ELEMENT MATERIALS TECHNOLOGY
(formerly PCTEST)
18855 Adams Court, Morgan Hill, CA 95037 USA
Tel. 408.538.5600
http://www.element.com

SAR EVALUATION REPORT

Applicant Name:
Apple, Inc.
One Apple Park Way
Cupertino, CA 95014 USA

Date of Testing:
06/17/2024 – 08/26/2024
Test Report Issue Date:
08/27/2024
Test Site/Location:
Element, Morgan Hill, CA, USA
Document Serial No.:
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FCC ID:	**BCG-A3003**
APPLICANT:	**APPLE, INC.**

DUT Type:	Watch
Application Type:	Certification
FCC Rule Part(s):	CFR §2.1093
Model:	A3003, A3206

Equipment Class	Band & Mode	Tx Frequency	SAR	
			1g Head (W/kg)	10g Extremity (W/kg)
PCT	UMTS 850	826.40 - 846.60 MHz	<0.1	0.19
PCT	UMTS 1750	1712.4 - 1752.6 MHz	0.29	0.13
PCT	UMTS 1900	1852.4 - 1907.6 MHz	0.50	<0.1
PCT	LTE Band 12	699.7 - 715.3 MHz	<0.1	0.24
PCT	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A
PCT	LTE Band 13	779.5 - 784.5 MHz	<0.1	0.29
PCT	LTE Band 14	790.5 - 795.5 MHz	<0.1	0.23
PCT	LTE Band 26 (Cell)	814.7 - 848.3 MHz	<0.1	0.21
PCT	LTE Band 5 (Cell)	824.7 - 848.3 MHz	<0.1	0.25
PCT	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.31	0.11
PCT	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A
PCT	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.46	<0.1
PCT	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A
PCT	LTE Band 7	2502.5 - 2567.5 MHz	1.06	0.59
PCT	LTE Band 41	2498.5 - 2687.5 MHz	0.77	0.52
DTS	2.4 GHz WiFi	2412 - 2472 MHz	0.43	<0.1
NII	5 GHz WiFi	U-NII-1: 5180 - 5240 MHz U-NII-2A: 5260 - 5320 MHz U-NII-2C: 5500 - 5720 MHz U-NII-3: 5745 - 5825 MHz	0.33	<0.1
DSS/DTS	2.4 GHz Bluetooth	2402 - 2480 MHz	0.21	0.16
NII	802.15.4 ab-NB	5728.75 - 5846.25 MHz	<0.1	<0.1
DXX	NFC	13.56 MHz	N/A	N/A
Simultaneous SAR per KDB 690783 D01v01r03:			**1.54**	**0.83**
Equipment Class	Band & Mode	Tx Frequency	APD (W/m²)	APD (W/m²)
UWB	UWB	6489.6 - 7987.2 MHz	N/A	0.07
Equipment Class	Band & Mode	Tx Frequency	Reported PD (W/m²)	Reported PD (W/m²)
UWB	UWB	6489.6 - 7987.2 MHz	N/A	0.40

Note: This revised Test Report supersedes and replaces the previously issued test report on the same subject device for the same type of testing as indicated. Please discard or destroy the previously issued test report(s) and dispose of it accordingly.

This watch has been shown to be capable of compliance for localized specific absorption rate (SAR) for uncontrolled environment/general population exposure limits specified in ANSI/IEEE C95.1-1992 and has been tested in accordance with the measurement procedures specified in Section 1.8 of this report; for North American frequency bands only.

I attest to the accuracy of data. All measurements reported herein were performed by me or were made under my supervision and are correct to the best of my knowledge and belief. I assume full responsibility for the completeness of these measurements and vouch for the qualifications of all persons taking them. Test results reported herein relate only to the item(s) tested.

RJ Ortanez
Executive Vice President

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1 DEVICE UNDER TEST

1.1 Device Overview

Band & Mode	Operating Modes	Tx Frequency
UMTS 850	Voice/Data	826.4 - 846.6 MHz
UMTS 1750	Voice/Data	1712.4 - 1752.6 MHz
UMTS 1900	Voice/Data	1852.4 - 1907.6 MHz
LTE Band 12	Voice/Data	699.7 - 715.3 MHz
LTE Band 17	Voice/Data	706.5 - 713.5 MHz
LTE Band 13	Voice/Data	779.5 - 784.5 MHz
LTE Band 14	Voice/Data	790.5 - 795.5 MHz
LTE Band 26 (Cell)	Voice/Data	814.7 - 848.3 MHz
LTE Band 5 (Cell)	Voice/Data	824.7 - 848.3 MHz
LTE Band 66 (AWS)	Voice/Data	1710.7 - 1779.3 MHz
LTE Band 4 (AWS)	Voice/Data	1710.7 - 1754.3 MHz
LTE Band 25 (PCS)	Voice/Data	1850.7 - 1914.3 MHz
LTE Band 2 (PCS)	Voice/Data	1850.7 - 1909.3 MHz
LTE Band 7	Voice/Data	2502.5 - 2567.5 MHz
LTE Band 41	Voice/Data	2498.5 - 2687.5 MHz
2.4 GHz WLAN	Voice/Data	2412 - 2472 MHz
5 GHz WIFI	Voice/Data	U-NII-1: 5180 - 5240 MHz U-NII-2A: 5260 - 5320 MHz U-NII-2C: 5500 - 5720 MHz U-NII-3: 5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
802.15.4 ab-NB	Data	5728.75 - 5846.25 MHz
UWB	Data	6489.6 - 7987.2 MHz
NFC	Data	13.56 MHz

1.2 Power Reduction for SAR

This device uses an independent fixed level power reduction mechanism for LTE Band 7 during next to mouth scenarios. When the speaker is on, the output power of LTE Band 7 is reduced. Detailed descriptions of the power reduction mechanisms are included in the operational description. The power reduction mechanisms were confirmed during the SAR evaluation.

This device additionally utilizes a power reduction mechanism for Bluetooth operations. When Bluetooth is operating simultaneously with the Cellular antenna, the output power is permanently reduced. SAR evaluations were additionally performed at the maximum allowed output power for these scenarios to evaluate simultaneous transmission compliance.

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D04v01.

1.3.1 Maximum Output Power – UMTS Mode

Mode/Band		Modulated Average Output Power (in dBm)			
		3GPP WCDMA Rel 99	3GPP HSDPA Rel 5	3GPP HSUPA Rel 6	DC-HSPA+
UMTS Band 5 (850 MHz)	Max allowed power	**25.00**	**25.00**	**24.00**	**24.00**
	Nominal	**24.00**	**24.00**	**23.00**	**23.00**
UMTS Band 4 (1750 MHz)	Max allowed power	**24.00**	**24.00**	**23.00**	**22.00**
	Nominal	**23.00**	**23.00**	**22.00**	**21.00**
UMTS Band 2 (1900 MHz)	Max allowed power	**24.00**	**24.00**	**23.00**	**22.00**
	Nominal	**23.00**	**23.00**	**22.00**	**21.00**

1.3.2 Maximum Output Power – LTE Mode

Mode / Band		Modulated Average Output Power (in dBm)
LTE FDD Band 12	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 17	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 13	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 14	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 26	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 5	Max allowed power	**25.50**
	Nominal	**24.50**
LTE FDD Band 4	Max allowed power	**24.50**
	Nominal	**23.50**
LTE FDD Band 66	Max allowed power	**24.50**
	Nominal	**23.50**
LTE FDD Band 2	Max allowed power	**24.50**
	Nominal	**23.50**
LTE FDD Band 25	Max allowed power	**24.50**
	Nominal	**23.50**
LTE FDD Band 7	Max allowed power	**24.00**
	Nominal	**23.00**
LTE FDD Band 7 Reduced*	Max allowed power	**23.00**
	Nominal	**22.00**
LTE TDD Band 41	Max allowed power	**24.00**
	Nominal	**23.00**

1.3.3 Maximum Output Power – WiFi Mode

Mode/ Band			IEEE 802.11b (2.4 GHz)		IEEE 802.11g (2.4 GHz)		IEEE 802.11n (2.4 GHz)	
		Channel	Maximum	Nominal	Maximum	Nominal	Maximum	Nominal
Modulated Average - Single Tx Chain (dBm)	20 MHz Bandwidth	1	19.00	18.00	17.00	16.00	17.00	16.00
		2	19.00	18.00	18.00	17.00	18.00	17.00
		3	19.00	18.00	18.50	17.50	18.50	17.50
		4	19.00	18.00	18.50	17.50	18.50	17.50
		5	19.00	18.00	18.50	17.50	18.50	17.50
		6	19.00	18.00	18.50	17.50	18.50	17.50
		7	19.00	18.00	18.50	17.50	18.50	17.50
		8	19.00	18.00	18.50	17.50	18.50	17.50
		9	19.00	18.00	18.50	17.50	18.50	17.50
		10	19.00	18.00	18.00	17.00	18.00	17.00
		11	19.00	18.00	14.00	13.00	14.00	13.00
		12	18.00	17.00	13.00	12.00	13.00	12.00
		13	15.00	14.00	2.50	1.50	2.50	1.50

Mode/ Band			IEEE 802.11a (5 GHz)		IEEE 802.11n (5 GHz)	
		Channel	Maximum	Nominal	Maximum	Nominal
Modulated Average - Single Tx Chain (dBm)	20 MHz Bandwidth	36	17.00	16.00	17.00	16.00
		40	17.00	16.00	17.00	16.00
		44	17.00	16.00	17.00	16.00
		48	17.00	16.00	17.00	16.00
		52	17.00	16.00	17.00	16.00
		56	17.00	16.00	17.00	16.00
		60	17.00	16.00	17.00	16.00
		64	17.00	16.00	17.00	16.00
		100	17.00	16.00	17.00	16.00
		104	17.00	16.00	17.00	16.00
		108	17.00	16.00	17.00	16.00
		112	17.00	16.00	17.00	16.00
		116	17.00	16.00	17.00	16.00
		120	17.00	16.00	17.00	16.00
		124	17.00	16.00	17.00	16.00
		128	17.00	16.00	17.00	16.00
		132	17.00	16.00	17.00	16.00
		136	16.00	15.00	16.00	15.00
		140	13.50	12.50	13.50	12.50
		144	17.00	16.00	17.00	16.00
		149	17.00	16.00	17.00	16.00
		153	17.00	16.00	17.00	16.00
		157	17.00	16.00	17.00	16.00
		161	17.00	16.00	17.00	16.00
		165	17.00	16.00	17.00	16.00

1.3.4 Maximum and Reduced Output Power – Bluetooth Mode

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth BDR/LE	Maximum	**17.50**
	Nominal	**16.50**
Bluetooth EDR	Maximum	**14.00**
	Nominal	**13.00**
Bluetooth HDR	Maximum	**13.50**
	Nominal	**12.50**

Table below is applicable in the following conditions:

- Simultaneous condition with Licensed Bands and NFC active
- Simultaneous condition with Licensed Bands, 5 GHz WLAN and NFC active
- Simultaneous condition with Licensed Bands, 802.15.4 ab-NB and NFC active
- Simultaneous condition with Licensed Bands, UWB and NFC active

Mode / Band		Modulated Average - Single Tx Chain (dBm)
Bluetooth BDR/LE	Maximum	**13.00**
	Nominal	**12.00**
Bluetooth EDR	Maximum	**13.00**
	Nominal	**12.00**
Bluetooth HDR	Maximum	**13.00**
	Nominal	**12.00**

1.3.5 Maximum Output Power – 802.15.4 ab-NB

Mode / Band		Modulated Average - Single Tx Chain (dBm)
802.15.4 ab-NB	Maximum	**16.00**
	Nominal	**14.00**

1.4 DUT Antenna Locations

A diagram showing the location of the device antennas can be found in the DUT Antenna Diagram & SAR Test Setup Photographs Appendix.

1.5 Near Field Communications (NFC) Antenna

This DUT has NFC operations. The NFC antenna is integrated into the device for this model. Therefore, all SAR tests were performed with the device which already incorporates the NFC antenna. A diagram showing the location of the NFC antenna can be found in the DUT Antenna Diagram & SAR Test Setup Photographs Appendix.

1.6 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D04v01, transmitters are considered to be operating simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

This device contains multiple transmitters that may operate simultaneously, and therefore requires a simultaneous transmission analysis according to FCC KDB Publication 447498 D04v01 procedures.

Table 1-1
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Extremity
1	Cellular Band + 2.4 GHz WI-FI + NFC	Yes*	Yes
2	Cellular Band + 5 GHz WI-FI + NFC	Yes*	Yes
3	Cellular Band + 2.4 GHz Bluetooth + NFC	Yes*	Yes
4	Cellular Band + 802.15.4 ab-NB + NFC	Yes*	Yes
5	Cellular Band + UWB + NFC	Yes*	Yes
6	Cellular Band + 2.4 GHz WI-FI + 802.15.4 ab-NB + NFC	Yes*	Yes
7	Cellular Band + 2.4 GHz WI-FI + UWB + NFC	Yes*	Yes
8	Cellular Band + 2.4 GHz Bluetooth + 5 GHz WI-FI + NFC	Yes*	Yes
9	Cellular Band + 2.4 GHz Bluetooth + 802.15.4 ab-NB + NFC	Yes*	Yes
10	Cellular Band + 2.4 GHz Bluetooth + UWB + NFC	Yes*	Yes
11	2.4 GHz WI-FI + 802.15.4 ab-NB + NFC	Yes*	Yes
12	2.4 GHz WI-FI + UWB + NFC	Yes*	Yes
13	2.4 GHz Bluetooth + 5 GHz WI-FI + NFC	Yes*	Yes
14	2.4 GHz Bluetooth + 802.15.4 ab-NB + NFC	Yes*	Yes
15	2.4 GHz Bluetooth + UWB + NFC	Yes*	Yes

1. 2.4 GHz WLAN and 2.4 GHz Bluetooth cannot transmit simultaneously.
2. 2.4 GHz WLAN and 5 GHz WLAN cannot transmit simultaneously.
3. 802.15.4 ab-NB, 5 GHz WLAN and UWB cannot transmit simultaneously.
4. Licensed modes cannot transmit simultaneously.
5. When the user utilizes multiple services in UMTS 3G mode it uses multi-Radio Access Bearer or multi-RAB. The power control is based on a physical control channel (Dedicated Physical Control Channel [DPCCH]) and power control will be adjusted to meet the needs of both services. Therefore, the UMTS+WLAN scenario also represents the UMTS Voice/DATA + WLAN scenario.
6. This device supports VoLTE and VoWIFI.
7. *UWB and NFC were evaluated for extremity based on expected usage conditions.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

This device supports channel 1-13 for 2.4 GHz WLAN. However, due to the reduced output power for channels 12 and 13, channels 1, 6, and 11 were considered for SAR testing per KDB 248227 D01v02r02.

Since U-NII-1 and U-NII-2A bands have the same maximum output power and the highest reported SAR for U-NII-2A is less than 1.2 W/kg, SAR is not required for U-NII-1 band according to FCC KDB Publication 248227 D01v02r02.

Per FCC guidance, SAR was performed using 8 GHz SAR probe calibration factors for UWB. Absorbed power density (APD) using a 4cm^2 averaging area is reported based on SAR measurements. Incident power density is evaluated at 2mm ensuring that the resolution is sufficient such that integrated power density (iPD) between d=2mm and d=λ/5mm is $\geq$ -1dB per equipment manufacturer guidance. Power density results are scaled up for uncertainty above 30%.

(B) Licensed Transmitter(s)

This device is only capable of QPSK HSUPA in the uplink. Therefore, no additional SAR tests are required beyond that described for devices with HSUPA in KDB 941225 D01v03r01.

LTE SAR for the higher modulations and lower bandwidths were not tested since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth; and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg for all configurations according to FCC KDB 941225 D05v02r04.

This device supports LTE capabilities with overlapping transmission frequency ranges. When the supported frequency range of an LTE Band falls completely within an LTE band with a larger transmission frequency range, both LTE bands have the same target power (or the band with the larger transmission frequency range has a higher target power), and both LTE bands share the same transmission path and signal characteristics, SAR was only assessed for the band with the larger transmission frequency range.

This device is limited to 27 RB on the uplink for 16QAM modulation. Additional measurements were evaluated to support SAR test exclusion for 16 QAM as described in Section 7.5.4.

1.8 Guidance Applied

- FCC KDB Publication 941225 D01v03r01, D05v02r04 (3G/4G)
- FCC KDB Publication 248227 D01v02r02 (SAR Considerations for 802.11 Devices)
- FCC KDB Publication 447498 D04v01 (General SAR Guidance, Wrist-worn Device Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- IEEE 1528-2013
- November 2017, October 2018, April 2019, November 2019, October 2020 TCBC Workshop Notes
- SPEAG DASY6 System Handbook
- SPEAG DASY6 Application Note (Interim Procedures for Devices Operating at 6-10 GHz) (Nov 2021)
- IEC 62479:2010
- IEC/IEEE 63195-1:2022

1.9 Device Serial Numbers

Several samples with identical hardware were used to support SAR testing. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical, and thermal characteristics and are within operational tolerances expected for production units. The serial numbers used for each test are indicated alongside the results in Section 10.

1.10 Device Housing Types and Wrist Band Types

This device has two housing types that were evaluated independently for SAR: Aluminum and Titanium. The device can also be used with different wristband accessories. The non-metallic wrist accessory, sport band, was evaluated for all exposure conditions. The available metallic wrist accessories, metal links band and metal loop band, were additionally evaluated.

2 LTE INFORMATION

LTE Information					
Form Factor	Watch				
Frequency Range of each LTE transmission band	LTE Band 12 (699.7 - 715.3 MHz)				
	LTE Band 17 (706.5 - 713.5 MHz)				
	LTE Band 13 (779.5 - 784.5 MHz)				
	LTE Band 14 (790.5 - 795.5 MHz)				
	LTE Band 26 (Cell) (814.7 - 848.3 MHz)				
	LTE Band 5 (Cell) (824.7 - 848.3 MHz)				
	LTE Band 66 (AWS) (1710.7 - 1779.3 MHz)				
	LTE Band 4 (AWS) (1710.7 - 1754.3 MHz)				
	LTE Band 25 (PCS) (1850.7 - 1914.3 MHz)				
	LTE Band 2 (PCS) (1850.7 - 1909.3 MHz)				
	LTE Band 7 (2502.5 - 2567.5 MHz)				
	LTE Band 41 (2498.5 - 2687.5 MHz)				
	LTE Band 12: 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 17: 5 MHz, 10 MHz				
	LTE Band 13: 5 MHz, 10 MHz				
	LTE Band 14: 5 MHz, 10 MHz				
	LTE Band 26 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 5 (Cell): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz				
	LTE Band 66 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 4 (AWS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 25 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 2 (PCS): 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
	LTE Band 41: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Numbers and Frequencies (MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)		707.5 (23095)	715.3 (23173)	
LTE Band 12: 3 MHz	700.5 (23025)		707.5 (23095)	714.5 (23165)	
LTE Band 12: 5 MHz	701.5 (23035)		707.5 (23095)	713.5 (23155)	
LTE Band 12: 10 MHz	704 (23060)		707.5 (23095)	711 (23130)	
LTE Band 17: 5 MHz	706.5 (23755)		710 (23790)	713.5 (23825)	
LTE Band 17: 10 MHz	709 (23780)		710 (23790)	711 (23800)	
LTE Band 13: 5 MHz	779.5 (23205)		782 (23230)	784.5 (23255)	
LTE Band 13: 10 MHz	N/A		782 (23230)	N/A	
LTE Band 14: 5 MHz	790.5 (23305)		793 (23330)	795.5 (23355)	
LTE Band 14: 10 MHz	N/A		793 (23330)	N/A	
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)		831.5 (26865)	848.3 (27033)	
LTE Band 26 (Cell): 3 MHz	815.5 (26705)		831.5 (26865)	847.5 (27025)	
LTE Band 26 (Cell): 5 MHz	816.5 (26715)		831.5 (26865)	846.5 (27015)	
LTE Band 26 (Cell): 10 MHz	819 (26740)		831.5 (26865)	844 (26990)	
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)		836.5 (20525)	848.3 (20643)	
LTE Band 5 (Cell): 3 MHz	825.5 (20415)		836.5 (20525)	847.5 (20635)	
LTE Band 5 (Cell): 5 MHz	826.5 (20425)		836.5 (20525)	846.5 (20625)	
LTE Band 5 (Cell): 10 MHz	829 (20450)		836.5 (20525)	844 (20600)	
LTE Band 66 (AWS): 1.4 MHz	1710.7 (131979)		1745 (132322)	1779.3 (132665)	
LTE Band 66 (AWS): 3 MHz	1711.5 (131987)		1745 (132322)	1778.5 (132657)	
LTE Band 66 (AWS): 5 MHz	1712.5 (131997)		1745 (132322)	1777.5 (132647)	
LTE Band 66 (AWS): 10 MHz	1715 (132022)		1745 (132322)	1775 (132622)	
LTE Band 66 (AWS): 15 MHz	1717.5 (132047)		1745 (132322)	1772.5 (132597)	
LTE Band 66 (AWS): 20 MHz	1720 (132072)		1745 (132322)	1770 (132572)	
LTE Band 4 (AWS): 1.4 MHz	1710.7 (19957)		1732.5 (20175)	1754.3 (20393)	
LTE Band 4 (AWS): 3 MHz	1711.5 (19965)		1732.5 (20175)	1753.5 (20385)	
LTE Band 4 (AWS): 5 MHz	1712.5 (19975)		1732.5 (20175)	1752.5 (20375)	
LTE Band 4 (AWS): 10 MHz	1715 (20000)		1732.5 (20175)	1750 (20350)	
LTE Band 4 (AWS): 15 MHz	1717.5 (20025)		1732.5 (20175)	1747.5 (20325)	
LTE Band 4 (AWS): 20 MHz	1720 (20050)		1732.5 (20175)	1745 (20300)	
LTE Band 25 (PCS): 1.4 MHz	1850.7 (26047)		1882.5 (26365)	1914.3 (26683)	
LTE Band 25 (PCS): 3 MHz	1851.5 (26055)		1882.5 (26365)	1913.5 (26675)	
LTE Band 25 (PCS): 5 MHz	1852.5 (26065)		1882.5 (26365)	1912.5 (26665)	
LTE Band 25 (PCS): 10 MHz	1855 (26090)		1882.5 (26365)	1910 (26640)	
LTE Band 25 (PCS): 15 MHz	1857.5 (26115)		1882.5 (26365)	1907.5 (26615)	
LTE Band 25 (PCS): 20 MHz	1860 (26140)		1882.5 (26365)	1905 (26590)	
LTE Band 2 (PCS): 1.4 MHz	1850.7 (18607)		1880 (18900)	1909.3 (19193)	
LTE Band 2 (PCS): 3 MHz	1851.5 (18615)		1880 (18900)	1908.5 (19185)	
LTE Band 2 (PCS): 5 MHz	1852.5 (18625)		1880 (18900)	1907.5 (19175)	
LTE Band 2 (PCS): 10 MHz	1855 (18650)		1880 (18900)	1905 (19150)	
LTE Band 2 (PCS): 15 MHz	1857.5 (18675)		1880 (18900)	1902.5 (19125)	
LTE Band 2 (PCS): 20 MHz	1860 (18700)		1880 (18900)	1900 (19100)	
LTE Band 7: 5 MHz	2502.5 (20775)		2535 (21100)	2567.5 (21425)	
LTE Band 7: 10 MHz	2505 (20800)		2535 (21100)	2565 (21400)	
LTE Band 7: 15 MHz	2507.5 (20825)		2535 (21100)	2562.5 (21375)	
LTE Band 7: 20 MHz	2510 (20850)		2535 (21100)	2560 (21350)	
LTE Band 41: 5 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41490)
UE Category	1				
Modulations Supported in UL	QPSK, 16QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	YES				
A-MPR (Additional MPR) disabled for SAR Testing?	YES				
LTE Carrier Aggregation Possible Combinations	The technical description includes all the possible carrier aggregation combinations				
LTE Additional Information	This device does not support full CA features on 3GPP Release 12. All uplink communications are identical to the Release 8 Specifications. The following LTE Release 12 Features are not supported: Carrier Aggregation, Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

3 INTRODUCTION

The FCC and Innovation, Science, and Economic Development Canada have adopted the guidelines for evaluating the environmental effects of radio frequency (RF) radiation in ET Docket 93-62 on Aug. 6, 1996, and Health Canada Safety Code 6 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. [1]

The safety limits used for the environmental evaluation measurements are based on the criteria published by the American National Standards Institute (ANSI) for localized specific absorption rate (SAR) in IEEE/ANSI C95.1-1992 Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz [3] and Health Canada RF Exposure Guidelines Safety Code 6 [22]. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave [4] is used for guidance in measuring the Specific Absorption Rate (SAR) due to the RF radiation exposure from the Equipment Under Test (EUT). These criteria for SAR evaluation are similar to those recommended by the International Committee for Non-Ionizing Radiation Protection (ICNIRP) in Biological Effects and Exposure Criteria for Radiofrequency Electromagnetic Fields," Report No. Vol 74. SAR is a measure of the rate of energy absorption due to exposure to an RF transmitting source. SAR values have been related to threshold levels for potential biological hazards.

3.1 SAR Definition

Specific Absorption Rate is defined as the time derivative (rate) of the incremental energy (dU) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ). It is also defined as the rate of RF energy absorption per unit mass at a point in an absorbing body (see Equation 3-1).

Equation 3-1
SAR Mathematical Equation

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

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

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

where:

σ = conductivity of the tissue-simulating material (S/m)
ρ = mass density of the tissue-simulating material (kg/m^3)
E = Total RMS electric field strength (V/m)

NOTE: The primary factors that control rate of energy absorption were found to be the wavelength of the incident field in relation to the dimensions and geometry of the irradiated organism, the orientation of the organism in relation to the polarity of field vectors, the presence of reflecting surfaces, and whether conductive contact is made by the organism with a ground plane.[6]

4 DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and:

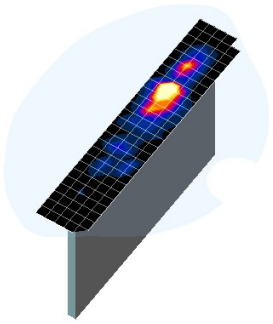


Figure 4-1
Sample SAR Area Scan

1. The SAR distribution at the exposed side of the head or body was measured at a distance no greater than 5.0 mm from the inner surface of the shell. The area covered the entire dimension of the device-head and body interface, and the horizontal grid resolution was determined per FCC KDB Publication 865664 D01v01r04 (See Table 4-1).
2. The point SAR measurement was taken at the maximum SAR region determined from Step 1 to enable the monitoring of SAR fluctuations/drifts during the 1g/10g cube evaluation. SAR at this fixed point was measured and used as a reference value.
3. Based on the area scan data, the peak of the region with maximum SAR was determined by spline interpolation. Around this point, a volume was assessed according to the measurement resolution and volume size requirements of FCC KDB Publication 865664 D01v01r04 (See Table 4-1). On the basis of this data set, the spatial peak SAR value was evaluated with the following procedure (see references or the DASY manual online for more details):

   a. SAR values at the inner surface of the phantom are extrapolated from the measured values along the line away from the surface with spacing no greater than that in Table 4-1. The extrapolation was based on a least-squares algorithm. A polynomial of the fourth order was calculated through the points in the z-axis (normal to the phantom shell).

   b. After the maximum interpolated values were calculated between the points in the cube, the SAR was averaged over the spatial volume (1g or 10g) using a 3D-Spline interpolation algorithm. The 3D-spline is composed of three one-dimensional splines with the “Not a knot” condition (in x, y, and z directions). The volume was then integrated with the trapezoidal algorithm. One thousand points (10 x 10 x 10) were obtained through interpolation, in order to calculate the averaged SAR.

   c. All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.
4. The SAR reference value, at the same location as step 2, was re-measured after the zoom scan was complete to calculate the SAR drift. If the drift deviated by more than 5%, the SAR test and drift measurements were repeated.

