ELEMENT MATERIALS TECHNOLOGY
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SAR EVALUATION REPORT

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

Date of Testing:
06/14/2024 – 08/26/2024
Test Report Issue Date:
08/26/2024
Test Site/Location:
Element, Morgan Hill, CA, USA
Document Serial No.:
1C2405230021-01.BCG-R1

FCC ID:	**BCG-A3001**
APPLICANT:	**APPLE, INC.**

DUT Type:	Watch
Application Type:	Certification
FCC Rule Part(s):	CFR §2.1093
Model:	A3001, A3002

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	0.23
PCT	UMTS 1750	1712.4 - 1752.6 MHz	0.19	0.29
PCT	UMTS 1900	1852.4 - 1907.6 MHz	0.19	0.29
PCT	LTE Band 12	699.7 - 715.3 MHz	<0.1	0.15
PCT	LTE Band 17	706.5 - 713.5 MHz	N/A	N/A
PCT	LTE Band 13	779.5 - 784.5 MHz	<0.1	0.25
PCT	LTE Band 14	790.5 - 795.5 MHz	<0.1	0.24
PCT	LTE Band 26 (Cell)	814.7 - 848.3 MHz	<0.1	0.31
PCT	LTE Band 5 (Cell)	824.7 - 848.3 MHz	<0.1	0.26
PCT	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.27	0.36
PCT	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A
PCT	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.24	0.21
PCT	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A
PCT	LTE Band 7	2502.5 - 2567.5 MHz	0.30	0.15
PCT	LTE Band 41	2498.5 - 2687.5 MHz	0.54	0.12
DTS	2.4 GHz WiFi	2412 - 2472 MHz	0.37	0.13
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	0.26	<0.1
DSS/DTS	2.4 GHz Bluetooth	2402 - 2480 MHz	0.21	<0.1
NII	802.15.4 ab-NB	5728.75 - 5846.25 MHz	<0.1	<0.1
DXX	NFC	13.56 MHz	N/A	<0.1
UWB	UWB	6489.6 - 7987.2 MHz	N/A	<0.1
Simultaneous SAR per KDB 690783 D01v01r03:			**1.26**	**0.47**
Equipment Class	Band & Mode	Tx Frequency	APD (W/m²)	APD (W/m²)
UWB	UWB	6489.6 - 7987.2 MHz	N/A	0.06
Equipment Class	Band & Mode	Tx Frequency	Reported PD (W/m²)	Reported PD (W/m²)
UWB	UWB	6489.6 - 7987.2 MHz	N/A	0.35

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	826.40 - 846.60 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 WIFI	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
2.4 GHz Bluetooth	Data	2402 - 2480 MHz
802.15.4 ab-NB	Data	5728.75 - 5846.25 MHz
NFC	Data	13.56 MHz
UWB	Data	6489.6 - 7987.2 MHz

1.2 Power Reduction for SAR

There is no power reduction used for any band/mode implemented in this device for SAR purposes.

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	3GPP DC-HSPA+ Rel 8
UMTS Band 5 (850MHz)	Max allowed power	25.00	25.00	24.00	24.00
	Nominal	24.00	24.00	23.00	23.00
UMTS Band 4 (1750MHz)	Max allowed power	24.00	24.00	23.00	22.00
	Nominal	23.00	23.00	22.00	21.00
UMTS Band 2 (1900MHz)	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 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	18.50	17.50	18.50	17.50
		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	16.00	15.00	16.00	15.00
		12	18.00	17.00	14.50	13.50	14.50	13.50
		13	17.00	16.00	4.00	3.00	4.00	3.00

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	17.00	16.00	17.00	16.00
		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 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

1.3.5 Maximum Output Power – 802.15.4 ab-NB

Mode / Band		Modulated Average - Single Tx Chain (dBm)
802.15.4ab-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, because channel 12/13 targets are not higher than that of channels 1-11, 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:

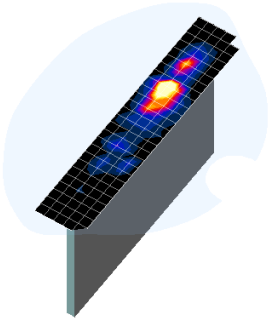

Figure 4-1
Sample SAR Area Scan

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	23.10	**23.33**	23.32	22.66	**22.97**	22.89	22.91	22.85	**23.04**	-
99		12.2 kbps AMR	23.75	23.98	23.94	22.78	23.09	22.97	23.11	22.97	23.20	-
6	HSDPA	Subtest 1	24.25	24.51	24.47	23.56	23.48	23.52	23.29	23.18	23.45	0
6		Subtest 2	23.22	23.50	23.40	22.53	22.63	22.64	22.30	22.31	22.51	0
6		Subtest 3	22.75	22.94	22.94	21.95	22.13	22.16	21.82	21.78	21.94	0.5
6		Subtest 4	22.55	22.70	22.61	21.62	21.88	21.87	21.61	21.51	21.73	0.5
6	HSUPA	Subtest 1	22.27	22.47	22.38	22.33	22.61	22.58	21.88	21.72	21.94	0
6		Subtest 2	20.97	21.21	21.13	20.00	20.32	20.26	19.61	19.43	19.58	2
6		Subtest 3	21.88	22.17	22.12	20.79	21.11	21.05	20.27	20.23	20.39	1
6		Subtest 4	20.21	20.33	20.28	20.29	20.63	20.57	19.85	19.78	19.88	2
6		Subtest 5	23.25	23.47	23.36	22.31	22.63	22.60	21.82	21.70	21.90	0
8	DC-HSDPA	Subtest 1	23.65	23.94	23.94	21.35	21.68	21.66	21.34	21.18	21.46	0
8		Subtest 2	22.65	22.72	22.85	20.12	20.47	20.49	20.38	20.25	20.25	0
8		Subtest 3	22.15	22.37	22.35	19.83	20.04	20.10	19.81	19.78	19.98	0.5
8		Subtest 4	21.86	22.11	22.16	19.56	19.84	19.85	19.63	19.52	19.67	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	**23.85**	0	0
	1	25	23.81		0
	1	49	23.64		0
	25	0	**23.26**	0-1	1
	25	12	23.15		1
	25	25	23.01		1
	50	0	23.24		1
	15	0	23.18	0-1	1
	15	17	23.11		1
	15	35	22.90		1
	27	0	23.21	0-2	1
	27	12	23.10		1
	27	23	23.00		1
16QAM	1	0	23.42	0-2	1
	1	25	23.39		1
	1	49	23.21		1
	25	0	22.18	0-3	2
	25	12	22.12		2
	25	25	21.97		2
	15	0	22.15	0-5	2
	15	17	22.13		2
	15	35	21.95		2
	27	0	22.17		2
	27	12	22.08		2
	27	23	22.03		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	23.77	0	0
	1	25	**23.97**		0
	1	49	23.83		0
	25	0	23.08	0-1	1
	25	12	23.23		1
	25	25	**23.36**		1
	50	0	23.25		1
	15	0	23.02	0-1	1
	15	17	23.24		1
	15	35	23.20		1
	27	0	23.10	0-2	1
	27	12	23.21		1
	27	23	23.23		1
16QAM	1	0	23.57	0-2	1
	1	25	23.62		1
	1	49	23.54		1
	25	0	22.16	0-3	2
	25	12	22.27		2
	25	25	22.31		2
	15	0	22.05	0-5	2
	15	17	22.33		2
	15	35	22.30		2
	27	0	22.19		2
	27	12	22.28		2
	27	23	22.34		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	**23.82**	0	0
	1	25	23.76		0
	1	49	23.56		0
	25	0	**22.87**	0-1	1
	25	12	22.72		1
	25	25	22.66		1
	50	0	22.82		1
	15	0	22.84	0-1	1
	15	17	22.71		1
	15	35	22.55		1
	27	0	22.85	0-2	1
	27	12	22.70		1
	27	23	22.67		1
16QAM	1	0	23.37	0-2	1
	1	25	23.33		1
	1	49	23.07		1
	25	0	21.82	0-3	2
	25	12	21.68		2
	25	25	21.63		2
	15	0	21.91	0-5	2
	15	17	21.83		2
	15	35	21.63		2
	27	0	21.87		2
	27	12	21.71		2
	27	23	21.64		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	23.68	23.55	23.67	0	0
	1	25	23.72	23.76	23.55		0
	1	49	23.61	**23.86**	23.74		0
	25	0	22.87	22.70	22.65	0-1	1
	25	12	22.85	22.88	22.62		1
	25	25	22.70	**22.96**	22.63		1
	50	0	22.87	22.94	22.74		1
	15	0	22.79	22.69	22.72	0-1	1
	15	17	22.86	22.87	22.64		1
	15	35	22.72	22.91	22.73		1
	27	0	22.85	22.71	22.66	0-2	1
	27	12	22.78	22.88	22.63		1
	27	23	22.73	22.94	22.68		1
16QAM	1	0	22.99	23.01	23.23	0-2	1
	1	25	23.07	23.14	23.08		1
	1	49	22.94	23.22	23.17		1
	25	0	21.88	21.74	21.71	0-3	2
	25	12	21.87	21.86	21.69		2
	25	25	21.76	21.98	21.73		2
	15	0	21.82	21.67	21.77	0-5	2
	15	17	21.89	21.89	21.69		2
	15	35	21.77	21.91	21.75		2
	27	0	21.89	21.69	21.68		2
	27	12	21.81	21.86	21.65		2
	27	23	21.76	21.94	21.62		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	23.73	0	0
	1	25	**23.77**		0
	1	49	23.61		0
	25	0	22.82	0-1	1
	25	12	**22.91**		1
	25	25	22.76		1
	50	0	22.85		1
	15	0	22.86	0-1	1
	15	17	22.84		1
	15	35	22.72		1
	27	0	22.82	0-2	1
	27	12	22.83		1
	27	23	22.76		1
16QAM	1	0	23.16	0-2	1
	1	25	23.19		1
	1	49	23.13		1
	25	0	21.83	0-3	2
	25	12	21.89		2
	25	25	21.78		2
	15	0	21.95	0-5	2
	15	17	21.93		2
	15	35	21.82		2
	27	0	21.92		2
	27	12	21.94		2
	27	23	21.83		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	22.52	22.83	22.73	0	0
	1	50	22.92	22.98	22.54		0
	1	99	22.93	**23.16**	22.75		0
	50	0	22.15	22.14	21.80	0-1	1
	50	25	22.37	22.24	21.80		1
	50	50	22.26	**22.47**	21.96		1
	100	0	22.32	22.32	22.24		1
	15	0	22.53	22.63	22.55	0-1	0
	15	42	22.77	22.71	22.53		0
	15	85	22.72	22.87	22.59		0
	27	0	21.67	21.84	21.70	0-2	1
	27	37	22.03	21.96	21.62		1
	27	73	22.02	22.08	21.84		1
16QAM	1	0	22.03	22.24	22.30	0-2	1
	1	50	22.39	22.28	22.01		1
	1	99	22.37	22.46	22.25		1
	15	0	21.71	21.88	21.88	0-3	1
	15	42	22.10	21.90	21.64		1
	15	85	22.15	22.09	21.85		1
	27	0	21.00	21.12	21.02	0-5	2
	27	37	21.38	21.23	20.86		2
	27	73	21.40	21.35	21.13		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	23.22	23.28	23.29	0	0
	1	50	23.26	23.53	23.47		0
	1	99	23.44	**23.58**	23.24		0
	50	0	22.60	22.41	22.26	0-1	1
	50	25	22.79	22.54	22.56		1
	50	50	22.59	**23.06**	22.67		1
	100	0	22.63	22.61	22.65		1
	15	0	23.25	23.22	23.01	0-1	0
	15	42	23.44	23.33	23.22		0
	15	85	23.32	23.42	23.00		0
	27	0	22.27	22.20	21.99	0-2	1
	27	37	22.38	22.31	22.24		1
	27	73	22.32	22.37	22.16		1
16QAM	1	0	22.63	22.43	22.51	0-2	1
	1	50	22.72	22.68	22.57		1
	1	99	22.64	22.67	22.37		1
	15	0	22.35	22.18	22.07	0-3	1
	15	42	22.47	22.40	22.29		1
	15	85	22.36	22.46	22.05		1
	27	0	21.35	21.24	21.03	0-5	2
	27	37	21.43	21.39	21.21		2
	27	73	21.34	21.40	21.16		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	22.56	22.69	23.05	0	0
	1	50	22.71	22.62	22.77		0
	1	99	**23.11**	22.73	22.96		0
	50	0	21.52	21.73	21.95	0-1	1
	50	25	21.67	21.64	21.76		1
	50	50	**22.08**	21.95	21.90		1
	100	0	21.96	21.74	21.60		1
	15	0	22.30	22.53	22.75	0-1	0
	15	42	22.33	22.32	22.50		0
	15	85	22.67	22.61	22.59		0
	27	0	21.27	21.51	21.78	0-2	1
	27	37	21.31	21.36	21.42		1
	27	73	21.62	21.56	21.43		1
16QAM	1	0	21.72	21.85	22.04	0-2	1
	1	50	21.81	21.72	21.76		1
	1	99	22.07	21.97	22.00		1
	15	0	21.28	21.57	21.79	0-3	1
	15	42	21.34	21.34	21.44		1
	15	85	21.72	21.64	21.56		1
	27	0	20.23	20.51	20.75	0-5	2
	27	37	20.37	20.38	20.45		2
	27	73	20.63	20.52	20.42		2

8.2.9 LTE Band 41

Table 8-10
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	22.90	23.26	22.95	23.11	23.02	0	0
	1	50	23.02	23.06	23.00	**23.27**	23.05		0
	1	99	22.88	22.97	22.99	23.19	22.99		0
	50	0	21.93	22.04	21.97	**22.10**	22.01	0-1	1
	50	25	21.94	22.02	21.98	22.03	22.00		1
	50	50	21.89	22.03	21.98	22.00	21.97		1
	100	0	22.03	22.07	22.02	22.07	22.09		1
	15	0	22.91	23.11	22.92	23.11	23.01	0-1	0
	15	42	22.96	23.07	23.01	23.09	23.02		0
	15	85	22.92	23.04	22.99	23.03	22.99		0
	27	0	21.85	22.08	21.96	22.08	22.01	0-2	1
	27	37	21.93	22.03	22.01	22.07	21.98		1
	27	73	21.88	22.01	21.97	21.99	21.91		1
16QAM	1	0	22.34	22.69	22.52	22.68	22.65	0-2	1
	1	50	22.50	22.64	22.50	22.65	22.68		1
	1	99	22.41	22.55	22.47	22.59	22.51		1
	15	0	21.88	22.09	21.98	22.17	22.03	0-3	1
	15	42	21.92	22.06	22.02	22.15	22.00		1
	15	85	21.91	22.03	21.98	22.07	21.95		1
	27	0	20.77	21.08	20.98	21.19	20.94	0-5	2
	27	37	20.86	21.05	21.02	21.08	21.00		2
	27	73	20.82	21.02	20.97	21.02	20.91		2

Figure 8-2
Power Measurement Setup

8.3 WLAN Conducted Powers

Table 8-11
2.4 GHz WLAN Maximum Average RF Power

2.4GHz WIFI (20MHz 802.11b SISO)		
Freq. [MHz]	**Channel**	**Conducted Power [dBm]**
2412	1	17.77
2437	6	17.59
2462	11	17.74
2.4GHz WIFI (20MHz 802.11g SISO)		
Freq. [MHz]	**Channel**	**Conducted Power [dBm]**
2412	1	16.48
2437	6	16.82
2462	11	14.32
2.4GHz WIFI (20MHz 802.11n SISO)		
Freq. [MHz]	**Channel**	**Conducted Power [dBm]**
2412	1	16.47
2437	6	16.82
2462	11	14.37

Table 8-12
5 GHz WLAN Maximum Average RF Power

5GHz WIFI (20MHz 802.11a SISO)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-1	5180	36	15.80
	5200	40	15.96
	5220	44	15.83
	5240	48	15.90
UNII-2A	5260	52	15.99
	5280	56	16.00
	5300	60	15.88
	5320	64	15.92
UNII-2C	5500	100	15.79
	5600	120	15.75
	5620	124	15.95
	5720	144	15.99
UNII-3	5745	149	16.05
	5785	157	16.18
	5825	165	16.28
5GHz WIFI (20MHz 802.11n SISO)			
Band	**Freq. [MHz]**	**Channel**	**Avg. Conducted Power [dBm]**
UNII-1	5180	36	16.17
	5200	40	16.10
	5220	44	16.05
	5240	48	16.08
UNII-2A	5260	52	16.12
	5280	56	15.94
	5300	60	15.89
	5320	64	15.84
UNII-2C	5500	100	15.79
	5600	120	15.81
	5620	124	15.66
	5720	144	15.81
UNII-3	5745	149	15.71
	5785	157	15.78
	5825	165	15.99

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.

