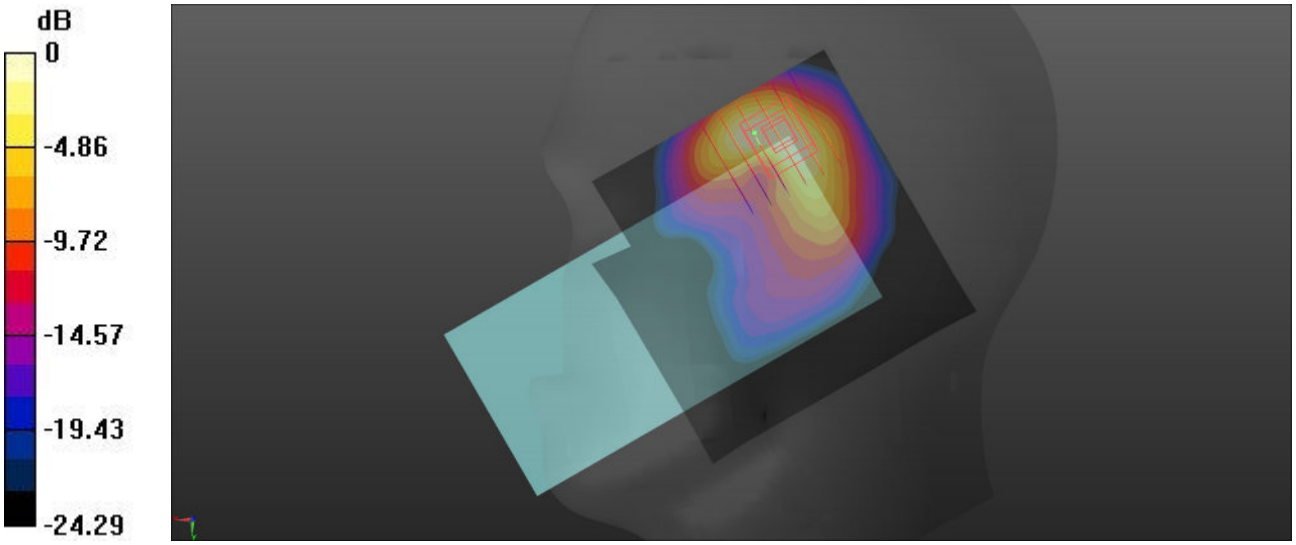
08_LTE Band 66_20M_QPSK_1RB_0Offset_Right Cheek_0mm_Ch132572

Communication System: UID 0, LTE-FDD (0); Frequency: 1770 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1770 MHz; σ = 1.372 S/m; ε_r = 40.927; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.97, 8.97, 8.97); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.18 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.52 W/kg
SAR(1 g) = 0.718 W/kg; SAR(10 g) = 0.351 W/kg
Maximum value of SAR (measured) = 1.17 W/kg



0 dB = 1.17 W/kg = 0.68 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

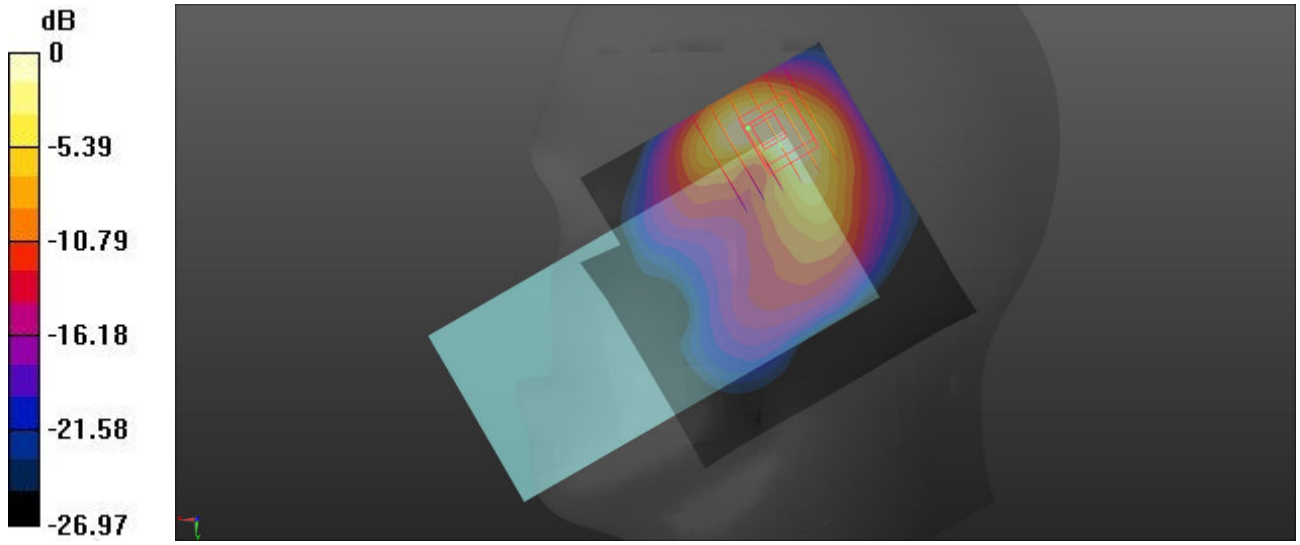
09_FR1 n66_40M_QPSK_216RB_0Offset_Right Cheek_0mm_Ch349000

Communication System: UID 0, 5G NR (0); Frequency: 1745 MHz;Duty Cycle: 1:1
Medium: HSL_1750 Medium parameters used: f = 1745 MHz; σ = 1.355 S/m; ε_r = 40.953; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.97, 8.97, 8.97); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.20 W/kg

Zoom Scan (6x6x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.13 V/m; Power Drift = -0.03 dB
Peak SAR (extrapolated) = 1.62 W/kg
SAR(1 g) = 0.756 W/kg; SAR(10 g) = 0.367 W/kg
Maximum value of SAR (measured) = 1.20 W/kg



0 dB = 1.20 W/kg = 0.79 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

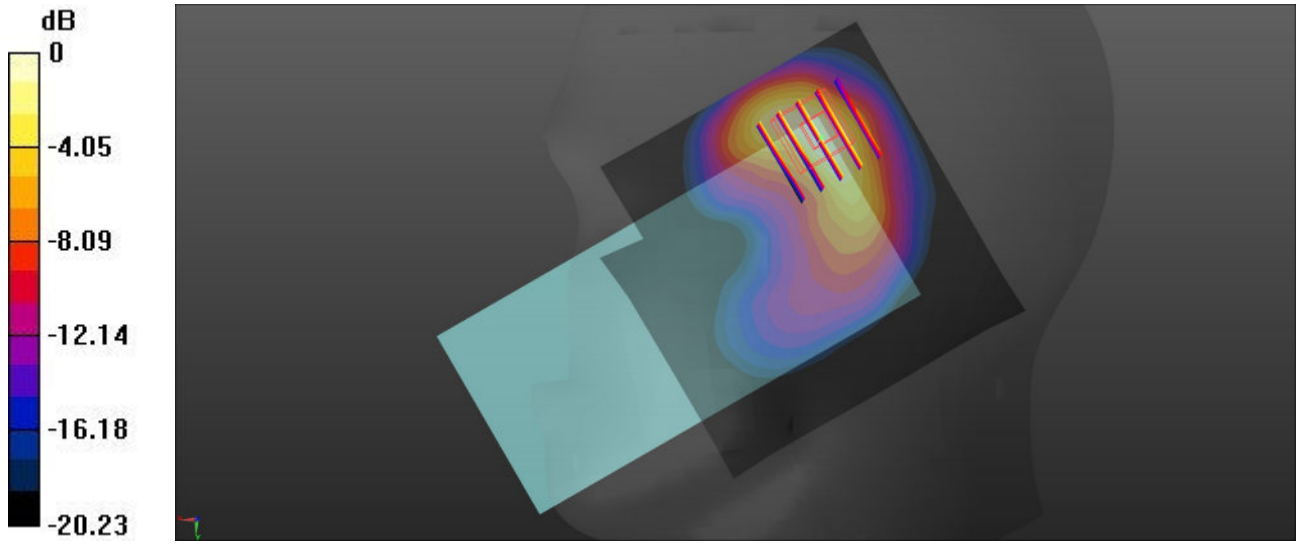
10_GSM1900_GPRS (3 Tx slots)_Right Cheek_0mm_Ch661