Table 4-1
Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

Frequency	Maximum Area Scan Resolution (mm) (Δx_{area}, Δy_{area})	Maximum Zoom Scan Resolution (mm) (Δx_{zoom}, Δy_{zoom})	Maximum Zoom Scan Spatial Resolution (mm)			Minimum Zoom Scan Volume (mm) (x,y,z)
			Uniform Grid	Graded Grid		
			$\Delta z_{zoom}(n)$	$\Delta z_{zoom}(1)$*	$\Delta z_{zoom}(n>1)$*	
≤ 2 GHz	≤ 15	≤ 8	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5*$\Delta z_{zoom}(n-1)$	≥ 22

*Also compliant to IEEE 1528-2013 Table 6

5 TEST CONFIGURATION POSITIONS

5.1 Device Holder

The device holder is made out of low-loss POM material having the following dielectric parameters: relative permittivity ε = 3 and loss tangent δ = 0.02. Additionally, a manufacturer provided low-loss foam was used to position the device for head SAR evaluations.

5.2 Positioning for Head

Devices that are designed to be worn on the wrist may operate in speaker mode for voice communication, with the device worn on the wrist and positioned next to the mouth. When next-to-mouth SAR evaluation is required, the device is positioned at 10 mm from a flat phantom filled with head tissue-equivalent medium. The device is evaluated with wrist bands strapped together to represent normal use conditions.

5.3 Extremity Exposure Configurations

Devices that are designed or intended for use on extremities or mainly operated in extremity only exposure conditions: i.e., hands, wrists, feet, and ankles, may require extremity SAR evaluation. When the device also operates in close proximity to the user's body, SAR compliance for the body is also required. When extremity SAR evaluation is required, the device is evaluated with the back of the device touching the flat phantom, which is filled with head tissue-equivalent medium. The device was evaluated with Sport wristband unstrapped and touching the phantom. For Metal Loop and Metal Links wristbands, the device was evaluated with wristbands strapped and the distance between wristbands and the phantom was minimized to represent the spacing created by actual use conditions.

6 RF EXPOSURE LIMITS

6.1 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.

6.2 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. This 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.

6.3 RF Exposure Limits for Frequencies Below 6 GHz

Table 6-1
SAR Human Exposure Specified in ANSI/IEEE C95.1-1992 and Health Canada Safety Code 6

HUMAN EXPOSURE LIMITS		
	UNCONTROLLED ENVIRONMENT *General Population* (W/kg) or (mW/g)	CONTROLLED ENVIRONMENT *Occupational* (W/kg) or (mW/g)
Peak Spatial Average SAR Head	1.6	8.0
Whole Body SAR	0.08	0.4
Peak Spatial Average SAR Hands, Feet, Ankle, Wrists, etc.	4.0	20

1. The Spatial Peak value of the SAR averaged over any 1 gram of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.
2. The Spatial Average value of the SAR averaged over the whole body.
3. The Spatial Peak value of the SAR averaged over any 10 grams of tissue (defined as a tissue volume in the shape of a cube) and over the appropriate averaging time.

6.4 RF Exposure Limits for Frequencies Above 6 GHz

Per §1.1310 (d)(3), the MPE limits are applied for frequencies above 6 GHz. Power Density is expressed in units of W/m^2 or mW/cm^2.

Peak Spatially Averaged Power Density was evaluated over a circular area of 4 cm^2 per interim FCC Guidance for near-field power density evaluations per October 2018 TCB Workshop notes.

Table 6-2
Human Exposure Limits Specified in FCC 47 CFR §1.1310

Human Exposure to Radiofrequency (RF) Radiation Limits		
Frequency Range [MHz]	**Power Density** [mW/cm^2]	**Average Time** [Minutes]
(A) Limits For Occupational / Controlled Environments		
1,500 – 100,000	5.0	6
(B) Limits For General Population / Uncontrolled Environments		
1,500 – 100,000	1.0	30

Note: 1.0 mW/cm^2 is 10 W/m^2

7 FCC MEASUREMENT PROCEDURES

Power measurements for licensed transmitters are performed using a base station simulator under digital average power.

7.1 Measured and Reported SAR

Per FCC KDB Publication 447498 D04v01, when SAR is not measured at the maximum power level allowed for production units, the results must be scaled to the maximum tune-up tolerance limit according to the power applied to the individual channels tested to determine compliance. For simultaneous transmission, the measured aggregate SAR must be scaled according to the sum of the differences between the maximum tune-up tolerance and actual power used to test each transmitter. When SAR is measured at or scaled to the maximum tune-up tolerance limit, the results are referred to as *reported* SAR. The highest *reported* SAR results are identified on the grant of equipment authorization according to procedures in KDB 690783 D01v01r03.

7.2 3G SAR Test Reduction Procedure

In FCC KDB Publication 941225 D01v03r01, certain transmission modes within a frequency band and wireless mode evaluated for SAR are defined as primary modes. The equivalent modes considered for SAR test reduction are denoted as secondary modes. When the maximum output power including tune-up tolerance specified for production units in a secondary mode is ≤ 0.25 dB higher than the primary mode or when the highest reported SAR of the primary mode, scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode, is ≤ 1.2 W/kg, SAR measurements are not required for the secondary mode. These criteria are referred to as the 3G SAR test reduction procedure. When the 3G SAR test reduction procedure is not satisfied, SAR measurements are additionally required for the secondary mode.

7.3 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01 “3G SAR Measurement Procedures.”

The device is placed into a simulated call using a base station simulator in a RF shielded chamber. Establishing connections in this manner ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. Devices under test are evaluated prior to testing, with a fully charged battery and were configured to operate at maximum output power. In order to verify that the device is tested throughout the SAR test at maximum output power, the SAR measurement system measures a “point SAR” at an arbitrary reference point at the start and end of the 1-gram SAR evaluation, to assess for any power drifts during the evaluation. If the power drift deviates by more than 5%, the SAR test and drift measurements are repeated.

7.4 SAR Measurement Conditions for UMTS

7.4.1 Output Power Verification

Maximum output power is verified on the High, Middle, and Low channels according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC with TPC (transmit power control) set to all “1s” or applying the required inner loop power control procedures to maintain maximum output power while HSUPA is active. Results for all applicable physical channel configurations (DPCCH, DPDCHn and spreading codes, HS-DPCCH etc) are tabulated in this test report. All configurations that are not supported by the DUT or cannot be measured due to technical or equipment limitations are identified.

7.4.2 Head SAR Measurements

SAR for head exposure configurations is measured using the 12.2 kbps RMC with TPC bits configured to all "1s". SAR in AMR configurations is not required when the maximum average output of each RF channel for 12.2 kbps AMR is less than 0.25 dB higher than that measured in 12.2 kbps RMC. Otherwise, SAR is measured on the maximum output channel in 12.2 AMR with a 3.4 kbps SRB (signaling radio bearer) using the exposure configuration that resulted in the highest SAR for that RF channel in the 12.2 kbps RMC mode.

7.4.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all "1s". The 3G SAR test reduction procedure is applied to other spreading codes and multiple $DPDCH_n$ configurations supported by the handset with 12.2 kbps RMC as the primary mode. Otherwise, SAR is measured using an applicable RMC configuration with the corresponding spreading code or $DPDCH_n$, for the highest reported SAR configuration in 12.2 kbps RMC.

7.4.4 SAR Measurements with Rel 5 HSDPA

The 3G SAR test reduction procedure is applied to HSDPA body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSDPA is measured using an FRC with H-Set 1 in Sub-test 1 and a 12.2 kbps RMC configured in Test Loop Mode 1, for the highest reported SAR configuration in 12.2 kbps RMC without HSDPA. Handsets with both HSDPA and HSUPA are tested according to Release 6 HSPA test procedures.

7.4.5 SAR Measurements with Rel 6 HSUPA

The 3G SAR test reduction procedure is applied to HSPA (HSUPA/HSDPA with RMC) body configurations with 12.2 kbps RMC as the primary mode. Otherwise, Body SAR for HSPA is measured with E-DCH Sub-test 5, using H-Set 1 and QPSK for FRC and a 12.2 kbps RMC configured in Test Loop Mode 1 and power control algorithm 2, according to the highest reported body SAR configuration in 12.2 kbps RMC without HSPA.

When VOIP applies to head exposure, the 3G SAR test reduction procedure is applied with 12.2 kbps RMC as the primary mode; otherwise, the same HSPA configuration used for body SAR measurements are applied to head exposure testing.

7.5 SAR Measurement Conditions for LTE

LTE modes are tested according to FCC KDB 941225 D05v02r04 publication. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR [4]. The R&S CMW500 or Anritsu MT8820C simulators are used for LTE output power measurements and SAR testing. Closed loop power control was used so the UE transmits with maximum output power during SAR testing. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

7.5.1 Spectrum Plots for RB Configurations

A properly configured base station simulator was used for SAR tests and power measurements. Therefore, spectrum plots for RB configurations were not required to be included in this report.

7.5.2 MPR

MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.

7.5.3 A-MPR

A-MPR (Additional MPR) has been disabled for all SAR tests by setting NS=01 on the base station simulator.

7.5.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r04:

a. Per Section 5.2.1, SAR is required for QPSK 1 RB Allocation for the largest bandwidth
   i. The required channel and offset combination with the highest maximum output power is required for SAR.
   ii. When the reported SAR is ≤ 0.8 W/kg, testing of the remaining RB offset configurations and required test channels is not required. Otherwise, SAR is required for the remaining required test channels using the RB offset configuration with highest output power for that channel.
   iii. When the reported SAR for a required test channel is > 1.45 W/kg, SAR is required for all RB offset configurations for that channel.
b. Per Section 5.2.2, SAR is required for 50% RB allocation using the largest bandwidth following the same procedures outlined in Section 5.2.1.
c. Per Section 5.2.3, QPSK SAR is not required for the 100% allocation when the highest maximum output power for the 100% allocation is less than the highest maximum output power of the 1 RB and 50% RB allocations and the reported SAR for the 1 RB and 50% RB allocations is < 0.8 W/kg.
d. Per Section 5.2.4 and 5.3, SAR tests for higher order modulations and lower bandwidths configurations are not required when the conducted power of the required test configurations determined by Sections 5.2.1 through 5.2.3 is less than or equal to ½ dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is <1.45 W/kg.
e. This device can only operate with 16QAM on the uplink with less than or equal to 27 RB. For 16QAM configurations with 10 MHz, 15 MHz and 20 MHz bandwidths, LTE powers for RB size of 15 (“50% RB”) and 27 (“100% RB”) with offsets to upper edge, middle, and lower edge of the channel are additionally measured for both QPSK and 16QAM modulations to support comparison and SAR test exclusion per Section 5.2.4 and 5.3.

7.5.5 TDD

LTE TDD testing is performed using the SAR test guidance provided in FCC KDB 941225 D05v02r04. TDD is tested at the highest duty factor using UL-DL configuration 0 with special subframe configuration 6 and applying the FDD LTE procedures in KDB 941225 D05v02r04. SAR testing is performed using the extended cyclic prefix listed in 3GPP TS 36.211 Section 4.

7.6 SAR Testing with 802.11 Transmitters

The normal network operating configurations of 802.11 transmitters are not suitable for SAR measurements. Unpredictable fluctuations in network traffic and antenna diversity conditions can introduce undesirable variations in SAR results. The SAR for these devices should be measured using chipset-based test mode software to ensure the results are consistent and reliable. See KDB Publication 248227 D01v02r02 for more details.

7.6.1 General Device Setup

Chipset based test mode software is hardware dependent and generally varies among manufacturers. The device operating parameters established in test mode for SAR measurements must be identical to those

programmed in production units, including output power levels, amplifier gain settings and other RF performance tuning parameters.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the transmission, a maximum transmission duty factor of 92 - 96% is typically achievable in most test mode configurations. A minimum transmission duty factor of 85% is required to avoid certain hardware and device implementation issues related to wide range SAR scaling. The reported SAR is scaled to 100% transmission duty factor to determine compliance at the maximum tune-up tolerance limit.

7.6.2 U-NII-1 and U-NII-2A

For devices that operate in both U-NII-1 and U-NII-2A bands, when the same maximum output power is specified for both bands, SAR measurement using OFDM SAR test procedures is not required for U-NII-1 unless the highest reported SAR for U-NII-2A is > 1.2 W/kg. When different maximum output powers are specified for the bands, SAR measurement for the U-NII band with the lower maximum output power is not required unless the highest reported SAR for the U-NII band with the higher maximum output power, adjusted by the ratio of lower to higher specified maximum output power for the two bands, is > 1.2 W/kg. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

7.6.3 U-NII-2C and U-NII-3

The frequency range covered by U-NII-2C and U-NII-3 is 380 MHz (5.47 – 5.85 GHz), which requires a minimum of at least two SAR probe calibration frequency points to support SAR measurements. When Terminal Doppler Weather Radar (TDWR) restriction applies, the channels at 5.60 – 5.65 GHz in U-NII-2C band must be disabled with acceptable mechanisms and documented in the equipment certification. Unless band gap channels are permanently disabled, SAR must be considered for these channels. Each band is tested independently according to the normally required OFDM SAR measurement and probe calibration frequency points requirements.

7.6.4 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either the fixed test position or, when applicable, the initial test position procedure. SAR test reduction is determined according to the following:

1) When the reported SAR of the highest measured maximum output power channel for the exposure configuration is ≤ 0.8 W/kg, no further SAR testing is required for 802.11b DSSS in that exposure configuration.

2) When the reported SAR is > 0.8 W/kg, SAR is required for that position using the next highest measured output power channel. When any reported SAR is > 1.2 W/kg, SAR is required for the third channel, i.e., all channels require testing.

2.4 GHz 802.11 g/n OFDM are additionally evaluated for SAR if the highest reported SAR for 802.11b, adjusted by the ratio of the OFDM to DSSS specified maximum output power, is > 1.2 W/kg. When SAR is required for OFDM modes in 2.4 GHz band, the Initial Test Configuration Procedures should be followed. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

7.6.5 OFDM Transmission Mode and SAR Test Channel Selection

When the same maximum output power was specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration with the largest channel

bandwidth, lowest order modulation and lowest data rate. When the maximum output power of a channel is the same for equivalent OFDM configurations; for example, 802.11a, and 802.11n or 802.11g and 802.11n with the same channel bandwidth, modulation, and data rate etc., the lower order 802.11 mode i.e., 802.11a, then 802.11n or 802.11g then 802.11n, is used for SAR measurement. When the maximum output power are the same for multiple test channels, either according to the default or additional power measurement requirements, SAR is measured using the channel closest to the middle of the frequency band or aggregated band. When there are multiple channels with the same maximum output power, SAR is measured using the higher number channel.

7.6.6 Initial Test Configuration Procedure

For OFDM, an initial test configuration is determined for each frequency band and aggregated band, according to the transmission mode with the highest maximum output power specified for SAR measurements. When the same maximum output power is specified for multiple OFDM transmission mode configurations in a frequency band or aggregated band, SAR is measured using the configuration(s) with the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order IEEE 802.11 mode. The channel of the transmission mode with the highest average RF output conducted power will be the initial test configuration.

When the reported SAR is ≤ 0.8 W/kg, no additional measurements on other test channels are required. Otherwise, SAR is evaluated using the subsequent highest average RF output channel until the reported SAR result is ≤ 1.2 W/kg or all channels are measured. When there are multiple untested channels having the same subsequent highest average RF output power, the channel with higher frequency from the lowest 802.11 mode is considered for SAR measurements (See Section 7.6.5). When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

7.6.7 Subsequent Test Configuration Procedures

For OFDM configurations in each frequency band and aggregated band, SAR is evaluated for initial test configuration using the fixed test position or the initial test position procedure. When the highest reported SAR (for the initial test configuration), adjusted by the ratio of the specified maximum output power of the subsequent test configuration to initial test configuration, is ≤ 1.2 W/kg, no additional SAR tests for the subsequent test configurations are required. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

8 RF CONDUCTED POWERS

8.1 UMTS Conducted Powers

Table 8-1
Maximum Conducted Powers

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band [dBm]			AWS Band [dBm]			PCS Band [dBm]			3GPP MPR [dB]
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	**23.20**	23.06	23.10	22.92	**22.95**	22.82	22.86	**22.87**	22.76	-
99		12.2 kbps AMR	23.26	23.10	23.13	23.02	23.07	22.99	22.91	22.93	22.82	-
6	HSDPA	Subtest 1	24.60	24.52	24.39	23.42	23.46	23.23	23.34	23.30	23.29	0
6		Subtest 2	23.58	23.48	23.37	22.44	22.53	22.32	22.46	22.48	22.44	0
6		Subtest 3	23.09	22.94	22.86	21.93	22.04	21.81	21.96	21.95	21.89	0.5
6		Subtest 4	22.91	22.72	22.67	21.72	21.79	21.57	21.69	21.67	21.63	0.5
6	HSUPA	Subtest 1	22.70	22.59	22.51	22.38	22.46	22.31	22.42	22.31	22.08	0
6		Subtest 2	21.16	21.01	20.98	20.05	20.16	19.97	20.15	20.08	20.09	2
6		Subtest 3	22.21	22.04	22.00	20.87	20.93	20.78	20.91	20.89	20.85	1
6		Subtest 4	21.45	21.29	21.24	20.35	20.47	20.29	20.47	20.46	20.41	2
6		Subtest 5	23.46	23.30	23.28	22.39	22.43	22.26	22.43	22.38	22.32	0
8	DC-HSDPA	Subtest 1	23.50	23.34	23.33	21.48	21.53	21.28	21.41	21.37	21.33	0
8		Subtest 2	22.46	22.35	22.15	20.39	20.43	20.25	20.34	20.44	20.41	0
8		Subtest 3	21.95	21.82	21.73	19.88	20.01	19.72	19.94	19.91	19.88	0.5
8		Subtest 4	21.69	21.58	21.63	19.63	19.71	19.55	19.66	19.68	19.62	0.5

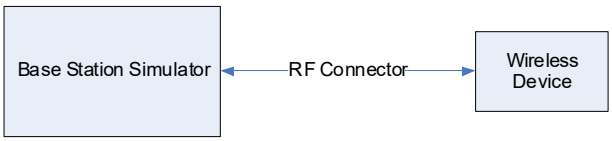


Figure 8-1
Power Measurement Setup

8.2 LTE Conducted Powers

Per FCC KDB Publication 941225 D05v02r05, LTE SAR for the lower bandwidths was not required for testing since the maximum average output power of all required channels and configurations was not more than 0.5 dB higher than the highest bandwidth and the reported LTE SAR for the highest bandwidth was less than 1.45 W/kg. Lower bandwidth conducted powers for all LTE bands can be found in the LTE Lower Bandwidth RF Conducted Powers Appendix.

Some bands do not support non-overlapping channels. Per FCC Guidance, 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.

8.2.1 LTE Band 12

Table 8-2
LTE Band 12 Conducted Power – 10 MHz Bandwidth

LTE Band 12 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	**24.06**	0	0
	1	25	23.91		0
	1	49	24.00		0
	25	0	23.01	0-1	1
	25	12	23.00		1
	25	25	**23.14**		1
	50	0	23.12		1
	15	0	23.51	0-1	1
	15	17	23.41		1
	15	35	23.46		1
	27	0	23.49	0-2	1
	27	12	23.47		1
	27	23	23.50		1
16QAM	1	0	23.17	0-2	1
	1	25	23.24		1
	1	49	23.19		1
	25	0	22.04	0-3	2
	25	12	22.01		2
	25	25	22.08		2
	15	0	22.42	0-5	2
	15	17	22.50		2
	15	35	22.64		2
	27	0	22.49		2
	27	12	22.48		2
	27	23	22.62		2

8.2.2 LTE Band 13

Table 8-3
LTE Band 13 Conducted Power – 10 MHz Bandwidth

LTE Band 13 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.67	0	0
	1	25	23.59		0
	1	49	**23.68**		0
	25	0	**22.75**	0-1	1
	25	12	22.67		1
	25	25	22.66		1
	50	0	22.67		1
	15	0	22.60	0-1	1
	15	17	22.56		1
	15	35	22.66		1
	27	0	22.69	0-2	1
	27	12	22.60		1
	27	23	22.62		1
16QAM	1	0	22.62	0-2	1
	1	25	22.54		1
	1	49	22.51		1
	25	0	21.82	0-3	2
	25	12	21.74		2
	25	25	21.77		2
	15	0	21.70	0-5	2
	15	17	21.75		2
	15	35	21.80		2
	27	0	21.76		2
	27	12	21.74		2
	27	23	21.79		2

8.2.3 LTE Band 14

Table 8-4
LTE Band 14 Conducted Power – 10 MHz Bandwidth

LTE Band 14 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23330 (793.0 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.56	0	0
	1	25	**23.66**		0
	1	49	23.57		0
	25	0	22.52	0-1	1
	25	12	22.62		1
	25	25	**22.67**		1
	50	0	22.66		1
	15	0	22.65	0-1	1
	15	17	22.57		1
	15	35	22.59		1
	27	0	22.62	0-2	1
	27	12	22.67		1
	27	23	22.63		1
16QAM	1	0	23.26	0-2	1
	1	25	23.45		1
	1	49	23.10		1
	25	0	21.58	0-3	2
	25	12	21.66		2
	25	25	21.70		2
	15	0	22.48	0-5	2
	15	17	22.37		2
	15	35	22.31		2
	27	0	22.41		2
	27	12	22.39		2
	27	23	22.38		2

8.2.4 LTE Band 26

Table 8-5
LTE Band 26 Conducted Power – 10 MHz Bandwidth

LTE Band 26 (Cell) 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.77	24.81	**24.87**	0	0
	1	25	24.69	24.66	24.82		0
	1	49	24.85	24.71	24.62		0
	25	0	23.73	23.85	**23.97**	0-1	1
	25	12	23.71	23.79	23.95		1
	25	25	23.81	23.72	23.88		1
	50	0	23.86	23.84	23.90		1
	15	0	23.72	23.82	23.58	0-1	1
	15	17	23.68	23.80	23.59		1
	15	35	23.58	23.76	23.59		1
	27	0	23.61	23.79	23.68	0-2	1
	27	12	23.56	23.77	23.61		1
	27	23	23.65	23.75	23.53		1
16QAM	1	0	24.27	24.30	24.25	0-2	1
	1	25	24.21	24.31	24.32		1
	1	49	24.25	24.25	24.26		1
	25	0	23.12	23.11	23.30	0-3	2
	25	12	22.95	22.97	23.21		2
	25	25	23.04	22.87	23.09		2
	15	0	23.22	23.20	23.00	0-5	2
	15	17	23.17	23.09	23.32		2
	15	35	23.04	23.02	23.21		2
	27	0	23.04	22.94	23.03		2
	27	12	23.17	23.17	23.04		2
	27	23	23.22	23.28	23.37		2

8.2.5 LTE Band 5

Table 8-6
LTE Band 5 Conducted Power – 10 MHz Bandwidth

LTE Band 5 (Cell) 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20525 (836.5 MHz) Conducted Power [dBm]	MPR Allowed per 3GPP [dB]	MPR [dB]
QPSK	1	0	23.51	0	0
	1	25	23.53		0
	1	49	**23.63**		0
	25	0	22.52	0-1	1
	25	12	22.58		1
	25	25	**22.67**		1
	50	0	22.65		1
	15	0	22.59	0-1	1
	15	17	22.53		1
	15	35	22.61		1
	27	0	22.63	0-2	1
	27	12	22.57		1
	27	23	22.60		1
16QAM	1	0	23.17	0-2	1
	1	25	23.24		1
	1	49	23.19		1
	25	0	22.04	0-3	2
	25	12	22.01		2
	25	25	22.08		2
	15	0	22.21	0-5	2
	15	17	22.29		2
	15	35	22.26		2
	27	0	22.34		2
	27	12	22.24		2
	27	23	22.22		2

8.2.6 LTE Band 66

Table 8-7
LTE Band 66 Conducted Power – 20 MHz Bandwidth

LTE Band 66 (AWS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 132072 (1720.0 MHz)	Mid Channel 132322 (1745.0 MHz)	High Channel 132572 (1770.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.14	**23.21**	22.98	0	0
	1	50	23.07	22.95	22.92		0
	1	99	23.05	23.18	22.97		0
	50	0	22.41	**22.55**	22.47	0-1	1
	50	25	22.39	22.32	22.48		1
	50	50	22.41	22.33	22.46		1
	100	0	22.52	22.49	22.47		1
	15	0	22.89	22.82	22.77	0-1	0
	15	42	22.83	22.83	22.80		0
	15	85	22.82	22.86	22.79		0
	27	0	22.12	21.99	21.95	0-2	1
	27	37	22.01	21.96	21.93		1
	27	73	22.03	21.84	21.87		1
16QAM	1	0	22.45	22.05	22.25	0-2	1
	1	50	22.37	21.96	22.01		1
	1	99	22.32	22.15	22.12		1
	15	0	21.92	21.95	21.88	0-3	1
	15	42	21.95	21.94	21.96		1
	15	85	21.90	21.94	21.82		1
	27	0	21.80	21.82	21.75	0-5	2
	27	37	21.49	21.27	21.34		2
	27	73	21.51	21.19	21.29		2

8.2.7 LTE Band 25

Table 8-8
LTE Band 25 Conducted Power – 20 MHz Bandwidth

LTE Band 25 (PCS) 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1860.0 MHz)	Mid Channel 26365 (1882.5 MHz)	High Channel 26590 (1905.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.16	23.18	23.37	0	0
	1	50	23.08	23.09	23.43		0
	1	99	23.18	23.22	**23.44**		0
	50	0	22.27	22.31	22.33	0-1	1
	50	25	22.26	22.20	22.40		1
	50	50	22.28	22.24	**22.41**		1
	100	0	22.25	22.29	22.39		1
	15	0	22.96	22.96	22.99	0-1	0
	15	42	22.94	22.84	22.93		0
	15	85	22.93	22.85	22.98		0
	27	0	21.93	21.95	21.97	0-2	1
	27	37	21.93	21.89	21.95		1
	27	73	21.94	21.87	21.98		1
16QAM	1	0	22.91	22.71	22.82	0-2	1
	1	50	22.77	22.41	22.81		1
	1	99	22.85	22.46	22.92		1
	15	0	21.99	22.01	22.03	0-3	1
	15	42	21.95	22.08	22.05		1
	15	85	22.00	22.02	22.08		1
	27	0	21.01	21.00	21.08	0-5	2
	27	37	20.98	21.01	21.07		2
	27	73	20.94	21.04	20.97		2

8.2.8 LTE Band 7

Table 8-9
LTE Band 7 Conducted Power – 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.81	**23.31**	23.09	0	0
	1	50	22.98	23.18	23.13		0
	1	99	23.16	23.29	23.29		0
	50	0	22.11	**22.29**	22.13	0-1	1
	50	25	22.13	22.23	22.18		1
	50	50	22.23	22.20	22.28		1
	100	0	22.19	22.25	22.22		1
	15	0	22.87	23.14	23.03	0-1	0
	15	42	22.92	23.10	22.98		0
	15	85	22.89	23.05	23.06		0
	27	0	22.17	22.23	22.19	0-2	1
	27	37	22.21	22.27	22.20		1
	27	73	22.11	22.19	22.22		1
16QAM	1	0	22.30	22.61	22.66	0-2	1
	1	50	22.48	22.68	22.63		1
	1	99	22.71	22.63	22.74		1
	15	0	22.30	22.21	22.25	0-3	1
	15	42	22.26	22.18	22.21		1
	15	85	22.16	22.09	22.14		1
	27	0	21.20	21.16	21.20	0-5	2
	27	37	21.28	21.24	21.29		2
	27	73	21.19	21.13	21.27		2