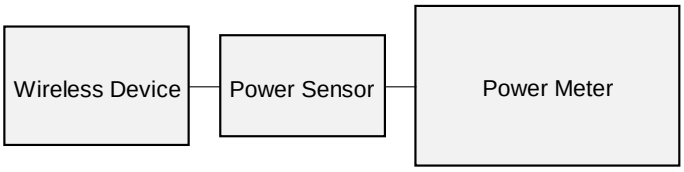

Figure 8-3
Power Measurement Setup

8.4 Bluetooth Conducted Powers

Table 8-13
Bluetooth Average RF Power

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	16.72	46.989
2441	GFSK	1.0	39	16.78	47.643
2480	GFSK	1.0	78	16.71	46.881

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

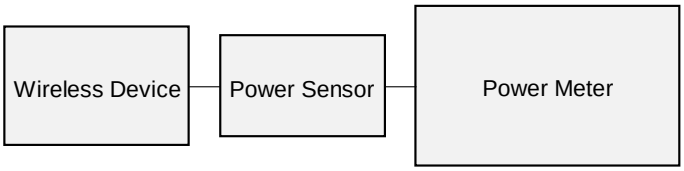

Figure 8-4
Power Measurement Setup

8.5 802.15.4 ab-NB Conducted Powers

Table 8-14
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	15.04	31.915
5786.25	O-QPSK	1.0	Middle	14.96	31.333
5846.25	O-QPSK	1.0	High	14.92	31.046

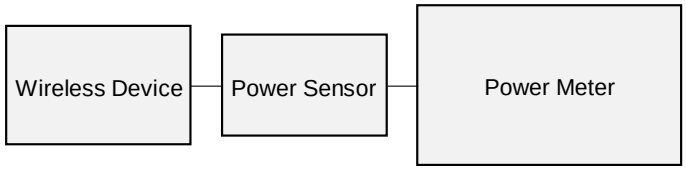

Figure 8-5
Power Measurement Setup

8.6 802.15.4 ab-NB Duty Cycle

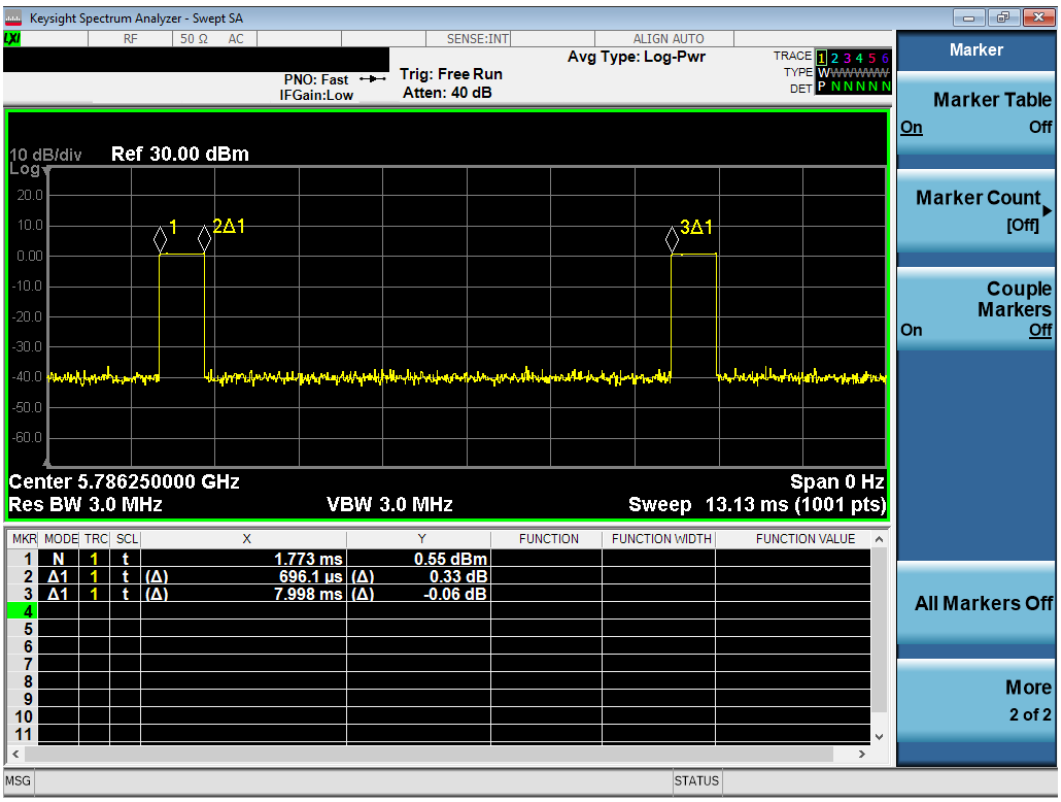

Figure 8-6
802.15.4 ab-NB Transmission Plot

Equation 8-1
802.15.4 ab-NB Duty Cycle Calculation

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

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
07/01/2024	30 Head	23.5	4	0.756	54.013	0.750	55.000	0.80%	-1.79%
			12	0.757	53.627	0.750	55.000	0.93%	-2.50%
			13	0.757	53.554	0.750	55.000	0.93%	-2.63%
			14	0.757	53.529	0.750	55.000	0.93%	-2.67%
			30	0.759	53.005	0.750	55.000	1.20%	-3.63%
			60	0.765	52.483	0.753	54.325	1.59%	-3.39%
			65	0.766	52.395	0.753	54.213	1.73%	-3.35%
			150	0.794	50.913	0.760	52.300	4.47%	-2.65%
06/14/2024	750 Head	24.5	680	0.844	43.547	0.888	42.305	-4.95%	2.94%
			695	0.857	43.363	0.889	42.227	-3.60%	2.69%
			700	0.861	43.302	0.889	42.201	-3.15%	2.61%
			710	0.870	43.178	0.890	42.149	-2.25%	2.44%
			725	0.883	42.983	0.891	42.071	-0.90%	2.17%
			750	0.907	42.645	0.894	41.942	1.45%	1.68%
			770	0.926	42.377	0.895	41.838	3.46%	1.29%
			785	0.940	42.185	0.896	41.760	4.91%	1.02%
06/17/2024	750 Head	23.2	695	0.845	42.746	0.889	42.227	-4.95%	1.23%
			700	0.850	42.712	0.889	42.201	-4.39%	1.21%
			710	0.860	42.628	0.890	42.149	-3.37%	1.14%
			725	0.873	42.447	0.891	42.071	-2.02%	0.89%
			750	0.893	41.998	0.894	41.942	-0.11%	0.13%
			770	0.910	41.630	0.895	41.838	1.68%	-0.50%
			785	0.925	41.429	0.896	41.760	3.24%	-0.79%
			800	0.941	41.306	0.897	41.682	4.91%	-0.90%
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%
06/26/2024	750 Head	24.0	695	0.850	43.194	0.889	42.227	-4.39%	2.29%
			700	0.854	43.128	0.889	42.201	-3.94%	2.20%
			710	0.863	42.997	0.890	42.149	-3.03%	2.01%
			725	0.876	42.794	0.891	42.071	-1.68%	1.72%
			750	0.899	42.436	0.894	41.942	0.56%	1.18%
			770	0.917	42.163	0.895	41.838	2.46%	0.78%
			785	0.930	41.987	0.896	41.760	3.79%	0.54%
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%
06/24/2024	835 Head	21.2	815	0.884	41.281	0.898	41.594	-1.56%	-0.75%
			820	0.889	41.211	0.899	41.578	-1.11%	-0.88%
			835	0.903	41.011	0.900	41.500	0.33%	-1.18%
			850	0.917	40.822	0.916	41.500	0.11%	-1.63%
06/26/2024	835 Head	20.7	815	0.890	41.063	0.898	41.594	-0.89%	-1.28%
			820	0.895	40.997	0.899	41.578	-0.44%	-1.40%
			835	0.910	40.786	0.900	41.500	1.11%	-1.72%
			850	0.926	40.587	0.916	41.500	1.09%	-2.20%
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%

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	1900 Head	22.0	1850	1.379	38.719	1.400	40.000	-1.50%	-3.20%
			1860	1.389	38.675	1.400	40.000	-0.79%	-3.31%
			1880	1.410	38.593	1.400	40.000	0.71%	-3.52%
			1900	1.431	38.506	1.400	40.000	2.21%	-3.74%
			1905	1.436	38.483	1.400	40.000	2.57%	-3.79%
			1910	1.442	38.462	1.400	40.000	3.00%	-3.84%
			1920	1.452	38.415	1.400	40.000	3.71%	-3.96%
07/03/2024	1900 Head	24.5	1850	1.404	41.110	1.400	40.000	0.29%	2.78%
			1860	1.413	41.078	1.400	40.000	0.93%	2.70%
			1880	1.433	41.020	1.400	40.000	2.36%	2.55%
			1900	1.451	40.956	1.400	40.000	3.64%	2.39%
			1905	1.456	40.939	1.400	40.000	4.00%	2.35%
			1910	1.460	40.921	1.400	40.000	4.29%	2.30%
			1920	1.469	40.890	1.400	40.000	4.93%	2.23%
07/03/2024	2450 Head	19.5	2300	1.659	39.495	1.670	39.500	-0.66%	-0.01%
			2310	1.667	39.484	1.679	39.480	-0.71%	0.01%
			2320	1.675	39.473	1.687	39.460	-0.71%	0.03%
			2400	1.738	39.325	1.756	39.289	-1.03%	0.09%
			2450	1.778	39.251	1.800	39.200	-1.22%	0.13%
			2480	1.801	39.188	1.833	39.162	-1.75%	0.07%
			2500	1.819	39.155	1.855	39.136	-1.94%	0.05%
			2510	1.827	39.139	1.866	39.123	-2.09%	0.04%
			2535	1.847	39.098	1.893	39.092	-2.43%	0.02%
			2550	1.858	39.071	1.909	39.073	-2.67%	-0.01%
			2560	1.866	39.050	1.920	39.060	-2.81%	-0.03%
			2600	1.900	38.974	1.964	39.009	-3.26%	-0.09%
			2650	1.941	38.888	2.018	38.945	-3.82%	-0.15%
			2680	1.965	38.829	2.051	38.907	-4.19%	-0.20%
			2700	1.982	38.791	2.073	38.882	-4.39%	-0.23%
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
07/08/2024	2450 Head	19.0	2300	1.638	40.049	1.670	39.500	-1.92%	1.39%
			2310	1.645	40.029	1.679	39.480	-2.03%	1.39%
			2320	1.653	40.010	1.687	39.460	-2.02%	1.39%
			2400	1.714	39.899	1.756	39.289	-2.39%	1.55%
			2450	1.755	39.819	1.800	39.200	-2.50%	1.58%
			2480	1.778	39.780	1.833	39.162	-3.00%	1.58%
			2500	1.793	39.745	1.855	39.136	-3.34%	1.56%
			2510	1.801	39.727	1.866	39.123	-3.48%	1.54%
			2535	1.822	39.688	1.893	39.092	-3.75%	1.52%
			2550	1.835	39.667	1.909	39.073	-3.88%	1.52%
			2560	1.843	39.653	1.920	39.060	-4.01%	1.52%
			2600	1.876	39.583	1.964	39.009	-4.48%	1.47%
			2650	1.921	39.505	2.018	38.945	-4.81%	1.44%
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%

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
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%

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
06/22/2024	5200-5800 Head	20.7	5180	4.534	34.774	4.635	36.009	-2.18%	-3.43%
			5190	4.544	34.758	4.645	35.998	-2.17%	-3.44%
			5200	4.556	34.755	4.655	35.986	-2.13%	-3.42%
			5210	4.564	34.743	4.666	35.975	-2.19%	-3.42%
			5220	4.575	34.721	4.676	35.963	-2.16%	-3.45%
			5240	4.600	34.684	4.696	35.940	-2.04%	-3.49%
			5250	4.610	34.681	4.706	35.929	-2.04%	-3.47%
			5260	4.620	34.659	4.717	35.917	-2.06%	-3.50%
			5270	4.633	34.639	4.727	35.906	-1.99%	-3.53%
			5280	4.641	34.612	4.737	35.894	-2.03%	-3.57%
			5290	4.642	34.606	4.748	35.883	-2.23%	-3.56%
			5300	4.650	34.591	4.758	35.871	-2.27%	-3.57%
			5310	4.663	34.580	4.768	35.860	-2.20%	-3.57%
			5320	4.680	34.565	4.778	35.849	-2.05%	-3.58%
			5500	4.863	34.250	4.963	35.643	-2.01%	-3.91%
			5510	4.871	34.232	4.973	35.632	-2.05%	-3.93%
			5520	4.883	34.209	4.983	35.620	-2.01%	-3.96%
			5530	4.895	34.182	4.994	35.609	-1.98%	-4.01%
			5540	4.905	34.175	5.004	35.597	-1.98%	-3.99%
			5550	4.914	34.171	5.014	35.586	-1.99%	-3.98%
			5560	4.922	34.157	5.024	35.574	-2.03%	-3.98%
			5580	4.952	34.107	5.045	35.551	-1.84%	-4.06%
			5600	4.977	34.075	5.065	35.529	-1.74%	-4.09%
			5610	4.989	34.060	5.076	35.518	-1.71%	-4.10%
			5620	5.000	34.049	5.086	35.506	-1.69%	-4.10%
			5640	5.018	34.036	5.106	35.483	-1.72%	-4.08%
			5660	5.042	34.012	5.127	35.460	-1.66%	-4.08%
			5670	5.060	33.990	5.137	35.449	-1.50%	-4.12%
			5680	5.077	33.963	5.147	35.437	-1.36%	-4.16%
			5690	5.090	33.949	5.158	35.426	-1.32%	-4.17%
			5700	5.098	33.934	5.168	35.414	-1.35%	-4.18%
			5710	5.105	33.919	5.178	35.403	-1.41%	-4.19%
			5720	5.115	33.900	5.188	35.391	-1.41%	-4.21%
			5745	5.138	33.883	5.214	35.363	-1.46%	-4.19%
			5750	5.144	33.871	5.219	35.357	-1.44%	-4.20%
			5755	5.150	33.859	5.224	35.351	-1.42%	-4.22%
			5765	5.164	33.828	5.234	35.340	-1.34%	-4.28%
			5775	5.176	33.803	5.245	35.329	-1.32%	-4.32%
			5785	5.187	33.786	5.255	35.317	-1.29%	-4.34%
			5795	5.194	33.777	5.265	35.305	-1.35%	-4.33%
			5800	5.201	33.773	5.270	35.300	-1.31%	-4.33%
			5805	5.204	33.763	5.275	35.294	-1.35%	-4.34%
			5825	5.215	33.733	5.296	35.271	-1.53%	-4.36%
			5835	5.227	33.720	5.305	35.230	-1.47%	-4.29%
			5845	5.243	33.705	5.315	35.210	-1.35%	-4.27%
			5850	5.250	33.700	5.320	35.200	-1.32%	-4.26%
			5855	5.258	33.691	5.325	35.197	-1.26%	-4.28%
			5865	5.267	33.662	5.336	35.190	-1.29%	-4.34%
			5875	5.276	33.639	5.347	35.183	-1.33%	-4.39%
			5885	5.286	33.618	5.357	35.177	-1.33%	-4.43%
			5905	5.298	33.578	5.379	35.163	-1.51%	-4.51%