Communication System: UID 0, PCS (0); Frequency: 1880 MHz;Duty Cycle: 1:2.77
Medium: HSL_1900 Medium parameters used: f = 1880 MHz; σ = 1.443 S/m; ε_r = 40.707; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.51, 8.51, 8.51); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.58 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 17.74 V/m; Power Drift = 0.03 dB
Peak SAR (extrapolated) = 1.79 W/kg
SAR(1 g) = 0.897 W/kg; SAR(10 g) = 0.438 W/kg
Maximum value of SAR (measured) = 1.41 W/kg



0 dB = 1.41 W/kg = 1.50 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

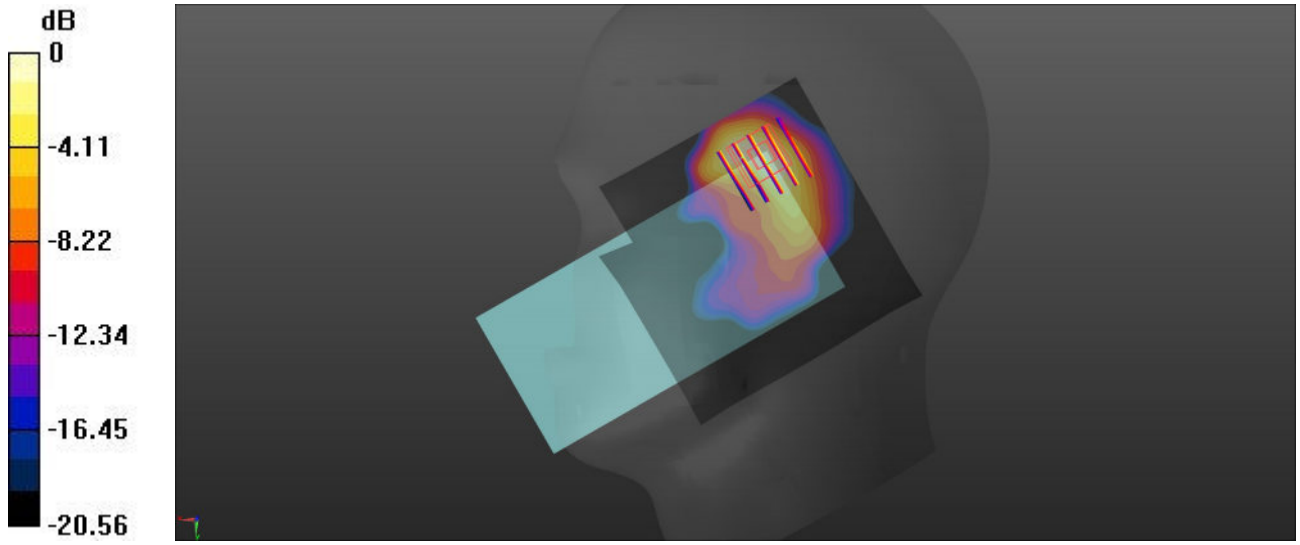
11_WCDMA II_RMC 12.2Kbps_Right Cheek_0mm_Ch9538

Communication System: UID 0, WCDMA (0); Frequency: 1907.6 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1908 MHz; σ = 1.461 S/m; ε_r = 40.669; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.51, 8.51, 8.51); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.05 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 16.70 V/m; Power Drift = -0.16 dB
Peak SAR (extrapolated) = 1.33 W/kg
SAR(1 g) = 0.647 W/kg; SAR(10 g) = 0.319 W/kg
Maximum value of SAR (measured) = 1.04 W/kg



0 dB = 1.04 W/kg = 0.17 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

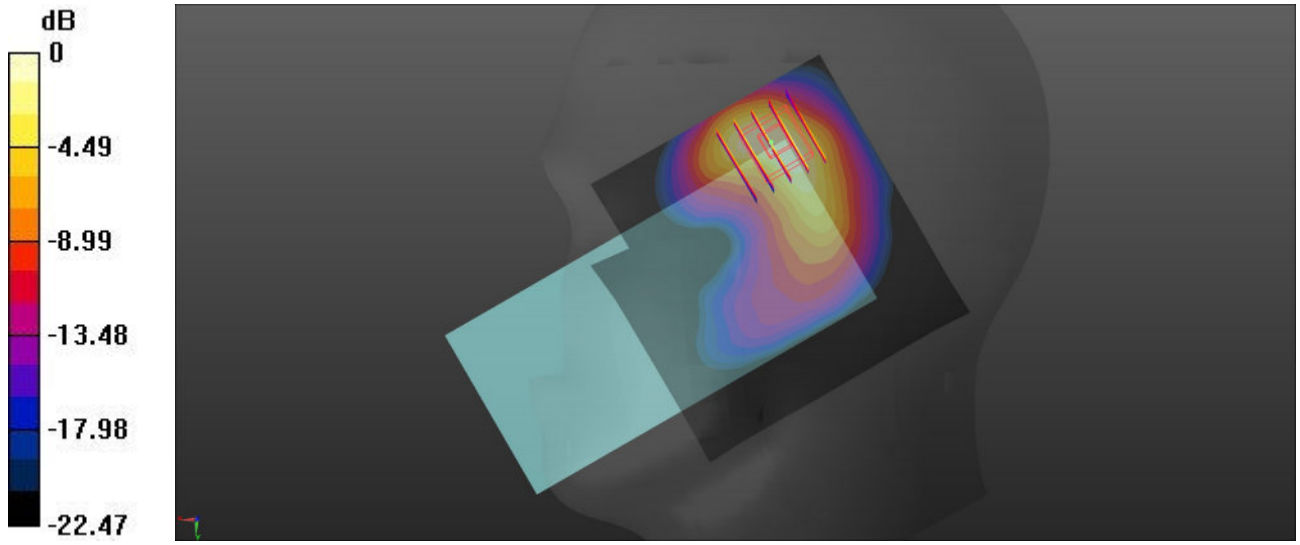
12_LTE Band 25_20M_QPSK_1RB_0Offset_Right Cheek_0mm_Ch26590

Communication System: UID 0, LTE-FDD (0); Frequency: 1905 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1905 MHz; σ = 1.46 S/m; ε_r = 40.674; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.51, 8.51, 8.51); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.39 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.01 dB
Peak SAR (extrapolated) = 1.69 W/kg
SAR(1 g) = 0.814 W/kg; SAR(10 g) = 0.402 W/kg
Maximum value of SAR (measured) = 1.37 W/kg