8.2.9 LTE Band 7 Reduced

Table 8-10
LTE Band 7 Reduced Conducted Power – 20 MHz Bandwidth

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.87	22.73	22.88	0	0
	1	50	22.61	22.75	22.84		0
	1	99	22.86	22.83	**22.95**		0
	50	0	21.70	21.86	21.83	0-1	1
	50	25	21.76	21.94	21.89		1
	50	50	21.89	21.97	**21.99**		1
	100	0	21.98	21.96	21.85		1
	15	0	22.00	22.17	22.13	0-1	0
	15	42	21.99	22.15	22.17		0
	15	85	22.01	22.16	22.20		0
	27	0	20.99	21.04	21.01	0-2	1
	27	37	21.00	21.02	21.03		1
	27	73	21.15	21.18	21.22		1
16QAM	1	0	21.05	21.13	21.19	0-2	1
	1	50	21.07	21.09	21.25		1
	1	99	21.03	21.12	21.12		1
	15	0	20.99	21.00	21.02	0-3	1
	15	42	20.99	20.98	21.00		1
	15	85	21.02	20.99	21.08		1
	27	0	20.82	20.08	20.06	0-5	2
	27	37	20.81	20.04	20.03		2
	27	73	20.83	20.05	20.02		2

8.2.10 LTE Band 41

Table 8-11
LTE Band 41 Conducted Power – 20 MHz Bandwidth

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	MPR [dB]
			39750 (2506.0 MHz)	40185 (2549.5 MHz)	40620 (2593.0 MHz)	41055 (2636.5 MHz)	41490 (2680.0 MHz)		
			Conducted Power [dBm]						
QPSK	1	0	22.91	23.17	23.17	23.11	22.82	0	0
	1	50	23.08	23.41	23.31	23.15	22.93		0
	1	99	23.07	**23.44**	23.25	23.12	22.90		0
	50	0	21.90	22.25	22.11	22.05	21.89	0-1	1
	50	25	21.96	22.24	22.13	22.01	21.91		1
	50	50	21.95	**22.28**	22.17	21.98	21.94		1
	100	0	22.07	22.27	22.18	22.03	21.98		1
	15	0	22.57	22.86	22.83	22.56	22.48	0-1	0
	15	42	22.57	22.87	22.89	22.49	22.50		0
	15	85	22.60	22.85	22.79	22.49	22.47		0
	27	0	22.55	21.99	22.04	21.76	21.61	0-2	1
	27	37	22.10	21.97	22.01	21.67	21.62		1
	27	73	21.85	22.00	21.97	21.65	21.60		1
16QAM	1	0	22.18	22.56	22.48	22.30	22.33	0-2	1
	1	50	22.34	22.54	22.51	22.21	22.24		1
	1	99	22.50	22.63	22.54	22.25	22.20		1
	15	0	21.77	22.01	22.05	21.79	21.75	0-3	1
	15	42	21.85	21.98	22.02	21.69	21.67		1
	15	85	21.96	22.02	22.04	21.66	21.63		1
	27	0	20.64	20.95	20.99	20.69	20.60	0-5	2
	27	37	20.77	20.94	20.97	20.63	20.59		2
	27	73	20.86	20.98	20.93	20.59	20.57		2

Figure 8-2
Power Measurement Setup

8.3 WLAN Conducted Powers

Table 8-12
2.4 GHz WLAN Maximum Average RF Power

2.4GHz WIFI (20MHz IEEE 802.11b)			2.4GHz WIFI (20MHz IEEE 802.11g)			2.4GHz WIFI (20MHz IEEE 802.11n)		
Freq. [MHz]	Channel	Conducted Power [dBm]	Freq. [MHz]	Channel	Conducted Power [dBm]	Freq. [MHz]	Channel	Conducted Power [dBm]
2412	1	17.99	2412	1	16.50	2412	1	16.48
2437	6	17.83	2437	6	16.68	2437	6	16.73
2462	11	18.01	2462	11	12.67	2462	11	12.63

Table 8-13
5 GHz WLAN Maximum Average RF Power

5GHz WIFI (20MHz IEEE 802.11a)				5GHz WIFI (20MHz IEEE 802.11n)			
Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]	Band	Freq. [MHz]	Channel	Avg. Conducted Power [dBm]
UNII-1	5180	36	15.43	UNII-1	5180	36	16.17
	5200	40	15.78		5200	40	16.10
	5220	44	15.93		5220	44	16.05
	5240	48	15.97		5240	48	15.90
UNII-2A	5260	52	16.15	UNII-2A	5260	52	15.87
	5280	56	16.08		5280	56	15.79
	5300	60	16.21		5300	60	15.77
	5320	64	16.23		5320	64	15.82
UNII-2C	5500	100	15.85	UNII-2C	5500	100	15.72
	5600	120	15.95		5600	120	15.69
	5620	124	15.82		5620	124	15.70
	5720	144	16.02		5720	144	15.82
UNII-3	5745	149	15.93	UNII-3	5745	149	15.80
	5785	157	15.97		5785	157	15.86
	5825	165	16.11		5825	165	15.87

Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02:

- Power measurements were performed for the transmission mode configuration with the highest maximum output power specified for production units.
- For transmission modes with the same maximum output power specification, powers were measured for the largest channel bandwidth, lowest order modulation and lowest data rate.
- For transmission modes with identical maximum specified output power, channel bandwidth, modulation and data rates, power measurements were required for all identical configurations.
- For each transmission mode configuration, powers were measured for the highest and lowest channels; and at the mid-band channel(s) when there were at least 3 channels supported. For configurations with multiple mid-band channels, due to an even number of channels, both channels were measured.

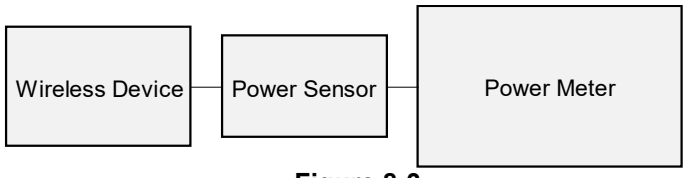


Figure 8-3
Power Measurement Setup

8.4 Bluetooth Conducted Powers

Table 8-14
Bluetooth Average RF Power

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	17.10	51.286
2441	GFSK	1.0	39	16.95	49.545
2480	GFSK	1.0	78	16.91	49.091

Note 1: Bluetooth was evaluated with a test mode with 100% transmission duty factor.

Table 8-15
Bluetooth Average Reduced RF Power

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	12.48	17.701
2441	GFSK	1.0	39	12.35	17.179
2480	GFSK	1.0	78	12.21	16.634

Note 1: Bluetooth was evaluated with a test mode with 100% transmission duty factor.

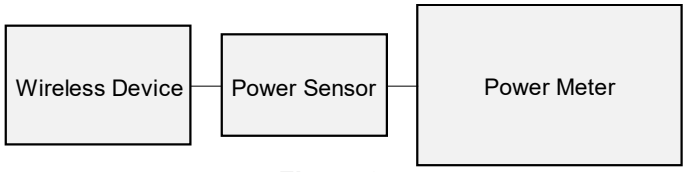


Figure 8-4
Power Measurement Setup

8.5 802.15.4 ab-NB Conducted Powers

Table 8-16
802.15.4 ab-NB Average RF Power

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel	Avg Conducted Power	
				[dBm]	[mW]
5728.75	O-QPSK	1.0	Low	15.16	32.810
5786.25	O-QPSK	1.0	Middle	15.06	32.063
5846.25	O-QPSK	1.0	High	14.98	31.477

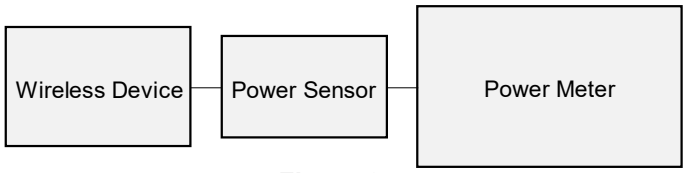
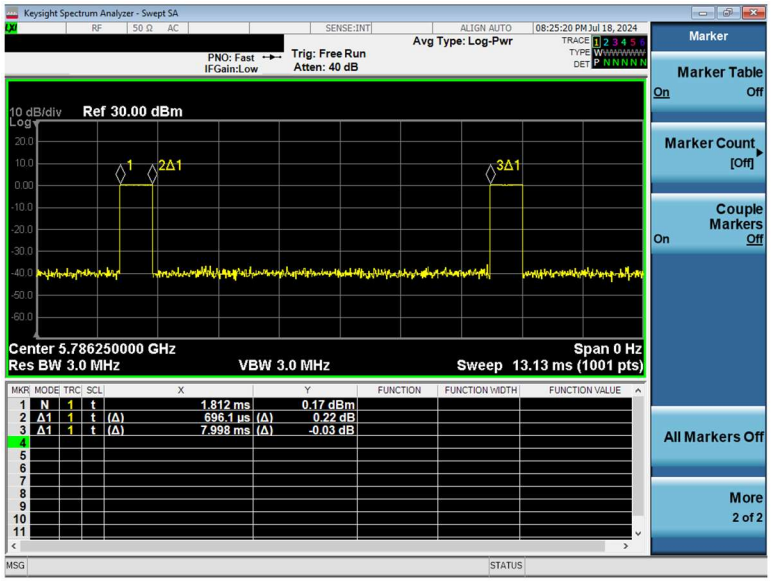


Figure 8-5
Power Measurement Setup

8.6 802.15.4 ab-NB Duty Cycle

Figure 8-6
802.15.4 ab-NB Transmission Plot



Equation 8-1
802.15.4 ab-NB Duty Cycle Calculation

$$Duty\ Cycle = \frac{Pulse\ Width}{Period} * 100\% = \frac{0.696}{7.998} * 100\% = 8.70\%$$

9 SYSTEM VERIFICATION

9.1 Tissue Verification

Table 9-1
Measured Head Tissue Properties

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/09/2024	30 Head	24.0	12	0.723	52.434	0.750	55.000	-3.60%	-4.67%
			13	0.723	52.424	0.750	55.000	-3.60%	-4.68%
			14	0.723	52.364	0.750	55.000	-3.60%	-4.79%
06/18/2024	750 Head	23.0	700	0.849	41.554	0.889	42.201	-4.50%	-1.53%
			710	0.857	41.437	0.890	42.149	-3.71%	-1.69%
			725	0.870	41.232	0.891	42.071	-2.36%	-1.99%
			750	0.895	40.829	0.894	41.942	0.11%	-2.65%
			770	0.916	40.539	0.895	41.838	2.35%	-3.10%
			785	0.930	40.370	0.896	41.760	3.79%	-3.33%
			800	0.941	40.206	0.897	41.682	4.91%	-3.54%
06/19/2024	750 Head	19.9	680	0.847	42.319	0.888	42.305	-4.62%	0.03%
			695	0.852	42.293	0.889	42.227	-4.16%	0.16%
			700	0.854	42.285	0.889	42.201	-3.94%	0.20%
			710	0.858	42.259	0.890	42.149	-3.60%	0.26%
			725	0.863	42.217	0.891	42.071	-3.14%	0.35%
			750	0.874	42.133	0.894	41.942	-2.24%	0.46%
			770	0.881	42.072	0.895	41.838	-1.56%	0.56%
			785	0.886	42.033	0.896	41.760	-1.12%	0.65%
			800	0.891	41.994	0.897	41.682	-0.67%	0.75%
06/28/2024	750 Head	25.0	695	0.846	42.568	0.889	42.227	-4.84%	0.81%
			710	0.860	42.357	0.890	42.149	-3.37%	0.49%
			725	0.873	42.131	0.891	42.071	-2.02%	0.14%
			750	0.897	41.764	0.894	41.942	0.34%	-0.42%
			770	0.915	41.484	0.895	41.838	2.23%	-0.85%
			785	0.929	41.286	0.896	41.760	3.68%	-1.14%
			800	0.942	41.085	0.897	41.682	4.96%	-1.43%
06/17/2024	835 Head	19.2	815	0.888	41.519	0.898	41.594	-1.11%	-0.18%
			820	0.893	41.449	0.899	41.578	-0.67%	-0.31%
			835	0.908	41.242	0.900	41.500	0.89%	-0.62%
			850	0.923	41.049	0.916	41.500	0.76%	-1.09%
			880	0.951	40.697	0.950	41.500	0.11%	-1.93%
			900	0.968	40.472	0.970	41.500	-0.21%	-2.48%
			915	0.983	40.282	0.980	41.500	0.31%	-2.93%
			920	0.987	40.215	0.982	41.491	0.51%	-3.08%
			950	1.016	39.834	0.991	41.413	2.52%	-3.81%
			1000	1.062	39.295	1.013	41.325	4.84%	-4.91%
06/19/2024	835 Head	22.9	815	0.884	42.332	0.898	41.594	-1.56%	1.77%
			820	0.888	42.260	0.899	41.578	-1.22%	1.64%
			835	0.903	42.053	0.900	41.500	0.33%	1.33%
			850	0.918	41.873	0.916	41.500	0.22%	0.90%
06/21/2024	835 Head	21.0	815	0.883	41.524	0.898	41.594	-1.67%	-0.17%
			820	0.888	41.458	0.899	41.578	-1.22%	-0.29%
			835	0.902	41.244	0.900	41.500	0.22%	-0.62%
			850	0.918	41.043	0.916	41.500	0.22%	-1.10%
			880	0.947	40.717	0.950	41.500	-0.32%	-1.89%
			900	0.965	40.511	0.970	41.500	-0.52%	-2.38%
			915	0.978	40.326	0.980	41.500	-0.20%	-2.83%
			920	0.983	40.260	0.982	41.491	0.10%	-2.97%
			950	1.012	39.873	0.991	41.413	2.12%	-3.72%
			1000	1.061	39.398	1.013	41.325	4.74%	-4.66%
07/08/2024	835 Head	19.7	815	0.888	41.923	0.898	41.594	-1.11%	0.79%
			820	0.893	41.855	0.899	41.578	-0.67%	0.67%
			835	0.907	41.657	0.900	41.500	0.78%	0.38%
			850	0.921	41.479	0.916	41.500	0.55%	-0.05%

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/03/2024	1750 Head	20.2	1700	1.322	38.619	1.343	40.145	-1.56%	-3.80%
			1705	1.327	38.602	1.345	40.141	-1.34%	-3.83%
			1710	1.332	38.588	1.348	40.136	-1.19%	-3.86%
			1720	1.342	38.568	1.354	40.126	-0.89%	-3.88%
			1745	1.366	38.519	1.368	40.087	-0.15%	-3.91%
			1750	1.371	38.501	1.371	40.079	0.00%	-3.94%
			1770	1.389	38.401	1.383	40.047	0.43%	-4.11%
			1790	1.408	38.275	1.394	40.016	1.00%	-4.35%
07/03/2024	1750 Head	20.2	1700	1.365	38.391	1.343	40.145	1.64%	-4.37%
			1705	1.369	38.370	1.345	40.141	1.78%	-4.41%
			1710	1.374	38.346	1.348	40.136	1.93%	-4.46%
			1720	1.383	38.304	1.354	40.126	2.14%	-4.54%
			1745	1.407	38.191	1.368	40.087	2.85%	-4.73%
			1750	1.412	38.170	1.371	40.079	2.99%	-4.76%
			1770	1.433	38.094	1.383	40.047	3.62%	-4.88%
07/02/2024	1900 Head	21.1	1850	1.387	39.353	1.400	40.000	-0.93%	-1.62%
			1860	1.397	39.308	1.400	40.000	-0.21%	-1.73%
			1880	1.419	39.226	1.400	40.000	1.36%	-1.94%
			1900	1.440	39.142	1.400	40.000	2.86%	-2.14%
			1905	1.445	39.121	1.400	40.000	3.21%	-2.20%
			1910	1.450	39.099	1.400	40.000	3.57%	-2.25%
			1920	1.461	39.055	1.400	40.000	4.36%	-2.36%
07/08/2024	1900 Head	20.9	1850	1.393	38.373	1.400	40.000	-0.50%	-4.07%
			1860	1.404	38.323	1.400	40.000	0.29%	-4.19%
			1880	1.424	38.236	1.400	40.000	1.71%	-4.41%
			1900	1.445	38.158	1.400	40.000	3.21%	-4.61%
			1905	1.450	38.139	1.400	40.000	3.57%	-4.65%
			1910	1.455	38.120	1.400	40.000	3.93%	-4.70%
			1920	1.465	38.081	1.400	40.000	4.64%	-4.80%
07/01/2024	2450 Head	24.8	2300	1.636	38.678	1.670	39.500	-2.04%	-2.08%
			2310	1.647	38.639	1.679	39.480	-1.91%	-2.13%
			2320	1.658	38.603	1.687	39.460	-1.72%	-2.17%
			2400	1.745	38.328	1.756	39.289	-0.63%	-2.45%
			2450	1.804	38.146	1.800	39.200	0.22%	-2.69%
			2480	1.837	38.029	1.833	39.162	0.22%	-2.89%
			2500	1.860	37.943	1.855	39.136	0.27%	-3.05%
			2510	1.871	37.903	1.866	39.123	0.27%	-3.12%
			2535	1.901	37.806	1.893	39.092	0.42%	-3.29%
			2550	1.919	37.752	1.909	39.073	0.52%	-3.38%
			2560	1.930	37.715	1.920	39.060	0.52%	-3.44%
			2600	1.975	37.557	1.964	39.009	0.56%	-3.72%
			2650	2.033	37.348	2.018	38.945	0.74%	-4.10%
			2680	2.067	37.232	2.051	38.907	0.78%	-4.31%
			2700	2.088	37.152	2.073	38.882	0.72%	-4.45%
07/03/2024	2450 Head	24.9	2300	1.684	38.966	1.670	39.500	0.84%	-1.35%
			2310	1.695	38.926	1.679	39.480	0.95%	-1.40%
			2320	1.707	38.887	1.687	39.460	1.19%	-1.45%
			2400	1.796	38.590	1.756	39.289	2.28%	-1.78%
			2450	1.855	38.391	1.800	39.200	3.06%	-2.06%
			2480	1.889	38.270	1.833	39.162	3.06%	-2.28%
			2500	1.912	38.186	1.855	39.136	3.07%	-2.43%
			2510	1.923	38.144	1.866	39.123	3.05%	-2.50%
			2535	1.953	38.042	1.893	39.092	3.17%	-2.69%
			2550	1.971	37.981	1.909	39.073	3.25%	-2.79%
			2560	1.982	37.943	1.920	39.060	3.23%	-2.86%
			2600	2.027	37.782	1.964	39.009	3.21%	-3.15%
			2650	2.084	37.572	2.018	38.945	3.27%	-3.53%
			2680	2.117	37.459	2.051	38.907	3.22%	-3.72%
			2700	2.138	37.372	2.073	38.882	3.14%	-3.88%
07/08/2024	2450 Head	24.5	2300	1.675	39.727	1.670	39.500	0.30%	0.57%
			2310	1.686	39.689	1.679	39.480	0.42%	0.53%
			2320	1.697	39.651	1.687	39.460	0.59%	0.48%
			2400	1.785	39.380	1.756	39.289	1.65%	0.23%
			2450	1.843	39.190	1.800	39.200	2.39%	-0.03%
			2480	1.878	39.067	1.833	39.162	2.45%	-0.24%
			2500	1.901	38.983	1.855	39.136	2.48%	-0.39%
			2510	1.913	38.941	1.866	39.123	2.52%	-0.47%
			2535	1.943	38.842	1.893	39.092	2.64%	-0.64%
			2550	1.961	38.780	1.909	39.073	2.72%	-0.75%
			2560	1.973	38.743	1.920	39.060	2.76%	-0.81%
			2600	2.018	38.578	1.964	39.009	2.75%	-1.10%
			2650	2.079	38.357	2.018	38.945	3.02%	-1.51%
			2680	2.112	38.243	2.051	38.907	2.97%	-1.71%
			2700	2.134	38.160	2.073	38.882	2.94%	-1.86%

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/10/2024	2450 Head	24.4	2300	1.698	39.625	1.670	39.500	1.68%	0.32%
			2310	1.709	39.582	1.679	39.480	1.79%	0.26%
			2320	1.721	39.539	1.687	39.460	2.02%	0.20%
			2400	1.815	39.237	1.756	39.289	3.36%	-0.13%
			2450	1.875	39.029	1.800	39.200	4.17%	-0.44%
			2480	1.910	38.912	1.833	39.162	4.20%	-0.64%
			2500	1.934	38.826	1.855	39.136	4.26%	-0.79%
			2510	1.946	38.787	1.866	39.123	4.29%	-0.86%
			2535	1.977	38.693	1.893	39.092	4.44%	-1.02%
			2550	1.996	38.640	1.909	39.073	4.56%	-1.11%
			2560	2.008	38.604	1.920	39.060	4.58%	-1.17%
			2600	2.054	38.434	1.964	39.009	4.58%	-1.47%
			2650	2.116	38.226	2.018	38.945	4.86%	-1.85%
			2680	2.152	38.098	2.051	38.907	4.92%	-2.08%
07/29/2024	2450 Head	24.9	2300	1.677	40.352	1.670	39.500	0.42%	2.16%
			2320	1.700	40.281	1.687	39.460	0.77%	2.08%
			2400	1.792	39.971	1.756	39.289	2.05%	1.74%
			2450	1.850	39.779	1.800	39.200	2.78%	1.48%
			2480	1.885	39.647	1.833	39.162	2.84%	1.24%
			2500	1.909	39.572	1.855	39.136	2.91%	1.11%
			2510	1.921	39.534	1.866	39.123	2.95%	1.05%
			2535	1.950	39.433	1.893	39.092	3.01%	0.87%
			2550	1.967	39.371	1.909	39.073	3.04%	0.76%
			2560	1.979	39.328	1.920	39.060	3.07%	0.69%
			2600	2.026	39.175	1.964	39.009	3.16%	0.43%
			2650	2.085	38.971	2.018	38.945	3.32%	0.07%
			2680	2.119	38.853	2.051	38.907	3.32%	-0.14%
			2700	2.141	38.770	2.073	38.882	3.28%	-0.29%
08/26/2024	2450 Head	24.5	2300	1.613	39.868	1.670	39.500	-3.41%	0.93%
			2310	1.624	39.837	1.679	39.480	-3.28%	0.90%
			2320	1.635	39.805	1.687	39.460	-3.08%	0.87%
			2400	1.723	39.505	1.756	39.289	-1.88%	0.55%
			2450	1.777	39.338	1.800	39.200	-1.28%	0.35%
			2480	1.810	39.224	1.833	39.162	-1.25%	0.16%
			2500	1.833	39.156	1.855	39.136	-1.19%	0.05%
			2510	1.845	39.123	1.866	39.123	-1.13%	0.00%
			2535	1.873	39.038	1.893	39.092	-1.06%	-0.14%
			2550	1.889	38.984	1.909	39.073	-1.05%	-0.23%
			2560	1.900	38.944	1.920	39.060	-1.04%	-0.30%
			2600	1.948	38.796	1.964	39.009	-0.81%	-0.55%
			2650	2.006	38.616	2.018	38.945	-0.59%	-0.84%
			2680	2.040	38.502	2.051	38.907	-0.54%	-1.04%
			2700	2.063	38.427	2.073	38.882	-0.48%	-1.17%

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06/17/2024	5200-5800 Head	20.2	5180	4.571	35.664	4.635	36.009	-1.38%	-0.96%
			5190	4.580	35.658	4.645	35.998	-1.40%	-0.94%
			5200	4.587	35.650	4.655	35.986	-1.46%	-0.93%
			5210	4.597	35.639	4.666	35.975	-1.48%	-0.93%
			5220	4.608	35.608	4.676	35.963	-1.45%	-0.99%
			5240	4.630	35.568	4.696	35.940	-1.41%	-1.04%
			5250	4.638	35.559	4.706	35.929	-1.44%	-1.03%
			5260	4.652	35.549	4.717	35.917	-1.38%	-1.02%
			5270	4.664	35.527	4.727	35.906	-1.33%	-1.06%
			5280	4.677	35.507	4.737	35.894	-1.27%	-1.08%
			5290	4.684	35.504	4.748	35.883	-1.35%	-1.06%
			5300	4.689	35.503	4.758	35.871	-1.45%	-1.03%
			5310	4.697	35.490	4.768	35.860	-1.49%	-1.03%
			5320	4.709	35.459	4.778	35.849	-1.44%	-1.09%
			5500	4.905	35.158	4.963	35.643	-1.17%	-1.36%
			5510	4.914	35.129	4.973	35.632	-1.19%	-1.41%
			5520	4.926	35.104	4.983	35.620	-1.14%	-1.45%
			5530	4.940	35.087	4.994	35.609	-1.08%	-1.47%
			5540	4.954	35.075	5.004	35.597	-1.00%	-1.47%
			5550	4.966	35.068	5.014	35.586	-0.96%	-1.46%
			5560	4.975	35.058	5.024	35.574	-0.98%	-1.45%
			5580	4.999	35.024	5.045	35.551	-0.91%	-1.48%
			5600	5.020	34.995	5.065	35.529	-0.89%	-1.50%
			5610	5.028	34.972	5.076	35.518	-0.95%	-1.54%
			5620	5.039	34.942	5.086	35.506	-0.92%	-1.59%
			5640	5.062	34.918	5.106	35.483	-0.86%	-1.59%
			5660	5.085	34.897	5.127	35.460	-0.82%	-1.59%
			5670	5.096	34.871	5.137	35.449	-0.80%	-1.63%
			5680	5.110	34.848	5.147	35.437	-0.72%	-1.66%
			5690	5.118	34.838	5.158	35.426	-0.78%	-1.66%
			5700	5.131	34.824	5.168	35.414	-0.72%	-1.67%
			5710	5.141	34.801	5.178	35.403	-0.71%	-1.70%
			5720	5.152	34.779	5.188	35.391	-0.69%	-1.73%
			5745	5.182	34.754	5.214	35.363	-0.61%	-1.72%
			5750	5.191	34.751	5.219	35.357	-0.54%	-1.71%
			5755	5.200	34.748	5.224	35.351	-0.46%	-1.71%
			5765	5.211	34.735	5.234	35.340	-0.44%	-1.71%
			5775	5.219	34.706	5.245	35.329	-0.50%	-1.76%
			5785	5.225	34.668	5.255	35.317	-0.57%	-1.84%
			5795	5.229	34.645	5.265	35.305	-0.68%	-1.87%
			5800	5.235	34.636	5.270	35.300	-0.66%	-1.88%
			5805	5.244	34.631	5.275	35.294	-0.59%	-1.88%
			5825	5.268	34.611	5.296	35.271	-0.53%	-1.87%
			5835	5.279	34.602	5.305	35.230	-0.49%	-1.78%
			5845	5.291	34.602	5.315	35.210	-0.45%	-1.73%
			5850	5.297	34.601	5.320	35.200	-0.43%	-1.70%
			5855	5.302	34.592	5.325	35.197	-0.43%	-1.72%
			5865	5.315	34.572	5.336	35.190	-0.39%	-1.76%
			5875	5.325	34.550	5.347	35.183	-0.41%	-1.80%
			5885	5.333	34.517	5.357	35.177	-0.45%	-1.88%
			5905	5.349	34.469	5.379	35.163	-0.56%	-1.97%