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
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
07/10/2024	5200-5800 Head	19.3	5180	4.543	34.779	4.635	36.009	-1.98%	-3.42%
			5190	4.554	34.765	4.645	35.998	-1.96%	-3.43%
			5200	4.563	34.743	4.655	35.986	-1.98%	-3.45%
			5210	4.574	34.721	4.666	35.975	-1.97%	-3.49%
			5220	4.587	34.705	4.676	35.963	-1.90%	-3.50%
			5240	4.607	34.678	4.696	35.940	-1.90%	-3.51%
			5250	4.618	34.665	4.706	35.929	-1.87%	-3.52%
			5260	4.630	34.647	4.717	35.917	-1.84%	-3.54%
			5270	4.641	34.622	4.727	35.906	-1.82%	-3.58%
			5280	4.650	34.600	4.737	35.894	-1.84%	-3.61%
			5290	4.659	34.582	4.748	35.883	-1.87%	-3.63%
			5300	4.670	34.566	4.758	35.871	-1.85%	-3.64%
			5310	4.683	34.541	4.768	35.860	-1.78%	-3.68%
			5320	4.696	34.512	4.778	35.849	-1.72%	-3.73%
			5500	4.891	34.216	4.963	35.643	-1.45%	-4.00%
			5510	4.900	34.196	4.973	35.632	-1.47%	-4.03%
			5520	4.912	34.172	4.983	35.620	-1.42%	-4.07%
			5530	4.926	34.146	4.994	35.609	-1.36%	-4.11%
			5540	4.939	34.123	5.004	35.597	-1.30%	-4.14%
			5550	4.951	34.106	5.014	35.586	-1.26%	-4.16%
			5560	4.963	34.102	5.024	35.574	-1.21%	-4.14%
			5580	4.986	34.072	5.045	35.551	-1.17%	-4.16%
			5600	5.010	34.029	5.065	35.529	-1.09%	-4.22%
			5610	5.019	34.010	5.076	35.518	-1.12%	-4.25%
			5620	5.030	33.988	5.086	35.506	-1.10%	-4.28%
			5640	5.053	33.933	5.106	35.483	-1.04%	-4.37%
			5660	5.079	33.894	5.127	35.460	-0.94%	-4.42%
			5670	5.093	33.886	5.137	35.449	-0.86%	-4.41%
			5680	5.103	33.876	5.147	35.437	-0.85%	-4.41%
			5690	5.112	33.862	5.158	35.426	-0.89%	-4.41%
			5700	5.125	33.846	5.168	35.414	-0.83%	-4.43%
			5710	5.137	33.825	5.178	35.403	-0.79%	-4.46%
			5720	5.148	33.802	5.188	35.391	-0.77%	-4.49%
			5745	5.177	33.741	5.214	35.363	-0.71%	-4.59%
			5750	5.182	33.731	5.219	35.357	-0.71%	-4.60%
			5755	5.186	33.721	5.224	35.351	-0.73%	-4.61%
			5765	5.197	33.702	5.234	35.340	-0.71%	-4.63%
			5775	5.209	33.691	5.245	35.329	-0.69%	-4.64%
			5785	5.223	33.683	5.255	35.317	-0.61%	-4.63%
			5795	5.235	33.674	5.265	35.305	-0.57%	-4.62%
			5800	5.240	33.665	5.270	35.300	-0.57%	-4.63%
			5805	5.245	33.657	5.275	35.294	-0.57%	-4.64%
			5825	5.267	33.615	5.296	35.271	-0.55%	-4.70%
			5835	5.282	33.595	5.305	35.230	-0.43%	-4.64%
			5845	5.292	33.578	5.315	35.210	-0.43%	-4.64%
			5850	5.296	33.568	5.320	35.200	-0.45%	-4.64%
			5855	5.300	33.554	5.325	35.197	-0.47%	-4.67%
			5865	5.308	33.528	5.336	35.190	-0.52%	-4.72%
			5875	5.317	33.502	5.347	35.183	-0.56%	-4.78%
			5885	5.329	33.481	5.357	35.177	-0.52%	-4.82%
			5905	5.359	33.461	5.379	35.163	-0.37%	-4.84%

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
07/08/2024	6000 Head	20.4	5935	5.229	36.525	5.411	35.143	-3.36%	3.93%
			5970	5.275	36.469	5.448	35.120	-3.18%	3.84%
			5985	5.295	36.442	5.464	35.110	-3.09%	3.79%
			6000	5.314	36.412	5.480	35.100	-3.03%	3.74%
			6025	5.348	36.360	5.510	35.070	-2.94%	3.68%
			6065	5.403	36.268	5.557	35.022	-2.77%	3.56%
			6075	5.418	36.242	5.569	35.010	-2.71%	3.52%
			6085	5.434	36.218	5.580	34.998	-2.62%	3.49%
			6185	5.566	36.084	5.698	34.878	-2.32%	3.46%
			6275	5.676	35.987	5.805	34.770	-2.22%	3.50%
			6285	5.685	35.973	5.816	34.758	-2.25%	3.50%
			6305	5.705	35.943	5.840	34.734	-2.31%	3.48%
			6345	5.740	35.884	5.887	34.686	-2.50%	3.45%
			6475	5.895	35.593	6.041	34.530	-2.42%	3.08%
			6485	5.902	35.566	6.052	34.518	-2.48%	3.04%
			6500	5.919	35.519	6.070	34.500	-2.49%	2.95%
			6505	5.926	35.503	6.076	34.494	-2.47%	2.93%
			6545	5.998	35.409	6.122	34.446	-2.03%	2.80%
			6665	6.171	35.270	6.265	34.302	-1.50%	2.82%
			6675	6.182	35.256	6.273	34.290	-1.45%	2.82%
			6685	6.195	35.239	6.285	34.278	-1.43%	2.80%
			6715	6.240	35.196	6.319	34.242	-1.25%	2.79%
			6785	6.285	35.155	6.400	34.158	-1.80%	2.92%
			6825	6.321	35.050	6.447	34.110	-1.95%	2.76%
			6985	6.489	34.773	6.633	33.918	-2.17%	2.52%
			6995	6.507	34.743	6.644	33.906	-2.06%	2.47%
			7000	6.517	34.729	6.650	33.900	-2.00%	2.45%
			7005	6.527	34.717	6.656	33.894	-1.94%	2.43%
			7025	6.569	34.679	6.680	33.870	-1.66%	2.39%
			7500	7.153	34.017	7.240	33.300	-1.20%	2.15%
			7980	7.738	33.211	7.816	32.724	-1.00%	1.49%
			8000	7.743	33.179	7.840	32.700	-1.24%	1.46%

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	06/14/2024	21.6	22.5	0.20	1097	3949	1684	1.640	8.270	8.200	-0.85%
AM1	750	HEAD	06/17/2024	21.5	21.2	0.20	1097	3949	1684	1.700	8.270	8.500	2.78%
AM1	750	HEAD	06/18/2024	21.5	21.0	0.20	1097	3949	1684	1.750	8.270	8.750	5.80%
AM15	835	HEAD	06/24/2024	21.5	21.3	0.20	4d108	7668	1681	2.030	9.800	10.150	3.57%
AM15	835	HEAD	06/26/2024	22.3	21.6	0.20	4d108	7668	1681	1.910	9.800	9.550	-2.55%
AM10	1750	HEAD	07/03/2024	20.3	19.5	0.10	1104	7546	1402	3.390	35.600	33.900	-4.78%
AM4	1900	HEAD	07/03/2024	22.7	21.0	0.10	5d180	7639	1403	4.150	39.200	41.500	5.87%
AM15	1900	HEAD	07/03/2024	23.6	23.0	0.10	5d131	7668	1681	4.200	40.100	42.000	4.74%
AM13	2450	HEAD	07/03/2024	21.7	20.7	0.10	921	7682	1683	5.140	54.200	51.400	-5.17%
AM6	2450	HEAD	07/03/2024	22.2	23.4	0.10	750	7499	1644	5.110	52.600	51.100	-2.85%
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	07/03/2024	22.2	23.4	0.10	1042	7499	1644	5.490	55.800	54.900	-1.61%
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	06/22/2024	21.5	19.6	0.05	1066	7427	467	3.770	80.300	75.400	-6.10%
AM1	5250	HEAD	07/10/2024	21.6	20.9	0.05	1123	3949	1684	3.960	79.400	79.200	-0.25%
AM8	5600	HEAD	06/22/2024	21.5	19.6	0.05	1066	7427	467	4.160	83.900	83.200	-0.83%
AM1	5600	HEAD	07/10/2024	21.6	20.9	0.05	1123	3949	1684	4.050	82.500	81.000	-1.82%
AM8	5750	HEAD	06/22/2024	21.5	19.6	0.05	1066	7427	467	3.950	79.500	79.000	-0.63%
AM1	5750	HEAD	07/10/2024	21.6	20.9	0.05	1123	3949	1684	3.880	79.400	77.600	-2.27%
AM8	5850	HEAD	06/22/2024	21.5	19.6	0.05	1066	7427	467	4.160	82.200	83.200	1.22%
AM1	5850	HEAD	07/10/2024	21.6	20.9	0.05	1123	3949	1684	3.970	80.100	79.400	-0.87%

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	07/01/2024	22.0	21.8	1.00	1004	3746	1237	0.367	0.356	0.367	3.09%				
AM1	750	HEAD	06/17/2024	21.5	21.2	0.20	1097	3949	1684	1.110	5.380	5.550	3.16%				
AM1	750	HEAD	06/26/2024	21.8	22.5	0.20	1097	3949	1684	1.110	5.380	5.550	3.16%				
AM15	835	HEAD	06/21/2024	20.4	21.0	0.20	4d108	7668	1681	1.310	6.340	6.550	3.31%				
AM15	835	HEAD	06/24/2024	21.5	21.3	0.20	4d108	7668	1681	1.330	6.340	6.650	4.89%				
AM15	835	HEAD	06/26/2024	22.3	21.6	0.20	4d108	7668	1681	1.250	6.340	6.250	-1.42%				
AM10	1750	HEAD	07/03/2024	20.3	19.5	0.10	1104	7546	1402	1.810	18.800	18.100	-3.72%				
AM4	1900	HEAD	07/03/2024	22.7	21.0	0.10	5d180	7639	1403	2.150	20.600	21.500	4.37%				
AM13	2450	HEAD	07/03/2024	21.7	20.7	0.10	921	7682	1683	2.440	25.500	24.400	-4.31%				
AM6	2450	HEAD	07/08/2024	20.8	23.6	0.10	750	7499	1644	2.340	24.500	23.400	-4.49%				
AM13	2450	HEAD	07/08/2024	21.4	20.4	0.10	921	7682	1683	2.520	25.500	25.200	-1.18%				
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	06/27/2024	20.8	19.8	0.05	1066	7427	467	1.090	23.100	21.800	-5.63%				
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	06/27/2024	20.8	19.8	0.05	1066	7427	467	1.180	24.100	23.600	-2.07%				
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	06/27/2024	20.8	19.8	0.05	1066	7427	467	1.090	22.600	21.800	-3.54%				
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	06/27/2024	20.8	19.8	0.05	1066	7427	467	1.120	23.400	22.400	-4.27%				
AM7	6500	HEAD	07/08/2024	21.2	19.7	0.025	1019	7421	604	1.410	54.100	56.400	4.25%	34.4	1320	1376	4.24%
AM7	8000	HEAD	07/08/2024	21.2	19.7	0.025	1006	7421	604	1.150	45.400	46.000	1.32%	28.2	1110	1128	1.62%

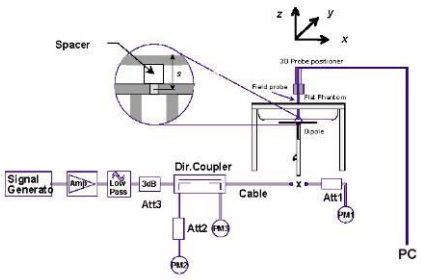

Figure 9-1
System Verification Setup Diagram

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.

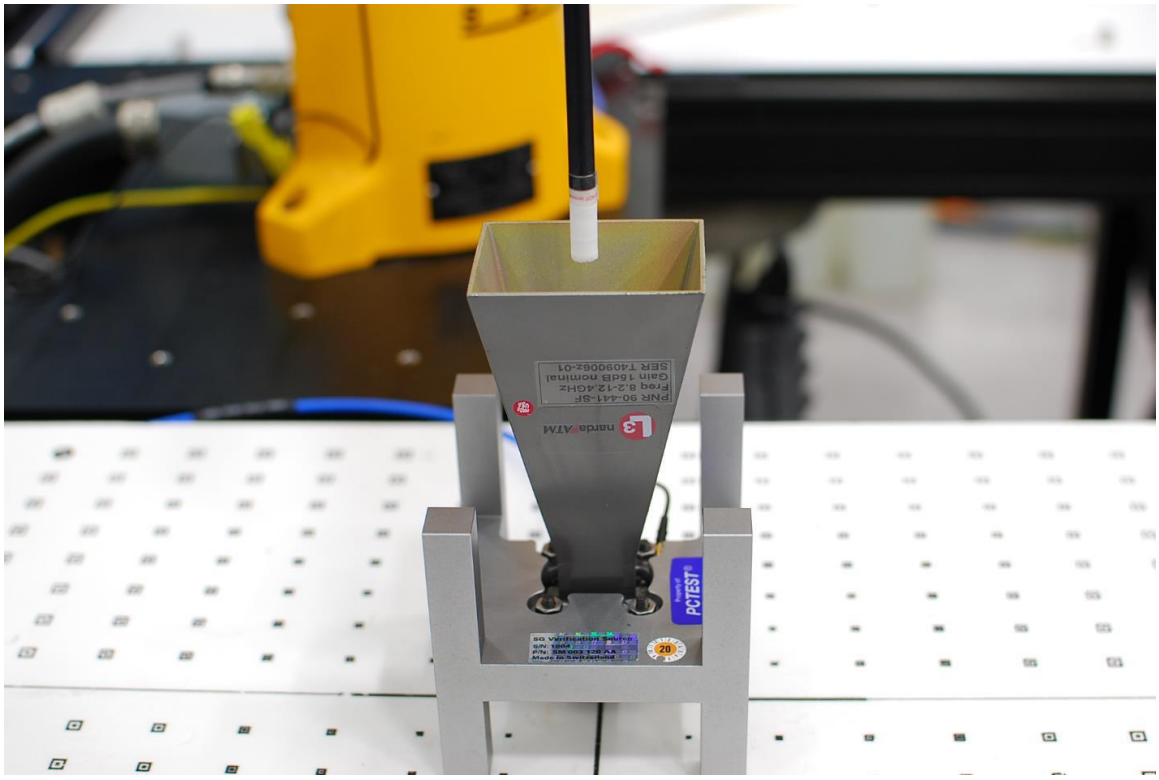

Figure 9-3
System Verification Setup Photo

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	
AM5	10	07/03/2024	1006	9487	793	93.3	62.1	58.5	0.26	62.3	58.9	0.24

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	VV6QW	1:1	-0.01	836.60	4183	25.00	23.33	Front	10	0.003	1.469	0.004	
Head	UMTS 850	RMC	Aluminum	Metal Loop	VV6QW	1:1	0.01	836.60	4183	25.00	23.33	Front	10	0.002	1.469	0.003	
Head	UMTS 850	RMC	Aluminum	Metal Links	VV6QW	1:1	0.03	836.60	4183	25.00	23.33	Front	10	0.004	1.469	0.006	
Head	UMTS 850	RMC	Titanium	Sport	N717C	1:1	0.03	836.60	4183	25.00	23.33	Front	10	0.004	1.469	0.006	
Head	UMTS 850	RMC	Titanium	Metal Loop	N717C	1:1	0.01	826.40	4132	25.00	23.10	Front	10	0.002	1.549	0.003	
Head	UMTS 850	RMC	Titanium	Metal Loop	N717C	1:1	0.01	836.60	4183	25.00	23.33	Front	10	0.005	1.469	0.007	A1
Head	UMTS 850	RMC	Titanium	Metal Loop	N717C	1:1	0.01	846.60	4233	25.00	23.32	Front	10	0.001	1.472	0.001	
Head	UMTS 850	RMC	Titanium	Metal Links	N717C	1:1	0.09	836.60	4183	25.00	23.33	Front	10	0.003	1.469	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					