0 dB = 1.37 W/kg = 1.37 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/3

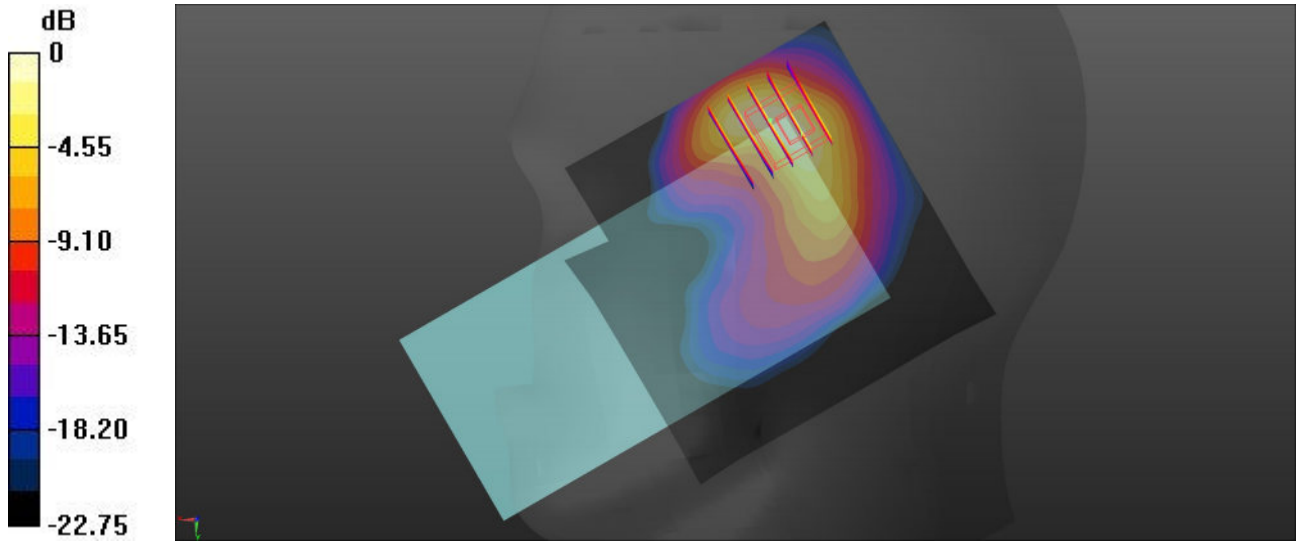
13_FR1 n2_20M_QPSK_50RB_28Offset_Right Cheek_0mm_Ch372000

Communication System: UID 0, 5G NR (0); Frequency: 1860 MHz;Duty Cycle: 1:1
Medium: HSL_1900 Medium parameters used: f = 1860 MHz; σ = 1.43 S/m; ε_r = 40.724; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.51, 8.51, 8.51); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (81x81x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 1.38 W/kg

Zoom Scan (5x5x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 19.76 V/m; Power Drift = -0.06 dB
Peak SAR (extrapolated) = 1.88 W/kg
SAR(1 g) = 0.909 W/kg; SAR(10 g) = 0.450 W/kg
Maximum value of SAR (measured) = 1.56 W/kg



0 dB = 1.56 W/kg = 1.93 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/4

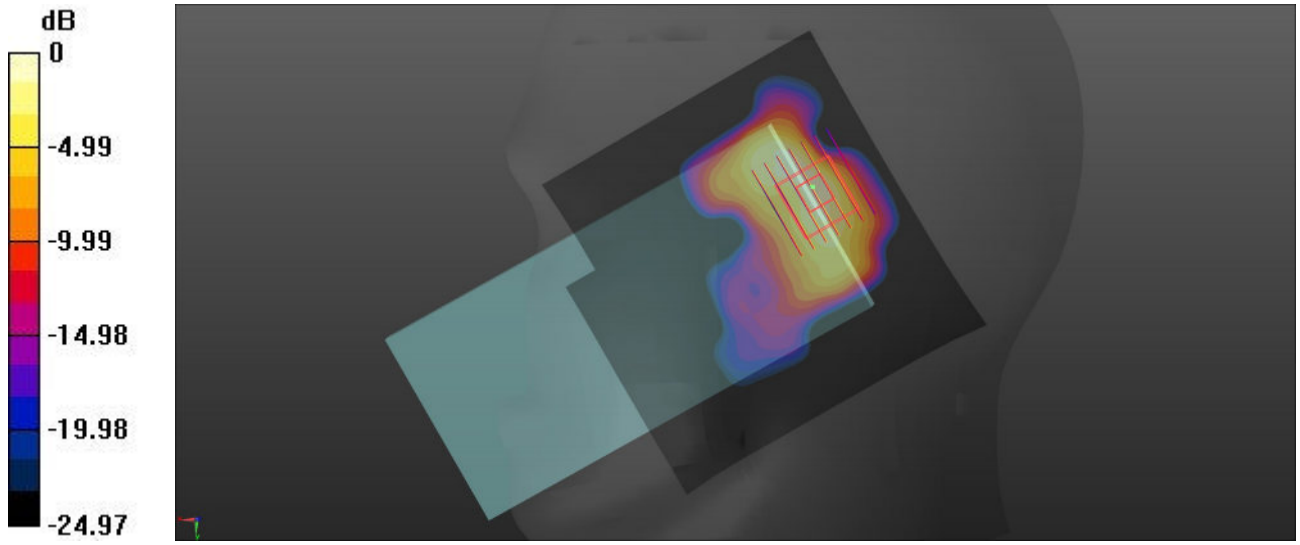
14_LTE Band 7_20M_QPSK_1RB_0Offset_Right Tilted_0mm_Ch21100

Communication System: UID 0, LTE-FDD (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2535 MHz; σ = 1.961 S/m; ε_r = 40.765; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.82, 7.82, 7.82); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.36 W/kg

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.032 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 1.67 W/kg
SAR(1 g) = 0.754 W/kg; SAR(10 g) = 0.339 W/kg
Maximum value of SAR (measured) = 1.37 W/kg



0 dB = 1.37 W/kg = 1.37 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/4

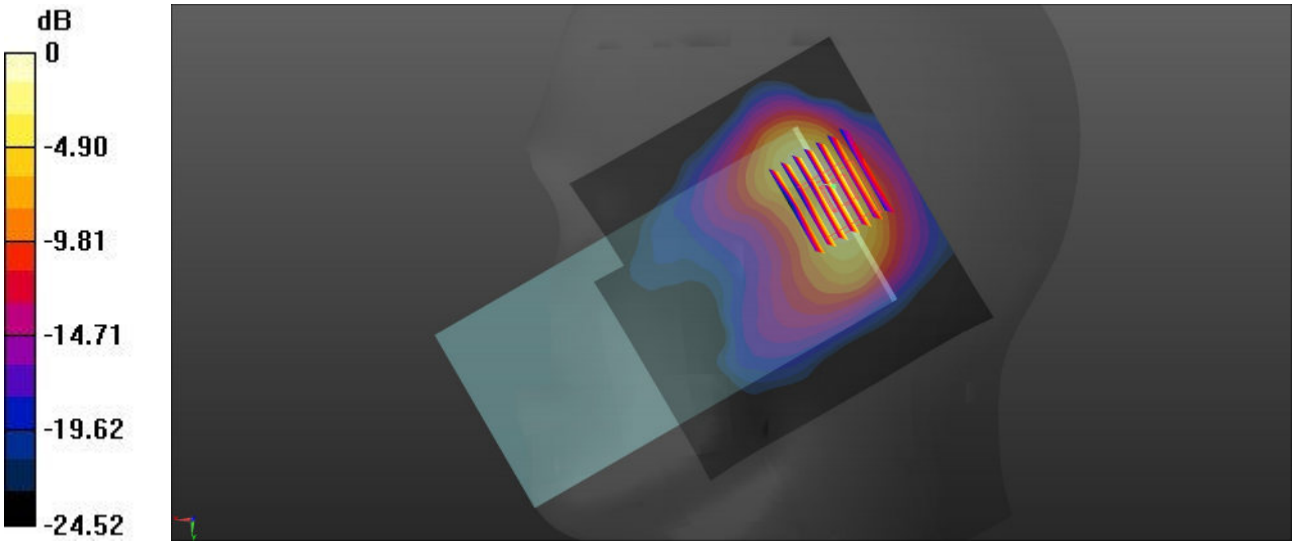
15_FR1 n7_40M_QPSK_108RB_54Offset_Right Tilted_0mm_Ch507000