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06/27/2024	5200-5800 Head	20.5	5180	4.487	34.758	4.635	36.009	-3.19%	-3.47%
			5190	4.501	34.747	4.645	35.998	-3.10%	-3.48%
			5200	4.511	34.740	4.655	35.986	-3.09%	-3.46%
			5210	4.519	34.718	4.666	35.975	-3.15%	-3.49%
			5220	4.531	34.682	4.676	35.963	-3.10%	-3.56%
			5240	4.552	34.657	4.696	35.940	-3.07%	-3.57%
			5250	4.557	34.649	4.706	35.929	-3.17%	-3.56%
			5260	4.568	34.630	4.717	35.917	-3.16%	-3.58%
			5270	4.582	34.605	4.727	35.906	-3.07%	-3.62%
			5280	4.600	34.596	4.737	35.894	-2.89%	-3.62%
			5290	4.613	34.590	4.748	35.883	-2.84%	-3.60%
			5300	4.620	34.575	4.758	35.871	-2.90%	-3.61%
			5310	4.624	34.545	4.768	35.860	-3.02%	-3.67%
			5320	4.629	34.508	4.778	35.849	-3.12%	-3.74%
			5500	4.819	34.248	4.963	35.643	-2.90%	-3.91%
			5510	4.834	34.240	4.973	35.632	-2.80%	-3.91%
			5520	4.845	34.227	4.983	35.620	-2.77%	-3.91%
			5530	4.856	34.217	4.994	35.609	-2.76%	-3.91%
			5540	4.864	34.207	5.004	35.597	-2.80%	-3.90%
			5550	4.874	34.195	5.014	35.586	-2.79%	-3.91%
			5560	4.883	34.178	5.024	35.574	-2.81%	-3.92%
			5580	4.907	34.127	5.045	35.551	-2.74%	-4.01%
			5600	4.930	34.094	5.065	35.529	-2.67%	-4.04%
			5610	4.941	34.072	5.076	35.518	-2.66%	-4.07%
			5620	4.952	34.062	5.086	35.506	-2.63%	-4.07%
			5640	4.969	34.045	5.106	35.483	-2.68%	-4.05%
			5660	4.988	34.006	5.127	35.460	-2.71%	-4.10%
			5670	5.002	33.976	5.137	35.449	-2.63%	-4.16%
			5680	5.013	33.945	5.147	35.437	-2.60%	-4.21%
			5690	5.024	33.925	5.158	35.426	-2.60%	-4.24%
			5700	5.037	33.914	5.168	35.414	-2.53%	-4.24%
			5710	5.050	33.896	5.178	35.403	-2.47%	-4.26%
			5720	5.060	33.885	5.188	35.391	-2.47%	-4.26%
			5745	5.090	33.861	5.214	35.363	-2.38%	-4.25%
			5750	5.096	33.847	5.219	35.357	-2.36%	-4.27%
			5755	5.103	33.832	5.224	35.351	-2.32%	-4.30%
			5765	5.114	33.804	5.234	35.340	-2.29%	-4.35%
			5775	5.126	33.786	5.245	35.329	-2.27%	-4.37%
			5785	5.138	33.768	5.255	35.317	-2.23%	-4.39%
			5795	5.146	33.752	5.265	35.305	-2.26%	-4.40%
			5800	5.150	33.749	5.270	35.300	-2.28%	-4.39%
			5805	5.154	33.743	5.275	35.294	-2.29%	-4.39%
			5825	5.173	33.726	5.296	35.271	-2.32%	-4.38%
			5835	5.186	33.715	5.305	35.230	-2.24%	-4.30%
			5845	5.198	33.701	5.315	35.210	-2.20%	-4.29%
			5850	5.203	33.694	5.320	35.200	-2.20%	-4.28%
			5855	5.210	33.688	5.325	35.197	-2.16%	-4.29%
			5865	5.222	33.676	5.336	35.190	-2.14%	-4.30%
			5875	5.233	33.661	5.347	35.183	-2.13%	-4.33%
			5885	5.245	33.636	5.357	35.177	-2.09%	-4.38%
			5905	5.255	33.618	5.379	35.163	-2.31%	-4.39%

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/02/2024	5200-5800 Head	20.0	5180	4.564	35.354	4.635	36.009	-1.53%	-1.82%
			5190	4.574	35.331	4.645	35.998	-1.53%	-1.85%
			5200	4.584	35.306	4.655	35.986	-1.53%	-1.89%
			5210	4.596	35.283	4.666	35.975	-1.50%	-1.92%
			5220	4.607	35.263	4.676	35.963	-1.48%	-1.95%
			5240	4.625	35.224	4.696	35.940	-1.51%	-1.99%
			5250	4.635	35.207	4.706	35.929	-1.51%	-2.01%
			5260	4.648	35.194	4.717	35.917	-1.46%	-2.01%
			5270	4.660	35.182	4.727	35.906	-1.42%	-2.02%
			5280	4.672	35.176	4.737	35.894	-1.37%	-2.00%
			5290	4.684	35.158	4.748	35.883	-1.35%	-2.02%
			5300	4.692	35.136	4.758	35.871	-1.39%	-2.05%
			5310	4.699	35.118	4.768	35.860	-1.45%	-2.07%
			5320	4.707	35.105	4.778	35.849	-1.49%	-2.08%
			5500	4.898	34.813	4.963	35.643	-1.31%	-2.33%
			5510	4.910	34.801	4.973	35.632	-1.27%	-2.33%
			5520	4.923	34.787	4.983	35.620	-1.20%	-2.34%
			5530	4.935	34.768	4.994	35.609	-1.18%	-2.36%
			5540	4.947	34.749	5.004	35.597	-1.14%	-2.38%
			5550	4.957	34.731	5.014	35.586	-1.14%	-2.40%
			5560	4.965	34.718	5.024	35.574	-1.17%	-2.41%
			5580	4.984	34.677	5.045	35.551	-1.21%	-2.46%
			5600	5.009	34.639	5.065	35.529	-1.11%	-2.50%
			5610	5.020	34.628	5.076	35.518	-1.10%	-2.51%
			5620	5.032	34.612	5.086	35.506	-1.06%	-2.52%
			5640	5.059	34.579	5.106	35.483	-0.92%	-2.55%
			5660	5.082	34.555	5.127	35.460	-0.88%	-2.55%
			5670	5.090	34.544	5.137	35.449	-0.91%	-2.55%
			5680	5.098	34.523	5.147	35.437	-0.95%	-2.58%
			5690	5.107	34.505	5.158	35.426	-0.99%	-2.60%
			5700	5.120	34.484	5.168	35.414	-0.93%	-2.63%
			5710	5.132	34.465	5.178	35.403	-0.89%	-2.65%
			5720	5.144	34.443	5.188	35.391	-0.85%	-2.68%
			5745	5.177	34.396	5.214	35.363	-0.71%	-2.73%
			5750	5.184	34.389	5.219	35.357	-0.67%	-2.74%
			5755	5.190	34.383	5.224	35.351	-0.65%	-2.74%
			5765	5.199	34.371	5.234	35.340	-0.67%	-2.74%
			5775	5.207	34.362	5.245	35.329	-0.72%	-2.74%
			5785	5.215	34.355	5.255	35.317	-0.76%	-2.72%
			5795	5.223	34.338	5.265	35.305	-0.80%	-2.74%
			5805	5.233	34.304	5.275	35.294	-0.80%	-2.81%
			5825	5.256	34.249	5.296	35.271	-0.76%	-2.90%
			5835	5.269	34.238	5.305	35.230	-0.68%	-2.82%
			5845	5.286	34.224	5.315	35.210	-0.55%	-2.80%
			5850	5.293	34.215	5.320	35.200	-0.51%	-2.80%
			5855	5.299	34.204	5.325	35.197	-0.49%	-2.82%
			5875	5.317	34.185	5.347	35.183	-0.56%	-2.84%
			5885	5.326	34.174	5.357	35.177	-0.58%	-2.85%
			5905	5.346	34.126	5.379	35.163	-0.61%	-2.95%

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
07/01/2024	6000 Head	20.5	5935	5.453	34.936	5.411	35.143	0.78%	-0.59%
			5970	5.494	34.881	5.448	35.120	0.84%	-0.68%
			5985	5.513	34.862	5.464	35.110	0.90%	-0.71%
			6000	5.532	34.843	5.480	35.100	0.95%	-0.73%
			6025	5.559	34.800	5.510	35.070	0.89%	-0.77%
			6065	5.605	34.714	5.557	35.022	0.86%	-0.88%
			6075	5.620	34.697	5.569	35.010	0.92%	-0.89%
			6085	5.635	34.679	5.580	34.998	0.99%	-0.91%
			6185	5.768	34.497	5.698	34.878	1.23%	-1.09%
			6275	5.884	34.316	5.805	34.770	1.36%	-1.31%
			6285	5.896	34.299	5.816	34.758	1.38%	-1.32%
			6305	5.920	34.259	5.840	34.734	1.37%	-1.37%
			6345	5.959	34.203	5.887	34.686	1.22%	-1.39%
			6475	6.101	34.022	6.041	34.530	0.99%	-1.47%
			6485	6.109	34.013	6.052	34.518	0.94%	-1.46%
			6500	6.119	33.992	6.070	34.500	0.81%	-1.47%
			6505	6.122	33.984	6.076	34.494	0.76%	-1.48%
			6545	6.165	33.895	6.122	34.446	0.70%	-1.60%
			6665	6.355	33.684	6.265	34.302	1.44%	-1.80%
			6675	6.366	33.670	6.273	34.290	1.48%	-1.81%
			6685	6.376	33.658	6.285	34.278	1.45%	-1.81%
			6715	6.403	33.607	6.319	34.242	1.33%	-1.85%
			6785	6.498	33.461	6.400	34.158	1.53%	-2.04%
			6825	6.515	33.405	6.447	34.110	1.05%	-2.07%
			6985	6.677	33.152	6.633	33.918	0.66%	-2.26%
			6995	6.684	33.138	6.644	33.906	0.60%	-2.27%
			7000	6.690	33.127	6.650	33.900	0.60%	-2.28%
			7005	6.695	33.114	6.656	33.894	0.59%	-2.30%
			7025	6.733	33.069	6.680	33.870	0.79%	-2.36%
			7500	7.330	32.233	7.240	33.300	1.24%	-3.20%
			7980	7.855	31.465	7.816	32.724	0.50%	-3.85%
			8000	7.892	31.407	7.840	32.700	0.66%	-3.95%

The above measured tissue parameters were used in the DASY software. The DASY software was used to perform interpolation to determine the dielectric parameters at the SAR test device frequencies (per KDB Publication 865664 D01v01r04 and IEEE 1528-2013 6.6.1.2). The tissue parameters listed in the SAR test plots may slightly differ from the table above due to significant digit rounding in the software.

Per April 2019 TCB Workshop Notes, single head-tissue simulating liquid specified in IEC 62209-1 is permitted to use for all SAR tests.

9.2 Test System Verification

Prior to SAR assessment, the system is verified to ±10% of the SAR measurement on the reference dipole at the time of calibration by the calibration facility. Full system validation status and result summary can be found in the SAR System Validation Appendix.

Table 9-2
System Verification Results – 1g

System Verification TARGET & MEASURED													
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	DAE	Measured SAR 1g (W/kg)	1W Target SAR 1g (W/kg)	1W Normalized SAR 1g (W/kg)	Deviation 1g (%)
AM1	750	HEAD	06/18/2024	21.5	21.0	0.20	1097	3949	1684	1.750	8.270	8.750	5.80%
AM11	750	HEAD	06/19/2024	19.8	19.0	0.20	1057	7532	501	1.650	8.510	8.250	-3.06%
AM15	835	HEAD	06/17/2024	19.9	19.1	0.20	4d108	7668	1681	2.080	9.800	10.400	6.12%
AM15	835	HEAD	06/21/2024	20.4	21.0	0.20	4d108	7668	1681	2.010	9.800	10.050	2.55%
AM15	835	HEAD	07/08/2024	20.5	19.8	0.20	4d040	7668	1681	1.890	9.790	9.450	-3.47%
AM10	1750	HEAD	07/03/2024	20.3	19.5	0.10	1104	7546	1402	3.390	35.600	33.900	-4.78%
AM3	1750	HEAD	07/03/2024	22.5	21.0	0.10	1104	7782	1646	3.680	35.600	36.800	3.37%
AM4	1900	HEAD	07/02/2024	23.2	21.3	0.10	5d181	7639	1403	3.750	39.900	37.500	-6.02%
AM4	1900	HEAD	07/08/2024	22.6	21.3	0.10	5d180	7639	1403	4.060	39.200	40.600	3.57%
AM6	2450	HEAD	07/01/2024	21.6	22.9	0.10	750	7499	1644	5.150	52.600	51.500	-2.09%
AM6	2450	HEAD	07/03/2024	22.2	23.4	0.10	750	7499	1644	5.110	52.600	51.100	-2.85%
AM13	2450	HEAD	07/29/2024	21.1	23.0	0.10	855	7682	1683	5.360	52.400	53.600	2.29%
AM6	2450	HEAD	08/26/2024	20.8	24.5	0.10	750	7499	1644	5.330	52.600	53.300	1.33%
AM6	2600	HEAD	07/01/2024	21.6	22.9	0.10	1042	7499	1644	5.350	55.800	53.500	-4.12%
AM6	2600	HEAD	08/26/2024	20.8	24.5	0.10	1042	7499	1644	5.430	55.800	54.300	-2.69%
AM8	5250	HEAD	06/17/2024	21.2	20.4	0.05	1066	7427	467	3.860	80.300	77.200	-3.86%
AM8	5250	HEAD	06/27/2024	20.8	19.8	0.05	1066	7427	467	3.800	80.300	76.000	-5.35%
AM8	5600	HEAD	06/17/2024	21.2	20.4	0.05	1066	7427	467	4.210	83.900	84.200	0.36%
AM8	5600	HEAD	06/27/2024	20.8	19.8	0.05	1066	7427	467	4.120	83.900	82.400	-1.79%
AM8	5750	HEAD	06/17/2024	21.2	20.4	0.05	1066	7427	467	3.810	79.500	76.200	-4.15%
AM8	5750	HEAD	06/27/2024	20.8	19.8	0.05	1066	7427	467	3.800	79.500	76.000	-4.40%
AM8	5850	HEAD	06/17/2024	21.2	20.4	0.05	1066	7427	467	4.070	82.200	81.400	-0.97%
AM8	5850	HEAD	06/27/2024	20.8	19.8	0.05	1066	7427	467	3.960	82.200	79.200	-3.65%

Table 9-3
System Verification Results – 10g

System Verification TARGET & MEASURED																	
SAR System	Tissue Frequency (MHz)	Tissue Type	Date	Amb. Temp. (C)	Liquid Temp. (C)	Input Power (W)	Source SN	Probe SN	DAE	Measured SAR 10g (W/kg)	1W Target SAR 10g (W/kg)	1W Normalized SAR 10g (W/kg)	Deviation 10g (%)	Measured 4cm² APD (W/m²)	1W Target 4cm² APD (W/m²)	1W Normalized 4cm² APD (W/m²)	Deviation 4cm² APD (%)
AM14	13	HEAD	07/09/2024	22.0	22.5	1.00	1004	3746	1237	0.368	0.356	0.368	3.37%				
AM1	750	HEAD	06/18/2024	21.5	21.0	0.20	1097	3949	1684	1.150	5.380	5.750	6.88%				
AM1	750	HEAD	06/28/2024	21.8	23.2	0.20	1097	3949	1684	1.020	5.380	5.100	-5.20%				
AM15	835	HEAD	06/17/2024	19.9	19.1	0.20	4d108	7668	1681	1.360	6.340	6.800	7.26%				
AM15	835	HEAD	06/19/2024	20.4	21.5	0.20	4d108	7668	1681	1.330	6.340	6.650	4.89%				
AM15	835	HEAD	07/08/2024	20.5	19.8	0.20	4d040	7668	1681	1.230	6.380	6.150	-3.61%				
AM10	1750	HEAD	07/03/2024	20.3	19.5	0.10	1104	7546	1402	1.810	18.800	18.100	-3.72%				
AM3	1750	HEAD	07/03/2024	22.5	21.0	0.10	1104	7782	1646	1.920	18.800	19.200	2.13%				
AM4	1900	HEAD	07/02/2024	23.2	21.3	0.10	5d181	7639	1403	1.950	21.100	19.500	-7.58%				
AM6	2450	HEAD	07/03/2024	22.2	23.4	0.10	750	7499	1644	2.290	24.500	22.900	-6.53%				
AM6	2450	HEAD	07/08/2024	20.8	23.6	0.10	750	7499	1644	2.340	24.500	23.400	-4.49%				
AM6	2450	HEAD	07/10/2024	20.0	22.7	0.10	750	7499	1644	2.330	24.500	23.300	-4.90%				
AM6	2600	HEAD	07/08/2024	20.8	23.6	0.10	1042	7499	1644	2.310	24.900	23.100	-7.23%				
AM8	5250	HEAD	06/17/2024	21.2	20.4	0.05	1066	7427	467	1.110	23.100	22.200	-3.90%				
AM8	5250	HEAD	07/02/2024	21.2	20.0	0.05	1123	7427	467	1.090	22.800	21.800	-4.39%				
AM8	5600	HEAD	06/17/2024	21.2	20.4	0.05	1066	7427	467	1.200	24.100	24.000	-0.41%				
AM8	5600	HEAD	07/02/2024	21.2	20.0	0.05	1123	7427	467	1.160	23.600	23.200	-1.69%				
AM8	5750	HEAD	06/17/2024	21.2	20.4	0.05	1066	7427	467	1.090	22.600	21.800	-3.54%				
AM8	5750	HEAD	07/02/2024	21.2	20.0	0.05	1123	7427	467	1.050	22.600	21.000	-7.08%				
AM8	5850	HEAD	06/17/2024	21.2	20.4	0.05	1066	7427	467	1.150	23.400	23.000	-1.71%				
AM8	5850	HEAD	07/02/2024	21.2	20.0	0.05	1163	7427	467	1.150	22.200	23.000	3.60%				
AM11	6500	HEAD	07/01/2024	20.8	19.7	0.025	1019	7532	501	1.420	54.100	56.800	4.99%	34.7	1320	1388	5.15%
AM11	8000	HEAD	07/01/2024	20.8	19.7	0.025	1006	7532	501	1.200	45.400	48.000	5.73%	29.5	1110	1180	6.31%

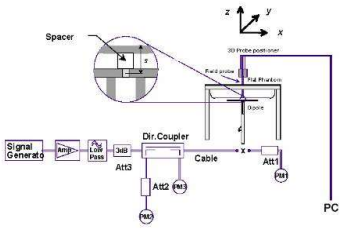

Figure 9-1
System Verification Setup Diagram

Figure 9-2
System Verification Setup Photo

9.3 Power Density Test System Verification

The system was verified to be within ±0.66 dB of the power density targets on the calibration certificate according to the test system specification in the user's manual and calibration facility recommendation. The 0.66 dB deviation threshold represents the expanded uncertainty for system performance checks using SPEAG's mmWave verification sources. The same spatial resolution and measurement region used in the source calibration was applied during the system check.

The measured power density distribution of verification source was also confirmed through visual inspection to have no noticeable differences, both spatially (shape) and numerically (level) from the distribution provided by the manufacturer, per November 2017 TCBC Workshop Notes.

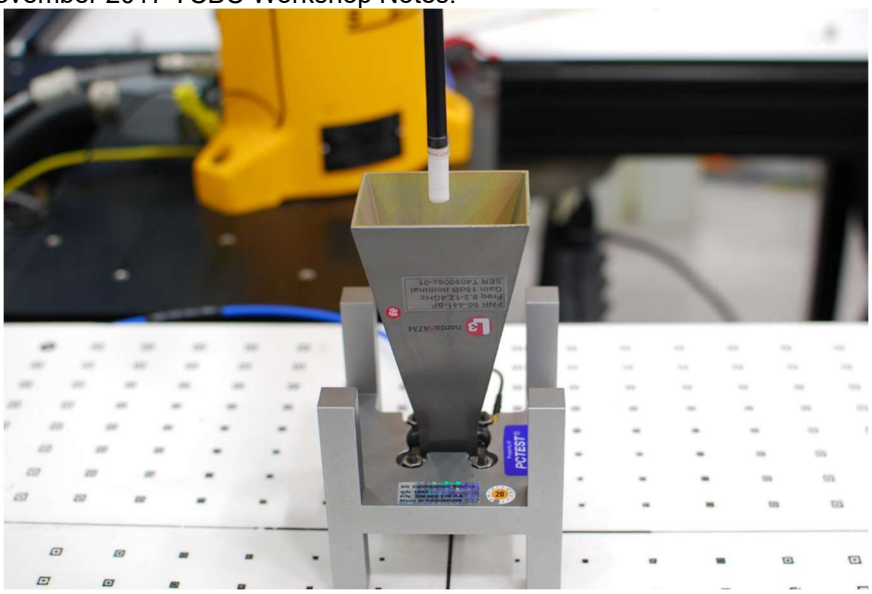

Figure 9-3
System Verification Setup Photo
Table 9-4
10 GHz Verification Results

System	Frequency (GHz)	Date	Source S/N	Probe S/N	DAE S/N	Prad (mW)	Normal psPD (W/m² over 4 cm²)		Deviation (dB)	Total psPD (W/m² over 4 cm²)		Deviation (dB)
							Measured	Target		Measured	Target	
AM12	10	07/03/2024	1006	9407	1408	93.3	50.7	58.5	-0.62	50.9	58.9	-0.63

Note: A **10 mm distance spacing** was used from the reference horn antenna aperture to the probe element.

10 SAR DATA SUMMARY

10.1 UMTS 850 Standalone Head SAR

Table 10-1

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	UMTS 850	RMC	Aluminum	Sport	YW77G	1:1	0.01	826.40	4132	25.00	23.20	Front	10	0.000	1.514	0.000	
Head	UMTS 850	RMC	Aluminum	Metal Loop	YW77G	1:1	0.02	826.40	4132	25.00	23.20	Front	10	0.001	1.514	0.002	
Head	UMTS 850	RMC	Aluminum	Metal Links	YW77G	1:1	0.09	826.40	4132	25.00	23.20	Front	10	0.001	1.514	0.002	
Head	UMTS 850	RMC	Titanium	Sport	JQG4N	1:1	0.01	826.40	4132	25.00	23.20	Front	10	0.001	1.514	0.002	
Head	UMTS 850	RMC	Titanium	Metal Loop	JQG4N	1:1	0.01	826.40	4132	25.00	23.20	Front	10	0.002	1.514	0.003	
Head	UMTS 850	RMC	Titanium	Metal Links	JQG4N	1:1	0.01	826.40	4132	25.00	23.20	Front	10	0.002	1.514	0.003	A1
Head	UMTS 850	RMC	Titanium	Metal Links	JQG4N	1:1	0.06	836.60	4183	25.00	23.06	Front	10	0.001	1.563	0.002	
Head	UMTS 850	RMC	Titanium	Metal Links	JQG4N	1:1	0.14	846.60	4233	25.00	23.10	Front	10	0.000	1.549	0.000	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram					

10.2 UMTS 1750 Standalone Head SAR

Table 10-2

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	UMTS 1750	RMC	Aluminum	Sport	X9XGQ	1:1	0.00	1732.40	1412	24.00	22.95	Front	10	0.141	1.274	0.180	
Head	UMTS 1750	RMC	Aluminum	Metal Loop	X9XGQ	1:1	-0.04	1732.40	1412	24.00	22.95	Front	10	0.195	1.274	0.248	
Head	UMTS 1750	RMC	Aluminum	Metal Links	X9XGQ	1:1	0.01	1712.40	1312	24.00	22.92	Front	10	0.199	1.283	0.255	
Head	UMTS 1750	RMC	Aluminum	Metal Links	X9XGQ	1:1	0.03	1732.40	1412	24.00	22.95	Front	10	0.213	1.274	0.271	
Head	UMTS 1750	RMC	Aluminum	Metal Links	X9XGQ	1:1	-0.05	1752.60	1513	24.00	22.82	Front	10	0.218	1.313	0.286	A2
Head	UMTS 1750	RMC	Titanium	Sport	167KN	1:1	0.01	1732.40	1412	24.00	22.95	Front	10	0.118	1.274	0.150	
Head	UMTS 1750	RMC	Titanium	Metal Loop	167KN	1:1	-0.05	1732.40	1412	24.00	22.95	Front	10	0.181	1.274	0.231	
Head	UMTS 1750	RMC	Titanium	Metal Links	167KN	1:1	0.01	1732.40	1412	24.00	22.95	Front	10	0.190	1.274	0.242	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram					

10.3 UMTS 1900 Standalone Head SAR

Table 10-3

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	UMTS 1900	RMC	Aluminum	Sport	HF6NX	1:1	0.00	1880.00	9400	24.00	22.87	Front	10	0.254	1.296	0.329	
Head	UMTS 1900	RMC	Aluminum	Metal Loop	HF6NX	1:1	0.01	1880.00	9400	24.00	22.87	Front	10	0.289	1.296	0.375	
Head	UMTS 1900	RMC	Aluminum	Metal Links	HF6NX	1:1	-0.04	1880.00	9400	24.00	22.87	Front	10	0.264	1.296	0.342	
Head	UMTS 1900	RMC	Titanium	Sport	M5YHT	1:1	0.08	1880.00	9400	24.00	22.87	Front	10	0.242	1.296	0.314	
Head	UMTS 1900	RMC	Titanium	Metal Loop	M5YHT	1:1	-0.01	1852.40	9262	24.00	22.86	Front	10	0.321	1.299	0.417	
Head	UMTS 1900	RMC	Titanium	Metal Loop	M5YHT	1:1	0.05	1880.00	9400	24.00	22.87	Front	10	0.322	1.296	0.417	
Head	UMTS 1900	RMC	Titanium	Metal Loop	M5YHT	1:1	0.01	1907.60	9538	24.00	22.76	Front	10	0.376	1.330	0.500	A3
Head	UMTS 1900	RMC	Titanium	Metal Links	M5YHT	1:1	-0.06	1880.00	9400	24.00	22.87	Front	10	0.279	1.296	0.362	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram					