10.2 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	4XX4J	1:1	0.00	1732.40	1412	24.00	22.97	Front	10	0.105	1.268	0.133	
Head	UMTS 1750	RMC	Aluminum	Metal Loop	4XX4J	1:1	-0.01	1732.40	1412	24.00	22.97	Front	10	0.141	1.268	0.179	
Head	UMTS 1750	RMC	Aluminum	Metal Links	4XX4J	1:1	-0.05	1712.40	1312	24.00	22.66	Front	10	0.110	1.361	0.150	
Head	UMTS 1750	RMC	Aluminum	Metal Links	4XX4J	1:1	-0.03	1732.40	1412	24.00	22.97	Front	10	0.150	1.268	0.190	A2
Head	UMTS 1750	RMC	Aluminum	Metal Links	4XX4J	1:1	-0.02	1752.60	1513	24.00	22.89	Front	10	0.127	1.291	0.164	
Head	UMTS 1750	RMC	Titanium	Sport	TXY5W	1:1	-0.04	1732.40	1412	24.00	22.97	Front	10	0.118	1.268	0.150	
Head	UMTS 1750	RMC	Titanium	Metal Loop	TXY5W	1:1	0.08	1732.40	1412	24.00	22.97	Front	10	0.139	1.268	0.176	
Head	UMTS 1750	RMC	Titanium	Metal Links	TXY5W	1:1	0.07	1732.40	1412	24.00	22.97	Front	10	0.133	1.268	0.169	
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	3M74J	1:1	-0.01	1907.60	9538	24.00	23.04	Front	10	0.088	1.247	0.110	
Head	UMTS 1900	RMC	Aluminum	Metal Loop	3M74J	1:1	-0.03	1907.60	9538	24.00	23.04	Front	10	0.118	1.247	0.147	
Head	UMTS 1900	RMC	Aluminum	Metal Links	3M74J	1:1	0.06	1852.40	9262	24.00	22.91	Front	10	0.134	1.285	0.172	
Head	UMTS 1900	RMC	Aluminum	Metal Links	3M74J	1:1	-0.03	1880.00	9400	24.00	22.85	Front	10	0.125	1.303	0.163	
Head	UMTS 1900	RMC	Aluminum	Metal Links	3M74J	1:1	0.01	1907.60	9538	24.00	23.04	Front	10	0.155	1.247	0.193	A3
Head	UMTS 1900	RMC	Titanium	Sport	Q696D	1:1	-0.09	1907.60	9538	24.00	23.04	Front	10	0.078	1.247	0.097	
Head	UMTS 1900	RMC	Titanium	Metal Loop	Q696D	1:1	0.08	1907.60	9538	24.00	23.04	Front	10	0.075	1.247	0.094	
Head	UMTS 1900	RMC	Titanium	Metal Links	Q696D	1:1	-0.03	1907.60	9538	24.00	23.04	Front	10	0.109	1.247	0.136	
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	26NRF	1:1	0.08	707.50	23095	0.0	25.50	23.85	1	0	Front	10	0.003	1.462	0.004	
Head	LTE Band 12	10	QPSK	Aluminum	Sport	26NRF	1:1	0.08	707.50	23095	1.0	24.50	23.26	25	0	Front	10	0.003	1.330	0.004	
Head	LTE Band 12	10	QPSK	Aluminum	Metal Loop	26NRF	1:1	0.03	707.50	23095	0.0	25.50	23.85	1	0	Front	10	0.003	1.462	0.004	
Head	LTE Band 12	10	QPSK	Aluminum	Metal Loop	26NRF	1:1	0.05	707.50	23095	1.0	24.50	23.26	25	0	Front	10	0.003	1.330	0.004	
Head	LTE Band 12	10	QPSK	Aluminum	Metal Links	26NRF	1:1	0.07	707.50	23095	0.0	25.50	23.85	1	0	Front	10	0.003	1.462	0.004	A4
Head	LTE Band 12	10	QPSK	Aluminum	Metal Links	26NRF	1:1	0.04	707.50	23095	1.0	24.50	23.26	25	0	Front	10	0.002	1.330	0.003	
Head	LTE Band 12	10	QPSK	Titanium	Sport	XH7NF	1:1	0.04	707.50	23095	0.0	25.50	23.85	1	0	Front	10	0.003	1.462	0.004	
Head	LTE Band 12	10	QPSK	Titanium	Sport	XH7NF	1:1	0.06	707.50	23095	1.0	24.50	23.26	25	0	Front	10	0.002	1.330	0.003	
Head	LTE Band 12	10	QPSK	Titanium	Metal Loop	XH7NF	1:1	0.09	707.50	23095	0.0	25.50	23.85	1	0	Front	10	0.003	1.462	0.004	
Head	LTE Band 12	10	QPSK	Titanium	Metal Loop	XH7NF	1:1	0.02	707.50	23095	1.0	24.50	23.26	25	0	Front	10	0.002	1.330	0.003	
Head	LTE Band 12	10	QPSK	Titanium	Metal Links	XH7NF	1:1	0.09	707.50	23095	0.0	25.50	23.85	1	0	Front	10	0.002	1.462	0.003	
Head	LTE Band 12	10	QPSK	Titanium	Metal Links	XH7NF	1:1	0.01	707.50	23095	1.0	24.50	23.26	25	0	Front	10	0.002	1.330	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					

10.5 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	Q2MHL	1:1	0.01	782.00	23230	0.0	25.50	23.97	1	25	Front	10	0.005	1.422	0.007	
Head	LTE Band 13	10	QPSK	Aluminum	Sport	Q2MHL	1:1	0.08	782.00	23230	1.0	24.50	23.36	25	25	Front	10	0.003	1.300	0.004	
Head	LTE Band 13	10	QPSK	Aluminum	Metal Loop	Q2MHL	1:1	0.02	782.00	23230	0.0	25.50	23.97	1	25	Front	10	0.005	1.422	0.007	
Head	LTE Band 13	10	QPSK	Aluminum	Metal Loop	Q2MHL	1:1	0.09	782.00	23230	1.0	24.50	23.36	25	25	Front	10	0.004	1.300	0.005	
Head	LTE Band 13	10	QPSK	Aluminum	Metal Links	Q2MHL	1:1	0.10	782.00	23230	0.0	25.50	23.97	1	25	Front	10	0.004	1.422	0.006	
Head	LTE Band 13	10	QPSK	Aluminum	Metal Links	Q2MHL	1:1	0.06	782.00	23230	1.0	24.50	23.36	25	25	Front	10	0.003	1.300	0.004	
Head	LTE Band 13	10	QPSK	Titanium	Sport	XH7NF	1:1	0.03	782.00	23230	0.0	25.50	23.97	1	25	Front	10	0.005	1.422	0.007	
Head	LTE Band 13	10	QPSK	Titanium	Sport	XH7NF	1:1	0.03	782.00	23230	1.0	24.50	23.36	25	25	Front	10	0.003	1.300	0.004	
Head	LTE Band 13	10	QPSK	Titanium	Metal Loop	XH7NF	1:1	0.06	782.00	23230	0.0	25.50	23.97	1	25	Front	10	0.005	1.422	0.007	A5
Head	LTE Band 13	10	QPSK	Titanium	Metal Loop	XH7NF	1:1	0.05	782.00	23230	1.0	24.50	23.36	25	25	Front	10	0.004	1.300	0.005	
Head	LTE Band 13	10	QPSK	Titanium	Metal Links	XH7NF	1:1	0.06	782.00	23230	0.0	25.50	23.97	1	25	Front	10	0.004	1.422	0.006	
Head	LTE Band 13	10	QPSK	Titanium	Metal Links	XH7NF	1:1	0.15	782.00	23230	1.0	24.50	23.36	25	25	Front	10	0.003	1.300	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	QWX1H	1:1	0.03	793.00	23330	0.0	25.50	23.82	1	0	Front	10	0.005	1.472	0.007	
Head	LTE Band 14	10	QPSK	Aluminum	Sport	QWX1H	1:1	0.02	793.00	23330	1.0	24.50	22.87	25	0	Front	10	0.003	1.455	0.004	
Head	LTE Band 14	10	QPSK	Aluminum	Metal Loop	QWX1H	1:1	0.02	793.00	23330	0.0	25.50	23.82	1	0	Front	10	0.005	1.472	0.007	
Head	LTE Band 14	10	QPSK	Aluminum	Metal Loop	QWX1H	1:1	-0.04	793.00	23330	1.0	24.50	22.87	25	0	Front	10	0.002	1.455	0.003	
Head	LTE Band 14	10	QPSK	Aluminum	Metal Links	QWX1H	1:1	0.04	793.00	23330	0.0	25.50	23.82	1	0	Front	10	0.004	1.472	0.006	
Head	LTE Band 14	10	QPSK	Aluminum	Metal Links	QWX1H	1:1	0.08	793.00	23330	1.0	24.50	22.87	25	0	Front	10	0.002	1.455	0.003	
Head	LTE Band 14	10	QPSK	Titanium	Sport	XH7NF	1:1	0.04	793.00	23330	0.0	25.50	23.82	1	0	Front	10	0.004	1.472	0.006	
Head	LTE Band 14	10	QPSK	Titanium	Sport	XH7NF	1:1	0.09	793.00	23330	1.0	24.50	22.87	25	0	Front	10	0.003	1.455	0.004	
Head	LTE Band 14	10	QPSK	Titanium	Metal Loop	XH7NF	1:1	0.16	793.00	23330	0.0	25.50	23.82	1	0	Front	10	0.005	1.472	0.007	A6
Head	LTE Band 14	10	QPSK	Titanium	Metal Loop	XH7NF	1:1	0.03	793.00	23330	1.0	24.50	22.87	25	0	Front	10	0.003	1.455	0.004	
Head	LTE Band 14	10	QPSK	Titanium	Metal Links	XH7NF	1:1	0.03	793.00	23330	0.0	25.50	23.82	1	0	Front	10	0.004	1.472	0.006	
Head	LTE Band 14	10	QPSK	Titanium	Metal Links	XH7NF	1:1	0.01	793.00	23330	1.0	24.50	22.87	25	0	Front	10	0.003	1.455	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					

10.7 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	2WN29	1:1	-0.21	831.50	26865	0.0	25.50	23.86	1	49	Front	10	0.003	1.459	0.004	
Head	LTE Band 26	10	QPSK	Aluminum	Sport	2WN29	1:1	0.07	831.50	26865	1.0	24.50	22.96	25	25	Front	10	0.002	1.426	0.003	
Head	LTE Band 26	10	QPSK	Aluminum	Metal Loop	2WN29	1:1	0.09	831.50	26865	0.0	25.50	23.86	1	49	Front	10	0.002	1.459	0.003	
Head	LTE Band 26	10	QPSK	Aluminum	Metal Loop	2WN29	1:1	0.06	831.50	26865	1.0	24.50	22.96	25	25	Front	10	0.002	1.426	0.003	
Head	LTE Band 26	10	QPSK	Aluminum	Metal Links	2WN29	1:1	0.05	831.50	26865	0.0	25.50	23.86	1	49	Front	10	0.002	1.459	0.003	
Head	LTE Band 26	10	QPSK	Aluminum	Metal Links	2WN29	1:1	0.01	831.50	26865	1.0	24.50	22.96	25	25	Front	10	0.001	1.426	0.001	
Head	LTE Band 26	10	QPSK	Titanium	Sport	C52WP	1:1	0.05	831.50	26865	0.0	25.50	23.86	1	49	Front	10	0.006	1.459	0.009	
Head	LTE Band 26	10	QPSK	Titanium	Sport	C52WP	1:1	0.01	831.50	26865	1.0	24.50	22.96	25	25	Front	10	0.003	1.426	0.004	
Head	LTE Band 26	10	QPSK	Titanium	Metal Loop	C52WP	1:1	0.05	831.50	26865	0.0	25.50	23.86	1	49	Front	10	0.005	1.459	0.007	
Head	LTE Band 26	10	QPSK	Titanium	Metal Loop	C52WP	1:1	0.08	831.50	26865	1.0	24.50	22.96	25	25	Front	10	0.002	1.426	0.003	
Head	LTE Band 26	10	QPSK	Titanium	Metal Links	C52WP	1:1	0.02	819.00	26740	0.0	25.50	23.72	1	25	Front	10	0.003	1.507	0.005	
Head	LTE Band 26	10	QPSK	Titanium	Metal Links	C52WP	1:1	0.01	831.50	26865	0.0	25.50	23.86	1	49	Front	10	0.006	1.459	0.009	A7
Head	LTE Band 26	10	QPSK	Titanium	Metal Links	C52WP	1:1	0.05	844.00	26990	0.0	25.50	23.74	1	49	Front	10	0.005	1.500	0.008	
Head	LTE Band 26	10	QPSK	Titanium	Metal Links	C52WP	1:1	0.01	831.50	26865	1.0	24.50	22.96	25	25	Front	10	0.004	1.426	0.006	
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	VV6QW	1:1	0.01	836.50	20525	0.0	25.50	23.77	1	25	Front	10	0.003	1.489	0.004	
Head	LTE Band 5	10	QPSK	Aluminum	Sport	VV6QW	1:1	0.09	836.50	20525	1.0	24.50	22.91	25	12	Front	10	0.002	1.442	0.003	
Head	LTE Band 5	10	QPSK	Aluminum	Metal Loop	VV6QW	1:1	0.09	836.50	20525	0.0	25.50	23.77	1	25	Front	10	0.004	1.489	0.006	
Head	LTE Band 5	10	QPSK	Aluminum	Metal Loop	VV6QW	1:1	0.06	836.50	20525	1.0	24.50	22.91	25	12	Front	10	0.002	1.442	0.003	
Head	LTE Band 5	10	QPSK	Aluminum	Metal Links	VV6QW	1:1	0.01	836.50	20525	0.0	25.50	23.77	1	25	Front	10	0.004	1.489	0.006	
Head	LTE Band 5	10	QPSK	Aluminum	Metal Links	VV6QW	1:1	0.01	836.50	20525	1.0	24.50	22.91	25	12	Front	10	0.002	1.442	0.003	
Head	LTE Band 5	10	QPSK	Titanium	Sport	C52WP	1:1	0.06	836.50	20525	0.0	25.50	23.77	1	25	Front	10	0.005	1.489	0.007	
Head	LTE Band 5	10	QPSK	Titanium	Sport	C52WP	1:1	0.02	836.50	20525	1.0	24.50	22.91	25	12	Front	10	0.003	1.442	0.004	
Head	LTE Band 5	10	QPSK	Titanium	Metal Loop	C52WP	1:1	0.02	836.50	20525	0.0	25.50	23.77	1	25	Front	10	0.006	1.489	0.009	A8
Head	LTE Band 5	10	QPSK	Titanium	Metal Loop	C52WP	1:1	0.08	836.50	20525	1.0	24.50	22.91	25	12	Front	10	0.004	1.442	0.006	
Head	LTE Band 5	10	QPSK	Titanium	Metal Links	C52WP	1:1	0.04	836.50	20525	0.0	25.50	23.77	1	25	Front	10	0.004	1.489	0.006	
Head	LTE Band 5	10	QPSK	Titanium	Metal Links	C52WP	1:1	0.04	836.50	20525	1.0	24.50	22.91	25	12	Front	10	0.003	1.442	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					