Communication System: UID 0, 5G NR (0); Frequency: 2535 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2535 MHz; σ = 1.961 S/m; ε_r = 40.765; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.82, 7.82, 7.82); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.938 W/kg

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 22.07 V/m; Power Drift = -0.04 dB
Peak SAR (extrapolated) = 1.26 W/kg
SAR(1 g) = 0.570 W/kg; SAR(10 g) = 0.255 W/kg
Maximum value of SAR (measured) = 1.01 W/kg



0 dB = 1.01 W/kg = 0.04 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/4

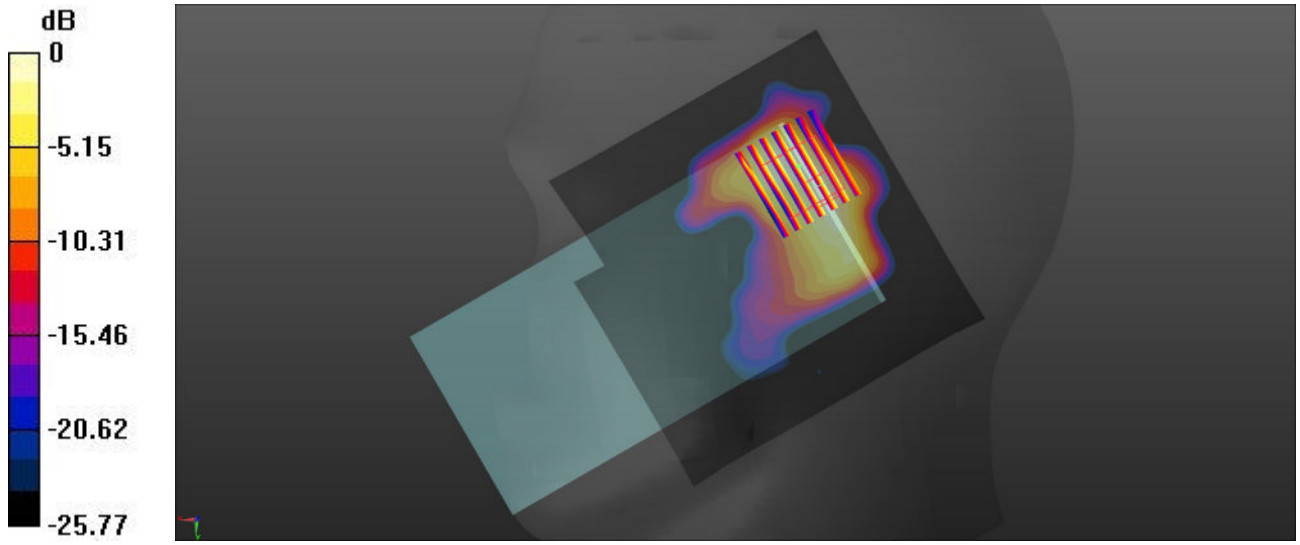
16_LTE Band 41 HPUE_20M_QPSK_50RB_0Offset_Right Tilted_0mm_Ch41055

Communication System: UID 0, LTE-HPUE (0); Frequency: 2636.5 MHz;Duty Cycle: 1:2.33
Medium: HSL_2600 Medium parameters used: f = 2637 MHz; σ = 2.043 S/m; ε_r = 40.593; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.82, 7.82, 7.82); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (101x101x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 1.21 W/kg

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.002 V/m; Power Drift = 0.04 dB
Peak SAR (extrapolated) = 1.40 W/kg
SAR(1 g) = 0.623 W/kg; SAR(10 g) = 0.284 W/kg
Maximum value of SAR (measured) = 1.08 W/kg



0 dB = 1.08 W/kg = 0.33 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/4

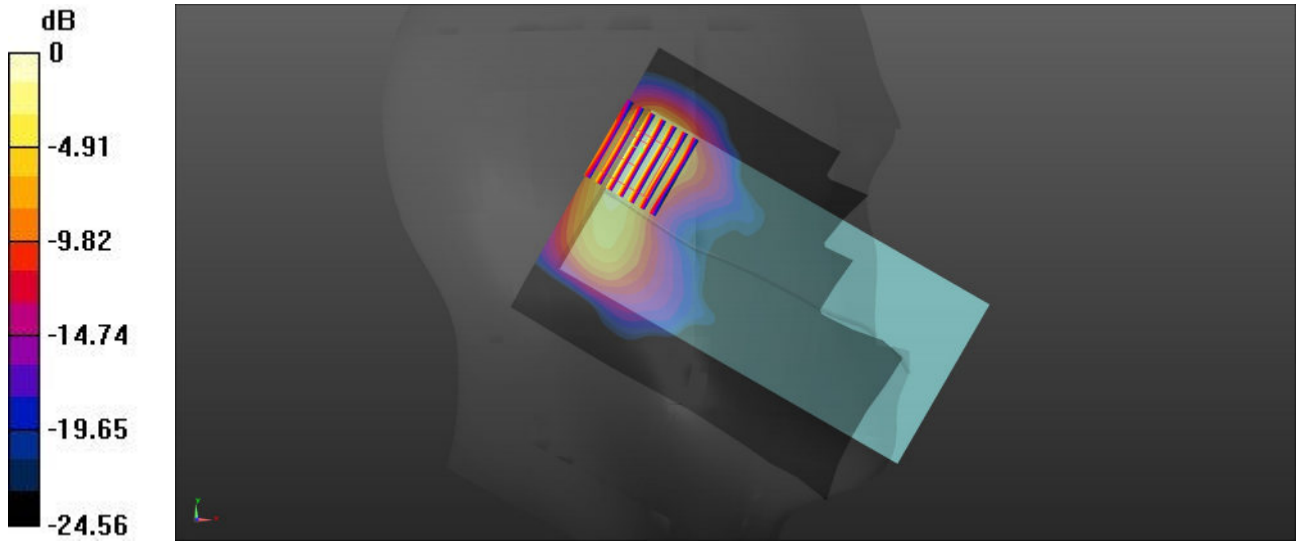
17_FR1 n41_100M_QPSK_1RB_1Offset_Left Tilted_0mm_Ch518598

Communication System: UID 0, 5G NR (0); Frequency: 2592.99 MHz;Duty Cycle: 1:1
Medium: HSL_2600 Medium parameters used: f = 2593 MHz; σ = 2.007 S/m; ε_r = 40.653; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.82, 7.82, 7.82); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (101x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 2.10 W/kg