10.4 LTE Band 12 Standalone Head SAR

Table 10-4

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 12	10	QPSK	Aluminum	Sport	Q7MP9	1:1	0.06	707.50	23095	0.0	25.50	24.06	1	0	Front	10	0.003	1.393	0.004	
Head	LTE Band 12	10	QPSK	Aluminum	Sport	Q7MP9	1:1	0.08	707.50	23095	1.0	24.50	23.14	25	25	Front	10	0.002	1.368	0.003	
Head	LTE Band 12	10	QPSK	Aluminum	Metal Loop	Q7MP9	1:1	0.03	707.50	23095	0.0	25.50	24.06	1	0	Front	10	0.002	1.393	0.003	
Head	LTE Band 12	10	QPSK	Aluminum	Metal Loop	Q7MP9	1:1	0.09	707.50	23095	1.0	24.50	23.14	25	25	Front	10	0.001	1.368	0.001	
Head	LTE Band 12	10	QPSK	Aluminum	Metal Links	Q7MP9	1:1	-0.08	707.50	23095	0.0	25.50	24.06	1	0	Front	10	0.005	1.393	0.007	A4
Head	LTE Band 12	10	QPSK	Aluminum	Metal Links	Q7MP9	1:1	0.07	707.50	23095	1.0	24.50	23.14	25	25	Front	10	0.004	1.368	0.005	
Head	LTE Band 12	10	QPSK	Titanium	Sport	JQG4N	1:1	0.04	707.50	23095	0.0	25.50	24.06	1	0	Front	10	0.002	1.393	0.003	
Head	LTE Band 12	10	QPSK	Titanium	Sport	JQG4N	1:1	0.04	707.50	23095	1.0	24.50	23.14	25	25	Front	10	0.001	1.368	0.001	
Head	LTE Band 12	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	0.08	707.50	23095	0.0	25.50	24.06	1	0	Front	10	0.003	1.393	0.004	
Head	LTE Band 12	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	-0.15	707.50	23095	1.0	24.50	23.14	25	25	Front	10	0.002	1.368	0.003	
Head	LTE Band 12	10	QPSK	Titanium	Metal Links	JQG4N	1:1	0.06	707.50	23095	0.0	25.50	24.06	1	0	Front	10	0.004	1.393	0.006	
Head	LTE Band 12	10	QPSK	Titanium	Metal Links	JQG4N	1:1	-0.06	707.50	23095	1.0	24.50	23.14	25	25	Front	10	0.004	1.368	0.005	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Head 1.6 W/kg (mW/g) averaged over 1 gram					

10.5 LTE Band 13 Standalone Head SAR

Table 10-5

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 13	10	QPSK	Aluminum	Sport	H0FTG	1:1	0.08	782.00	23230	0.0	25.50	23.68	1	49	Front	10	0.002	1.521	0.003	
Head	LTE Band 13	10	QPSK	Aluminum	Sport	H0FTG	1:1	0.02	782.00	23230	1.0	24.50	22.75	25	0	Front	10	0.002	1.496	0.003	
Head	LTE Band 13	10	QPSK	Aluminum	Metal Loop	H0FTG	1:1	0.03	782.00	23230	0.0	25.50	23.68	1	49	Front	10	0.002	1.521	0.003	
Head	LTE Band 13	10	QPSK	Aluminum	Metal Loop	H0FTG	1:1	-0.10	782.00	23230	1.0	24.50	22.75	25	0	Front	10	0.001	1.496	0.001	
Head	LTE Band 13	10	QPSK	Aluminum	Metal Links	H0FTG	1:1	0.04	782.00	23230	0.0	25.50	23.68	1	49	Front	10	0.005	1.521	0.008	A5
Head	LTE Band 13	10	QPSK	Aluminum	Metal Links	H0FTG	1:1	0.01	782.00	23230	1.0	24.50	22.75	25	0	Front	10	0.005	1.496	0.007	
Head	LTE Band 13	10	QPSK	Titanium	Sport	TFKWG	1:1	0.03	782.00	23230	0.0	25.50	23.68	1	49	Front	10	0.002	1.521	0.003	
Head	LTE Band 13	10	QPSK	Titanium	Sport	TFKWG	1:1	0.08	782.00	23230	1.0	24.50	22.75	25	0	Front	10	0.001	1.496	0.001	
Head	LTE Band 13	10	QPSK	Titanium	Metal Loop	TFKWG	1:1	0.02	782.00	23230	0.0	25.50	23.68	1	49	Front	10	0.002	1.521	0.003	
Head	LTE Band 13	10	QPSK	Titanium	Metal Loop	TFKWG	1:1	0.08	782.00	23230	1.0	24.50	22.75	25	0	Front	10	0.001	1.496	0.001	
Head	LTE Band 13	10	QPSK	Titanium	Metal Links	TFKWG	1:1	0.08	782.00	23230	0.0	25.50	23.68	1	49	Front	10	0.004	1.521	0.006	
Head	LTE Band 13	10	QPSK	Titanium	Metal Links	TFKWG	1:1	0.03	782.00	23230	1.0	24.50	22.75	25	0	Front	10	0.003	1.496	0.004	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram						

10.6 LTE Band 14 Standalone Head SAR

Table 10-6

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 14	10	QPSK	Aluminum	Sport	647GG	1:1	0.01	793.00	23330	0.0	25.50	23.66	1	25	Front	10	0.003	1.528	0.005	
Head	LTE Band 14	10	QPSK	Aluminum	Sport	647GG	1:1	0.01	793.00	23330	1.0	24.50	22.67	25	25	Front	10	0.002	1.524	0.003	
Head	LTE Band 14	10	QPSK	Aluminum	Metal Loop	647GG	1:1	0.08	793.00	23330	0.0	25.50	23.66	1	25	Front	10	0.002	1.528	0.003	
Head	LTE Band 14	10	QPSK	Aluminum	Metal Loop	647GG	1:1	0.05	793.00	23330	1.0	24.50	22.67	25	25	Front	10	0.001	1.524	0.002	
Head	LTE Band 14	10	QPSK	Aluminum	Metal Links	647GG	1:1	0.08	793.00	23330	0.0	25.50	23.66	1	25	Front	10	0.003	1.528	0.005	A6
Head	LTE Band 14	10	QPSK	Aluminum	Metal Links	647GG	1:1	0.05	793.00	23330	1.0	24.50	22.67	25	25	Front	10	0.003	1.524	0.005	
Head	LTE Band 14	10	QPSK	Titanium	Sport	1Q3QL	1:1	0.01	793.00	23330	0.0	25.50	23.66	1	25	Front	10	0.001	1.528	0.002	
Head	LTE Band 14	10	QPSK	Titanium	Sport	1Q3QL	1:1	0.01	793.00	23330	1.0	24.50	22.67	25	25	Front	10	0.000	1.524	0.000	
Head	LTE Band 14	10	QPSK	Titanium	Metal Loop	1Q3QL	1:1	0.08	793.00	23330	0.0	25.50	23.66	1	25	Front	10	0.001	1.528	0.002	
Head	LTE Band 14	10	QPSK	Titanium	Metal Loop	1Q3QL	1:1	0.03	793.00	23330	1.0	24.50	22.67	25	25	Front	10	0.001	1.524	0.002	
Head	LTE Band 14	10	QPSK	Titanium	Metal Links	1Q3QL	1:1	0.07	793.00	23330	0.0	25.50	23.66	1	25	Front	10	0.003	1.528	0.005	
Head	LTE Band 14	10	QPSK	Titanium	Metal Links	1Q3QL	1:1	0.06	793.00	23330	1.0	24.50	22.67	25	25	Front	10	0.002	1.524	0.003	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram						

10.7 LTE Band 26 (Cell) Standalone Head SAR

Table 10-7

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 26	10	QPSK	Aluminum	Sport	JJN0V	1:1	0.03	844.00	26990	0.0	25.50	24.87	1	0	Front	10	0.002	1.156	0.002	
Head	LTE Band 26	10	QPSK	Aluminum	Sport	JJN0V	1:1	0.08	844.00	26990	1.0	24.50	23.97	25	0	Front	10	0.001	1.130	0.001	
Head	LTE Band 26	10	QPSK	Aluminum	Metal Loop	JJN0V	1:1	0.07	844.00	26990	0.0	25.50	24.87	1	0	Front	10	0.000	1.156	0.000	
Head	LTE Band 26	10	QPSK	Aluminum	Metal Loop	JJN0V	1:1	0.01	844.00	26990	1.0	24.50	23.97	25	0	Front	10	0.000	1.130	0.000	
Head	LTE Band 26	10	QPSK	Aluminum	Metal Links	JJN0V	1:1	0.03	844.00	26990	0.0	25.50	24.87	1	0	Front	10	0.000	1.156	0.000	
Head	LTE Band 26	10	QPSK	Aluminum	Metal Links	JJN0V	1:1	0.06	844.00	26990	1.0	24.50	23.97	25	0	Front	10	0.000	1.130	0.000	
Head	LTE Band 26	10	QPSK	Titanium	Sport	JQG4N	1:1	0.09	844.00	26990	0.0	25.50	24.87	1	0	Front	10	0.002	1.156	0.002	
Head	LTE Band 26	10	QPSK	Titanium	Sport	JQG4N	1:1	0.01	844.00	26990	1.0	24.50	23.97	25	0	Front	10	0.002	1.130	0.002	
Head	LTE Band 26	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	0.01	819.00	26740	0.0	25.50	24.85	1	49	Front	10	0.003	1.161	0.003	A7
Head	LTE Band 26	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	0.01	831.50	26865	0.0	25.50	24.81	1	0	Front	10	0.002	1.172	0.002	
Head	LTE Band 26	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	0.01	844.00	26990	0.0	25.50	24.87	1	0	Front	10	0.002	1.156	0.002	
Head	LTE Band 26	10	QPSK	Titanium	Metal Links	JQG4N	1:1	0.01	844.00	26990	1.0	24.50	23.97	25	0	Front	10	0.002	1.130	0.002	
Head	LTE Band 26	10	QPSK	Titanium	Metal Links	JQG4N	1:1	0.02	844.00	26990	0.0	25.50	24.87	1	0	Front	10	0.000	1.156	0.000	
Head	LTE Band 26	10	QPSK	Titanium	Metal Links	JQG4N	1:1	0.02	844.00	26990	1.0	24.50	23.97	25	0	Front	10	0.000	1.130	0.000	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram						

10.8 LTE Band 5 (Cell) Standalone Head SAR

Table 10-8

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 5	10	QPSK	Aluminum	Sport	WD0GX	1:1	0.01	836.50	20525	0.0	25.50	23.63	1	49	Front	10	0.002	1.538	0.003	
Head	LTE Band 5	10	QPSK	Aluminum	Sport	WD0GX	1:1	0.02	836.50	20525	1.0	24.50	22.67	25	25	Front	10	0.001	1.524	0.002	
Head	LTE Band 5	10	QPSK	Aluminum	Metal Loop	WD0GX	1:1	0.03	836.50	20525	0.0	25.50	23.63	1	49	Front	10	0.000	1.538	0.000	
Head	LTE Band 5	10	QPSK	Aluminum	Metal Loop	WD0GX	1:1	0.05	836.50	20525	1.0	24.50	22.67	25	25	Front	10	0.000	1.524	0.000	
Head	LTE Band 5	10	QPSK	Aluminum	Metal Links	WD0GX	1:1	-0.05	836.50	20525	0.0	25.50	23.63	1	49	Front	10	0.002	1.538	0.003	
Head	LTE Band 5	10	QPSK	Aluminum	Metal Links	WD0GX	1:1	0.06	836.50	20525	1.0	24.50	22.67	25	25	Front	10	0.002	1.524	0.003	
Head	LTE Band 5	10	QPSK	Titanium	Sport	JQG4N	1:1	0.04	836.50	20525	0.0	25.50	23.63	1	49	Front	10	0.002	1.538	0.003	
Head	LTE Band 5	10	QPSK	Titanium	Sport	JQG4N	1:1	0.02	836.50	20525	1.0	24.50	22.67	25	25	Front	10	0.000	1.524	0.000	
Head	LTE Band 5	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	-0.03	836.50	20525	0.0	25.50	23.63	1	49	Front	10	0.003	1.538	0.005	A8
Head	LTE Band 5	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	0.01	836.50	20525	1.0	24.50	22.67	25	25	Front	10	0.001	1.524	0.002	
Head	LTE Band 5	10	QPSK	Titanium	Metal Links	JQG4N	1:1	0.01	836.50	20525	0.0	25.50	23.63	1	49	Front	10	0.002	1.538	0.003	
Head	LTE Band 5	10	QPSK	Titanium	Metal Links	JQG4N	1:1	0.07	836.50	20525	1.0	24.50	22.67	25	25	Front	10	0.000	1.524	0.000	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram						

10.9 LTE Band 66 (AWS) Standalone Head SAR

Table 10-9

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 66	20	QPSK	Aluminum	Sport	M0XJ7	1:1	0.04	1745.00	132222	0.0	24.50	23.21	1	0	Front	10	0.148	1.346	0.199	
Head	LTE Band 66	20	QPSK	Aluminum	Sport	M0XJ7	1:1	0.03	1745.00	132322	1.0	23.50	22.55	50	0	Front	10	0.131	1.245	0.163	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Loop	M0XJ7	1:1	-0.03	1745.00	132322	0.0	24.50	23.21	1	0	Front	10	0.214	1.346	0.288	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Loop	M0XJ7	1:1	0.08	1745.00	132322	1.0	23.50	22.55	50	0	Front	10	0.186	1.245	0.232	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Links	M0XJ7	1:1	-0.10	1745.00	132322	0.0	24.50	23.21	1	0	Front	10	0.171	1.346	0.230	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Links	M0XJ7	1:1	0.01	1745.00	132322	1.0	23.50	22.55	50	0	Front	10	0.149	1.245	0.186	
Head	LTE Band 66	20	QPSK	Titanium	Sport	MF95K	1:1	0.20	1745.00	132322	0.0	24.50	23.21	1	0	Front	10	0.153	1.346	0.206	
Head	LTE Band 66	20	QPSK	Titanium	Sport	MF95K	1:1	0.10	1745.00	132322	1.0	23.50	22.55	50	0	Front	10	0.134	1.245	0.167	
Head	LTE Band 66	20	QPSK	Titanium	Metal Loop	MF95K	1:1	-0.04	1745.00	132322	0.0	24.50	23.21	1	0	Front	10	0.217	1.346	0.292	
Head	LTE Band 66	20	QPSK	Titanium	Metal Loop	MF95K	1:1	0.02	1745.00	132322	1.0	23.50	22.55	50	0	Front	10	0.188	1.245	0.234	
Head	LTE Band 66	20	QPSK	Titanium	Metal Links	MF95K	1:1	0.00	1720.00	132072	0.0	24.50	23.14	1	0	Front	10	0.176	1.368	0.241	
Head	LTE Band 66	20	QPSK	Titanium	Metal Links	MF95K	1:1	0.02	1745.00	132322	0.0	24.50	23.21	1	0	Front	10	0.233	1.346	0.314	A9
Head	LTE Band 66	20	QPSK	Titanium	Metal Links	MF95K	1:1	0.01	1770.00	132572	0.0	24.50	22.98	1	0	Front	10	0.210	1.419	0.298	
Head	LTE Band 66	20	QPSK	Titanium	Metal Links	MF95K	1:1	-0.01	1745.00	132322	1.0	23.50	22.55	50	0	Front	10	0.183	1.245	0.228	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Head 1.6 W/kg (mW/g) averaged over 1 gram			

10.10 LTE Band 25 (PCS) Standalone Head SAR

Table 10-10

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 25	20	QPSK	Aluminum	Sport	LKPWQ	1:1	-0.04	1905.00	26590	0.0	24.50	23.44	1	99	Front	10	0.316	1.276	0.403	
Head	LTE Band 25	20	QPSK	Aluminum	Sport	LKPWQ	1:1	0.01	1905.00	26590	1.0	23.50	22.41	50	50	Front	10	0.278	1.285	0.357	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Loop	LKPWQ	1:1	0.01	1860.00	26140	0.0	24.50	23.18	1	99	Front	10	0.286	1.355	0.388	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Loop	LKPWQ	1:1	0.03	1882.50	26365	0.0	24.50	23.22	1	99	Front	10	0.331	1.343	0.445	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Loop	LKPWQ	1:1	0.10	1905.00	26590	0.0	24.50	23.44	1	99	Front	10	0.360	1.276	0.459	A10
Head	LTE Band 25	20	QPSK	Aluminum	Metal Loop	LKPWQ	1:1	0.09	1905.00	26590	1.0	23.50	22.41	50	50	Front	10	0.280	1.285	0.360	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Links	LKPWQ	1:1	0.07	1905.00	26590	0.0	24.50	23.44	1	99	Front	10	0.275	1.276	0.351	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Links	LKPWQ	1:1	-0.02	1905.00	26590	1.0	23.50	22.41	50	50	Front	10	0.240	1.285	0.308	
Head	LTE Band 25	20	QPSK	Titanium	Sport	M5YHT	1:1	0.02	1905.00	26590	0.0	24.50	23.44	1	99	Front	10	0.311	1.276	0.397	
Head	LTE Band 25	20	QPSK	Titanium	Sport	M5YHT	1:1	-0.01	1905.00	26590	1.0	23.50	22.41	50	50	Front	10	0.263	1.285	0.338	
Head	LTE Band 25	20	QPSK	Titanium	Metal Loop	M5YHT	1:1	0.02	1905.00	26590	0.0	24.50	23.44	1	99	Front	10	0.334	1.276	0.426	
Head	LTE Band 25	20	QPSK	Titanium	Metal Loop	M5YHT	1:1	0.01	1905.00	26590	1.0	23.50	22.41	50	50	Front	10	0.290	1.285	0.373	
Head	LTE Band 25	20	QPSK	Titanium	Metal Links	M5YHT	1:1	0.02	1905.00	26590	0.0	24.50	23.44	1	99	Front	10	0.285	1.276	0.364	
Head	LTE Band 25	20	QPSK	Titanium	Metal Links	M5YHT	1:1	0.01	1905.00	26590	1.0	23.50	22.41	50	50	Front	10	0.237	1.285	0.305	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Head 1.6 W/kg (mW/g) averaged over 1 gram			

10.11 LTE Band 7 Standalone Head SAR

Table 10-11

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 7	20	QPSK	Aluminum	Sport	42QMC	1:1	0.03	2560.00	21350	0.0	23.00	22.95	1	99	Front	10	0.593	1.012	0.600	
Head	LTE Band 7	20	QPSK	Aluminum	Sport	42QMC	1:1	0.03	2560.00	21350	1.0	22.00	21.99	50	50	Front	10	0.479	1.002	0.480	
Head	LTE Band 7	20	QPSK	Aluminum	Metal Loop	42QMC	1:1	-0.02	2560.00	21350	0.0	23.00	22.95	1	99	Front	10	0.495	1.012	0.501	
Head	LTE Band 7	20	QPSK	Aluminum	Metal Loop	42QMC	1:1	0.02	2560.00	21350	1.0	22.00	21.99	50	50	Front	10	0.393	1.002	0.394	
Head	LTE Band 7	20	QPSK	Aluminum	Metal Links	42QMC	1:1	-0.02	2560.00	21350	0.0	23.00	22.95	1	99	Front	10	0.494	1.012	0.500	
Head	LTE Band 7	20	QPSK	Aluminum	Metal Links	42QMC	1:1	-0.04	2560.00	21350	1.0	22.00	21.99	50	50	Front	10	0.376	1.002	0.377	
Head	LTE Band 7	20	QPSK	Titanium	Sport	1Q3QL	1:1	0.06	2510.00	20850	0.0	23.00	22.87	1	0	Front	10	1.050	1.030	1.082	A11
Head	LTE Band 7	20	QPSK	Titanium	Sport	1Q3QL	1:1	0.02	2510.00	20850	0.0	23.00	22.87	1	0	Front	10	0.963	1.030	1.023	
Head	LTE Band 7	20	QPSK	Titanium	Sport	1Q3QL	1:1	0.09	2535.00	21100	0.0	23.00	22.83	1	99	Front	10	0.784	1.040	0.815	
Head	LTE Band 7	20	QPSK	Titanium	Sport	1Q3QL	1:1	-0.04	2560.00	21350	0.0	23.00	22.95	1	99	Front	10	0.712	1.012	0.721	
Head	LTE Band 7	20	QPSK	Titanium	Sport	1Q3QL	1:1	-0.05	2560.00	21350	1.0	22.00	21.99	50	50	Front	10	0.568	1.002	0.569	
Head	LTE Band 7	20	QPSK	Titanium	Sport	1Q3QL	1:1	-0.02	2510.00	20850	1.0	22.00	21.98	100	0	Front	10	0.835	1.005	0.839	
Head	LTE Band 7	20	QPSK	Titanium	Metal Loop	1Q3QL	1:1	-0.01	2560.00	21350	0.0	23.00	22.95	1	99	Front	10	0.609	1.012	0.616	
Head	LTE Band 7	20	QPSK	Titanium	Metal Loop	1Q3QL	1:1	0.00	2560.00	21350	1.0	22.00	21.99	50	50	Front	10	0.468	1.002	0.469	
Head	LTE Band 7	20	QPSK	Titanium	Metal Links	1Q3QL	1:1	-0.03	2560.00	21350	0.0	23.00	22.95	1	99	Front	10	0.601	1.012	0.608	
Head	LTE Band 7	20	QPSK	Titanium	Metal Links	1Q3QL	1:1	0.00	2560.00	21350	1.0	22.00	21.99	50	50	Front	10	0.494	1.002	0.495	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Head 1.6 W/kg (mW/g) averaged over 1 gram			

Note: Blue entry represents variability measurement

10.12 LTE Band 41 Standalone Head SAR

Table 10-12

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	LTE Band 41	20	QPSK	Aluminum	Sport	M0XJ7	1:1.58	-0.03	2549.50	40185	0.0	24.00	23.44	1	99	Front	10	0.419	1.138	0.477	
Head	LTE Band 41	20	QPSK	Aluminum	Sport	M0XJ7	1:1.58	0.04	2549.50	40185	1.0	23.00	22.28	50	50	Front	10	0.340	1.180	0.401	
Head	LTE Band 41	20	QPSK	Aluminum	Metal Loop	M0XJ7	1:1.58	0.01	2549.50	40185	0.0	24.00	23.44	1	99	Front	10	0.316	1.138	0.360	
Head	LTE Band 41	20	QPSK	Aluminum	Metal Loop	M0XJ7	1:1.58	0.03	2549.50	40185	1.0	23.00	22.28	50	50	Front	10	0.253	1.180	0.299	
Head	LTE Band 41	20	QPSK	Aluminum	Metal Links	M0XJ7	1:1.58	0.01	2549.50	40185	0.0	24.00	23.44	1	99	Front	10	0.270	1.138	0.307	
Head	LTE Band 41	20	QPSK	Aluminum	Metal Links	M0XJ7	1:1.58	0.00	2549.50	40185	1.0	23.00	22.28	50	50	Front	10	0.226	1.180	0.267	
Head	LTE Band 41	20	QPSK	Titanium	Sport	1Q3QL	1:1.58	0.02	2506.00	39750	0.0	24.00	23.08	1	50	Front	10	0.626	1.236	0.774	A12
Head	LTE Band 41	20	QPSK	Titanium	Sport	1Q3QL	1:1.58	-0.04	2549.50	40185	0.0	24.00	23.44	1	99	Front	10	0.525	1.138	0.597	
Head	LTE Band 41	20	QPSK	Titanium	Sport	1Q3QL	1:1.58	-0.04	2593.00	40620	0.0	24.00	23.31	1	50	Front	10	0.505	1.172	0.592	
Head	LTE Band 41	20	QPSK	Titanium	Sport	1Q3QL	1:1.58	-0.04	2636.50	41055	0.0	24.00	23.15	1	50	Front	10	0.502	1.216	0.610	
Head	LTE Band 41	20	QPSK	Titanium	Sport	1Q3QL	1:1.58	0.10	2680.00	41490	0.0	24.00	22.93	1	50	Front	10	0.476	1.279	0.609	
Head	LTE Band 41	20	QPSK	Titanium	Sport	1Q3QL	1:1.58	-0.03	2549.50	40185	1.0	23.00	22.28	50	50	Front	10	0.427	1.180	0.504	
Head	LTE Band 41	20	QPSK	Titanium	Metal Loop	1Q3QL	1:1.58	0.00	2549.50	40185	0.0	24.00	23.44	1	99	Front	10	0.255	1.138	0.290	
Head	LTE Band 41	20	QPSK	Titanium	Metal Loop	1Q3QL	1:1.58	0.05	2549.50	40185	1.0	23.00	22.28	50	50	Front	10	0.205	1.180	0.242	
Head	LTE Band 41	20	QPSK	Titanium	Metal Links	1Q3QL	1:1.58	-0.06	2549.50	40185	0.0	24.00	23.44	1	99	Front	10	0.337	1.138	0.384	
Head	LTE Band 41	20	QPSK	Titanium	Metal Links	1Q3QL	1:1.58	-0.13	2549.50	40185	1.0	23.00	22.28	50	50	Front	10	0.274	1.180	0.323	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Head 1.6 W/kg (mW/g) averaged over 1 gram			

10.13 2.4 GHz WIFI SISO Standalone Head SAR

Table 10-13

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Sport	H0FTG	99.76	-0.02	2462	11	1	19.00	18.01	Front	10	0.270	1.256	1.002	0.340	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Loop	H0FTG	99.76	0.01	2462	11	1	19.00	18.01	Front	10	0.177	1.256	1.002	0.223	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Links	H0FTG	99.76	0.10	2462	11	1	19.00	18.01	Front	10	0.172	1.256	1.002	0.216	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Sport	P971H	99.76	-0.05	2412	1	1	19.00	17.99	Front	10	0.284	1.262	1.002	0.359	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Sport	P971H	99.76	0.00	2437	6	1	19.00	17.83	Front	10	0.330	1.309	1.002	0.433	A13
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Sport	P971H	99.76	-0.02	2462	11	1	19.00	18.01	Front	10	0.283	1.256	1.002	0.356	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Loop	P971H	99.76	-0.05	2462	11	1	19.00	18.01	Front	10	0.198	1.256	1.002	0.249	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Links	P971H	99.76	-0.13	2462	11	1	19.00	18.01	Front	10	0.186	1.256	1.002	0.234	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Head 1.6 W/kg (mW/g) averaged over 1 gram						

10.14 5 GHz SISO Standalone Head SAR

Table 10-14

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	42QMC	98.57	0.15	5320	64	U-NII-2A	6.5	17.00	16.23	Front	10	0.163	1.194	1.015	0.198	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	42QMC	98.57	-0.07	5320	64	U-NII-2A	6.5	17.00	16.23	Front	10	0.133	1.194	1.015	0.161	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	42QMC	98.57	0.10	5320	64	U-NII-2A	6.5	17.00	16.23	Front	10	0.173	1.194	1.015	0.210	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	P971H	98.57	-0.07	5320	64	U-NII-2A	6.5	17.00	16.23	Front	10	0.149	1.194	1.015	0.181	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	P971H	98.57	-0.08	5320	64	U-NII-2A	6.5	17.00	16.23	Front	10	0.138	1.194	1.015	0.167	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	P971H	98.57	-0.05	5320	64	U-NII-2A	6.5	17.00	16.23	Front	10	0.244	1.194	1.015	0.296	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	42QMC	98.57	0.00	5720	144	U-NII-2C	6.5	17.00	16.02	Front	10	0.227	1.253	1.015	0.289	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	42QMC	98.57	-0.17	5720	144	U-NII-2C	6.5	17.00	16.02	Front	10	0.211	1.253	1.015	0.268	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	42QMC	98.57	-0.08	5500	100	U-NII-2C	6.5	17.00	15.85	Front	10	0.216	1.303	1.015	0.286	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	42QMC	98.57	0.09	5600	120	U-NII-2C	6.5	17.00	15.95	Front	10	0.219	1.274	1.015	0.283	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	42QMC	98.57	-0.18	5620	124	U-NII-2C	6.5	17.00	15.82	Front	10	0.246	1.312	1.015	0.328	A14
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	42QMC	98.57	0.01	5720	144	U-NII-2C	6.5	17.00	16.02	Front	10	0.235	1.253	1.015	0.299	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	P971H	98.57	-0.08	5720	144	U-NII-2C	6.5	17.00	16.02	Front	10	0.119	1.253	1.015	0.151	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	P971H	98.57	-0.06	5720	144	U-NII-2C	6.5	17.00	16.02	Front	10	0.143	1.253	1.015	0.182	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	P971H	98.57	0.01	5720	144	U-NII-2C	6.5	17.00	16.02	Front	10	0.174	1.253	1.015	0.221	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	42QMC	98.57	-0.19	5825	165	U-NII-3	6.5	17.00	16.11	Front	10	0.219	1.227	1.015	0.273	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	42QMC	98.57	-0.05	5825	165	U-NII-3	6.5	17.00	16.11	Front	10	0.238	1.227	1.015	0.296	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	42QMC	98.57	-0.11	5825	165	U-NII-3	6.5	17.00	16.11	Front	10	0.229	1.227	1.015	0.285	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	P971H	98.57	0.07	5825	165	U-NII-3	6.5	17.00	16.11	Front	10	0.168	1.227	1.015	0.209	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	P971H	98.57	0.06	5825	165	U-NII-3	6.5	17.00	16.11	Front	10	0.168	1.227	1.015	0.209	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	P971H	98.57	-0.01	5825	165	U-NII-3	6.5	17.00	16.11	Front	10	0.175	1.227	1.015	0.218	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Head 1.6 W/kg (mW/g) averaged over 1 gram						