10.9 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	Q2JH7	1:1	-0.05	1745.00	132322	0.0	24.50	23.16	1	99	Front	10	0.126	1.361	0.171	
Head	LTE Band 66	20	QPSK	Aluminum	Sport	Q2JH7	1:1	-0.01	1745.00	132322	1.0	23.50	22.47	50	50	Front	10	0.105	1.268	0.133	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Loop	Q2JH7	1:1	0.01	1720.00	132072	0.0	24.50	22.93	1	99	Front	10	0.185	1.435	0.265	A9
Head	LTE Band 66	20	QPSK	Aluminum	Metal Loop	Q2JH7	1:1	-0.05	1745.00	132322	0.0	24.50	23.16	1	99	Front	10	0.143	1.361	0.195	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Loop	Q2JH7	1:1	0.09	1770.00	132572	0.0	24.50	22.75	1	99	Front	10	0.177	1.496	0.265	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Loop	Q2JH7	1:1	0.01	1745.00	132322	1.0	23.50	22.47	50	50	Front	10	0.125	1.268	0.159	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Links	Q2JH7	1:1	-0.04	1745.00	132322	0.0	24.50	23.16	1	99	Front	10	0.134	1.361	0.182	
Head	LTE Band 66	20	QPSK	Aluminum	Metal Links	Q2JH7	1:1	0.00	1745.00	132322	1.0	23.50	22.47	50	50	Front	10	0.113	1.268	0.143	
Head	LTE Band 66	20	QPSK	Titanium	Sport	TXY5W	1:1	-0.08	1745.00	132322	0.0	24.50	23.16	1	99	Front	10	0.118	1.361	0.161	
Head	LTE Band 66	20	QPSK	Titanium	Sport	TXY5W	1:1	0.00	1745.00	132322	1.0	23.50	22.47	50	50	Front	10	0.102	1.268	0.129	
Head	LTE Band 66	20	QPSK	Titanium	Metal Loop	TXY5W	1:1	-0.13	1745.00	132322	0.0	24.50	23.16	1	99	Front	10	0.118	1.361	0.161	
Head	LTE Band 66	20	QPSK	Titanium	Metal Loop	TXY5W	1:1	-0.01	1745.00	132322	1.0	23.50	22.47	50	50	Front	10	0.100	1.268	0.127	
Head	LTE Band 66	20	QPSK	Titanium	Metal Links	TXY5W	1:1	-0.18	1745.00	132322	0.0	24.50	23.16	1	99	Front	10	0.121	1.361	0.165	
Head	LTE Band 66	20	QPSK	Titanium	Metal Links	TXY5W	1:1	0.01	1745.00	132322	1.0	23.50	22.47	50	50	Front	10	0.102	1.268	0.129	
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	3M74J	1:1	-0.04	1882.50	26365	0.0	24.50	23.58	1	99	Front	10	0.127	1.236	0.157	
Head	LTE Band 25	20	QPSK	Aluminum	Sport	3M74J	1:1	0.01	1882.50	26365	1.0	23.50	23.06	50	50	Front	10	0.102	1.107	0.113	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Loop	3M74J	1:1	0.05	1860.00	26140	0.0	24.50	23.44	1	99	Front	10	0.145	1.276	0.185	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Loop	3M74J	1:1	0.02	1882.50	26365	0.0	24.50	23.58	1	99	Front	10	0.181	1.236	0.224	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Loop	3M74J	1:1	-0.01	1905.00	26590	0.0	24.50	23.47	1	50	Front	10	0.190	1.268	0.241	A10
Head	LTE Band 25	20	QPSK	Aluminum	Metal Loop	3M74J	1:1	-0.02	1882.50	26365	1.0	23.50	23.06	50	50	Front	10	0.152	1.107	0.168	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Links	3M74J	1:1	-0.06	1882.50	26365	0.0	24.50	23.58	1	99	Front	10	0.132	1.236	0.163	
Head	LTE Band 25	20	QPSK	Aluminum	Metal Links	3M74J	1:1	0.00	1882.50	26365	1.0	23.50	23.06	50	50	Front	10	0.107	1.107	0.118	
Head	LTE Band 25	20	QPSK	Titanium	Sport	DVFWY	1:1	-0.03	1882.50	26365	0.0	24.50	23.58	1	99	Front	10	0.120	1.236	0.148	
Head	LTE Band 25	20	QPSK	Titanium	Sport	DVFWY	1:1	-0.09	1882.50	26365	1.0	23.50	23.06	50	50	Front	10	0.096	1.107	0.106	
Head	LTE Band 25	20	QPSK	Titanium	Metal Loop	DVFWY	1:1	0.01	1882.50	26365	0.0	24.50	23.58	1	99	Front	10	0.155	1.236	0.192	
Head	LTE Band 25	20	QPSK	Titanium	Metal Loop	DVFWY	1:1	-0.02	1882.50	26365	1.0	23.50	23.06	50	50	Front	10	0.127	1.107	0.141	
Head	LTE Band 25	20	QPSK	Titanium	Metal Links	DVFWY	1:1	0.01	1882.50	26365	0.0	24.50	23.58	1	99	Front	10	0.112	1.236	0.138	
Head	LTE Band 25	20	QPSK	Titanium	Metal Links	DVFWY	1:1	-0.01	1882.50	26365	1.0	23.50	23.06	50	50	Front	10	0.091	1.107	0.101	
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	267J9	1:1	0.08	2510.00	20850	0.0	24.00	23.11	1	99	Front	10	0.568	1.227	0.697	
Head	LTE Band 7	20	QPSK	Aluminum	Sport	267J9	1:1	0.08	2510.00	20850	1.0	23.00	22.08	50	50	Front	10	0.458	1.236	0.566	
Head	LTE Band 7	20	QPSK	Aluminum	Metal Loop	267J9	1:1	0.05	2510.00	20850	0.0	24.00	23.11	1	99	Front	10	0.453	1.227	0.556	
Head	LTE Band 7	20	QPSK	Aluminum	Metal Loop	267J9	1:1	0.06	2510.00	20850	1.0	23.00	22.08	50	50	Front	10	0.333	1.236	0.412	
Head	LTE Band 7	20	QPSK	Aluminum	Metal Links	267J9	1:1	0.04	2510.00	20850	0.0	24.00	23.11	1	99	Front	10	0.360	1.227	0.442	
Head	LTE Band 7	20	QPSK	Aluminum	Metal Links	267J9	1:1	0.04	2510.00	20850	1.0	23.00	22.08	50	50	Front	10	0.294	1.236	0.363	
Head	LTE Band 7	20	QPSK	Titanium	Sport	C52WP	1:1	0.04	2510.00	20850	0.0	24.00	23.11	1	99	Front	10	0.604	1.227	0.741	
Head	LTE Band 7	20	QPSK	Titanium	Sport	C52WP	1:1	0.00	2535.00	21100	0.0	24.00	22.73	1	99	Front	10	0.598	1.340	0.801	
Head	LTE Band 7	20	QPSK	Titanium	Sport	C52WP	1:1	0.03	2560.00	21350	0.0	24.00	23.05	1	0	Front	10	0.616	1.245	0.767	A11
Head	LTE Band 7	20	QPSK	Titanium	Sport	C52WP	1:1	0.07	2510.00	20850	1.0	23.00	22.08	50	50	Front	10	0.485	1.236	0.599	
Head	LTE Band 7	20	QPSK	Titanium	Sport	C52WP	1:1	0.04	2510.00	20850	1.0	23.00	21.96	100	0	Front	10	0.525	1.271	0.667	
Head	LTE Band 7	20	QPSK	Titanium	Metal Loop	C52WP	1:1	0.04	2510.00	20850	0.0	24.00	23.11	1	99	Front	10	0.465	1.227	0.571	
Head	LTE Band 7	20	QPSK	Titanium	Metal Loop	C52WP	1:1	0.03	2510.00	20850	1.0	23.00	22.08	50	50	Front	10	0.357	1.236	0.441	
Head	LTE Band 7	20	QPSK	Titanium	Metal Links	C52WP	1:1	0.05	2510.00	20850	0.0	24.00	23.11	1	99	Front	10	0.405	1.227	0.497	
Head	LTE Band 7	20	QPSK	Titanium	Metal Links	C52WP	1:1	0.10	2510.00	20850	1.0	23.00	22.08	50	50	Front	10	0.319	1.236	0.394	
ANSI/IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																		Head 1.6 W/kg (mW/g) averaged over 1 gram			

10.12 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	NXP2D	1:1.58	0.06	2636.50	41055	0.0	24.00	23.27	1	50	Front	10	0.353	1.183	0.418	
Head	LTE Band 41	20	QPSK	Aluminum	Sport	NXP2D	1:1.58	0.06	2636.50	41055	1.0	23.00	22.10	50	0	Front	10	0.295	1.230	0.363	
Head	LTE Band 41	20	QPSK	Aluminum	Metal Loop	NXP2D	1:1.58	0.10	2636.50	41055	0.0	24.00	23.27	1	50	Front	10	0.294	1.183	0.348	
Head	LTE Band 41	20	QPSK	Aluminum	Metal Loop	NXP2D	1:1.58	-0.02	2636.50	41055	1.0	23.00	22.10	50	0	Front	10	0.245	1.230	0.301	
Head	LTE Band 41	20	QPSK	Aluminum	Metal Links	NXP2D	1:1.58	0.00	2636.50	41055	0.0	24.00	23.27	1	50	Front	10	0.239	1.183	0.283	
Head	LTE Band 41	20	QPSK	Aluminum	Metal Links	NXP2D	1:1.58	0.05	2636.50	41055	1.0	23.00	22.10	50	0	Front	10	0.198	1.230	0.244	
Head	LTE Band 41	20	QPSK	Titanium	Sport	C52WP	1:1.58	0.00	2506.00	39750	0.0	24.00	23.02	1	50	Front	10	0.339	1.253	0.425	
Head	LTE Band 41	20	QPSK	Titanium	Sport	C52WP	1:1.58	0.03	2549.50	40185	0.0	24.00	23.26	1	0	Front	10	0.372	1.186	0.441	
Head	LTE Band 41	20	QPSK	Titanium	Sport	C52WP	1:1.58	0.01	2593.00	40620	0.0	24.00	23.00	1	50	Front	10	0.430	1.259	0.541	
Head	LTE Band 41	20	QPSK	Titanium	Sport	C52WP	1:1.58	0.04	2636.50	41055	0.0	24.00	23.27	1	50	Front	10	0.432	1.183	0.511	A12
Head	LTE Band 41	20	QPSK	Titanium	Sport	C52WP	1:1.58	0.04	2680.00	41490	0.0	24.00	23.05	1	50	Front	10	0.357	1.245	0.444	
Head	LTE Band 41	20	QPSK	Titanium	Sport	C52WP	1:1.58	0.03	2636.50	41055	1.0	23.00	22.10	50	0	Front	10	0.363	1.230	0.446	
Head	LTE Band 41	20	QPSK	Titanium	Metal Loop	C52WP	1:1.58	-0.01	2636.50	41055	0.0	24.00	23.27	1	50	Front	10	0.274	1.183	0.324	
Head	LTE Band 41	20	QPSK	Titanium	Metal Loop	C52WP	1:1.58	-0.01	2636.50	41055	1.0	23.00	22.10	50	0	Front	10	0.217	1.230	0.267	
Head	LTE Band 41	20	QPSK	Titanium	Metal Links	C52WP	1:1.58	0.06	2636.50	41055	0.0	24.00	23.27	1	50	Front	10	0.281	1.183	0.332	
Head	LTE Band 41	20	QPSK	Titanium	Metal Links	C52WP	1:1.58	0.02	2636.50	41055	1.0	23.00	22.10	50	0	Front	10	0.229	1.230	0.282	
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	QWX1H	99.76	-0.04	2412	1	1	19.00	17.77	Front	10	0.232	1.327	1.002	0.308	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Loop	QWX1H	99.76	0.02	2412	1	1	19.00	17.77	Front	10	0.143	1.327	1.002	0.190	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Links	QWX1H	99.76	0.05	2412	1	1	19.00	17.77	Front	10	0.105	1.327	1.002	0.140	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Sport	QMN44	99.76	-0.10	2412	1	1	19.00	17.77	Front	10	0.235	1.327	1.002	0.312	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Sport	QMN44	99.76	-0.05	2437	6	1	19.00	17.59	Front	10	0.223	1.384	1.002	0.309	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Sport	QMN44	99.76	0.03	2462	11	1	19.00	17.74	Front	10	0.238	1.337	1.002	0.319	A13
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Loop	QMN44	99.76	-0.06	2412	1	1	19.00	17.77	Front	10	0.170	1.327	1.002	0.226	
Head	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Links	QMN44	99.76	0.05	2412	1	1	19.00	17.77	Front	10	0.143	1.327	1.002	0.190	
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 WIFI 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	1722C	98.57	0.05	5280	56	U-NII-2A	6.5	17.00	16.00	Front	10	0.082	1.259	1.015	0.105	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	1722C	98.57	0.01	5280	56	U-NII-2A	6.5	17.00	16.00	Front	10	0.069	1.259	1.015	0.088	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	1722C	98.57	0.04	5280	56	U-NII-2A	6.5	17.00	16.00	Front	10	0.068	1.259	1.015	0.087	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	3Y7JR	98.57	0.02	5280	56	U-NII-2A	6.5	17.00	16.00	Front	10	0.092	1.259	1.015	0.118	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	-0.13	5280	56	U-NII-2A	6.5	17.00	16.00	Front	10	0.105	1.259	1.015	0.134	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	3Y7JR	98.57	0.08	5280	56	U-NII-2A	6.5	17.00	16.00	Front	10	0.087	1.259	1.015	0.111	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	1722C	98.57	0.05	5720	144	U-NII-2C	6.5	17.00	15.99	Front	10	0.134	1.262	1.015	0.172	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	1722C	98.57	0.09	5720	144	U-NII-2C	6.5	17.00	15.99	Front	10	0.125	1.262	1.015	0.160	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	1722C	98.57	0.09	5720	144	U-NII-2C	6.5	17.00	15.99	Front	10	0.131	1.262	1.015	0.168	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	3Y7JR	98.57	-0.15	5720	144	U-NII-2C	6.5	17.00	15.99	Front	10	0.163	1.262	1.015	0.209	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	0.04	5720	144	U-NII-2C	6.5	17.00	15.99	Front	10	0.169	1.262	1.015	0.216	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	3Y7JR	98.57	0.07	5720	144	U-NII-2C	6.5	17.00	15.99	Front	10	0.106	1.262	1.015	0.136	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	1722C	98.57	-0.01	5825	165	U-NII-3	6.5	17.00	16.28	Front	10	0.147	1.180	1.015	0.176	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	1722C	98.57	-0.08	5825	165	U-NII-3	6.5	17.00	16.28	Front	10	0.163	1.180	1.015	0.195	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	1722C	98.57	0.02	5825	165	U-NII-3	6.5	17.00	16.28	Front	10	0.143	1.180	1.015	0.171	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	3Y7JR	98.57	-0.02	5825	165	U-NII-3	6.5	17.00	16.28	Front	10	0.180	1.180	1.015	0.216	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	-0.16	5745	149	U-NII-3	6.5	17.00	16.05	Front	10	0.192	1.245	1.015	0.243	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	0.04	5785	157	U-NII-3	6.5	17.00	16.18	Front	10	0.202	1.208	1.015	0.248	
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	0.05	5825	165	U-NII-3	6.5	17.00	16.28	Front	10	0.213	1.180	1.015	0.255	A14
Head	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	3Y7JR	98.57	0.02	5825	165	U-NII-3	6.5	17.00	16.28	Front	10	0.190	1.180	1.015	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						