Zoom Scan (8x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 0 V/m; Power Drift = 0.06 dB
Peak SAR (extrapolated) = 2.30 W/kg
SAR(1 g) = 0.977 W/kg; SAR(10 g) = 0.444 W/kg
Maximum value of SAR (measured) = 1.74 W/kg



0 dB = 1.74 W/kg = 2.41 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/5

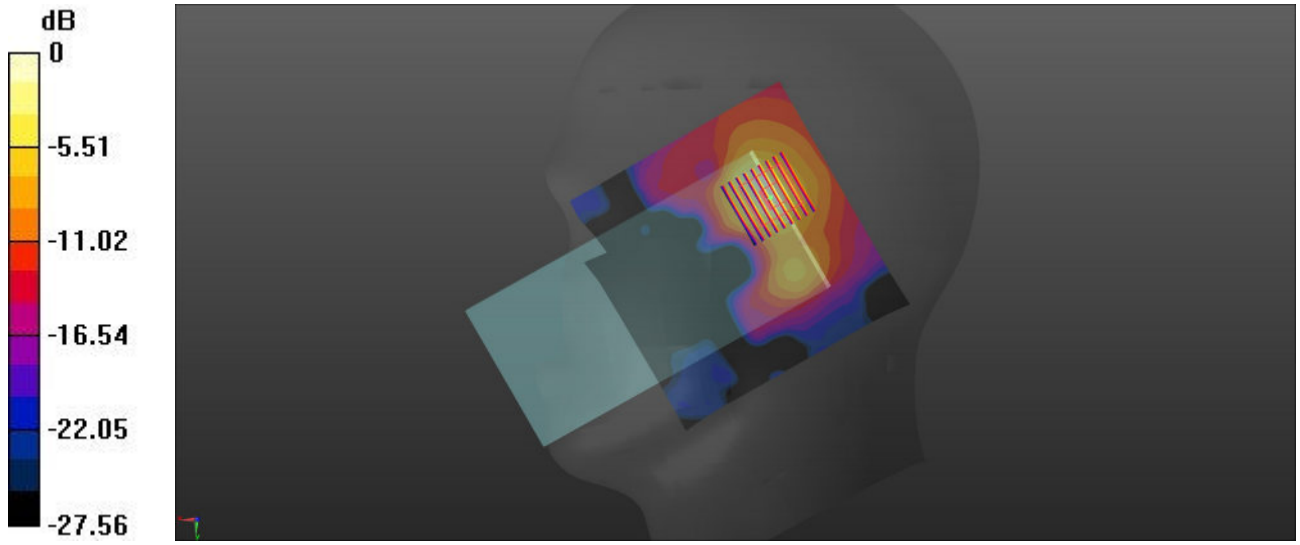
18_LTE Band 42_20M_QPSK_1RB_0Offset_Right Tilted_0mm_Ch42590

Communication System: UID 0, LTE-TDD (0); Frequency: 3500 MHz;Duty Cycle: 1:1.59
Medium: HSL_3500 Medium parameters used: f = 3500 MHz; σ = 2.782 S/m; ε_r = 39.163; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.34, 7.34, 7.34); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (121x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.824 W/kg

Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 10.72 V/m; Power Drift = -0.05 dB
Peak SAR (extrapolated) = 1.11 W/kg
SAR(1 g) = 0.408 W/kg; SAR(10 g) = 0.155 W/kg
Maximum value of SAR (measured) = 0.803 W/kg



0 dB = 0.803 W/kg = -0.95 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/5

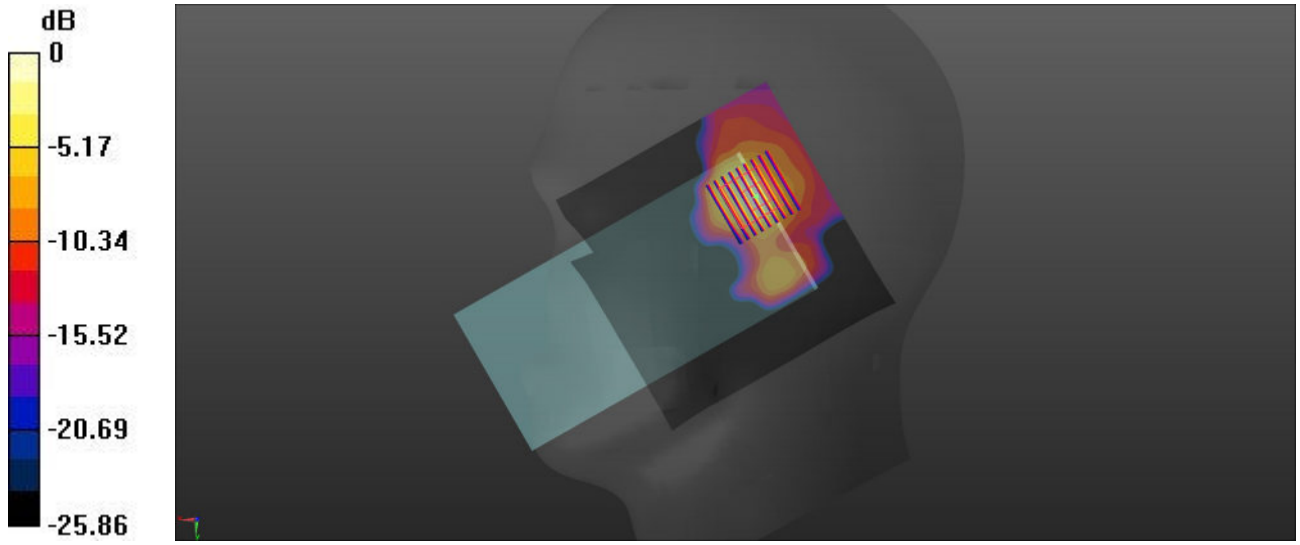
19_LTE Band 48_20M_QPSK_1RB_0Offset_Right Tilted_0mm_Ch55830

Communication System: UID 0, LTE-TDD (0); Frequency: 3609 MHz;Duty Cycle: 1:1.59
Medium: HSL_3700 Medium parameters used: f = 3609 MHz; σ = 2.956 S/m; ε_r = 38.358; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(7.33, 7.33, 7.33); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (121x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 0.475 W/kg

Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 4.743 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 0.705 W/kg
SAR(1 g) = 0.249 W/kg; SAR(10 g) = 0.092 W/kg
Maximum value of SAR (measured) = 0.514 W/kg



0 dB = 0.514 W/kg = -2.89 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/6