10.15 2.4 GHz Bluetooth SISO Standalone Head SAR

Table 10-15

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	JGF76	100.00	0.01	2402	0	1	17.50	17.10	Front	10	0.185	1.096	1.000	0.203	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	JGF76	100.00	0.00	2441	39	1	17.50	16.95	Front	10	0.184	1.135	1.000	0.209	A15
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	JGF76	100.00	-0.02	2480	78	1	17.50	16.91	Front	10	0.153	1.146	1.000	0.175	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Loop	JGF76	100.00	0.02	2402	0	1	17.50	17.10	Front	10	0.120	1.096	1.000	0.132	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Links	JGF76	100.00	-0.04	2402	0	1	17.50	17.10	Front	10	0.140	1.096	1.000	0.153	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Sport	P917H	100.00	-0.02	2402	0	1	17.50	17.10	Front	10	0.144	1.096	1.000	0.158	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Metal Loop	P917H	100.00	0.03	2402	0	1	17.50	17.10	Front	10	0.110	1.096	1.000	0.121	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Metal Links	P917H	100.00	0.02	2402	0	1	17.50	17.10	Front	10	0.116	1.096	1.000	0.127	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	JGF76	100.00	-0.03	2402	0	1	13.00	12.48	Front	10	0.088	1.127	1.000	0.099	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	JGF76	100.00	0.04	2441	39	1	13.00	12.35	Front	10	0.084	1.161	1.000	0.098	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	JGF76	100.00	0.00	2480	78	1	13.00	12.21	Front	10	0.073	1.199	1.000	0.088	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Loop	JGF76	100.00	-0.02	2402	0	1	13.00	12.48	Front	10	0.053	1.127	1.000	0.060	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Links	JGF76	100.00	0.04	2402	0	1	13.00	12.48	Front	10	0.058	1.127	1.000	0.065	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Sport	P917H	100.00	-0.03	2402	0	1	13.00	12.48	Front	10	0.080	1.127	1.000	0.090	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Metal Loop	P917H	100.00	0.03	2402	0	1	13.00	12.48	Front	10	0.045	1.127	1.000	0.051	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Metal Links	P917H	100.00	-0.07	2402	0	1	13.00	12.48	Front	10	0.043	1.127	1.000	0.048	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Head 1.6 W/kg (mW/g) averaged over 1 gram					

10.16 5 GHz 802.15.4 ab-NB SISO Standalone Head SAR

Table 10-16

Exposure	Band / Mode	Housing Type	Wristband Type	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 1g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 1g SAR [W/kg]	Plot #
Head	802.15.4 ab-NB	Aluminum	Sport	YW77G	8.70	-0.02	5846.25	High	1	16.00	14.98	Front	10	0.016	1.265	1.023	0.021	
Head	802.15.4 ab-NB	Aluminum	Sport	YW77G	8.70	0.06	5728.75	Low	1	16.00	15.16	Front	10	0.021	1.213	1.023	0.026	A16
Head	802.15.4 ab-NB	Aluminum	Sport	YW77G	8.70	0.13	5786.25	Mid	1	16.00	15.06	Front	10	0.019	1.242	1.023	0.024	
Head	802.15.4 ab-NB	Aluminum	Metal Loops	YW77G	8.70	-0.15	5728.75	Low	1	16.00	15.16	Front	10	0.016	1.213	1.023	0.020	
Head	802.15.4 ab-NB	Aluminum	Metal Links	YW77G	8.70	0.03	5728.75	Low	1	16.00	15.16	Front	10	0.014	1.213	1.023	0.017	
Head	802.15.4 ab-NB	Titanium	Sport	Y2QQ4	8.70	0.06	5728.75	Low	1	16.00	15.16	Front	10	0.010	1.213	1.023	0.012	
Head	802.15.4 ab-NB	Titanium	Metal Loops	Y2QQ4	8.70	0.02	5728.75	Low	1	16.00	15.16	Front	10	0.008	1.213	1.023	0.010	
Head	802.15.4 ab-NB	Titanium	Metal Links	Y2QQ4	8.70	0.01	5728.75	Low	1	16.00	15.16	Front	10	0.011	1.213	1.023	0.014	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Head 1.6 W/kg (mW/g) averaged over 1 gram						

Note: The reported SAR was scaled to the 8.90% transmission duty factor.

10.17 UMTS 850 Standalone Extremity SAR

Table 10-17

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	UMTS 850	RMC	Aluminum	Sport	9TQVJ	1:1	-0.04	826.40	4132	25.00	23.20	Back	0	0.062	1.514	0.094	
Extremity	UMTS 850	RMC	Aluminum	Metal Loop	9TQVJ	1:1	-0.01	826.40	4132	25.00	23.20	Back	0	0.098	1.514	0.148	
Extremity	UMTS 850	RMC	Aluminum	Metal Links	9TQVJ	1:1	-0.03	826.40	4132	25.00	23.20	Back	0	0.149	1.514	0.226	
Extremity	UMTS 850	RMC	Titanium	Sport	P971H	1:1	0.07	826.40	4132	25.00	23.20	Back	0	0.058	1.514	0.088	
Extremity	UMTS 850	RMC	Titanium	Metal Loop	P971H	1:1	0.11	826.40	4132	25.00	23.20	Back	0	0.113	1.514	0.171	
Extremity	UMTS 850	RMC	Titanium	Metal Links	P971H	1:1	0.06	826.40	4132	25.00	23.20	Back	0	0.154	1.514	0.233	A17
Extremity	UMTS 850	RMC	Titanium	Metal Links	P971H	1:1	-0.10	836.60	4183	25.00	23.06	Back	0	0.127	1.563	0.199	
Extremity	UMTS 850	RMC	Titanium	Metal Links	P971H	1:1	0.00	846.60	4233	25.00	23.10	Back	0	0.140	1.549	0.217	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Extremity 4.0 W/kg (mW/g) averaged over 10 grams					

10.18 UMTS 1750 Standalone Extremity SAR

Table 10-18

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	UMTS 1750	RMC	Aluminum	Sport	HCFFK	1:1	-0.19	1732.40	1412	24.00	22.95	Back	0	0.050	1.274	0.064	
Extremity	UMTS 1750	RMC	Aluminum	Metal Loop	HCFFK	1:1	0.04	1732.40	1412	24.00	22.95	Back	0	0.022	1.274	0.028	
Extremity	UMTS 1750	RMC	Aluminum	Metal Links	HCFFK	1:1	0.06	1712.40	1312	24.00	22.92	Back	0	0.079	1.283	0.101	
Extremity	UMTS 1750	RMC	Aluminum	Metal Links	HCFFK	1:1	0.05	1732.40	1412	24.00	22.95	Back	0	0.099	1.274	0.126	A18
Extremity	UMTS 1750	RMC	Aluminum	Metal Links	HCFFK	1:1	-0.07	1752.60	1513	24.00	22.82	Back	0	0.087	1.313	0.114	
Extremity	UMTS 1750	RMC	Titanium	Sport	167KN	1:1	-0.01	1732.40	1412	24.00	22.95	Back	0	0.041	1.274	0.052	
Extremity	UMTS 1750	RMC	Titanium	Metal Loop	167KN	1:1	0.09	1732.40	1412	24.00	22.95	Back	0	0.022	1.274	0.028	
Extremity	UMTS 1750	RMC	Titanium	Metal Links	167KN	1:1	0.11	1732.40	1412	24.00	22.95	Back	0	0.090	1.274	0.115	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Extremity 4.0 W/kg (mW/g) averaged over 10 grams					

10.19 UMTS 1900 Standalone Extremity SAR

Table 10-19

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	UMTS 1900	RMC	Aluminum	Sport	HF6NX	1:1	-0.08	1852.40	9262	24.00	22.86	Back	0	0.068	1.299	0.088	A19
Extremity	UMTS 1900	RMC	Aluminum	Sport	HF6NX	1:1	0.01	1880.00	9400	24.00	22.87	Back	0	0.058	1.296	0.075	
Extremity	UMTS 1900	RMC	Aluminum	Sport	HF6NX	1:1	0.02	1907.60	9538	24.00	22.76	Back	0	0.053	1.330	0.070	
Extremity	UMTS 1900	RMC	Aluminum	Metal Loop	HF6NX	1:1	0.15	1880.00	9400	24.00	22.87	Back	0	0.051	1.296	0.066	
Extremity	UMTS 1900	RMC	Aluminum	Metal Links	HF6NX	1:1	-0.06	1880.00	9400	24.00	22.87	Back	0	0.053	1.296	0.069	
Extremity	UMTS 1900	RMC	Titanium	Sport	M5YHT	1:1	-0.16	1880.00	9400	24.00	22.87	Back	0	0.034	1.296	0.044	
Extremity	UMTS 1900	RMC	Titanium	Metal Loop	M5YHT	1:1	-0.12	1880.00	9400	24.00	22.87	Back	0	0.044	1.296	0.057	
Extremity	UMTS 1900	RMC	Titanium	Metal Links	M5YHT	1:1	-0.18	1880.00	9400	24.00	22.87	Back	0	0.045	1.296	0.058	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Extremity 4.0 W/kg (mW/g) averaged over 10 grams					

10.20 LTE Band 12 Standalone Extremity SAR

Table 10-20

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 12	10	QPSK	Aluminum	Sport	YW77G	1:1	0.02	707.50	23095	0.0	25.50	24.06	1	0	Back	0	0.055	1.393	0.077	
Extremity	LTE Band 12	10	QPSK	Aluminum	Sport	YW77G	1:1	0.06	707.50	23095	1.0	24.50	23.14	25	25	Back	0	0.043	1.368	0.059	
Extremity	LTE Band 12	10	QPSK	Aluminum	Metal Loop	YW77G	1:1	0.02	707.50	23095	0.0	25.50	24.06	1	0	Back	0	0.085	1.393	0.118	
Extremity	LTE Band 12	10	QPSK	Aluminum	Metal Loop	YW77G	1:1	-0.05	707.50	23095	1.0	24.50	23.14	25	25	Back	0	0.069	1.368	0.094	
Extremity	LTE Band 12	10	QPSK	Aluminum	Metal Links	YW77G	1:1	-0.03	707.50	23095	0.0	25.50	24.06	1	0	Back	0	0.132	1.393	0.184	
Extremity	LTE Band 12	10	QPSK	Aluminum	Metal Links	YW77G	1:1	0.00	707.50	23095	1.0	24.50	23.14	25	25	Back	0	0.107	1.368	0.146	
Extremity	LTE Band 12	10	QPSK	Titanium	Sport	P971H	1:1	-0.01	707.50	23095	0.0	25.50	24.06	1	0	Back	0	0.055	1.393	0.077	
Extremity	LTE Band 12	10	QPSK	Titanium	Sport	P971H	1:1	-0.07	707.50	23095	1.0	24.50	23.14	25	25	Back	0	0.045	1.368	0.062	
Extremity	LTE Band 12	10	QPSK	Titanium	Metal Loop	P971H	1:1	-0.06	707.50	23095	0.0	25.50	24.06	1	0	Back	0	0.079	1.393	0.110	
Extremity	LTE Band 12	10	QPSK	Titanium	Metal Loop	P971H	1:1	0.03	707.50	23095	1.0	24.50	23.14	25	25	Back	0	0.067	1.368	0.092	
Extremity	LTE Band 12	10	QPSK	Titanium	Metal Links	P971H	1:1	-0.02	707.50	23095	0.0	25.50	24.06	1	0	Back	0	0.170	1.393	0.237	A20
Extremity	LTE Band 12	10	QPSK	Titanium	Metal Links	P971H	1:1	-0.14	707.50	23095	1.0	24.50	23.14	25	25	Back	0	0.111	1.368	0.152	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Extremity 4.0 W/kg (mW/g) averaged over 10 grams					

10.21 LTE Band 13 Standalone Extremity SAR

Table 10-21

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 13	10	QPSK	Aluminum	Sport	YW77G	1:1	-0.13	782.00	23230	0.0	25.50	23.68	1	49	Back	0	0.068	1.521	0.103	
Extremity	LTE Band 13	10	QPSK	Aluminum	Sport	YW77G	1:1	0.04	782.00	23230	1.0	24.50	22.75	25	0	Back	0	0.060	1.496	0.090	
Extremity	LTE Band 13	10	QPSK	Aluminum	Metal Loop	YW77G	1:1	0.12	782.00	23230	0.0	25.50	23.68	1	49	Back	0	0.154	1.521	0.234	
Extremity	LTE Band 13	10	QPSK	Aluminum	Metal Loop	YW77G	1:1	0.00	782.00	23230	1.0	24.50	22.75	25	0	Back	0	0.139	1.496	0.208	
Extremity	LTE Band 13	10	QPSK	Aluminum	Metal Links	YW77G	1:1	0.02	782.00	23230	0.0	25.50	23.68	1	49	Back	0	0.176	1.521	0.268	
Extremity	LTE Band 13	10	QPSK	Aluminum	Metal Links	YW77G	1:1	-0.04	782.00	23230	1.0	24.50	22.75	25	0	Back	0	0.155	1.496	0.232	
Extremity	LTE Band 13	10	QPSK	Titanium	Sport	TFKWG	1:1	-0.04	782.00	23230	0.0	25.50	23.68	1	49	Back	0	0.066	1.521	0.100	
Extremity	LTE Band 13	10	QPSK	Titanium	Sport	TFKWG	1:1	0.02	782.00	23230	1.0	24.50	22.75	25	0	Back	0	0.055	1.496	0.082	
Extremity	LTE Band 13	10	QPSK	Titanium	Metal Loop	TFKWG	1:1	-0.02	782.00	23230	0.0	25.50	23.68	1	49	Back	0	0.085	1.521	0.129	
Extremity	LTE Band 13	10	QPSK	Titanium	Metal Loop	TFKWG	1:1	0.12	782.00	23230	1.0	24.50	22.75	25	0	Back	0	0.070	1.496	0.105	
Extremity	LTE Band 13	10	QPSK	Titanium	Metal Links	TFKWG	1:1	0.08	782.00	23230	0.0	25.50	23.68	1	49	Back	0	0.190	1.521	0.289	A21
Extremity	LTE Band 13	10	QPSK	Titanium	Metal Links	TFKWG	1:1	-0.14	782.00	23230	1.0	24.50	22.75	25	0	Back	0	0.158	1.496	0.236	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.22 LTE Band 14 Standalone Extremity SAR

Table 10-22

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 14	10	QPSK	Aluminum	Sports	YW77G	1:1	-0.04	793.00	23330	0.0	25.50	23.66	1	25	Back	0	0.056	1.528	0.086	
Extremity	LTE Band 14	10	QPSK	Aluminum	Sports	YW77G	1:1	0.01	793.00	23330	1.0	24.50	22.67	25	25	Back	0	0.047	1.524	0.072	
Extremity	LTE Band 14	10	QPSK	Aluminum	Metal Loop	YW77G	1:1	-0.03	793.00	23330	0.0	25.50	23.66	1	25	Back	0	0.125	1.528	0.191	
Extremity	LTE Band 14	10	QPSK	Aluminum	Metal Loop	YW77G	1:1	0.02	793.00	23330	1.0	24.50	22.67	25	25	Back	0	0.072	1.524	0.110	
Extremity	LTE Band 14	10	QPSK	Aluminum	Metal Links	YW77G	1:1	0.01	793.00	23330	0.0	25.50	23.66	1	25	Back	0	0.153	1.528	0.234	A22
Extremity	LTE Band 14	10	QPSK	Aluminum	Metal Links	YW77G	1:1	0.01	793.00	23330	1.0	24.50	22.67	25	25	Back	0	0.113	1.524	0.172	
Extremity	LTE Band 14	10	QPSK	Titanium	Sports	6HQXG	1:1	0.02	793.00	23330	0.0	25.50	23.66	1	25	Back	0	0.057	1.528	0.087	
Extremity	LTE Band 14	10	QPSK	Titanium	Sports	6HQXG	1:1	-0.01	793.00	23330	1.0	24.50	22.67	25	25	Back	0	0.044	1.524	0.067	
Extremity	LTE Band 14	10	QPSK	Titanium	Metal Loop	6HQXG	1:1	-0.21	793.00	23330	0.0	25.50	23.66	1	25	Back	0	0.083	1.528	0.127	
Extremity	LTE Band 14	10	QPSK	Titanium	Metal Loop	6HQXG	1:1	0.03	793.00	23330	1.0	24.50	22.67	25	25	Back	0	0.068	1.524	0.104	
Extremity	LTE Band 14	10	QPSK	Titanium	Metal Links	6HQXG	1:1	-0.12	793.00	23330	0.0	25.50	23.66	1	25	Back	0	0.151	1.528	0.231	
Extremity	LTE Band 14	10	QPSK	Titanium	Metal Links	6HQXG	1:1	-0.07	793.00	23330	1.0	24.50	22.67	25	25	Back	0	0.117	1.524	0.178	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.23 LTE Band 26 (Cell) Standalone Extremity SAR

Table 10-23

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 26	10	QPSK	Aluminum	Sport	JJN0V	1:1	0.02	844.00	26990	0.0	25.50	24.87	1	0	Back	0	0.083	1.156	0.096	
Extremity	LTE Band 26	10	QPSK	Aluminum	Sport	JJN0V	1:1	0.01	844.00	26990	1.0	24.50	23.97	25	0	Back	0	0.073	1.130	0.082	
Extremity	LTE Band 26	10	QPSK	Aluminum	Metal Loop	JJN0V	1:1	-0.09	844.00	26990	0.0	25.50	24.87	1	0	Back	0	0.112	1.156	0.129	
Extremity	LTE Band 26	10	QPSK	Aluminum	Metal Loop	JJN0V	1:1	-0.05	844.00	26990	1.0	24.50	23.97	25	0	Back	0	0.101	1.130	0.114	
Extremity	LTE Band 26	10	QPSK	Aluminum	Metal Links	JJN0V	1:1	-0.04	844.00	26990	0.0	25.50	24.87	1	0	Back	0	0.179	1.156	0.207	
Extremity	LTE Band 26	10	QPSK	Aluminum	Metal Links	JJN0V	1:1	-0.02	844.00	26990	1.0	24.50	23.97	25	0	Back	0	0.146	1.130	0.165	
Extremity	LTE Band 26	10	QPSK	Titanium	Sport	JQG4N	1:1	-0.13	844.00	26990	0.0	25.50	24.87	1	0	Back	0	0.100	1.156	0.116	
Extremity	LTE Band 26	10	QPSK	Titanium	Sport	JQG4N	1:1	-0.10	844.00	26990	1.0	24.50	23.97	25	0	Back	0	0.086	1.130	0.097	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	-0.06	844.00	26990	0.0	25.50	24.87	1	0	Back	0	0.157	1.156	0.181	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Loop	JQG4N	1:1	-0.06	844.00	26990	1.0	24.50	23.97	25	0	Back	0	0.140	1.130	0.158	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Links	JQG4N	1:1	-0.01	819.00	26740	0.0	25.50	24.85	1	49	Back	0	0.172	1.161	0.200	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Links	JQG4N	1:1	0.02	831.50	26865	0.0	25.50	24.81	1	0	Back	0	0.181	1.172	0.212	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Links	JQG4N	1:1	0.00	844.00	26990	0.0	25.50	24.87	1	0	Back	0	0.184	1.156	0.213	A23
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Links	JQG4N	1:1	-0.02	844.00	26990	1.0	24.50	23.97	25	0	Back	0	0.168	1.130	0.190	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.24 LTE Band 5 (Cell) Standalone Extremity SAR

Table 10-24

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 5	10	QPSK	Aluminum	Sport	YW77G	1:1	-0.04	836.50	20525	0.0	25.50	23.63	1	49	Back	0	0.069	1.538	0.106	
Extremity	LTE Band 5	10	QPSK	Aluminum	Sport	YW77G	1:1	0.01	836.50	20525	1.0	24.50	22.67	25	25	Back	0	0.054	1.524	0.082	
Extremity	LTE Band 5	10	QPSK	Aluminum	Metal Loop	YW77G	1:1	0.06	836.50	20525	0.0	25.50	23.63	1	49	Back	0	0.157	1.538	0.241	
Extremity	LTE Band 5	10	QPSK	Aluminum	Metal Loop	YW77G	1:1	-0.07	836.50	20525	1.0	24.50	22.67	25	25	Back	0	0.085	1.524	0.130	
Extremity	LTE Band 5	10	QPSK	Aluminum	Metal Links	YW77G	1:1	-0.07	836.50	20525	0.0	25.50	23.63	1	49	Back	0	0.144	1.538	0.221	
Extremity	LTE Band 5	10	QPSK	Aluminum	Metal Links	YW77G	1:1	-0.13	836.50	20525	1.0	24.50	22.67	25	25	Back	0	0.113	1.524	0.172	
Extremity	LTE Band 5	10	QPSK	Titanium	Sport	P971H	1:1	-0.05	836.50	20525	0.0	25.50	23.63	1	49	Back	0	0.065	1.538	0.100	
Extremity	LTE Band 5	10	QPSK	Titanium	Sport	P971H	1:1	0.01	836.50	20525	1.0	24.50	22.67	25	25	Back	0	0.053	1.524	0.081	
Extremity	LTE Band 5	10	QPSK	Titanium	Metal Loop	P971H	1:1	-0.19	836.50	20525	0.0	25.50	23.63	1	49	Back	0	0.127	1.538	0.195	
Extremity	LTE Band 5	10	QPSK	Titanium	Metal Loop	P971H	1:1	0.01	836.50	20525	1.0	24.50	22.67	25	25	Back	0	0.059	1.524	0.090	
Extremity	LTE Band 5	10	QPSK	Titanium	Metal Links	P971H	1:1	0.03	836.50	20525	0.0	25.50	23.63	1	49	Back	0	0.160	1.538	0.246	A24
Extremity	LTE Band 5	10	QPSK	Titanium	Metal Links	P971H	1:1	-0.01	836.50	20525	1.0	24.50	22.67	25	25	Back	0	0.136	1.524	0.207	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.25 LTE Band 66 (AWS) Standalone Extremity SAR

Table 10-25

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 66	20	QPSK	Aluminum	Sport	M0KJ7	1:1	0.03	1745.00	132322	0.0	24.50	23.21	1	0	Back	0	0.045	1.346	0.061	
Extremity	LTE Band 66	20	QPSK	Aluminum	Sport	M0KJ7	1:1	0.10	1745.00	132322	1.0	23.50	22.55	50	0	Back	0	0.035	1.245	0.044	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Loop	M0KJ7	1:1	-0.03	1745.00	132322	0.0	24.50	23.21	1	0	Back	0	0.063	1.346	0.085	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Loop	M0KJ7	1:1	0.03	1745.00	132322	1.0	23.50	22.55	50	0	Back	0	0.052	1.245	0.065	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Links	M0KJ7	1:1	0.19	1720.00	132072	0.0	24.50	23.14	1	0	Back	0	0.067	1.368	0.092	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Links	M0KJ7	1:1	0.07	1745.00	132322	0.0	24.50	23.21	1	0	Back	0	0.079	1.346	0.106	A25
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Links	M0KJ7	1:1	0.01	1770.00	132572	0.0	24.50	22.98	1	0	Back	0	0.077	1.419	0.109	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Links	M0KJ7	1:1	0.00	1745.00	132322	1.0	23.50	22.55	50	0	Back	0	0.062	1.245	0.077	
Extremity	LTE Band 66	20	QPSK	Titanium	Sport	M5YHT	1:1	0.02	1745.00	132322	0.0	24.50	23.21	1	0	Back	0	0.038	1.346	0.051	
Extremity	LTE Band 66	20	QPSK	Titanium	Sport	M5YHT	1:1	-0.03	1745.00	132322	1.0	23.50	22.55	50	0	Back	0	0.033	1.245	0.041	
Extremity	LTE Band 66	20	QPSK	Titanium	Metal Loop	M5YHT	1:1	-0.02	1745.00	132322	0.0	24.50	23.21	1	0	Back	0	0.060	1.346	0.081	
Extremity	LTE Band 66	20	QPSK	Titanium	Metal Loop	M5YHT	1:1	0.06	1745.00	132322	1.0	23.50	22.55	50	0	Back	0	0.050	1.245	0.062	
Extremity	LTE Band 66	20	QPSK	Titanium	Metal Links	M5YHT	1:1	-0.14	1745.00	132322	0.0	24.50	23.21	1	0	Back	0	0.076	1.346	0.102	
Extremity	LTE Band 66	20	QPSK	Titanium	Metal Links	M5YHT	1:1	0.02	1745.00	132322	1.0	23.50	22.55	50	0	Back	0	0.066	1.245	0.082	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.26 LTE Band 25 (PCS) Standalone Extremity SAR

Table 10-26

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 25	20	QPSK	Aluminum	Sport	TFD4Y	1:1	-0.03	1905.00	26590	0.0	24.50	23.44	1	99	Back	0	0.030	1.276	0.038	
Extremity	LTE Band 25	20	QPSK	Aluminum	Sport	TFD4Y	1:1	-0.11	1905.00	26590	1.0	23.50	22.41	50	50	Back	0	0.024	1.285	0.031	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Loop	TFD4Y	1:1	-0.14	1905.00	26590	0.0	24.50	23.44	1	99	Back	0	0.015	1.276	0.019	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Loop	TFD4Y	1:1	-0.09	1905.00	26590	1.0	23.50	22.41	50	50	Back	0	0.011	1.285	0.014	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Links	TFD4Y	1:1	0.09	1905.00	26590	0.0	24.50	23.44	1	99	Back	0	0.056	1.276	0.071	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Links	TFD4Y	1:1	-0.06	1905.00	26590	1.0	23.50	22.41	50	50	Back	0	0.051	1.285	0.066	
Extremity	LTE Band 25	20	QPSK	Titanium	Sport	DQY2F	1:1	0.04	1905.00	26590	0.0	24.50	23.44	1	99	Back	0	0.022	1.276	0.028	
Extremity	LTE Band 25	20	QPSK	Titanium	Sport	DQY2F	1:1	0.03	1905.00	26590	1.0	23.50	22.41	50	50	Back	0	0.019	1.285	0.024	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Loop	DQY2F	1:1	-0.17	1905.00	26590	0.0	24.50	23.44	1	99	Back	0	0.021	1.276	0.027	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Loop	DQY2F	1:1	-0.01	1905.00	26590	1.0	23.50	22.41	50	50	Back	0	0.017	1.285	0.022	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Links	DQY2F	1:1	-0.02	1860.00	26140	0.0	24.50	23.18	1	99	Back	0	0.058	1.355	0.079	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Links	DQY2F	1:1	-0.03	1882.50	26365	0.0	24.50	23.22	1	99	Back	0	0.056	1.343	0.075	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Links	DQY2F	1:1	0.02	1905.00	26590	0.0	24.50	23.44	1	99	Back	0	0.058	1.276	0.074	A26
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Links	DQY2F	1:1	-0.15	1905.00	26590	1.0	23.50	22.41	50	50	Back	0	0.049	1.285	0.063	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.27 LTE Band 7 Standalone Extremity SAR