10.15 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	6WRDP	100.00	-0.14	2441	39	1	17.50	16.78	Front	10	0.138	1.180	1.000	0.163	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Loop	6WRDP	100.00	0.03	2441	39	1	17.50	16.78	Front	10	0.108	1.180	1.000	0.127	
Head	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Links	6WRDP	100.00	-0.19	2441	39	1	17.50	16.78	Front	10	0.072	1.180	1.000	0.085	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Sport	6K4TT	100.00	0.03	2402	0	1	17.50	16.72	Front	10	0.173	1.197	1.000	0.207	A15
Head	2.4 GHz Bluetooth	FHSS	Titanium	Sport	6K4TT	100.00	0.04	2441	39	1	17.50	16.78	Front	10	0.155	1.180	1.000	0.183	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Sport	6K4TT	100.00	0.03	2480	78	1	17.50	16.71	Front	10	0.132	1.199	1.000	0.158	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Metal Loop	6K4TT	100.00	0.01	2441	39	1	17.50	16.78	Front	10	0.105	1.180	1.000	0.124	
Head	2.4 GHz Bluetooth	FHSS	Titanium	Metal Links	6K4TT	100.00	-0.01	2441	39	1	17.50	16.78	Front	10	0.095	1.180	1.000	0.112	
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	QM2HL	8.70	0.01	5728.75	Low	1	16.00	15.04	Front	10	0.012	1.247	1.023	0.015	
Head	802.15.4 ab-NB	Aluminum	Metal Loops	QM2HL	8.70	0.06	5728.75	Low	1	16.00	15.04	Front	10	0.012	1.247	1.023	0.015	
Head	802.15.4 ab-NB	Aluminum	Metal Links	QM2HL	8.70	0.09	5728.75	Low	1	16.00	15.04	Front	10	0.011	1.247	1.023	0.014	
Head	802.15.4 ab-NB	Titanium	Sport	YQWPD	8.70	-0.12	5728.75	Low	1	16.00	15.04	Front	10	0.014	1.247	1.023	0.018	
Head	802.15.4 ab-NB	Titanium	Metal Loops	YQWPD	8.70	0.05	5846.25	High	1	16.00	14.92	Front	10	0.019	1.282	1.023	0.025	A16
Head	802.15.4 ab-NB	Titanium	Metal Loops	YQWPD	8.70	0.05	5728.75	Low	1	16.00	15.04	Front	10	0.015	1.247	1.023	0.019	
Head	802.15.4 ab-NB	Titanium	Metal Loops	YQWPD	8.70	0.01	5786.25	Mid	1	16.00	14.96	Front	10	0.011	1.271	1.023	0.014	
Head	802.15.4 ab-NB	Titanium	Metal Links	YQWPD	8.70	0.05	5728.75	Low	1	16.00	15.04	Front	10	0.013	1.247	1.023	0.017	
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 8.9% 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	VV6QW	1:1	-0.01	836.60	4183	25.00	23.33	Back	0	0.034	1.469	0.050	
Extremity	UMTS 850	RMC	Aluminum	Metal Loop	VV6QW	1:1	-0.01	836.60	4183	25.00	23.33	Back	0	0.105	1.469	0.154	
Extremity	UMTS 850	RMC	Aluminum	Metal Links	VV6QW	1:1	-0.02	836.60	4183	25.00	23.33	Back	0	0.123	1.469	0.181	
Extremity	UMTS 850	RMC	Titanium	Sport	N717C	1:1	-0.11	836.60	4183	25.00	23.33	Back	0	0.057	1.469	0.084	
Extremity	UMTS 850	RMC	Titanium	Metal Loop	N717C	1:1	0.07	836.60	4183	25.00	23.33	Back	0	0.105	1.469	0.154	
Extremity	UMTS 850	RMC	Titanium	Metal Links	N717C	1:1	-0.01	826.40	4132	25.00	23.10	Back	0	0.139	1.549	0.215	
Extremity	UMTS 850	RMC	Titanium	Metal Links	N717C	1:1	0.01	836.60	4183	25.00	23.33	Back	0	0.157	1.469	0.231	A17
Extremity	UMTS 850	RMC	Titanium	Metal Links	N717C	1:1	-0.06	846.60	4233	25.00	23.32	Back	0	0.150	1.472	0.221	
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	4XX4J	1:1	0.08	1732.40	1412	24.00	22.97	Back	0	0.113	1.268	0.143	
Extremity	UMTS 1750	RMC	Aluminum	Metal Loop	4XX4J	1:1	0.03	1732.40	1412	24.00	22.97	Back	0	0.188	1.268	0.238	
Extremity	UMTS 1750	RMC	Aluminum	Metal Links	4XX4J	1:1	-0.01	1712.40	1312	24.00	22.66	Back	0	0.210	1.361	0.286	
Extremity	UMTS 1750	RMC	Aluminum	Metal Links	4XX4J	1:1	-0.06	1732.40	1412	24.00	22.97	Back	0	0.220	1.268	0.279	A18
Extremity	UMTS 1750	RMC	Aluminum	Metal Links	4XX4J	1:1	0.04	1752.60	1513	24.00	22.89	Back	0	0.202	1.291	0.261	
Extremity	UMTS 1750	RMC	Titanium	Sport	WGGQL	1:1	0.07	1732.40	1412	24.00	22.97	Back	0	0.128	1.268	0.162	
Extremity	UMTS 1750	RMC	Titanium	Metal Loop	WGGQL	1:1	0.01	1732.40	1412	24.00	22.97	Back	0	0.206	1.268	0.261	
Extremity	UMTS 1750	RMC	Titanium	Metal Links	WGGQL	1:1	0.06	1732.40	1412	24.00	22.97	Back	0	0.184	1.268	0.233	
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	QWX1H	1:1	0.17	1907.60	9538	24.00	23.04	Back	0	0.132	1.247	0.165	
Extremity	UMTS 1900	RMC	Aluminum	Metal Loop	QWX1H	1:1	0.01	1907.60	9538	24.00	23.04	Back	0	0.178	1.247	0.222	
Extremity	UMTS 1900	RMC	Aluminum	Metal Links	QWX1H	1:1	-0.05	1852.40	9262	24.00	22.91	Back	0	0.229	1.285	0.294	A19
Extremity	UMTS 1900	RMC	Aluminum	Metal Links	QWX1H	1:1	0.11	1880.00	9400	24.00	22.85	Back	0	0.185	1.303	0.241	
Extremity	UMTS 1900	RMC	Aluminum	Metal Links	QWX1H	1:1	0.06	1907.60	9538	24.00	23.04	Back	0	0.223	1.247	0.278	
Extremity	UMTS 1900	RMC	Titanium	Sport	N717C	1:1	0.00	1907.60	9538	24.00	23.04	Back	0	0.076	1.247	0.095	
Extremity	UMTS 1900	RMC	Titanium	Metal Loop	N717C	1:1	0.07	1907.60	9538	24.00	23.04	Back	0	0.147	1.247	0.183	
Extremity	UMTS 1900	RMC	Titanium	Metal Links	N717C	1:1	0.17	1907.60	9538	24.00	23.04	Back	0	0.111	1.247	0.138	
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	26NRF	1:1	-0.03	707.50	23095	0.0	25.50	23.85	1	0	Back	0	0.042	1.462	0.061	
Extremity	LTE Band 12	10	QPSK	Aluminum	Sport	26NRF	1:1	-0.02	707.50	23095	1.0	24.50	23.26	25	0	Back	0	0.029	1.330	0.039	
Extremity	LTE Band 12	10	QPSK	Aluminum	Metal Loop	26NRF	1:1	-0.09	707.50	23095	0.0	25.50	23.85	1	0	Back	0	0.097	1.462	0.142	
Extremity	LTE Band 12	10	QPSK	Aluminum	Metal Loop	26NRF	1:1	0.00	707.50	23095	1.0	24.50	23.26	25	0	Back	0	0.080	1.330	0.106	
Extremity	LTE Band 12	10	QPSK	Aluminum	Metal Links	26NRF	1:1	0.00	707.50	23095	0.0	25.50	23.85	1	0	Back	0	0.103	1.462	0.151	A20
Extremity	LTE Band 12	10	QPSK	Aluminum	Metal Links	26NRF	1:1	0.02	707.50	23095	1.0	24.50	23.26	25	0	Back	0	0.088	1.330	0.117	
Extremity	LTE Band 12	10	QPSK	Titanium	Sport	XH7NF	1:1	0.08	707.50	23095	0.0	25.50	23.85	1	0	Back	0	0.032	1.462	0.047	
Extremity	LTE Band 12	10	QPSK	Titanium	Sport	XH7NF	1:1	-0.11	707.50	23095	1.0	24.50	23.26	25	0	Back	0	0.024	1.330	0.032	
Extremity	LTE Band 12	10	QPSK	Titanium	Metal Loop	XH7NF	1:1	-0.17	707.50	23095	0.0	25.50	23.85	1	0	Back	0	0.067	1.462	0.098	
Extremity	LTE Band 12	10	QPSK	Titanium	Metal Loop	XH7NF	1:1	-0.04	707.50	23095	1.0	24.50	23.26	25	0	Back	0	0.054	1.330	0.072	
Extremity	LTE Band 12	10	QPSK	Titanium	Metal Links	XH7NF	1:1	-0.08	707.50	23095	0.0	25.50	23.85	1	0	Back	0	0.085	1.462	0.124	
Extremity	LTE Band 12	10	QPSK	Titanium	Metal Links	XH7NF	1:1	-0.01	707.50	23095	1.0	24.50	23.26	25	0	Back	0	0.068	1.330	0.090	
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	26NRF	1:1	-0.03	782.00	23230	0.0	25.50	23.97	1	25	Back	0	0.052	1.422	0.074	
Extremity	LTE Band 13	10	QPSK	Aluminum	Sport	26NRF	1:1	0.06	782.00	23230	1.0	24.50	23.36	25	25	Back	0	0.044	1.300	0.057	
Extremity	LTE Band 13	10	QPSK	Aluminum	Metal Loop	26NRF	1:1	-0.07	782.00	23230	0.0	25.50	23.97	1	25	Back	0	0.093	1.422	0.132	
Extremity	LTE Band 13	10	QPSK	Aluminum	Metal Loop	26NRF	1:1	-0.14	782.00	23230	1.0	24.50	23.36	25	25	Back	0	0.075	1.300	0.098	
Extremity	LTE Band 13	10	QPSK	Aluminum	Metal Links	26NRF	1:1	-0.09	782.00	23230	0.0	25.50	23.97	1	25	Back	0	0.168	1.422	0.239	
Extremity	LTE Band 13	10	QPSK	Aluminum	Metal Links	26NRF	1:1	-0.10	782.00	23230	1.0	24.50	23.36	25	25	Back	0	0.151	1.300	0.196	
Extremity	LTE Band 13	10	QPSK	Titanium	Sport	N717C	1:1	0.00	782.00	23230	0.0	25.50	23.97	1	25	Back	0	0.059	1.422	0.084	
Extremity	LTE Band 13	10	QPSK	Titanium	Sport	N717C	1:1	-0.07	782.00	23230	1.0	24.50	23.36	25	25	Back	0	0.051	1.300	0.066	
Extremity	LTE Band 13	10	QPSK	Titanium	Metal Loop	N717C	1:1	0.08	782.00	23230	0.0	25.50	23.97	1	25	Back	0	0.114	1.422	0.162	
Extremity	LTE Band 13	10	QPSK	Titanium	Metal Loop	N717C	1:1	0.02	782.00	23230	1.0	24.50	23.36	25	25	Back	0	0.092	1.300	0.120	
Extremity	LTE Band 13	10	QPSK	Titanium	Metal Links	N717C	1:1	-0.09	782.00	23230	0.0	25.50	23.97	1	25	Back	0	0.174	1.422	0.247	A21
Extremity	LTE Band 13	10	QPSK	Titanium	Metal Links	N717C	1:1	-0.09	782.00	23230	1.0	24.50	23.36	25	25	Back	0	0.159	1.300	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					

10.22 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	2QJWK	1:1	-0.11	793.00	23330	0.0	25.50	23.82	1	0	Back	0	0.054	1.472	0.079	
Extremity	LTE Band 14	10	QPSK	Aluminum	Sports	2QJWK	1:1	-0.04	793.00	23330	1.0	24.50	22.87	25	0	Back	0	0.040	1.455	0.058	
Extremity	LTE Band 14	10	QPSK	Aluminum	Metal Loop	2QJWK	1:1	0.08	793.00	23330	0.0	25.50	23.82	1	0	Back	0	0.102	1.472	0.150	
Extremity	LTE Band 14	10	QPSK	Aluminum	Metal Loop	2QJWK	1:1	-0.06	793.00	23330	1.0	24.50	22.87	25	0	Back	0	0.082	1.455	0.119	
Extremity	LTE Band 14	10	QPSK	Aluminum	Metal Links	2QJWK	1:1	-0.04	793.00	23330	0.0	25.50	23.82	1	0	Back	0	0.161	1.472	0.237	A22
Extremity	LTE Band 14	10	QPSK	Aluminum	Metal Links	2QJWK	1:1	0.05	793.00	23330	1.0	24.50	22.87	25	0	Back	0	0.130	1.455	0.189	
Extremity	LTE Band 14	10	QPSK	Titanium	Sports	C52WP	1:1	0.02	793.00	23330	0.0	25.50	23.82	1	0	Back	0	0.058	1.472	0.085	
Extremity	LTE Band 14	10	QPSK	Titanium	Sports	C52WP	1:1	0.08	793.00	23330	1.0	24.50	22.87	25	0	Back	0	0.042	1.455	0.061	
Extremity	LTE Band 14	10	QPSK	Titanium	Metal Loop	C52WP	1:1	0.03	793.00	23330	0.0	25.50	23.82	1	0	Back	0	0.128	1.472	0.188	
Extremity	LTE Band 14	10	QPSK	Titanium	Metal Loop	C52WP	1:1	-0.05	793.00	23330	1.0	24.50	22.87	25	0	Back	0	0.081	1.455	0.118	
Extremity	LTE Band 14	10	QPSK	Titanium	Metal Links	C52WP	1:1	-0.06	793.00	23330	0.0	25.50	23.82	1	0	Back	0	0.160	1.472	0.236	
Extremity	LTE Band 14	10	QPSK	Titanium	Metal Links	C52WP	1:1	-0.08	793.00	23330	1.0	24.50	22.87	25	0	Back	0	0.117	1.455	0.170	
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	VV6QW	1:1	0.05	831.50	26865	0.0	25.50	23.86	1	49	Back	0	0.060	1.459	0.088	
Extremity	LTE Band 26	10	QPSK	Aluminum	Sport	VV6QW	1:1	-0.02	831.50	26865	1.0	24.50	22.96	25	25	Back	0	0.047	1.426	0.067	
Extremity	LTE Band 26	10	QPSK	Aluminum	Metal Loop	VV6QW	1:1	-0.03	831.50	26865	0.0	25.50	23.86	1	49	Back	0	0.113	1.459	0.165	
Extremity	LTE Band 26	10	QPSK	Aluminum	Metal Loop	VV6QW	1:1	0.03	831.50	26865	1.0	24.50	22.96	25	25	Back	0	0.091	1.426	0.130	
Extremity	LTE Band 26	10	QPSK	Aluminum	Metal Links	VV6QW	1:1	0.04	831.50	26865	0.0	25.50	23.86	1	49	Back	0	0.178	1.459	0.260	
Extremity	LTE Band 26	10	QPSK	Aluminum	Metal Links	VV6QW	1:1	0.02	831.50	26865	1.0	24.50	22.96	25	25	Back	0	0.139	1.426	0.198	
Extremity	LTE Band 26	10	QPSK	Titanium	Sport	WGGQL	1:1	-0.11	831.50	26865	0.0	25.50	23.86	1	49	Back	0	0.073	1.459	0.107	
Extremity	LTE Band 26	10	QPSK	Titanium	Sport	WGGQL	1:1	0.13	831.50	26865	1.0	24.50	22.96	25	25	Back	0	0.047	1.426	0.067	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Loop	WGGQL	1:1	-0.06	831.50	26865	0.0	25.50	23.86	1	49	Back	0	0.139	1.459	0.203	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Loop	WGGQL	1:1	-0.06	831.50	26865	1.0	24.50	22.96	25	25	Back	0	0.082	1.426	0.117	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Links	WGGQL	1:1	0.05	819.00	26740	0.0	25.50	23.72	1	25	Back	0	0.166	1.507	0.250	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Links	WGGQL	1:1	-0.03	831.50	26865	0.0	25.50	23.86	1	49	Back	0	0.213	1.459	0.311	A23
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Links	WGGQL	1:1	0.03	844.00	26990	0.0	25.50	23.74	1	49	Back	0	0.201	1.500	0.302	
Extremity	LTE Band 26	10	QPSK	Titanium	Metal Links	WGGQL	1:1	-0.04	831.50	26865	1.0	24.50	22.96	25	25	Back	0	0.164	1.426	0.234	
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	QWX1H	1:1	-0.04	836.50	20525	0.0	25.50	23.77	1	25	Back	0	0.046	1.489	0.068	
Extremity	LTE Band 5	10	QPSK	Aluminum	Sport	QWX1H	1:1	-0.07	836.50	20525	1.0	24.50	22.91	25	12	Back	0	0.035	1.442	0.050	
Extremity	LTE Band 5	10	QPSK	Aluminum	Metal Loop	QWX1H	1:1	-0.01	836.50	20525	0.0	25.50	23.77	1	25	Back	0	0.110	1.489	0.164	
Extremity	LTE Band 5	10	QPSK	Aluminum	Metal Loop	QWX1H	1:1	-0.03	836.50	20525	1.0	24.50	22.91	25	12	Back	0	0.088	1.442	0.127	
Extremity	LTE Band 5	10	QPSK	Aluminum	Metal Links	QWX1H	1:1	0.04	836.50	20525	0.0	25.50	23.77	1	25	Back	0	0.173	1.489	0.258	
Extremity	LTE Band 5	10	QPSK	Aluminum	Metal Links	QWX1H	1:1	0.04	836.50	20525	1.0	24.50	22.91	25	12	Back	0	0.138	1.442	0.199	
Extremity	LTE Band 5	10	QPSK	Titanium	Sport	N717C	1:1	0.03	836.50	20525	0.0	25.50	23.77	1	25	Back	0	0.090	1.489	0.134	
Extremity	LTE Band 5	10	QPSK	Titanium	Sport	N717C	1:1	-0.04	836.50	20525	1.0	24.50	22.91	25	12	Back	0	0.055	1.442	0.079	
Extremity	LTE Band 5	10	QPSK	Titanium	Metal Loop	N717C	1:1	-0.13	836.50	20525	0.0	25.50	23.77	1	25	Back	0	0.138	1.489	0.205	
Extremity	LTE Band 5	10	QPSK	Titanium	Metal Loop	N717C	1:1	-0.15	836.50	20525	1.0	24.50	22.91	25	12	Back	0	0.106	1.442	0.153	
Extremity	LTE Band 5	10	QPSK	Titanium	Metal Links	N717C	1:1	0.00	836.50	20525	0.0	25.50	23.77	1	25	Back	0	0.175	1.489	0.261	A24
Extremity	LTE Band 5	10	QPSK	Titanium	Metal Links	N717C	1:1	-0.01	836.50	20525	1.0	24.50	22.91	25	12	Back	0	0.136	1.442	0.196	
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	4X4J	1:1	-0.01	1745.00	132322	0.0	24.50	23.16	1	99	Back	0	0.121	1.361	0.165	
Extremity	LTE Band 66	20	QPSK	Aluminum	Sport	4X4J	1:1	0.01	1745.00	132322	1.0	23.50	22.47	50	50	Back	0	0.100	1.268	0.127	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Loop	4X4J	1:1	-0.03	1745.00	132322	0.0	24.50	23.16	1	99	Back	0	0.180	1.361	0.245	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Loop	4X4J	1:1	0.01	1745.00	132322	1.0	23.50	22.47	50	50	Back	0	0.157	1.268	0.199	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Links	4X4J	1:1	0.04	1720.00	132072	0.0	24.50	22.93	1	99	Back	0	0.248	1.435	0.356	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Links	4X4J	1:1	-0.10	1745.00	132322	0.0	24.50	23.16	1	99	Back	0	0.262	1.361	0.357	A25
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Links	4X4J	1:1	0.00	1770.00	132572	0.0	24.50	22.75	1	99	Back	0	0.207	1.496	0.310	
Extremity	LTE Band 66	20	QPSK	Aluminum	Metal Links	4X4J	1:1	0.01	1745.00	132322	1.0	23.50	22.47	50	50	Back	0	0.227	1.268	0.288	
Extremity	LTE Band 66	20	QPSK	Titanium	Sport	TXY5W	1:1	0.11	1745.00	132322	0.0	24.50	23.16	1	99	Back	0	0.186	1.361	0.253	
Extremity	LTE Band 66	20	QPSK	Titanium	Sport	TXY5W	1:1	0.05	1745.00	132322	1.0	23.50	22.47	50	50	Back	0	0.155	1.268	0.197	
Extremity	LTE Band 66	20	QPSK	Titanium	Metal Loop	TXY5W	1:1	0.01	1745.00	132322	0.0	24.50	23.16	1	99	Back	0	0.219	1.361	0.298	
Extremity	LTE Band 66	20	QPSK	Titanium	Metal Loop	TXY5W	1:1	0.02	1745.00	132322	1.0	23.50	22.47	50	50	Back	0	0.186	1.268	0.236	
Extremity	LTE Band 66	20	QPSK	Titanium	Metal Links	TXY5W	1:1	-0.17	1745.00	132322	0.0	24.50	23.16	1	99	Back	0	0.176	1.361	0.240	
Extremity	LTE Band 66	20	QPSK	Titanium	Metal Links	TXY5W	1:1	0.09	1745.00	132322	1.0	23.50	22.47	50	50	Back	0	0.150	1.268	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			