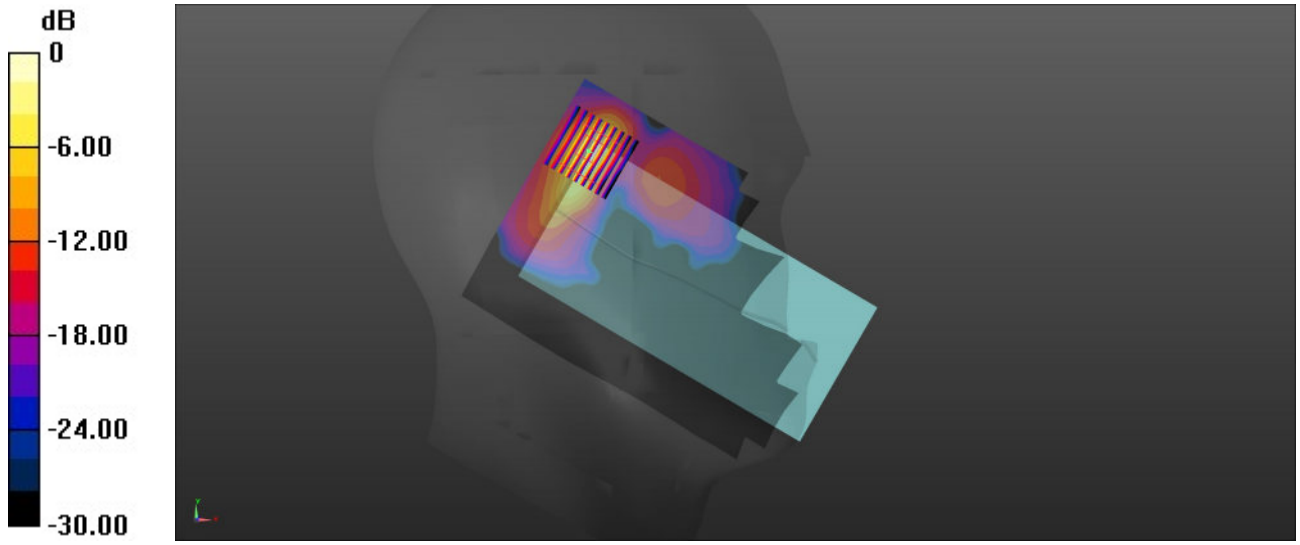
20_FR1 n77_100M_QPSK_270RB_0Offset_Left Tilted_0mm_Ch656000

Communication System: UID 0, 5G NR (0); Frequency: 3840 MHz;Duty Cycle: 1:1
Medium: HSL_3900 Medium parameters used: f = 3840 MHz; σ = 3.107 S/m; ε_r = 39.102; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7706; ConvF(7.2, 7.2, 7.2); Calibrated: 2022/1/20
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1279; Calibrated: 2022/10/26
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2022
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (121x191x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 2.92 W/kg

Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 21.33 V/m; Power Drift = 0.13 dB
Peak SAR (extrapolated) = 4.33 W/kg
SAR(1 g) = 0.973 W/kg; SAR(10 g) = 0.308 W/kg
Maximum value of SAR (measured) = 2.99 W/kg



0 dB = 2.99 W/kg = 4.76 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/4

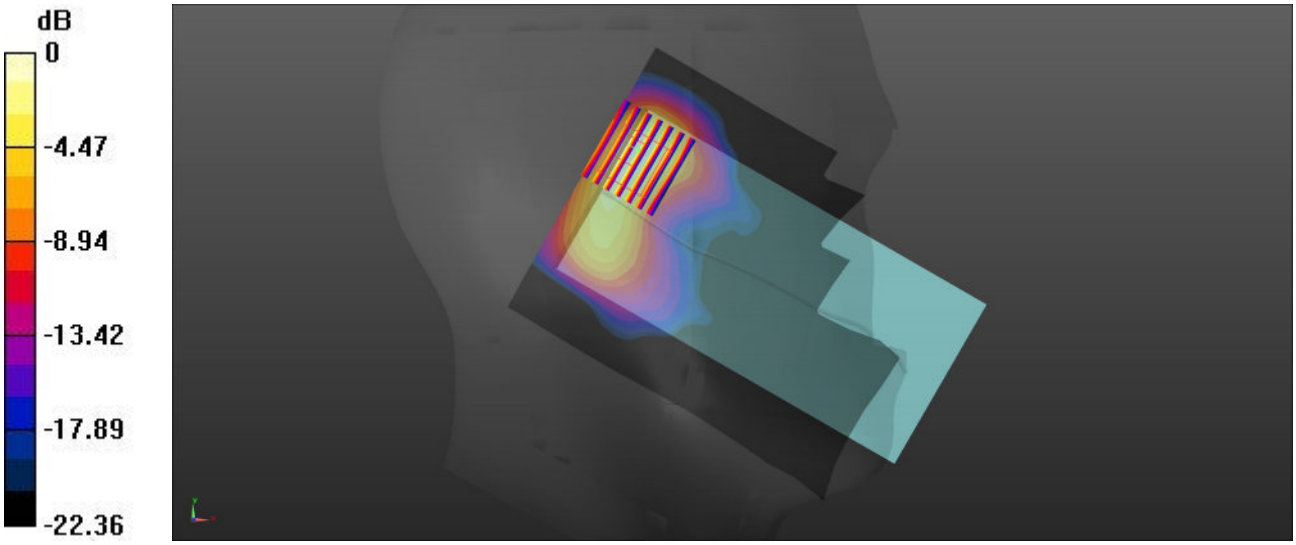
21_WLAN2.4GHz_802.11b 1Mbps_Left Tilted_0mm_Ch11

Communication System: UID 0, WLAN2.4GHz (0); Frequency: 2462 MHz;Duty Cycle: 1:1.022
Medium: HSL_2450 Medium parameters used: f = 2462 MHz; σ = 1.871 S/m; ε_r = 39.142; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.13, 8.13, 8.13); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (101x151x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.977 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 1.351 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 2.15 W/kg
SAR(1 g) = 0.582 W/kg; SAR(10 g) = 0.271 W/kg
Maximum value of SAR (measured) = 0.771 W/kg



0 dB = 0.771 W/kg = -1.13 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/4

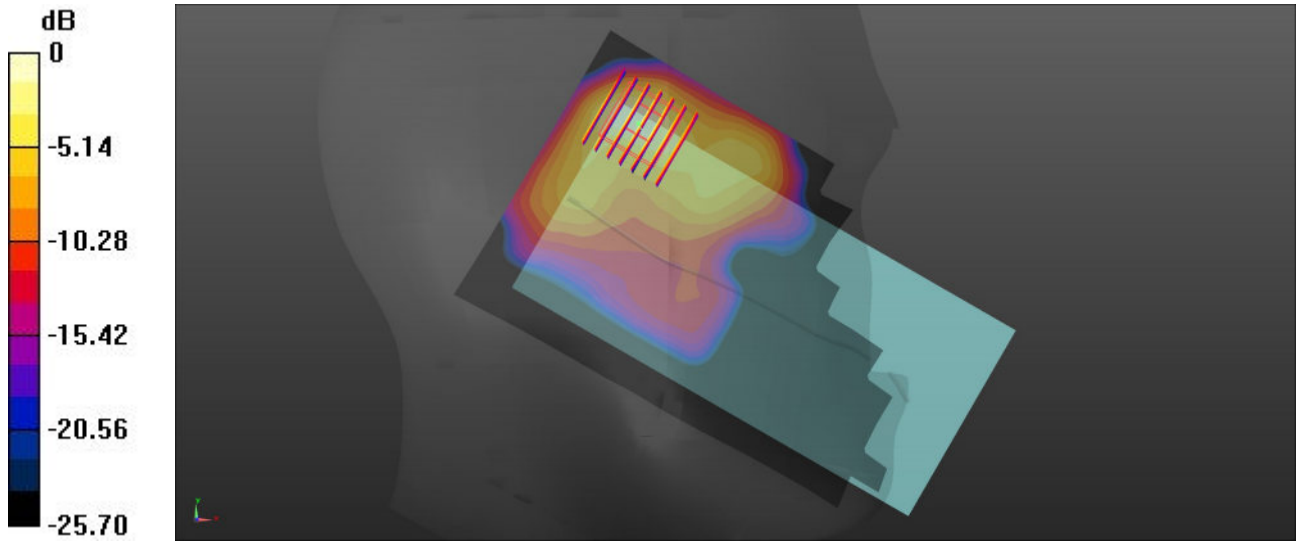
22_Bluetooth_1Mbps_Left Cheek_0mm_Ch39

Communication System: UID 0, Bluetooth (0); Frequency: 2441 MHz;Duty Cycle: 1:1.299
Medium: HSL_2450 Medium parameters used: f = 2441 MHz; σ = 1.844 S/m; ε_r = 39.089; ρ = 1000 kg/m^3
Ambient Temperature：23.4 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(8.13, 8.13, 8.13); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (91x161x1): Interpolated grid: dx=1.200 mm, dy=1.200 mm
Maximum value of SAR (interpolated) = 0.224 W/kg