Table 10-27

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 7	20	QPSK	Aluminum	Sport	MY73D	1:1	-0.08	2535.00	21100	0.0	24.00	23.31	1	0	Back	0	0.180	1.172	0.211	
Extremity	LTE Band 7	20	QPSK	Aluminum	Sport	MY73D	1:1	-0.02	2535.00	21100	1.0	23.00	22.29	50	0	Back	0	0.141	1.178	0.166	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Loop	MY73D	1:1	0.18	2510.00	20850	0.0	24.00	23.16	1	99	Back	0	0.487	1.213	0.591	A27
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Loop	MY73D	1:1	-0.16	2535.00	21100	0.0	24.00	23.31	1	0	Back	0	0.487	1.172	0.571	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Loop	MY73D	1:1	-0.10	2560.00	21350	0.0	24.00	23.29	1	99	Back	0	0.435	1.178	0.512	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Loop	MY73D	1:1	0.01	2535.00	21100	1.0	23.00	22.29	50	0	Back	0	0.366	1.178	0.431	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Links	MY73D	1:1	0.00	2535.00	21100	0.0	24.00	23.31	1	0	Back	0	0.416	1.172	0.488	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Links	MY73D	1:1	-0.09	2535.00	21100	1.0	23.00	22.29	50	0	Back	0	0.314	1.178	0.370	
Extremity	LTE Band 7	20	QPSK	Titanium	Sport	M7TRQ	1:1	-0.02	2535.00	21100	0.0	24.00	23.31	1	0	Back	0	0.186	1.172	0.218	
Extremity	LTE Band 7	20	QPSK	Titanium	Sport	M7TRQ	1:1	-0.02	2535.00	21100	1.0	23.00	22.29	50	0	Back	0	0.150	1.178	0.177	
Extremity	LTE Band 7	20	QPSK	Titanium	Metal Loop	M7TRQ	1:1	0.00	2535.00	21100	0.0	24.00	23.31	1	0	Back	0	0.311	1.172	0.364	
Extremity	LTE Band 7	20	QPSK	Titanium	Metal Loop	M7TRQ	1:1	-0.07	2535.00	21100	1.0	23.00	22.29	50	0	Back	0	0.250	1.178	0.295	
Extremity	LTE Band 7	20	QPSK	Titanium	Metal Links	M7TRQ	1:1	-0.21	2535.00	21100	0.0	24.00	23.31	1	0	Back	0	0.444	1.172	0.520	
Extremity	LTE Band 7	20	QPSK	Titanium	Metal Links	M7TRQ	1:1	-0.08	2535.00	21100	1.0	23.00	22.29	50	0	Back	0	0.340	1.178	0.401	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.28 LTE Band 41 Standalone Extremity SAR

Table 10-28

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	MPR [dB]	Max Allowed Power [dBm]	Conducted Power [dBm]	RB Size	RB Offset	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	LTE Band 41	20	QPSK	Aluminum	Sport	HCFFK	1:1.58	0.13	2549.50	40185	0.0	24.00	23.44	1	99	Back	0	0.174	1.138	0.198	
Extremity	LTE Band 41	20	QPSK	Aluminum	Sport	HCFFK	1:1.58	0.01	2549.50	40185	1.0	23.00	22.28	50	50	Back	0	0.138	1.180	0.163	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Loop	HCFFK	1:1.58	0.00	2506.00	39750	0.0	24.00	23.08	1	50	Back	0	0.257	1.236	0.318	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Loop	HCFFK	1:1.58	0.02	2549.50	40185	0.0	24.00	23.44	1	99	Back	0	0.238	1.138	0.271	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Loop	HCFFK	1:1.58	-0.06	2593.00	40620	0.0	24.00	23.31	1	50	Back	0	0.278	1.172	0.326	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Loop	HCFFK	1:1.58	-0.07	2636.50	41055	0.0	24.00	23.15	1	50	Back	0	0.354	1.216	0.430	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Loop	HCFFK	1:1.58	-0.19	2680.00	41490	0.0	24.00	22.93	1	50	Back	0	0.404	1.279	0.517	A28
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Loop	HCFFK	1:1.58	0.02	2549.50	40185	1.0	23.00	22.28	50	50	Back	0	0.187	1.180	0.221	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Links	HCFFK	1:1.58	0.02	2549.50	40185	0.0	24.00	23.44	1	99	Back	0	0.138	1.138	0.157	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Links	HCFFK	1:1.58	0.04	2549.50	40185	1.0	23.00	22.28	50	50	Back	0	0.112	1.180	0.132	
Extremity	LTE Band 41	20	QPSK	Titanium	Sport	W50X1	1:1.58	0.02	2549.50	40185	0.0	24.00	23.44	1	99	Back	0	0.107	1.138	0.122	
Extremity	LTE Band 41	20	QPSK	Titanium	Sport	W50X1	1:1.58	0.03	2549.50	40185	1.0	23.00	22.28	50	50	Back	0	0.081	1.180	0.096	
Extremity	LTE Band 41	20	QPSK	Titanium	Metal Loop	W50X1	1:1.58	0.02	2549.50	40185	0.0	24.00	23.44	1	99	Back	0	0.152	1.138	0.173	
Extremity	LTE Band 41	20	QPSK	Titanium	Metal Loop	W50X1	1:1.58	0.04	2549.50	40185	1.0	23.00	22.28	50	50	Back	0	0.117	1.180	0.138	
Extremity	LTE Band 41	20	QPSK	Titanium	Metal Links	W50X1	1:1.58	0.01	2549.50	40185	0.0	24.00	23.44	1	99	Back	0	0.213	1.138	0.242	
Extremity	LTE Band 41	20	QPSK	Titanium	Metal Links	W50X1	1:1.58	0.01	2549.50	40185	1.0	23.00	22.28	50	50	Back	0	0.174	1.180	0.205	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.29 2.4 GHz WIFI SISO Standalone Extremity SAR

Table 10-29

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Sport	H0FTG	99.76	0.01	2462	11	1	19.00	18.01	Back	0	0.037	1.256	1.002	0.047	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Loop	H0FTG	99.76	-0.07	2462	11	1	19.00	18.01	Back	0	0.045	1.256	1.002	0.057	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Links	H0FTG	99.76	-0.16	2462	11	1	19.00	18.01	Back	0	0.055	1.256	1.002	0.069	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Sport	9DCQ2	99.76	-0.01	2462	11	1	19.00	18.01	Back	0	0.043	1.256	1.002	0.054	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Loop	9DCQ2	99.76	-0.09	2412	1	1	19.00	17.99	Back	0	0.049	1.262	1.002	0.062	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Loop	9DCQ2	99.76	0.01	2437	6	1	19.00	17.83	Back	0	0.063	1.309	1.002	0.083	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Loop	9DCQ2	99.76	-0.04	2462	11	1	19.00	18.01	Back	0	0.065	1.256	1.002	0.082	A29
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Links	9DCQ2	99.76	-0.20	2462	11	1	19.00	18.01	Back	0	0.061	1.256	1.002	0.077	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

10.30 5 GHz WIFI SISO Standalone Extremity SAR

Table 10-30

Exposure	Band / Mode	Bandwidth [MHz]	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	U-NII band	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	TFD4Y	98.57	0.04	5320	64	U-NII-2A	6.5	17.00	16.23	Back	0	0.012	1.194	1.015	0.015	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	TFD4Y	98.57	0.17	5320	64	U-NII-2A	6.5	17.00	16.23	Back	0	0.010	1.194	1.015	0.012	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	TFD4Y	98.57	0.09	5320	64	U-NII-2A	6.5	17.00	16.23	Back	0	0.013	1.194	1.015	0.016	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	Y2QQ4	98.57	0.08	5320	64	U-NII-2A	6.5	17.00	16.23	Back	0	0.011	1.194	1.015	0.013	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	Y2QQ4	98.57	0.09	5320	64	U-NII-2A	6.5	17.00	16.23	Back	0	0.013	1.194	1.015	0.016	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	Y2QQ4	98.57	0.01	5320	64	U-NII-2A	6.5	17.00	16.23	Back	0	0.012	1.194	1.015	0.015	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	TFD4Y	98.57	0.05	5720	144	U-NII-2C	6.5	17.00	16.02	Back	0	0.040	1.253	1.015	0.051	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	TFD4Y	98.57	-0.11	5500	100	U-NII-2C	6.5	17.00	15.85	Back	0	0.033	1.303	1.015	0.044	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	TFD4Y	98.57	0.04	5600	120	U-NII-2C	6.5	17.00	15.95	Back	0	0.061	1.274	1.015	0.079	A30
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	TFD4Y	98.57	-0.18	5620	124	U-NII-2C	6.5	17.00	15.82	Back	0	0.050	1.312	1.015	0.067	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	TFD4Y	98.57	0.01	5720	144	U-NII-2C	6.5	17.00	16.02	Back	0	0.045	1.253	1.015	0.057	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	TFD4Y	98.57	0.09	5720	144	U-NII-2C	6.5	17.00	16.02	Back	0	0.031	1.253	1.015	0.039	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	Y2QQ4	98.57	0.07	5720	144	U-NII-2C	6.5	17.00	16.02	Back	0	0.024	1.253	1.015	0.031	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	Y2QQ4	98.57	0.02	5720	144	U-NII-2C	6.5	17.00	16.02	Back	0	0.023	1.253	1.015	0.029	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	Y2QQ4	98.57	0.08	5720	144	U-NII-2C	6.5	17.00	16.02	Back	0	0.023	1.253	1.015	0.029	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	TFD4Y	98.57	-0.03	5825	165	U-NII-3	6.5	17.00	16.11	Back	0	0.037	1.227	1.015	0.046	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	TFD4Y	98.57	-0.18	5745	149	U-NII-3	6.5	17.00	15.93	Back	0	0.044	1.279	1.015	0.057	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	TFD4Y	98.57	0.07	5785	157	U-NII-3	6.5	17.00	15.97	Back	0	0.048	1.268	1.015	0.062	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	TFD4Y	98.57	0.02	5825	165	U-NII-3	6.5	17.00	16.11	Back	0	0.043	1.227	1.015	0.054	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	TFD4Y	98.57	0.16	5745	149	U-NII-3	6.5	17.00	15.93	Back	0	0.038	1.279	1.015	0.049	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	TFD4Y	98.57	0.06	5785	157	U-NII-3	6.5	17.00	15.97	Back	0	0.039	1.268	1.015	0.050	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	TFD4Y	98.57	-0.08	5825	165	U-NII-3	6.5	17.00	16.11	Back	0	0.035	1.227	1.015	0.044	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	Y2QQ4	98.57	0.04	5825	165	U-NII-3	6.5	17.00	16.11	Back	0	0.025	1.227	1.015	0.031	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	Y2QQ4	98.57	-0.12	5825	165	U-NII-3	6.5	17.00	16.11	Back	0	0.022	1.227	1.015	0.027	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	Y2QQ4	98.57	0.02	5825	165	U-NII-3	6.5	17.00	16.11	Back	0	0.021	1.227	1.015	0.026	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population															Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

10.31 2.4 GHz Bluetooth SISO Standalone Extremity SAR

Table 10-31

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	X9XGQ	100.00	-0.21	2402	0	1	17.50	17.10	Back	0	0.041	1.096	1.000	0.045	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Loop	X9XGQ	100.00	-0.05	2402	0	1	17.50	17.10	Back	0	0.057	1.096	1.000	0.062	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Links	X9XGQ	100.00	-0.03	2402	0	1	17.50	17.10	Back	0	0.075	1.096	1.000	0.082	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Links	X9XGQ	100.00	-0.07	2441	39	1	17.50	16.95	Back	0	0.137	1.135	1.000	0.155	A31
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Links	X9XGQ	100.00	-0.10	2480	78	1	17.50	16.91	Back	0	0.117	1.146	1.000	0.134	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Sport	60MV9	100.00	-0.06	2402	0	1	17.50	17.10	Back	0	0.063	1.096	1.000	0.069	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Metal Loop	60MV9	100.00	-0.01	2402	0	1	17.50	17.10	Back	0	0.060	1.096	1.000	0.066	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Metal Links	60MV9	100.00	-0.05	2402	0	1	17.50	17.10	Back	0	0.071	1.096	1.000	0.078	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	X9XGQ	100.00	0.16	2402	0	1	13.00	12.48	Back	0	0.017	1.127	1.000	0.019	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Loop	X9XGQ	100.00	-0.05	2402	0	1	13.00	12.48	Back	0	0.018	1.127	1.000	0.020	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Links	X9XGQ	100.00	0.05	2402	0	1	13.00	12.48	Back	0	0.019	1.127	1.000	0.021	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Sport	60MV9	100.00	0.03	2402	0	1	13.00	12.48	Back	0	0.016	1.127	1.000	0.018	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Metal Loop	60MV9	100.00	-0.01	2402	0	1	13.00	12.48	Back	0	0.020	1.127	1.000	0.023	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Metal Loop	60MV9	100.00	-0.04	2441	39	1	13.00	12.35	Back	0	0.028	1.161	1.000	0.033	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Metal Loop	60MV9	100.00	0.00	2480	78	1	13.00	12.21	Back	0	0.023	1.199	1.000	0.028	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Metal Links	60MV9	100.00	0.04	2402	0	1	13.00	12.48	Back	0	0.018	1.127	1.000	0.020	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

10.32 5 GHz 802.15.4 ab-NB SISO Standalone Extremity SAR

Table 10-32

Exposure	Band / Mode	Housing Type	Wristband Type	Serial Number	Duty Cycle [%]	Power Drift [dB]	Frequency [MHz]	Channel #	Data Rate [Mbps]	Max Allowed Power [dBm]	Conducted Power [dBm]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Power Scaling Factor	Duty Cycle Scaling Factor	Reported 10g SAR [W/kg]	Plot #
Extremity	802.15.4 ab-NB	Aluminum	Sport	YW77G	8.70	0.01	5728.75	Low	1	16.00	15.16	Back	0	0.002	1.213	1.023	0.002	
Extremity	802.15.4 ab-NB	Aluminum	Metal Loops	YW77G	8.70	0.09	5728.75	Low	1	16.00	15.16	Back	0	0.001	1.213	1.023	0.001	
Extremity	802.15.4 ab-NB	Aluminum	Metal Links	YW77G	8.70	0.03	5846.25	High	1	16.00	14.98	Back	0	0.000	1.265	1.023	0.000	
Extremity	802.15.4 ab-NB	Aluminum	Metal Links	YW77G	8.70	0.04	5728.75	Low	1	16.00	15.16	Back	0	0.003	1.213	1.023	0.004	A32
Extremity	802.15.4 ab-NB	Aluminum	Metal Links	YW77G	8.70	0.17	5786.25	Mid	1	16.00	15.06	Back	0	0.000	1.242	1.023	0.000	
Extremity	802.15.4 ab-NB	Titanium	Sport	Y2QQ4	8.70	0.01	5728.75	Low	1	16.00	15.16	Back	0	0.000	1.213	1.023	0.000	
Extremity	802.15.4 ab-NB	Titanium	Metal Loops	Y2QQ4	8.70	0.03	5728.75	Low	1	16.00	15.16	Back	0	0.002	1.213	1.023	0.002	
Extremity	802.15.4 ab-NB	Titanium	Metal Links	Y2QQ4	8.70	-0.01	5728.75	Low	1	16.00	15.16	Back	0	0.000	1.213	1.023	0.000	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Extremity 4.0 W/kg (mW/g) averaged over 10 grams						

Note: The reported SAR was scaled to the 8.90% transmission duty factor.

10.33 NFC Standalone Extremity SAR

Table 10-33

Exposure	Band / Mode	Signal Type	Housing Type	Wristband Type	Serial Number	Power Drift [dB]	Frequency [MHz]	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Plot #
Extremity	NFC	B	Aluminum	Sport	TFKWG	-0.03	13.56	Back	0	0.000	
Extremity	NFC	B	Aluminum	Metal Loop	TFKWG	0.03	13.56	Back	0	0.000	
Extremity	NFC	B	Aluminum	Metal Links	TFKWG	0.05	13.56	Back	0	0.000	
Extremity	NFC	B	Titanium	Sport	9DCQ2	0.08	13.56	Back	0	0.000	A33
Extremity	NFC	B	Titanium	Metal Loop	9DCQ2	0.01	13.56	Back	0	0.000	
Extremity	NFC	B	Titanium	Metal Links	9DCQ2	0.09	13.56	Back	0	0.000	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

10.34 UWB Standalone Extremity SAR

Table 10-34

Exposure	Band / Mode	Service / Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Test Position	Spacing [mm]	Measured 10g SAR [W/kg]	Plot #
Extremity	UWB	CW	Aluminum	Sport	1P7JY	1:1	0.03	6489.60	5	Back	0	0.000	
Extremity	UWB	CW	Aluminum	Sport	1P7JY	1:1	0.01	7987.20	9	Back	0	0.003	
Extremity	UWB	CW	Aluminum	Metal Loop	1P7JY	1:1	0.06	6489.60	5	Back	0	0.002	
Extremity	UWB	CW	Aluminum	Metal Loop	1P7JY	1:1	0.02	7987.20	9	Back	0	0.002	
Extremity	UWB	CW	Aluminum	Metal Links	1P7JY	1:1	0.04	6489.60	5	Back	0	0.002	
Extremity	UWB	CW	Aluminum	Metal Links	1P7JY	1:1	0.03	7987.20	9	Back	0	0.002	
Extremity	UWB	CW	Titanium	Sport	4GFC6	1:1	0.02	6489.60	5	Back	0	0.003	
Extremity	UWB	CW	Titanium	Sport	4GFC6	1:1	0.07	7987.20	9	Back	0	0.003	
Extremity	UWB	CW	Titanium	Metal Loop	4GFC6	1:1	-0.08	6489.60	5	Back	0	0.001	
Extremity	UWB	CW	Titanium	Metal Loop	4GFC6	1:1	0.07	7987.20	9	Back	0	0.001	
Extremity	UWB	CW	Titanium	Metal Links	4GFC6	1:1	0.01	6489.60	5	Back	0	0.003	
Extremity	UWB	CW	Titanium	Metal Links	4GFC6	1:1	0.04	7987.20	9	Back	0	0.003	A34
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Extremity 4.0 W/kg (mW/g) averaged over 10 grams			

Exposure	Band/ Mode	Service/ Modulation	Housing Type	Form Factor	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Test Position	Spacing [mm]	Measured APD [W/m² (4cm²)]
Extremity	UWB	CW	Aluminum	Sport	1P7JY	1:1	0.03	6489.60	5	Back	0	0.015
Extremity	UWB	CW	Aluminum	Sport	1P7JY	1:1	0.01	7987.20	9	Back	0	0.055
Extremity	UWB	CW	Aluminum	Metal Loop	1P7JY	1:1	0.06	6489.60	5	Back	0	0.036
Extremity	UWB	CW	Aluminum	Metal Loop	1P7JY	1:1	0.02	7987.20	9	Back	0	0.041
Extremity	UWB	CW	Aluminum	Metal Links	1P7JY	1:1	0.04	6489.60	5	Back	0	0.036
Extremity	UWB	CW	Aluminum	Metal Links	1P7JY	1:1	0.03	7987.20	9	Back	0	0.052
Extremity	UWB	CW	Titanium	Sport	4GFC6	1:1	0.02	6489.60	5	Back	0	0.064
Extremity	UWB	CW	Titanium	Sport	4GFC6	1:1	0.07	7987.20	9	Back	0	0.071
Extremity	UWB	CW	Titanium	Metal Loop	4GFC6	1:1	-0.08	6489.60	5	Back	0	0.026
Extremity	UWB	CW	Titanium	Metal Loop	4GFC6	1:1	0.07	7987.20	9	Back	0	0.033
Extremity	UWB	CW	Titanium	Metal Links	4GFC6	1:1	0.01	6489.60	5	Back	0	0.056
Extremity	UWB	CW	Titanium	Metal Links	4GFC6	1:1	0.04	7987.20	9	Back	0	0.071

10.35 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in FCC KDB Publication 447498 D04v01.
2. Batteries are fully charged at the beginning of the SAR measurements.
3. Liquid tissue depth was at least 15.0 cm for all frequencies.
4. The manufacturer has confirmed that the device(s) tested have the same physical, mechanical, and thermal characteristics and are within operational tolerances expected for production units.
5. SAR results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D04v01.

6. Per FCC KDB Publication 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see section 12 for variability analysis.
7. This device has two housing types: Aluminum and Titanium. The non-metallic wrist accessory, sport band, was evaluated for all exposure conditions. The available metallic wrist accessories, metal links band and metal loop band, were additionally evaluated.
8. This device is a portable wrist-worn device and does not support any other use conditions. Therefore, the procedures in FCC KDB Publication 447498 D04v01 Section 5.2 have been applied for extremity and next to mouth (head) conditions.
9. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.

UMTS Notes:

1. UMTS mode was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D04v01, if the reported (scaled) SAR measured at the middle channel or highest output power channel for each test configuration is ≤ 0.8 W/kg for 1g evaluations and ≤ 2.0 W/kg for 10g SAR then testing at the other channels is not required for such test configuration(s).

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r04. The general test procedures used for testing can be found in Section 7.5.4.
2. MPR is permanently implemented for this device by the manufacturer. The specific manufacturer target MPR is indicated alongside the SAR results. MPR is enabled for this device, according to 3GPP TS36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
3. A-MPR was disabled for all SAR tests by setting NS=01 and MCC=001 on the base station simulator. SAR tests were performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).
4. Per FCC KDB Publication 447498 D04v01, when the reported LTE Band 41 SAR measured at the highest output power channel in a given a test configuration was > 0.6 W/kg for 1g evaluations and > 1.5 W/kg for 10g SAR, testing at the other channels was required for such test configurations.
5. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r04. Testing was performed using UL-DL configuration 0 with 6 UL subframes and 2 S subframes using extended cyclic prefix only and special subframe configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Section 4, the duty factor for special subframe configuration 6 using extended cyclic prefix is 0.633.
6. This device can only operate with 16 QAM on the uplink with less than or equal to 27 RB. QPSK and 16QAM LTE powers for RB size of 15 (“50% RB”) and 27 (“100% RB”) were additionally measured to support comparison and SAR test exclusion per KDB 941225 D05v02r04 Section 5.2.4 and 5.3.

WLAN Notes:

1. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 2.4 GHz WIFI single transmission chain operations, the highest measured maximum output power channel for DSSS was selected for SAR measurement. SAR for OFDM modes (2.4 GHz 802.11g/n) was not required due to the maximum allowed powers and the highest reported DSSS SAR. See Section 7.6.4 for more information.
2. Justification for test configurations for WLAN per KDB Publication 248227 D01v02r02 for 5 GHz WIFI single transmission chain operations, the initial test configuration was selected according to the transmission mode with the highest maximum allowed powers. Other transmission modes were not

investigated since the highest reported SAR for initial test configuration adjusted by the ratio of maximum output powers is less than 1.2 W/kg for 1g evaluations. See Section 7.6.5 for more information.

3. When the maximum reported 1g averaged SAR is ≤0.8 W/kg, SAR testing on additional channels was not required. Otherwise, SAR for the next highest output power channel was required until the reported SAR result was ≤ 1.20 W/kg for 1g evaluations or all test channels were measured. When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.
4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools. The reported SAR was scaled to the 100% transmission duty factor to determine compliance.

Bluetooth Notes

1. To determine compliance, Bluetooth SAR was measured with the maximum power condition. Bluetooth was evaluated with a test mode with 100% transmission duty factor.

802.15.4 ab-Nb Notes

1. 802.15.4 ab-NB SAR was scaled to the 8.90% transmission duty factor to determine compliance since the duty factor of the device is limited to 8.90% per manufacturer. See Section 8.6 for the time domain plot and calculation for the duty factor of the device.

10.36 Power Density Data

MEASUREMENT RESULTS																			
Frequency (MHz)	Channel	Mode	Service	Wristband Type	Power Drift (dB)	Spacing (mm)	Housing Type	DUT Serial Number	Data Rate (Mbps)	Side	Duty Cycle (%)	Grid Step (λ)	iPD (W/m²)	Scaling Factor for Measurement Uncertainty per IEC 62479	Normal psPD (W/m²)	Scaled Normal psPD (W/m²)	Total psPD (W/m²)	Scaled Total psPD (W/m²)	Plot #
6489.60	5	UWB	CW	Sport	-0.04	2	Aluminum	HCFFK	68.1	Back	100	0.25	2.030	1.554	0.183	0.284	0.188	0.292	
7987.20	9	UWB	CW	Sport	-0.06	2	Aluminum	HCFFK	68.1	Back	100	0.25	1.440	1.554	0.153	0.238	0.165	0.256	
6489.60	5	UWB	CW	Metal Links	0.11	2	Aluminum	HCFFK	68.1	Back	100	0.25	1.760	1.554	0.161	0.250	0.176	0.274	
7987.20	9	UWB	CW	Metal Links	-0.03	2	Aluminum	HCFFK	68.1	Back	100	0.25	1.470	1.554	0.154	0.239	0.173	0.269	
6489.60	5	UWB	CW	Metal Loop	-0.04	2	Aluminum	HCFFK	68.1	Back	100	0.25	2.380	1.554	0.255	0.396	0.259	0.402	A35
7987.20	9	UWB	CW	Metal Loop	-0.14	2	Aluminum	HCFFK	68.1	Back	100	0.25	2.030	1.554	0.246	0.382	0.254	0.395	
6489.60	5	UWB	CW	Metal Loop	-0.01	9.24	Aluminum	HCFFK	68.1	Back	100	0.25	0.225	1.554	0.059	0.092	0.080	0.124	
6489.60	5	UWB	CW	Sport	0.11	2	Titanium	60MV9	68.1	Back	100	0.25	1.490	1.554	0.187	0.291	0.189	0.294	
7987.20	9	UWB	CW	Sport	0.07	2	Titanium	60MV9	68.1	Back	100	0.25	2.580	1.554	0.208	0.323	0.212	0.329	
6489.60	5	UWB	CW	Metal Links	0.15	2	Titanium	60MV9	68.1	Back	100	0.25	1.040	1.554	0.127	0.197	0.132	0.205	
7987.20	9	UWB	CW	Metal Links	-0.05	2	Titanium	60MV9	68.1	Back	100	0.25	1.480	1.554	0.186	0.289	0.109	0.169	
6489.60	5	UWB	CW	Metal Loop	-0.04	2	Titanium	60MV9	68.1	Back	100	0.25	2.140	1.554	0.212	0.329	0.216	0.336	
7987.20	9	UWB	CW	Metal Loop	-0.02	2	Titanium	60MV9	68.1	Back	100	0.25	1.490	1.554	0.169	0.263	0.179	0.278	
47 CFR §1.1310 - SAFETY LIMIT Spatial Average Uncontrolled Exposure / General Population															Power Density 10 W/m² averaged over 4 cm²				

10.37 Power Density Notes

1. The manufacturer has confirmed that the devices tested have the same physical, mechanical, and thermal characteristics and are within operational tolerances expected for production units.
2. Batteries are fully charged at the beginning of the measurements. The DUT was connected to a wall charger for some measurements due to the test duration. It was confirmed that the charger plugged into this DUT did not impact the near-field PD test results.
3. Power density was calculated by repeated E-field measurements on two measurement planes separated by λ/4.
4. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor supported by the test mode tools.
5. Per FCC guidance and equipment manufacturer guidance, power density results were scaled according to IEC 62479:2010 for the portion of the measurement uncertainty > 30%. Total expanded uncertainty of 2.68 dB (85.4%) was used to determine the psPD measurement scaling factor.
6. Per equipment manufacturer guidance, power density was measured at d=2mm and d=λ/5mm using the same grid size and grid step size for some frequencies and surfaces. The integrated Power Density (iPD) was calculated based on these measurements. Since iPD ratio between the two distances is ≥ -1dB, the grid step was sufficient for determining compliance at d=2mm.
7. PD results were scaled to the maximum allowed power to demonstrate compliance per FCC KDB Publication 447498 D04v01.
8. PTP-PR algorithm was used during psPD measurement and calculations.