10.26 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	2WN29	1:1	-0.16	1882.50	26365	0.0	24.50	23.58	1	99	Back	0	0.136	1.236	0.168	
Extremity	LTE Band 25	20	QPSK	Aluminum	Sport	2WN29	1:1	-0.02	1882.50	26365	1.0	23.50	23.06	50	50	Back	0	0.108	1.107	0.120	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Loop	2WN29	1:1	-0.14	1860.00	26140	0.0	24.50	23.44	1	99	Back	0	0.167	1.276	0.213	A26
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Loop	2WN29	1:1	-0.07	1882.50	26365	0.0	24.50	23.58	1	99	Back	0	0.152	1.236	0.188	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Loop	2WN29	1:1	-0.01	1905.00	26590	0.0	24.50	23.47	1	50	Back	0	0.135	1.268	0.171	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Loop	2WN29	1:1	-0.07	1882.50	26365	1.0	23.50	23.06	50	50	Back	0	0.122	1.107	0.135	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Links	2WN29	1:1	-0.01	1882.50	26365	0.0	24.50	23.58	1	99	Back	0	0.148	1.236	0.183	
Extremity	LTE Band 25	20	QPSK	Aluminum	Metal Links	2WN29	1:1	0.03	1882.50	26365	1.0	23.50	23.06	50	50	Back	0	0.118	1.107	0.131	
Extremity	LTE Band 25	20	QPSK	Titanium	Sport	DVFWY	1:1	-0.17	1882.50	26365	0.0	24.50	23.58	1	99	Back	0	0.100	1.236	0.124	
Extremity	LTE Band 25	20	QPSK	Titanium	Sport	DVFWY	1:1	-0.16	1882.50	26365	1.0	23.50	23.06	50	50	Back	0	0.082	1.107	0.091	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Loop	DVFWY	1:1	0.16	1882.50	26365	0.0	24.50	23.58	1	99	Back	0	0.094	1.236	0.116	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Loop	DVFWY	1:1	0.01	1882.50	26365	1.0	23.50	23.06	50	50	Back	0	0.081	1.107	0.090	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Links	DVFWY	1:1	-0.09	1882.50	26365	0.0	24.50	23.58	1	99	Back	0	0.103	1.236	0.127	
Extremity	LTE Band 25	20	QPSK	Titanium	Metal Links	DVFWY	1:1	-0.14	1882.50	26365	1.0	23.50	23.06	50	50	Back	0	0.084	1.107	0.093	
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	267J9	1:1	0.02	2510.00	20850	0.0	24.00	23.11	1	99	Back	0	0.118	1.227	0.145	A27
Extremity	LTE Band 7	20	QPSK	Aluminum	Sport	267J9	1:1	0.05	2535.00	21100	0.0	24.00	22.73	1	99	Back	0	0.100	1.340	0.134	
Extremity	LTE Band 7	20	QPSK	Aluminum	Sport	267J9	1:1	-0.08	2560.00	21350	0.0	24.00	23.05	1	0	Back	0	0.104	1.245	0.129	
Extremity	LTE Band 7	20	QPSK	Aluminum	Sport	267J9	1:1	-0.08	2510.00	20850	1.0	23.00	22.08	50	50	Back	0	0.094	1.236	0.116	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Loop	267J9	1:1	0.02	2510.00	20850	0.0	24.00	23.11	1	99	Back	0	0.101	1.227	0.124	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Loop	267J9	1:1	-0.10	2510.00	20850	1.0	23.00	22.08	50	50	Back	0	0.069	1.236	0.085	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Links	267J9	1:1	-0.05	2510.00	20850	0.0	24.00	23.11	1	99	Back	0	0.116	1.227	0.142	
Extremity	LTE Band 7	20	QPSK	Aluminum	Metal Links	267J9	1:1	-0.08	2510.00	20850	1.0	23.00	22.08	50	50	Back	0	0.092	1.236	0.114	
Extremity	LTE Band 7	20	QPSK	Titanium	Sport	2R7WV	1:1	-0.21	2510.00	20850	0.0	24.00	23.11	1	99	Back	0	0.083	1.227	0.102	
Extremity	LTE Band 7	20	QPSK	Titanium	Sport	2R7WV	1:1	0.04	2510.00	20850	1.0	23.00	22.08	50	50	Back	0	0.065	1.236	0.080	
Extremity	LTE Band 7	20	QPSK	Titanium	Metal Loop	2R7WV	1:1	0.09	2510.00	20850	0.0	24.00	23.11	1	99	Back	0	0.069	1.227	0.085	
Extremity	LTE Band 7	20	QPSK	Titanium	Metal Loop	2R7WV	1:1	-0.01	2510.00	20850	1.0	23.00	22.08	50	50	Back	0	0.052	1.236	0.064	
Extremity	LTE Band 7	20	QPSK	Titanium	Metal Links	2R7WV	1:1	-0.01	2510.00	20850	0.0	24.00	23.11	1	99	Back	0	0.088	1.227	0.108	
Extremity	LTE Band 7	20	QPSK	Titanium	Metal Links	2R7WV	1:1	-0.05	2510.00	20850	1.0	23.00	22.08	50	50	Back	0	0.070	1.236	0.087	
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	3M74J	1:1.58	-0.02	2506.00	39750	0.0	24.00	23.02	1	50	Back	0	0.097	1.253	0.122	A28
Extremity	LTE Band 41	20	QPSK	Aluminum	Sport	3M74J	1:1.58	0.08	2549.50	40185	0.0	24.00	23.26	1	0	Back	0	0.082	1.186	0.097	
Extremity	LTE Band 41	20	QPSK	Aluminum	Sport	3M74J	1:1.58	-0.04	2593.00	40620	0.0	24.00	23.00	1	50	Back	0	0.088	1.259	0.111	
Extremity	LTE Band 41	20	QPSK	Aluminum	Sport	3M74J	1:1.58	0.00	2636.50	41055	0.0	24.00	23.27	1	50	Back	0	0.084	1.183	0.099	
Extremity	LTE Band 41	20	QPSK	Aluminum	Sport	3M74J	1:1.58	-0.04	2680.00	41490	0.0	24.00	23.05	1	50	Back	0	0.073	1.245	0.091	
Extremity	LTE Band 41	20	QPSK	Aluminum	Sport	3M74J	1:1.58	-0.19	2636.50	41055	1.0	23.00	22.10	50	0	Back	0	0.067	1.230	0.082	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Loop	3M74J	1:1.58	0.03	2636.50	41055	0.0	24.00	23.27	1	50	Back	0	0.063	1.183	0.075	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Loop	3M74J	1:1.58	0.08	2636.50	41055	1.0	23.00	22.10	50	0	Back	0	0.048	1.230	0.059	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Links	3M74J	1:1.58	-0.10	2636.50	41055	0.0	24.00	23.27	1	50	Back	0	0.081	1.183	0.096	
Extremity	LTE Band 41	20	QPSK	Aluminum	Metal Links	3M74J	1:1.58	0.03	2636.50	41055	1.0	23.00	22.10	50	0	Back	0	0.065	1.230	0.080	
Extremity	LTE Band 41	20	QPSK	Titanium	Sport	C52WP	1:1.58	-0.05	2636.50	41055	0.0	24.00	23.27	1	50	Back	0	0.077	1.183	0.091	
Extremity	LTE Band 41	20	QPSK	Titanium	Sport	C52WP	1:1.58	-0.14	2636.50	41055	1.0	23.00	22.10	50	0	Back	0	0.061	1.230	0.075	
Extremity	LTE Band 41	20	QPSK	Titanium	Metal Loop	C52WP	1:1.58	0.07	2636.50	41055	0.0	24.00	23.27	1	50	Back	0	0.047	1.183	0.056	
Extremity	LTE Band 41	20	QPSK	Titanium	Metal Loop	C52WP	1:1.58	-0.08	2636.50	41055	1.0	23.00	22.10	50	0	Back	0	0.039	1.230	0.048	
Extremity	LTE Band 41	20	QPSK	Titanium	Metal Links	C52WP	1:1.58	-0.17	2636.50	41055	0.0	24.00	23.27	1	50	Back	0	0.054	1.183	0.064	
Extremity	LTE Band 41	20	QPSK	Titanium	Metal Links	C52WP	1:1.58	-0.21	2636.50	41055	1.0	23.00	22.10	50	0	Back	0	0.042	1.230	0.052	
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	9TVDQ	99.76	-0.14	2412	1	1	19.00	17.77	Back	0	0.068	1.327	1.002	0.090	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Loop	9TVDQ	99.76	-0.06	2412	1	1	19.00	17.77	Back	0	0.059	1.327	1.002	0.078	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Links	9TVDQ	99.76	0.05	2412	1	1	19.00	17.77	Back	0	0.079	1.327	1.002	0.105	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Links	9TVDQ	99.76	-0.08	2437	6	1	19.00	17.59	Back	0	0.056	1.384	1.002	0.078	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Aluminum	Metal Links	9TVDQ	99.76	0.01	2462	11	1	19.00	17.74	Back	0	0.083	1.337	1.002	0.111	A29
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Sport	QMN44	99.76	-0.04	2412	1	1	19.00	17.77	Back	0	0.041	1.327	1.002	0.055	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Loop	QMN44	99.76	0.05	2412	1	1	19.00	17.77	Back	0	0.039	1.327	1.002	0.052	
Extremity	2.4 GHz WIFI/ IEEE 802.11b	22	DSSS	Titanium	Metal Links	QMN44	99.76	-0.08	2412	1	1	19.00	17.77	Back	0	0.047	1.327	1.002	0.062	
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	QM2HL	98.57	0.02	5280	56	U-NII-2A	6.5	17.00	16.00	Back	0	0.001	1.259	1.015	0.001	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	QM2HL	98.57	0.01	5280	56	U-NII-2A	6.5	17.00	16.00	Back	0	0.000	1.259	1.015	0.000	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	QM2HL	98.57	0.03	5280	56	U-NII-2A	6.5	17.00	16.00	Back	0	0.000	1.259	1.015	0.000	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	3Y7JR	98.57	0.07	5280	56	U-NII-2A	6.5	17.00	16.00	Back	0	0.006	1.259	1.015	0.008	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	0.08	5280	56	U-NII-2A	6.5	17.00	16.00	Back	0	0.003	1.259	1.015	0.004	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	3Y7JR	98.57	0.01	5280	56	U-NII-2A	6.5	17.00	16.00	Back	0	0.000	1.259	1.015	0.000	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	QM2HL	98.57	0.08	5720	144	U-NII-2C	6.5	17.00	15.99	Back	0	0.002	1.262	1.015	0.003	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	QM2HL	98.57	0.01	5720	144	U-NII-2C	6.5	17.00	15.99	Back	0	0.005	1.262	1.015	0.006	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	QM2HL	98.57	0.04	5720	144	U-NII-2C	6.5	17.00	15.99	Back	0	0.002	1.262	1.015	0.003	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	3Y7JR	98.57	0.03	5720	144	U-NII-2C	6.5	17.00	15.99	Back	0	0.002	1.262	1.015	0.003	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	-0.08	5720	144	U-NII-2C	6.5	17.00	15.99	Back	0	0.016	1.262	1.015	0.020	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	3Y7JR	98.57	0.05	5720	144	U-NII-2C	6.5	17.00	15.99	Back	0	0.019	1.262	1.015	0.024	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Sport	QM2HL	98.57	-0.16	5825	165	U-NII-3	6.5	17.00	16.28	Back	0	0.013	1.180	1.015	0.016	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Loop	QM2HL	98.57	0.08	5825	165	U-NII-3	6.5	17.00	16.28	Back	0	0.002	1.180	1.015	0.002	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Aluminum	Metal Links	QM2HL	98.57	0.07	5825	165	U-NII-3	6.5	17.00	16.28	Back	0	0.006	1.180	1.015	0.007	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Sport	3Y7JR	98.57	0.01	5825	165	U-NII-3	6.5	17.00	16.28	Back	0	0.007	1.180	1.015	0.008	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	0.04	5745	149	U-NII-3	6.5	17.00	16.05	Back	0	0.021	1.245	1.015	0.027	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	0.05	5785	157	U-NII-3	6.5	17.00	16.18	Back	0	0.021	1.208	1.015	0.026	
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Loop	3Y7JR	98.57	0.06	5825	165	U-NII-3	6.5	17.00	16.28	Back	0	0.028	1.180	1.015	0.034	A30
Extremity	5 GHz WIFI/ IEEE 802.11a	20	OFDM	Titanium	Metal Links	3Y7JR	98.57	0.08	5825	165	U-NII-3	6.5	17.00	16.28	Back	0	0.020	1.180	1.015	0.024	
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	6WRDP	100.00	0.17	2402	0	1	17.50	16.72	Back	0	0.034	1.197	1.000	0.041	A31
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	6WRDP	100.00	0.08	2441	39	1	17.50	16.78	Back	0	0.029	1.180	1.000	0.034	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Sport	6WRDP	100.00	0.06	2480	78	1	17.50	16.71	Back	0	0.021	1.199	1.000	0.025	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Loop	6WRDP	100.00	0.07	2441	39	1	17.50	16.78	Back	0	0.025	1.180	1.000	0.030	
Extremity	2.4 GHz Bluetooth	FHSS	Aluminum	Metal Links	6WRDP	100.00	0.01	2441	39	1	17.50	16.78	Back	0	0.026	1.180	1.000	0.031	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Sport	6K4TT	100.00	0.09	2441	39	1	17.50	16.78	Back	0	0.028	1.180	1.000	0.033	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Metal Loop	6K4TT	100.00	0.08	2441	39	1	17.50	16.78	Back	0	0.028	1.180	1.000	0.033	
Extremity	2.4 GHz Bluetooth	FHSS	Titanium	Metal Links	6K4TT	100.00	0.09	2441	39	1	17.50	16.78	Back	0	0.023	1.180	1.000	0.027	
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	TWF7C	8.70	0.08	5728.75	Low	1	16.00	15.04	Back	0	0.000	1.247	1.023	0.000	
Extremity	802.15.4 ab-NB	Aluminum	Metal Loop	TWF7C	8.70	0.01	5728.75	Low	1	16.00	15.04	Back	0	0.000	1.247	1.023	0.000	
Extremity	802.15.4 ab-NB	Aluminum	Metal Links	TWF7C	8.70	0.09	5728.75	Low	1	16.00	15.04	Back	0	0.000	1.247	1.023	0.000	A32
Extremity	802.15.4 ab-NB	Titanium	Sport	YQWPD	8.70	0.01	5728.75	Low	1	16.00	15.04	Back	0	0.000	1.247	1.023	0.000	
Extremity	802.15.4 ab-NB	Titanium	Metal Loop	YQWPD	8.70	0.01	5846.25	High	1	16.00	14.92	Back	0	0.000	1.282	1.023	0.000	
Extremity	802.15.4 ab-NB	Titanium	Metal Loop	YQWPD	8.70	0.06	5728.75	Low	1	16.00	15.04	Back	0	0.000	1.247	1.023	0.000	
Extremity	802.15.4 ab-NB	Titanium	Metal Loop	YQWPD	8.70	0.01	5786.25	Mid	1	16.00	14.96	Back	0	0.000	1.271	1.023	0.000	
Extremity	802.15.4 ab-NB	Titanium	Metal Links	YQWPD	8.70	0.06	5728.75	Low	1	16.00	15.04	Back	0	0.000	1.247	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 8.9% 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	A	Aluminum	Sport	NXP2D	0.03	13.56	Back	0	0.000	A33
Extremity	NFC	A	Aluminum	Metal Loop	NXP2D	0.02	13.56	Back	0	0.000	
Extremity	NFC	A	Aluminum	Metal Links	NXP2D	0.03	13.56	Back	0	0.000	
Extremity	NFC	A	Titanium	Sport	M9TYQ	0.04	13.56	Back	0	0.000	
Extremity	NFC	A	Titanium	Metal Loop	M9TYQ	0.01	13.56	Back	0	0.000	
Extremity	NFC	A	Titanium	Metal Links	M9TYQ	0.02	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	9TVDQ	1:1	0.06	6489.60	5	Back	0	0.001	
Extremity	UWB	CW	Aluminum	Sport	9TVDQ	1:1	0.01	7987.20	9	Back	0	0.000	
Extremity	UWB	CW	Aluminum	Metal Loop	9TVDQ	1:1	0.09	6489.60	5	Back	0	0.000	
Extremity	UWB	CW	Aluminum	Metal Loop	9TVDQ	1:1	0.02	7987.20	9	Back	0	0.002	A34
Extremity	UWB	CW	Aluminum	Metal Links	9TVDQ	1:1	0.17	6489.60	5	Back	0	0.002	
Extremity	UWB	CW	Aluminum	Metal Links	9TVDQ	1:1	0.02	7987.20	9	Back	0	0.000	
Extremity	UWB	CW	Titanium	Sport	3Y7JR	1:1	0.01	6489.60	5	Back	0	0.002	
Extremity	UWB	CW	Titanium	Sport	3Y7JR	1:1	0.07	7987.20	9	Back	0	0.000	
Extremity	UWB	CW	Titanium	Metal Loop	3Y7JR	1:1	0.03	6489.60	5	Back	0	0.000	
Extremity	UWB	CW	Titanium	Metal Loop	3Y7JR	1:1	0.09	7987.20	9	Back	0	0.000	
Extremity	UWB	CW	Titanium	Metal Links	3Y7JR	1:1	0.05	6489.60	5	Back	0	0.000	
Extremity	UWB	CW	Titanium	Metal Links	3Y7JR	1:1	0.01	7987.20	9	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			