Zoom Scan (7x7x7)/Cube 0: Measurement grid: dx=5mm, dy=5mm, dz=5mm
Reference Value = 5.202 V/m; Power Drift = 0.05 dB
Peak SAR (extrapolated) = 0.319 W/kg
SAR(1 g) = 0.103 W/kg; SAR(10 g) = 0.060 W/kg
Maximum value of SAR (measured) = 0.245 W/kg



0 dB = 0.245 W/kg = -6.11 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/6

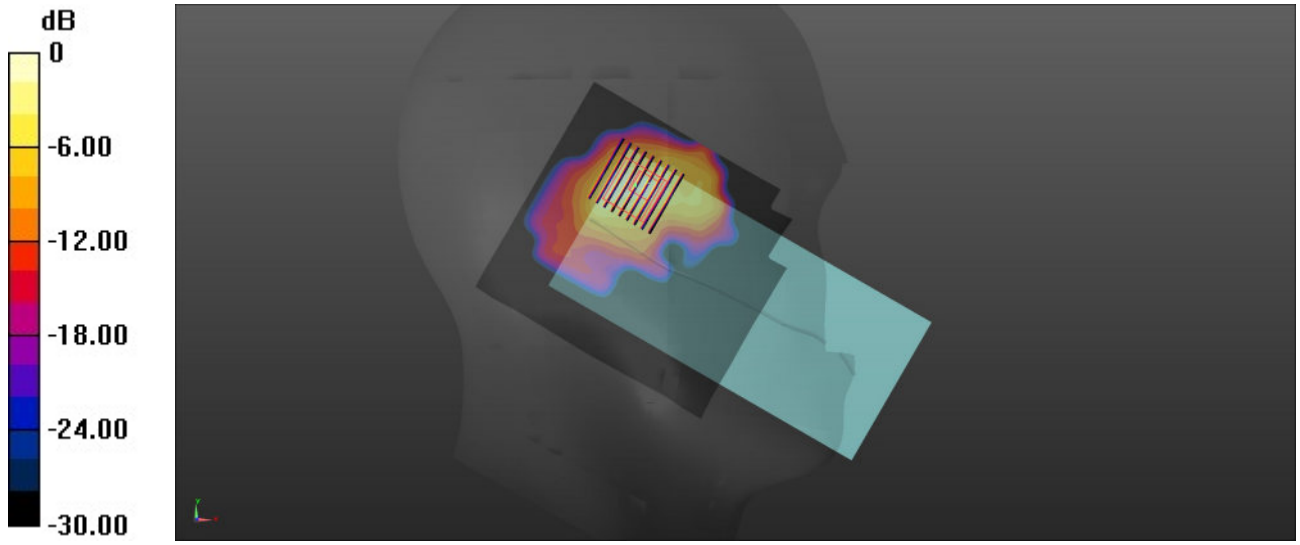
23_WLAN5GHz_802.11ac-VHT80 MCS0_Left Cheek_0mm_Ch58

Communication System: UID 0, WLAN5GHz (0); Frequency: 5290 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5290 MHz; σ = 4.687 S/m; ε_r = 35.826; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.6 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(5.7, 5.7, 5.7); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (111x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.47 W/kg

Zoom Scan (9x9x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 8.892 V/m; Power Drift = -0.01 dB
Peak SAR (extrapolated) = 2.32 W/kg
SAR(1 g) = 0.687 W/kg; SAR(10 g) = 0.249 W/kg
Maximum value of SAR (measured) = 1.49 W/kg



0 dB = 1.49 W/kg = 1.73 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/7

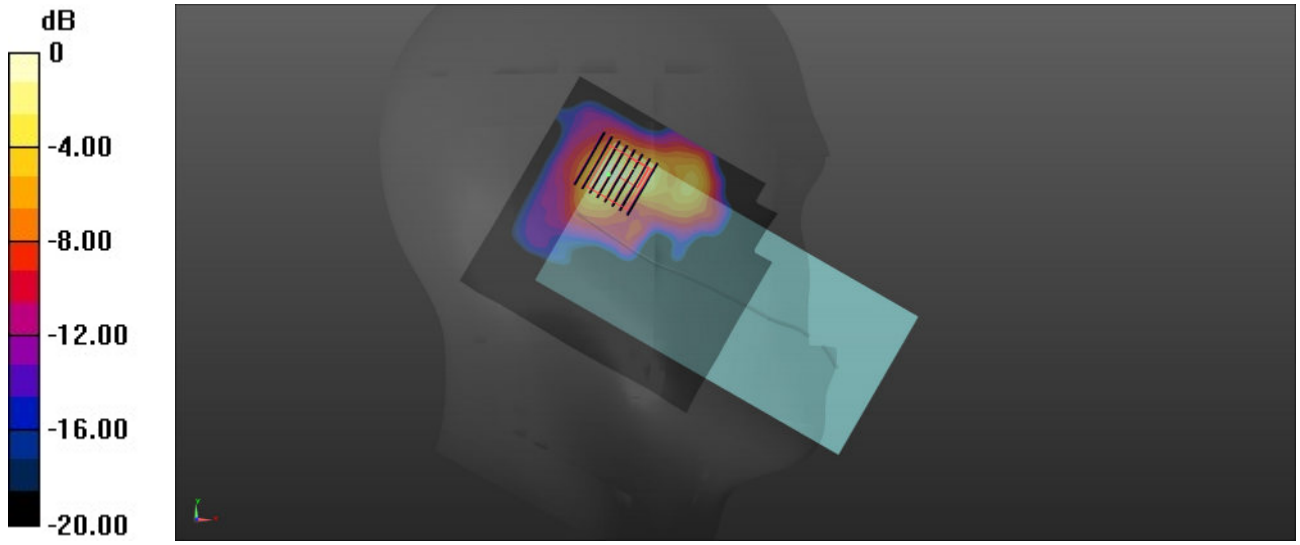
24_WLAN5GHz_802.11ac-VHT80 MCS0_Left Cheek_0mm_Ch122

Communication System: UID 0, WLAN5GHz (0); Frequency: 5610 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5610 MHz; σ = 5.041 S/m; ε_r = 35.307; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.8 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(4.95, 4.95, 4.95); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (111x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 1.53 W/kg

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 9.391 V/m; Power Drift = 0.08 dB
Peak SAR (extrapolated) = 3.12 W/kg
SAR(1 g) = 0.694 W/kg; SAR(10 g) = 0.227 W/kg
Maximum value of SAR (measured) = 1.73 W/kg