11 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

11.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D04v01 are applicable to devices with built-in unlicensed transmitters such as 802.11 and Bluetooth devices which may simultaneously transmit with the licensed transmitter.

11.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. Per FCC KDB Publication 447498 D04v01, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific physical test configuration is ≤1.6 W/kg. The different test positions in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1g or 10g SAR.

Note: In cases where simultaneous transmission scenarios overlap with the same power level (for example, cellular band + 2.4 GHz WIFI and cellular band + 2.4 GHz WIFI + 802.15.4 ab-NB), the most conservative SAR summation scenario was evaluated.

11.3 Head SAR Simultaneous Transmission Analysis

For SAR summation, the highest reported SAR across all housing and wristband types was used as a conservative evaluation for simultaneous transmission analysis.

Table 11-1
Simultaneous Transmission Scenario with 2.4 GHz WIFI and 802.15.4 ab-NB (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	802.15.4 ab-NB SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 850	0.003	0.433	0.026	0.462
	UMTS 1750	0.286	0.433	0.026	0.745
	UMTS 1900	0.500	0.433	0.026	0.959
	LTE Band 12	0.007	0.433	0.026	0.466
	LTE Band 13	0.008	0.433	0.026	0.467
	LTE Band 14	0.005	0.433	0.026	0.464
	LTE Band 26	0.003	0.433	0.026	0.462
	LTE Band 5	0.005	0.433	0.026	0.464
	LTE Band 66	0.314	0.433	0.026	0.773
	LTE Band 25	0.459	0.433	0.026	0.918
	LTE Band 7	1.082	0.433	0.026	1.541
	LTE Band 41	0.774	0.433	0.026	1.233

Table 11-2
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth and 5 GHz WIFI (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	5 GHz WIFI SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 850	0.003	0.099	0.328	0.430
	UMTS 1750	0.286	0.099	0.328	0.713
	UMTS 1900	0.500	0.099	0.328	0.927
	LTE Band 12	0.007	0.099	0.328	0.434
	LTE Band 13	0.008	0.099	0.328	0.435
	LTE Band 14	0.005	0.099	0.328	0.432
	LTE Band 26	0.003	0.099	0.328	0.430
	LTE Band 5	0.005	0.099	0.328	0.432
	LTE Band 66	0.314	0.099	0.328	0.741
	LTE Band 25	0.459	0.099	0.328	0.886
	LTE Band 7	1.082	0.099	0.328	1.509
	LTE Band 41	0.774	0.099	0.328	1.201

Table 11-3
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth, 802.15.4 ab-NB (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	802.15.4 ab-NB SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 850	0.003	0.099	0.026	0.128
	UMTS 1750	0.286	0.099	0.026	0.411
	UMTS 1900	0.500	0.099	0.026	0.625
	LTE Band 12	0.007	0.099	0.026	0.132
	LTE Band 13	0.008	0.099	0.026	0.133
	LTE Band 14	0.005	0.099	0.026	0.130
	LTE Band 26	0.003	0.099	0.026	0.128
	LTE Band 5	0.005	0.099	0.026	0.130
	LTE Band 66	0.314	0.099	0.026	0.439
	LTE Band 25	0.459	0.099	0.026	0.584
	LTE Band 7	1.082	0.099	0.026	1.207
	LTE Band 41	0.774	0.099	0.026	0.899

Table 11-4
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth and 5 GHz WIFI (Head at 1.0 cm)

Exposure Condition	2.4 GHz Bluetooth SAR (W/kg)	5 GHz WIFI SAR (W/kg)	∑ SAR (W/kg)
	1	2	1+2
Head SAR	0.209	0.328	0.537

Table 11-5
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth and 802.15.4 ab-NB (Head at 1.0 cm)

Exposure Condition	2.4 GHz Bluetooth SAR (W/kg)	802.15.4 ab-NB SAR (W/kg)	∑ SAR (W/kg)
	1	2	1+2
Head SAR	0.209	0.026	0.235

11.4 Extremity SAR Simultaneous Transmission Analysis

For SAR summation, the highest reported SAR across all housing and wristband types was used as a conservative evaluation for simultaneous transmission analysis.

Table 11-6
Simultaneous Transmission Scenario with 2.4 GHz WIFI, 802.15.4 ab-NB and NFC (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	802.15.4 ab-NB SAR (W/kg)	NFC SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	4	1+2+3+4
Extremity SAR	UMTS 850	0.233	0.083	0.004	0.000	0.320
	UMTS 1750	0.126	0.083	0.004	0.000	0.213
	UMTS 1900	0.088	0.083	0.004	0.000	0.175
	LTE Band 12	0.237	0.083	0.004	0.000	0.324
	LTE Band 13	0.289	0.083	0.004	0.000	0.376
	LTE Band 14	0.234	0.083	0.004	0.000	0.321
	LTE Band 26	0.213	0.083	0.004	0.000	0.300
	LTE Band 5	0.246	0.083	0.004	0.000	0.333
	LTE Band 66	0.109	0.083	0.004	0.000	0.196
	LTE Band 25	0.079	0.083	0.004	0.000	0.166
	LTE Band 7	0.591	0.083	0.004	0.000	0.678
	LTE Band 41	0.517	0.083	0.004	0.000	0.604

Table 11-7
Simultaneous Transmission Scenario with 2.4 GHz WIFI, UWB and NFC (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WIFI SAR (W/kg)	UWB SAR (W/kg)	NFC SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	4	1+2+3+4
Extremity SAR	UMTS 850	0.233	0.083	0.003	0.000	0.319
	UMTS 1750	0.126	0.083	0.003	0.000	0.212
	UMTS 1900	0.088	0.083	0.003	0.000	0.174
	LTE Band 12	0.237	0.083	0.003	0.000	0.323
	LTE Band 13	0.289	0.083	0.003	0.000	0.375
	LTE Band 14	0.234	0.083	0.003	0.000	0.320
	LTE Band 26	0.213	0.083	0.003	0.000	0.299
	LTE Band 5	0.246	0.083	0.003	0.000	0.332
	LTE Band 66	0.109	0.083	0.003	0.000	0.195
	LTE Band 25	0.079	0.083	0.003	0.000	0.165
	LTE Band 7	0.591	0.083	0.003	0.000	0.677
	LTE Band 41	0.517	0.083	0.003	0.000	0.603

Table 11-8
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth, 5 GHz WIFI and NFC (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	5 GHz WIFI SAR (W/kg)	NFC SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	4	1+2+3+4
Extremity SAR	UMTS 850	0.233	0.033	0.079	0.000	0.345
	UMTS 1750	0.126	0.033	0.079	0.000	0.238
	UMTS 1900	0.088	0.033	0.079	0.000	0.200
	LTE Band 12	0.237	0.033	0.079	0.000	0.349
	LTE Band 13	0.289	0.033	0.079	0.000	0.401
	LTE Band 14	0.234	0.033	0.079	0.000	0.346
	LTE Band 26	0.213	0.033	0.079	0.000	0.325
	LTE Band 5	0.246	0.033	0.079	0.000	0.358
	LTE Band 66	0.109	0.033	0.079	0.000	0.221
	LTE Band 25	0.079	0.033	0.079	0.000	0.191
	LTE Band 7	0.591	0.033	0.079	0.000	0.703
	LTE Band 41	0.517	0.033	0.079	0.000	0.629

Table 11-9
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth, 802.15.4 ab-NB and NFC (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	802.15.4 ab-NB SAR (W/kg)	NFC SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	4	1+2+3+4
Extremity SAR	UMTS 850	0.233	0.033	0.004	0.000	0.270
	UMTS 1750	0.126	0.033	0.004	0.000	0.163
	UMTS 1900	0.088	0.033	0.004	0.000	0.125
	LTE Band 12	0.237	0.033	0.004	0.000	0.274
	LTE Band 13	0.289	0.033	0.004	0.000	0.326
	LTE Band 14	0.234	0.033	0.004	0.000	0.271
	LTE Band 26	0.213	0.033	0.004	0.000	0.250
	LTE Band 5	0.246	0.033	0.004	0.000	0.283
	LTE Band 66	0.109	0.033	0.004	0.000	0.146
	LTE Band 25	0.079	0.033	0.004	0.000	0.116
	LTE Band 7	0.591	0.033	0.004	0.000	0.628
	LTE Band 41	0.517	0.033	0.004	0.000	0.554

Table 11-10
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth, UWB and NFC (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	UWB SAR (W/kg)	NFC SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	4	1+2+3+4
Extremity SAR	UMTS 850	0.233	0.033	0.003	0.000	0.269
	UMTS 1750	0.126	0.033	0.003	0.000	0.162
	UMTS 1900	0.088	0.033	0.003	0.000	0.124
	LTE Band 12	0.237	0.033	0.003	0.000	0.273
	LTE Band 13	0.289	0.033	0.003	0.000	0.325
	LTE Band 14	0.234	0.033	0.003	0.000	0.270
	LTE Band 26	0.213	0.033	0.003	0.000	0.249
	LTE Band 5	0.246	0.033	0.003	0.000	0.282
	LTE Band 66	0.109	0.033	0.003	0.000	0.145
	LTE Band 25	0.079	0.033	0.003	0.000	0.115
	LTE Band 7	0.591	0.033	0.003	0.000	0.627
	LTE Band 41	0.517	0.033	0.003	0.000	0.553

Table 11-11
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth, 5 GHz WIFI and NFC (Extremity at 0.0 cm)

Exposure Condition	2.4 GHz Bluetooth Max at 17.5 dBm SAR (W/kg)	5 GHz WIFI SAR (W/kg)	NFC SAR (W/kg)	∑ SAR (W/kg)
	1	2	3	1+2+3
Extremity SAR	0.155	0.079	0.000	0.234

Table 11-12
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth, 802.15.4 ab-NB and NFC (Extremity at 0.0 cm)

Exposure Condition	2.4 GHz Bluetooth SAR (W/kg)	802.15.4 ab-NB SAR (W/kg)	NFC SAR (W/kg)	∑ SAR (W/kg)
	1	2	3	1+2+3
Extremity SAR	0.155	0.004	0.000	0.159

Table 11-13
Simultaneous Transmission Scenario with 2.4 GHz Bluetooth, UWB and NFC (Extremity at 0.0 cm)

Exposure Condition	2.4 GHz Bluetooth SAR (W/kg)	UWB SAR (W/kg)	NFC SAR (W/kg)	∑ SAR (W/kg)
	1	2	3	1+2+3
Extremity SAR	0.155	0.003	0.000	0.158

11.5 Simultaneous Transmission Conclusion

The above numerical summed SAR results for all the worst-case simultaneous transmission conditions were below the SAR limit. Therefore, the above analysis is sufficient to determine that simultaneous transmission cases will not exceed the SAR limit and therefore no measured volumetric simultaneous SAR summation is required per FCC KDB Publication 447498 D04v01.

12 SAR MEASUREMENT VARIABILITY

12.1 Measurement Variability

Per FCC KDB Publication 865664 D01v01r04, SAR measurement variability was assessed for each frequency band, which was determined by the SAR probe calibration point and tissue-equivalent medium used for the device measurements. When both head and body tissue-equivalent media were required for SAR measurements in a frequency band, the variability measurement procedures were applied to the tissue medium with the highest measured SAR, using the highest measured SAR configuration for that tissue-equivalent medium. These additional measurements were repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device was returned to ambient conditions (normal room temperature) with the battery fully charged before it was re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

SAR Measurement Variability was assessed using the following procedures for each frequency band:

1) When the original highest measured SAR is ≥ 0.80 W/kg, the measurement was repeated once.
2) A second repeated measurement was performed only if the ratio of largest to smallest SAR for the original and first repeated measurements was > 1.20 or when the original or repeated measurement was ≥ 1.45 W/kg (~ 10% from the 1g SAR limit).
3) A third repeated measurement was performed only if the original, first or second repeated measurement was ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.
4) Repeated measurements are not required when the original highest measured SAR is < 0.80 W/kg
5) When 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds above.

HEAD VARIABILITY RESULTS

Band	FREQUENCY		Mode	Service	Data Rate (Mbps)	Side	Spacing	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.						(W/kg)	(W/kg)		(W/kg)		(W/kg)	
2450	2510.00	20850	LTE Band 7, 20 MHz Bandwidth	QPSK, 1 RB, 0 RB Offset	N/A	Front	10 mm	1.050	0.993	1.06	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							**Head 1.6 W/kg (mW/g) averaged over 1 gram**							

12.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis was not required.

13 EQUIPMENT LIST

Note: CBT (Calibrated Before Testing). Prior to testing, the measurement paths containing a cable, amplifier, attenuator, coupler, or filter were connected to a calibrated source (i.e., a signal generator) to determine the losses of the measurement path. The power meter offset was then adjusted to compensate for the measurement system losses. This level offset is stored within the power meter before measurements are made. This calibration verification procedure applies to the system verification and output power measurements. The calibrated reading is then taken directly from the power meter after compensation of the losses for all final power measurements. Each equipment item was used solely within its respective calibration period.

Manufacturer	Model	Description	Cal Date	Cal Interval	Cal Due	Serial Number
Agilent	E4404B	Spectrum Analyzer	N/A	N/A	N/A	MY45113242
Agilent	E4438C	ESG Vector Signal Generator	11/14/2023	Annual	11/14/2024	MY45093852
Agilent	E4438C	ESG Vector Signal Generator	11/15/2023	Annual	11/15/2024	MY45092078
Agilent	N5182A	MXG Vector Signal Generator	10/12/2023	Annual	10/12/2024	MY47400015
Agilent	N5182A	MXG Vector Signal Generator	3/7/2024	Annual	3/7/2025	MY47420603
Agilent	8753ES	S-Parameter Vector Network Analyzer	1/10/2024	Annual	1/10/2025	MY40001472
Agilent	8753ES	S-Parameter Vector Network Analyzer	7/21/2023	Annual	7/21/2024	US39170118
Amplifier Research	1S1G6	Amplifier	CBT	N/A	CBT	433973
Amplifier Research	1S1G6	Amplifier	CBT	N/A	CBT	433974
Amplifier Research	150A100C	Amplifier	CBT	N/A	CBT	350132
Anritsu	MN8110B	I/O Adaptor	CBT	N/A	CBT	6261747881
Anritsu	ML2496A	Power Meter	6/24/2024	Annual	6/24/2025	1840005
Anritsu	ML2495A	Power Meter	7/8/2024	Annual	7/8/2025	1039008
Anritsu	MA2411B	Pulse Power Sensor	8/22/2023	Annual	8/22/2024	1726262
Anritsu	MA2411B	Pulse Power Sensor	11/8/2023	Annual	11/8/2024	1027293
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	12/15/2023	Annual	12/15/2024	6200901190
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	5/15/2024	Annual	5/15/2025	6262150047
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	5/30/2024	Annual	5/30/2025	6262044715
Anritsu	MT8000A	Radio Communication Test Station	4/10/2024	Annual	4/10/2025	6261987983
Anritsu	MT8000A	Radio Communication Test Station	5/2/2024	Annual	5/2/2025	6272337436
Anritsu	MA24106A	USB Power Sensor	12/4/2023	Annual	12/4/2024	1520501
Anritsu	MA24106A	USB Power Sensor	4/15/2024	Annual	4/15/2025	1827528
Mini-Circuits	PWR-4GHS	USB Power Sensor	6/12/2024	Annual	6/12/2025	12001070013
Control Company	4052	Long Stem Thermometer	2/27/2024	Biennial	2/27/2026	240174346
Control Company	4052	Long Stem Thermometer	2/27/2024	Biennial	2/27/2026	240171096
Control Company	4052	Long Stem Thermometer	2/27/2024	Biennial	2/27/2026	240171059
Control Company	4040	Therm./ Clock/ Humidity Monitor	4/15/2024	Biennial	4/15/2026	240310280
Control Company	4040	Therm./ Clock/ Humidity Monitor	4/15/2024	Biennial	4/15/2026	240310282
Control Company	S66279	Therm./ Clock/ Humidity Monitor	2/16/2024	Biennial	2/16/2026	240140051
Mitutoyo	500-196-30	CD-6"ASX 6Inch Digital Caliper	2/16/2022	Triennial	2/16/2025	A20238413
Keysight Technologies	N9020A	MXA Signal Analyzer	4/11/2024	Annual	4/11/2025	MY54500644
Agilent	N9020A	MXA Signal Analyzer	6/14/2024	Annual	6/14/2025	MY56470202
MCL	BW-N6W5+	6dB Attenuator	CBT	N/A	CBT	1139
Mini-Circuits	VLF-6000+	Low Pass Filter DC to 6000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5+	DC to 18 GHz Precision Fixed 20 dB Attenuator	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-1200+	Low Pass Filter DC to 1000 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	NLP-2950+	Low Pass Filter DC to 2700 MHz	CBT	N/A	CBT	N/A
Mini-Circuits	BW-N20W5	Power Attenuator	CBT	N/A	CBT	1226
Mini-Circuits	ZUDC10-83-S+	Directional Coupler	CBT	N/A	CBT	2050
Narda	4772-3	Attenuator (3dB)	CBT	N/A	CBT	9406
Narda	BW-S3W2	Attenuator (3dB)	CBT	N/A	CBT	120
Seekonk	NC-100	Torque Wrench	4/2/2024	Biennial	4/2/2026	1262
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/19/2024	Annual	4/19/2025	101699
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/22/2024	Annual	4/22/2025	167285
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/22/2024	Annual	4/22/2025	106578
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/24/2024	Annual	4/24/2025	167284
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/24/2024	Annual	4/24/2025	145663
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	6/7/2024	Annual	6/7/2025	108843
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	6/10/2024	Annual	6/7/2025	168543
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	1/10/2024	Annual	1/10/2025	131453
SPEAG	DAK-3.5	Dielectric Assessment Kit	11/13/2023	Annual	11/13/2024	1277
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	8/14/2023	Annual	8/14/2024	1041
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1237
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1331
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1390
SPEAG	DAK-12	Dielectric Assessment Kit (4MHz - 3GHz)	3/11/2024	Annual	3/11/2025	1102
SPEAG	5G Verification Source 10GHz	10GHz System Verification Antenna	10/13/2023	Annual	10/13/2024	1006
SPEAG	CLA-13	Confined Loop Antenna	11/9/2023	Annual	11/9/2024	1004
SPEAG	D1750V2	1750 MHz SAR Dipole	9/6/2023	Annual	9/6/2024	1104
SPEAG	D1900V2	1900 MHz SAR Dipole	8/8/2023	Annual	8/8/2024	5d180
SPEAG	D1900V2	1900 MHz SAR Dipole	9/7/2023	Annual	9/7/2024	5d181
SPEAG	D2450V2	2450 MHz SAR Dipole	5/11/2022	Triennial	5/11/2025	750
SPEAG	D2450V2	2450 MHz SAR Dipole	11/15/2022	Biennial	11/15/2024	855
SPEAG	D2600V2	2600 MHz SAR Dipole	5/11/2022	Triennial	5/11/2025	1042
SPEAG	D5GHzV2	5 GHz SAR Dipole	11/17/2022	Biennial	11/17/2024	1066
SPEAG	D5GHzV2	5 GHz SAR Dipole	6/12/2024	Annual	6/12/2025	1163
SPEAG	D5GHzV2	5 GHz SAR Dipole	3/12/2024	Annual	3/12/2025	1123
SPEAG	D6.5GHzV2	6.5 GHz SAR Dipole	10/11/2023	Annual	10/11/2024	1019
SPEAG	D8GHzV2	8 GHz SAR Dipole	5/8/2024	Annual	5/8/2025	1006
SPEAG	D750V3	750 MHz SAR Dipole	9/13/2023	Annual	9/13/2024	1097
SPEAG	D750V3	750 MHz SAR Dipole	5/16/2022	Triennial	5/16/2025	1057
SPEAG	D835V2	835 MHz SAR Dipole	11/18/2022	Biennial	11/18/2024	4d108
SPEAG	D835V2	835 MHz SAR Dipole	5/16/2022	Triennial	5/16/2025	4d040
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/12/2023	Annual	9/12/2024	1684
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/9/2024	Annual	2/9/2025	467
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/9/2024	Annual	4/9/2025	501
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/18/2023	Annual	10/18/2024	1237
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2024	Annual	5/8/2025	1683
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/10/2024	Annual	4/10/2025	1402
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/14/2023	Annual	11/14/2024	1403
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/7/2023	Annual	12/7/2024	1644
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/12/2023	Annual	9/12/2024	1681
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/8/2023	Annual	9/8/2024	1646
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/6/2024	Annual	3/6/2025	1408
SPEAG	EX3DV4	SAR Probe	8/10/2023	Annual	8/10/2024	7668
SPEAG	EX3DV4	SAR Probe	10/16/2023	Annual	10/16/2024	3746
SPEAG	EX3DV4	SAR Probe	4/16/2024	Annual	4/16/2025	7532
SPEAG	EX3DV4	SAR Probe	4/16/2024	Annual	4/16/2025	7546
SPEAG	EX3DV4	SAR Probe	10/2/2023	Annual	10/2/2024	3949
SPEAG	EX3DV4	SAR Probe	2/9/2024	Annual	2/9/2025	7427
SPEAG	EX3DV4	SAR Probe	11/9/2023	Annual	11/9/2024	7639
SPEAG	EX3DV4	SAR Probe	5/13/2024	Annual	5/13/2025	7682
SPEAG	EX3DV4	SAR Probe	1/16/2024	Annual	1/16/2025	7499
SPEAG	EX3DV4	SAR Probe	9/12/2023	Annual	9/12/2024	7782
SPEAG	EUmmWV3	mmWave Probe	10/9/2023	Annual	10/9/2024	9407

14 MEASUREMENT UNCERTAINTIES

Applicable for SAR measurements < 6 GHz:

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E2.1	7	N	1	1	1	7.0	7.0	∞
Axial Isotropy	E2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E2.3	2	R	1.732	1	1	1.2	1.2	∞
Linearity	E2.4	0.3	N	1	1	1	0.3	0.3	∞
System Detection Limits	E2.4	0.25	R	1.732	1	1	0.1	0.1	∞
Modulation Response	E2.5	4.8	R	1.732	1	1	2.8	2.8	∞
Readout Electronics	E2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E2.7	0.8	R	1.732	1	1	0.5	0.5	∞
Integration Time	E2.8	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E6.1	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E6.1	3	R	1.732	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E6.2	0.8	R	1.732	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E6.3	6.7	R	1.732	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E5	4	R	1.732	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E2.9	5	R	1.732	1	1	2.9	2.9	∞
SAR Scaling	E6.5	0	R	1.732	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E3.4	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E3.4	0.6	R	1.732	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)			RSS				12.2	12.0	191
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				24.4	24.0	

The above measurement uncertainties are according to IEEE Std. 1528-2013

Applicable for SAR measurements > 6 GHz:

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1	9.3	N	1	1	1	9.3	9.3	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.732	1	1	1.2	1.2	∞
Linearity	E.2.4	0.3	N	1	1	1	0.3	0.3	∞
System Detection Limits	E.2.4	0.25	R	1.732	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.732	1	1	2.8	2.8	∞
Readout Electronics	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	R	1.732	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.732	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.732	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.732	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E.4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.732	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.732	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E.3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E.3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E.3.4	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E.3.4	0.6	R	1.732	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)			RSS				13.8	13.6	191
Expanded Uncertainty (95% CONFIDENCE LEVEL)			k=2				27.6	27.1	

The above measurement uncertainties are according to IEEE Std. 1528-2013

Applicable for Power Density measurements:

a	b	c	d	e	f = c x f/e	g
Uncertainty Component	Unc. (± dB)	Prob. Dist.	Div.	c_i	u_i (± dB)	v_i
Measurement System						
Calibration	0.49	N	1	1	0.49	∞
Probe Correction	0.00	R	1.73	1	0.00	∞
Frequency Response	0.20	R	1.73	1	0.12	∞
Sensor Cross Coupling	0.00	R	1.73	1	0.00	∞
Isotropy	0.50	R	1.73	1	0.29	∞
Linearity	0.20	R	1.73	1	0.12	∞
Probe Scattering	0.00	R	1.73	1	0.00	∞
Probe Positioning offset	0.30	R	1.73	1	0.17	∞
Probe Positioning Repeatability	0.04	R	1.73	1	0.02	∞
Sensor Mechanical Offset	0.00	R	1.73	1	0.00	∞
Probe Spatial Resolution	0.00	R	1.73	1	0.00	∞
Field Impedence Dependance	0.00	R	1.73	1	0.00	∞
Amplitude and Phase Drift	0.00	R	1.73	1	0.00	∞
Amplitude and Phase Noise	0.04	R	1.73	1	0.02	∞
Measurement Area Truncation	0.00	R	1.73	1	0.00	∞
Data Acquisition	0.03	N	1	1	0.03	∞
Sampling	0.00	R	1.73	1	0.00	∞
Field Reconstruction	2.00	R	1.73	1	1.15	∞
Forward Transformation	0.00	R	1.73	1	0.00	∞
Power Density Scaling	0.00	R	1.73	1	0.00	∞
Spatial Averaging	0.10	R	1.73	1	0.06	∞
System Detection Limit	0.04	R	1.73	1	0.02	∞
Test Sample Related						
Probe Coupling with DUT	0.00	R	1.73	1	0.00	∞
Modulation Response	0.40	R	1.73	1	0.23	∞
Integration Time	0.00	R	1.73	1	0.00	∞
Response Time	0.00	R	1.73	1	0.00	∞
Device Holder Influence	0.10	R	1.73	1	0.06	∞
DUT alignment	0.00	R	1.73	1	0.00	∞
RF Ambient Conditions	0.04	R	1.73	1	0.02	∞
Ambient Reflections	0.04	R	1.73	1	0.02	∞
Immunity/Secondary Reception	0.00	R	1.73	1	0.00	∞
Drift of DUT	0.21	R	1.73	1	0.12	∞
Combined Standard Uncertainty (k=1)		RSS			1.34	∞
Expanded Uncertainty (95% CONFIDENCE LEVEL)		k=2			2.68	

15 CONCLUSION

15.1 Measurement Conclusion

The SAR evaluation indicates that the EUT complies with the RF radiation exposure limits of the FCC and Innovation, Science, and Economic Development Canada, with respect to all parameters subject to this test. These measurements were taken to simulate the RF effects of RF exposure under worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are very complex phenomena that depend on the mass, shape, and size of the body, the orientation of the body with respect to the field vectors, and the electrical properties of both the body and the environment. Other variables that may play a substantial role in possible biological effects are those that characterize the environment (e.g., ambient temperature, air velocity, relative humidity, and body insulation) and those that characterize the individual (e.g., age, gender, activity level, debilitation, or disease). Because various factors may interact with one another to vary the specific biological outcome of an exposure to electromagnetic fields, any protection guide should consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables. [3]

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