Exposure	Band / Mode	Service/ Modulation	Housing Type	Wristband Type	Serial Number	Duty Cycle	Power Drift [dB]	Frequency [MHz]	Channel #	Test Position	Spacing [mm]	Measured APD [W/m² (4cm²)]
Extremity	UWB	CW	Aluminum	Sport	9TVDQ	1:1	0.06	6489.60	5	Back	0	0.036
Extremity	UWB	CW	Aluminum	Sport	9TVDQ	1:1	0.01	7987.20	9	Back	0	0.023
Extremity	UWB	CW	Aluminum	Metal Loop	9TVDQ	1:1	0.09	6489.60	5	Back	0	0.019
Extremity	UWB	CW	Aluminum	Metal Loop	9TVDQ	1:1	0.02	7987.20	9	Back	0	0.059
Extremity	UWB	CW	Aluminum	Metal Links	9TVDQ	1:1	0.17	6489.60	5	Back	0	0.042
Extremity	UWB	CW	Aluminum	Metal Links	9TVDQ	1:1	0.02	7987.20	9	Back	0	0.016
Extremity	UWB	CW	Titanium	Sport	3Y7JR	1:1	0.01	6489.60	5	Back	0	0.051
Extremity	UWB	CW	Titanium	Sport	3Y7JR	1:1	0.07	7987.20	9	Back	0	0.003
Extremity	UWB	CW	Titanium	Metal Loop	3Y7JR	1:1	0.03	6489.60	5	Back	0	0.016
Extremity	UWB	CW	Titanium	Metal Loop	3Y7JR	1:1	0.09	7987.20	9	Back	0	0.015
Extremity	UWB	CW	Titanium	Metal Links	3Y7JR	1:1	0.05	6489.60	5	Back	0	0.018
Extremity	UWB	CW	Titanium	Metal Links	3Y7JR	1:1	0.01	7987.20	9	Back	0	0.020

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 not required since measured SAR results for all frequency bands were less than 0.8 W/kg and 2.0 W/kg for 10g SAR.
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 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 8.9% transmission duty factor to determine compliance since the duty factor of the device is limited to 8.9% 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	Side	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	-0.07	2	Aluminum	9TVDQ	Back	0.25	1.150	1.554	0.186	0.289	0.232	0.361	A35
7987.20	9	UWB	CW	Sport	0.00	2	Aluminum	9TVDQ	Back	0.25	0.185	1.554	0.071	0.110	0.083	0.129	
6489.60	5	UWB	CW	Sport	0.00	9.24	Aluminum	9TVDQ	Back	0.25	0.447	1.554	0.129	0.200	0.156	0.242	
6489.60	5	UWB	CW	Metal Loop	0.04	2	Aluminum	9TVDQ	Back	0.25	0.337	1.554	0.095	0.148	0.120	0.186	
7987.20	9	UWB	CW	Metal Loop	0.00	2	Aluminum	9TVDQ	Back	0.25	0.116	1.554	0.069	0.107	0.076	0.118	
6489.60	5	UWB	CW	Metal Links	-0.02	2	Aluminum	9TVDQ	Back	0.25	0.371	1.554	0.093	0.145	0.108	0.168	
7987.20	9	UWB	CW	Metal Links	0.08	2	Aluminum	9TVDQ	Back	0.25	0.562	1.554	0.139	0.216	0.174	0.270	
6489.60	5	UWB	CW	Sport	0.00	2	Titanium	C3JMC	Back	0.25	0.458	1.554	0.079	0.123	0.108	0.168	
7987.20	9	UWB	CW	Sport	-0.10	2	Titanium	C3JMC	Back	0.25	1.020	1.554	0.195	0.303	0.211	0.328	
6489.60	5	UWB	CW	Metal Loop	0.04	2	Titanium	C3JMC	Back	0.25	0.179	1.554	0.072	0.112	0.086	0.134	
7987.20	9	UWB	CW	Metal Loop	0.00	2	Titanium	C3JMC	Back	0.25	0.101	1.554	0.039	0.061	0.053	0.082	
6489.60	5	UWB	CW	Metal Links	0.00	2	Titanium	C3JMC	Back	0.25	0.598	1.554	0.129	0.200	0.173	0.269	
7987.20	9	UWB	CW	Metal Links	0.00	2	Titanium	C3JMC	Back	0.25	0.385	1.554	0.104	0.162	0.126	0.196	
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 D01.
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	0.007	0.319	0.025	0.351
	UMTS 1750	0.190	0.319	0.025	0.534
	UMTS 1900	0.193	0.319	0.025	0.537
	LTE Band 12	0.004	0.319	0.025	0.348
	LTE Band 13	0.007	0.319	0.025	0.351
	LTE Band 14	0.007	0.319	0.025	0.351
	LTE Band 26	0.009	0.319	0.025	0.353
	LTE Band 5	0.009	0.319	0.025	0.353
	LTE Band 66	0.265	0.319	0.025	0.609
	LTE Band 25	0.241	0.319	0.025	0.585
	LTE Band 7	0.801	0.319	0.025	1.145
	LTE Band 41	0.541	0.319	0.025	0.885

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

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth SAR (W/kg)	5 GHz WIFI SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 850	0.007	0.207	0.255	0.469
	UMTS 1750	0.190	0.207	0.255	0.652
	UMTS 1900	0.193	0.207	0.255	0.655
	LTE Band 12	0.004	0.207	0.255	0.466
	LTE Band 13	0.007	0.207	0.255	0.469
	LTE Band 14	0.007	0.207	0.255	0.469
	LTE Band 26	0.009	0.207	0.255	0.471
	LTE Band 5	0.009	0.207	0.255	0.471
	LTE Band 66	0.265	0.207	0.255	0.727
	LTE Band 25	0.241	0.207	0.255	0.703
	LTE Band 7	0.801	0.207	0.255	1.263
	LTE Band 41	0.541	0.207	0.255	1.003

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

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth SAR (W/kg)	802.15.4 ab-NB SAR (W/kg)	∑ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 850	0.007	0.207	0.025	0.239
	UMTS 1750	0.190	0.207	0.025	0.422
	UMTS 1900	0.193	0.207	0.025	0.425
	LTE Band 12	0.004	0.207	0.025	0.236
	LTE Band 13	0.007	0.207	0.025	0.239
	LTE Band 14	0.007	0.207	0.025	0.239
	LTE Band 26	0.009	0.207	0.025	0.241
	LTE Band 5	0.009	0.207	0.025	0.241
	LTE Band 66	0.265	0.207	0.025	0.497
	LTE Band 25	0.241	0.207	0.025	0.473
	LTE Band 7	0.801	0.207	0.025	1.033
	LTE Band 41	0.541	0.207	0.025	0.773

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 11-4
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	0.231	0.111	0.000	0.000	0.342
	UMTS 1750	0.286	0.111	0.000	0.000	0.397
	UMTS 1900	0.294	0.111	0.000	0.000	0.405
	LTE Band 12	0.151	0.111	0.000	0.000	0.262
	LTE Band 13	0.247	0.111	0.000	0.000	0.358
	LTE Band 14	0.237	0.111	0.000	0.000	0.348
	LTE Band 26	0.311	0.111	0.000	0.000	0.422
	LTE Band 5	0.261	0.111	0.000	0.000	0.372
	LTE Band 66	0.357	0.111	0.000	0.000	0.468
	LTE Band 25	0.213	0.111	0.000	0.000	0.324
	LTE Band 7	0.145	0.111	0.000	0.000	0.256
	LTE Band 41	0.122	0.111	0.000	0.000	0.233

Table 11-5
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	0.231	0.111	0.002	0.000	0.344
	UMTS 1750	0.286	0.111	0.002	0.000	0.399
	UMTS 1900	0.294	0.111	0.002	0.000	0.407
	LTE Band 12	0.151	0.111	0.002	0.000	0.264
	LTE Band 13	0.247	0.111	0.002	0.000	0.360
	LTE Band 14	0.237	0.111	0.002	0.000	0.350
	LTE Band 26	0.311	0.111	0.002	0.000	0.424
	LTE Band 5	0.261	0.111	0.002	0.000	0.374
	LTE Band 66	0.357	0.111	0.002	0.000	0.470
	LTE Band 25	0.213	0.111	0.002	0.000	0.326
	LTE Band 7	0.145	0.111	0.002	0.000	0.258
	LTE Band 41	0.122	0.111	0.002	0.000	0.235

Table 11-6
Simultaneous Transmission Scenario with Bluetooth, 5 GHz WIFI and NFC (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth 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	0.231	0.041	0.034	0.000	0.306
	UMTS 1750	0.286	0.041	0.034	0.000	0.361
	UMTS 1900	0.294	0.041	0.034	0.000	0.369
	LTE Band 12	0.151	0.041	0.034	0.000	0.226
	LTE Band 13	0.247	0.041	0.034	0.000	0.322
	LTE Band 14	0.237	0.041	0.034	0.000	0.312
	LTE Band 26	0.311	0.041	0.034	0.000	0.386
	LTE Band 5	0.261	0.041	0.034	0.000	0.336
	LTE Band 66	0.357	0.041	0.034	0.000	0.432
	LTE Band 25	0.213	0.041	0.034	0.000	0.288
	LTE Band 7	0.145	0.041	0.034	0.000	0.220
	LTE Band 41	0.122	0.041	0.034	0.000	0.197

Table 11-7
Simultaneous Transmission Scenario with 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 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	0.231	0.041	0.000	0.000	0.272
	UMTS 1750	0.286	0.041	0.000	0.000	0.327
	UMTS 1900	0.294	0.041	0.000	0.000	0.335
	LTE Band 12	0.151	0.041	0.000	0.000	0.192
	LTE Band 13	0.247	0.041	0.000	0.000	0.288
	LTE Band 14	0.237	0.041	0.000	0.000	0.278
	LTE Band 26	0.311	0.041	0.000	0.000	0.352
	LTE Band 5	0.261	0.041	0.000	0.000	0.302
	LTE Band 66	0.357	0.041	0.000	0.000	0.398
	LTE Band 25	0.213	0.041	0.000	0.000	0.254
	LTE Band 7	0.145	0.041	0.000	0.000	0.186
	LTE Band 41	0.122	0.041	0.000	0.000	0.163

Table 11-8
Simultaneous Transmission Scenario with Bluetooth, UWB and NFC (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth 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	0.231	0.041	0.002	0.000	0.274
	UMTS 1750	0.286	0.041	0.002	0.000	0.329
	UMTS 1900	0.294	0.041	0.002	0.000	0.337
	LTE Band 12	0.151	0.041	0.002	0.000	0.194
	LTE Band 13	0.247	0.041	0.002	0.000	0.290
	LTE Band 14	0.237	0.041	0.002	0.000	0.280
	LTE Band 26	0.311	0.041	0.002	0.000	0.354
	LTE Band 5	0.261	0.041	0.002	0.000	0.304
	LTE Band 66	0.357	0.041	0.002	0.000	0.400
	LTE Band 25	0.213	0.041	0.002	0.000	0.256
	LTE Band 7	0.145	0.041	0.002	0.000	0.188
	LTE Band 41	0.122	0.041	0.002	0.000	0.165

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 D01v01, SAR measurement variability was not assessed for each frequency band since all measured SAR values are < 0.8 W/kg for 1g SAR and < 2.0 W/kg for 10g SAR.

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

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
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	1S51G6	Amplifier	CBT	N/A	CBT	433973
Amplifier Research	1S51G6	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	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	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
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	NRX	Power Meter	6/10/2024	Annual	6/10/2025	105096
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/19/2024	Annual	4/19/2025	151849
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/24/2024	Annual	4/24/2025	167284
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/22/2024	Annual	4/22/2025	106578
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	CLA-13	Confined Loop Antenna	11/9/2023	Annual	11/9/2024	1004
SPEAG	D750V3	750 MHz SAR Dipole	9/13/2023	Annual	9/13/2024	1097
SPEAG	D835V2	835 MHz SAR Dipole	11/18/2022	Biennial	11/18/2024	4d108
SPEAG	D1750V2	1750 MHz SAR Dipole	9/6/2023	Annual	9/6/2024	1104
SPEAG	D1900V2	1900 MHz SAR Dipole	11/16/2022	Biennial	11/16/2024	5d131
SPEAG	D1900V2	1900 MHz SAR Dipole	8/8/2023	Annual	8/8/2024	5d180
SPEAG	D2450V2	2450 MHz SAR Dipole	11/9/2021	Triennial	11/9/2024	921
SPEAG	D2450V2	2450 MHz SAR Dipole	5/11/2022	Triennial	5/11/2025	750
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	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	5G Verification Source 10GHz	10GHz System Verification Antenna	10/13/2023	Annual	10/13/2024	1006
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	3/6/2024	Annual	3/6/2025	604
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/14/2023	Annual	11/14/2024	1403
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/10/2024	Annual	4/10/2025	1402
SPEAG	DAE4	Dasy Data Acquisition Electronics	5/8/2024	Annual	5/8/2025	1683
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/7/2023	Annual	12/7/2024	1644
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/18/2023	Annual	10/18/2024	1237
SPEAG	DAE4	Dasy Data Acquisition Electronics	9/12/2023	Annual	9/12/2024	1681
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/18/2023	Annual	10/18/2024	793
SPEAG	EX3DV4	SAR Probe	11/9/2023	Annual	11/9/2024	7639
SPEAG	EX3DV4	SAR Probe	10/16/2023	Annual	10/16/2024	3746
SPEAG	EX3DV4	SAR Probe	8/10/2023	Annual	8/10/2024	7668
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	5/13/2024	Annual	5/13/2025	7682
SPEAG	EX3DV4	SAR Probe	4/16/2024	Annual	4/16/2025	7546
SPEAG	EX3DV4	SAR Probe	1/16/2024	Annual	1/16/2025	7499
SPEAG	EX3DV4	SAR Probe	3/11/2024	Annual	3/11/2025	7421
SPEAG	EUmmWV4	mmWave Probe	4/8/2024	Annual	4/8/2025	9487

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.

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	E2.1	9.3	N	1	1	1	9.3	9.3	∞
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				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 MechanicalOffset	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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