0 dB = 1.73 W/kg = 2.38 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/7

25_WLAN5GHz_802.11ac-VHT80 MCS0_Left Cheek_0mm_Ch155

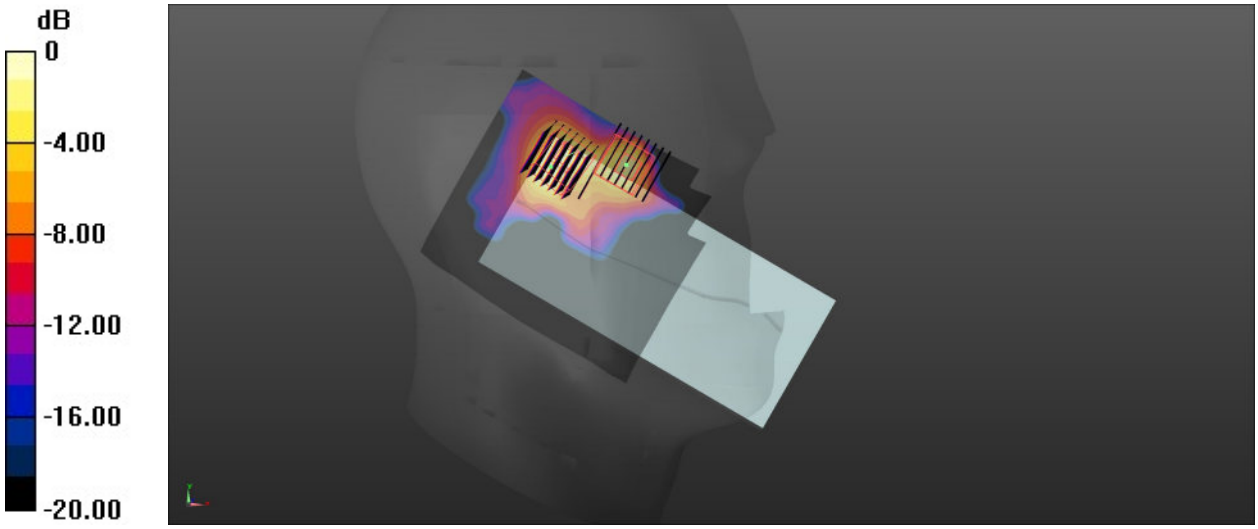
Communication System: UID 0, WLAN5GHz (0); Frequency: 5775 MHz;Duty Cycle: 1:1
Medium: HSL_5000 Medium parameters used: f = 5775 MHz; σ = 5.202 S/m; ε_r = 35.071; ρ = 1000 kg/m^3
Ambient Temperature：23.2 ℃; Liquid Temperature：22.9 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(5.15, 5.15, 5.15); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (111x121x1): Interpolated grid: dx=1.000 mm, dy=1.000 mm
Maximum value of SAR (interpolated) = 2.06 W/kg

Zoom Scan (8x8x7)/Cube 0: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 9.63 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.78 W/kg
SAR(1 g) = 0.570 W/kg; SAR(10 g) = 0.195 W/kg
Maximum value of SAR (measured) = 1.75 W/kg

Zoom Scan (8x8x7)/Cube 1: Measurement grid: dx=4mm, dy=4mm, dz=1.4mm
Reference Value = 8.631 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 2.22 W/kg
SAR(1 g) = 0.480 W/kg; SAR(10 g) = 0.142 W/kg
Maximum value of SAR (measured) = 1.21 W/kg



0 dB = 1.21 W/kg = 0.83 dBW/kg

Test Laboratory: Sporton International Inc. SAR/HAC Testing Lab Date: 2022/12/2

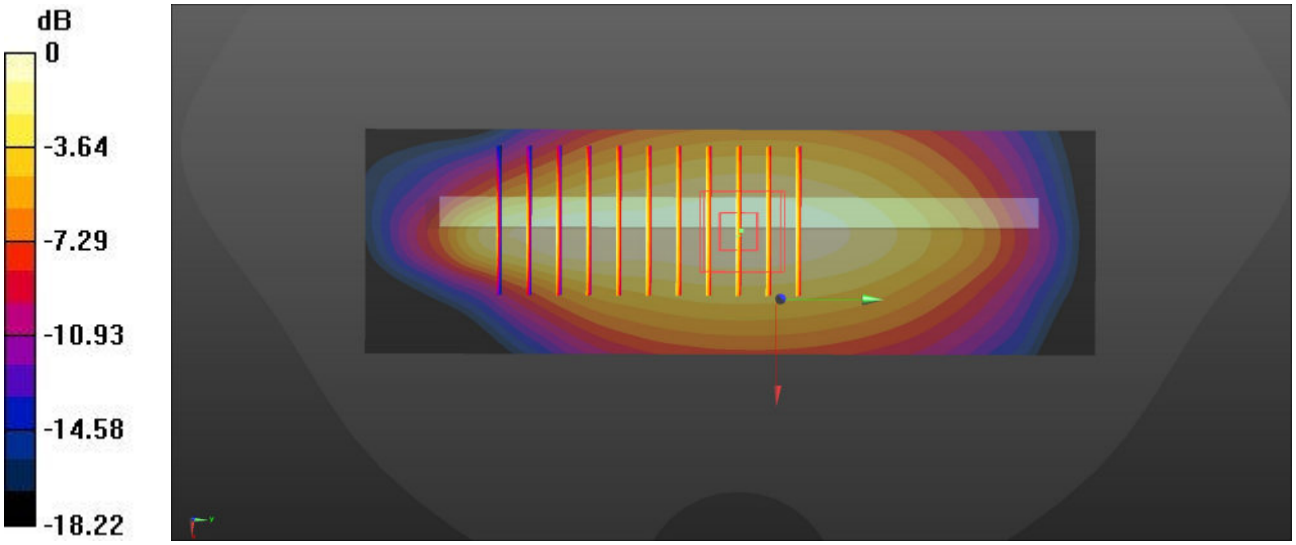
26_LTE Band 12_10M_QPSK_1RB_0Offset_Left Side_5mm_Ch23095

Communication System: UID 0, LTE-FDD (0); Frequency: 707.5 MHz;Duty Cycle: 1:1
Medium: HSL_750 Medium parameters used: f = 707.5 MHz; σ = 0.891 S/m; ε_r = 42.809; ρ = 1000 kg/m^3
Ambient Temperature：23.1 ℃; Liquid Temperature：22.7 ℃

DASY5 Configuration:
- Probe: EX3DV4 - SN7630; ConvF(10.35, 10.35, 10.35); Calibrated: 2022/3/4
- Sensor-Surface: 1.4mm (Mechanical Surface Detection)
- Electronics: DAE4 Sn1305; Calibrated: 2022/4/27
- Phantom: Twin-SAM 1; Type: SAM Twin; Serial: 2024
- Measurement SW: DASY52, Version 52.10 (4); SEMCAD X Version 14.6.14 (7501)

Area Scan (41x131x1): Interpolated grid: dx=1.500 mm, dy=1.500 mm
Maximum value of SAR (interpolated) = 0.668 W/kg

Zoom Scan (6x11x7)/Cube 0: Measurement grid: dx=8mm, dy=8mm, dz=5mm
Reference Value = 24.86 V/m; Power Drift = 0.02 dB
Peak SAR (extrapolated) = 0.821 W/kg
SAR(1 g) = 0.512 W/kg; SAR(10 g) = 0.349 W/kg
Maximum value of SAR (measured) = 0.683 W/kg



0 dB = 0.683 W/kg = -1.66 dBW/kg