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:
06/06/2023 – 07/18/2023
Test Report Issue Date:
08/11/2023
Test Site/Location:
Element, Morgan Hill, CA, USA
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FCC ID: **BCG-A2982**

APPLICANT: **APPLE, INC.**

DUT Type: Watch
Application Type: Certification
FCC Rule Part(s): CFR §2.1093
Model: A2982, A2983

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	0.28
PCT	UMTS 1750	1712.4 - 1752.6 MHz	0.28	0.12
PCT	UMTS 1900	1852.4 - 1907.6 MHz	0.39	0.17
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	0.27
PCT	LTE Band 14	790.5 - 795.5 MHz	< 0.1	0.26
PCT	LTE Band 26 (Cell)	814.7 - 848.3 MHz	< 0.1	0.24
PCT	LTE Band 5 (Cell)	824.7 - 848.3 MHz	< 0.1	0.22
PCT	LTE Band 66 (AWS)	1710.7 - 1779.3 MHz	0.47	0.17
PCT	LTE Band 4 (AWS)	1710.7 - 1754.3 MHz	N/A	N/A
PCT	LTE Band 25 (PCS)	1850.7 - 1914.3 MHz	0.48	0.22
PCT	LTE Band 2 (PCS)	1850.7 - 1909.3 MHz	N/A	N/A
PCT	LTE Band 7	2502.5 - 2567.5 MHz	1.15	1.52
PCT	LTE Band 41	2498.5 - 2687.5 MHz	0.79	0.52
DTS	2.4 GHz WLAN	2412 - 2472 MHz	0.30	0.22
NII	U-NII-1	5180 - 5240 MHz	N/A	N/A
NII	U-NII-2A	5260 - 5320 MHz	0.20	< 0.1
NII	U-NII-2C	5500 - 5720 MHz	0.27	< 0.1
NII	U-NII-3	5745 - 5825 MHz	0.18	< 0.1
DSS/DTS	Bluetooth	2402 - 2480 MHz	0.34	0.20
NII	802.15.4ab-NB	5728.25 - 5846.25 MHz	< 0.1	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03:			1.53	1.73

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 WLAN	Voice/Data	2412 - 2472 MHz
U-NII-1	Voice/Data	5180 - 5240 MHz
U-NII-2A	Voice/Data	5260 - 5320 MHz
U-NII-2C	Voice/Data	5500 - 5720 MHz
U-NII-3	Voice/Data	5745 - 5825 MHz
Bluetooth	Data	2402 - 2480 MHz
802.15.4ab-NB	Data	5728.25 - 5846.25 MHz
NFC	Data	13.56 MHz
UWB	Data	6489.6 - 7987.2 MHz

1.2 Power Reduction for SAR

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

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

1.3 Nominal and Maximum Output Power Specifications

This device operates using the following maximum and nominal output power specifications. SAR values were scaled to the maximum allowed power to determine compliance per KDB Publication 447498 D01v06.

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 (850 MHz)	Max allowed power	**25.00**	**25.00**	**24.00**	**24.00**
	Nominal	**24.00**	**24.00**	**23.00**	**23.00**
UMTS Band 4 (1750 MHz)	Max allowed power	**24.00**	**24.00**	**23.00**	**22.00**
	Nominal	**23.00**	**23.00**	**22.00**	**21.00**
UMTS Band 2 (1900 MHz)	Max allowed power	**24.00**	**24.00**	**23.00**	**22.00**
	Nominal	**23.00**	**23.00**	**22.00**	**21.00**

1.3.2 Maximum Output Power – LTE Mode

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

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

Table below is applicable in the following conditions:

- Simultaneous conditions with Licensed Bands
- Simultaneous conditions with Licensed Bands and 5 GHz WLAN active
- Simultaneous conditions with Licensed Bands and 802.15.4ab-NB

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

1.3.5 Maximum Output Power – 802.15.4ab-NB Mode

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 D01v06, 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 D01v06 4.3.2 procedures.

Table 1-1
Simultaneous Transmission Scenarios

No.	Capable Transmit Configuration	Head	Extremity
1	Cellular + 2.4 GHz WI-FI	Yes	Yes
2	Cellular + 5 GHz WI-FI	Yes	Yes
3	Cellular + 2.4 GHz Bluetooth	Yes	Yes
4	Cellular + 802.15.4ab-NB	Yes	Yes
5	Cellular + 2.4 GHz Bluetooth + 5 GHz WI-FI	Yes	Yes
6	Cellular + 802.15.4ab-NB + 2.4 GHz WIFI	Yes	Yes
7	Cellular + 2.4 GHz Bluetooth + 802.15.4ab-NB	Yes	Yes
8	2.4 GHz Bluetooth + 5 GHz WI-FI	Yes	Yes
9	2.4 GHz Bluetooth + 802.15.4ab-NB	Yes	Yes
10	802.15.4ab-NB + 2.4 GHz WI-FI	Yes	Yes

1. 2.4 GHz WLAN and 2.4 GHz Bluetooth share the same antenna path and cannot transmit simultaneously.
2. 2.4 GHz WLAN and 5 GHz WLAN share the same antenna path and cannot transmit simultaneously.
3. 802.15.4ab-NB and 5 GHz WLAN share the same antenna path and 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.
7. This device supports VOWIFI.

1.7 Miscellaneous SAR Test Considerations

(A) WIFI/BT

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

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

(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 D01v06 (General SAR Guidance, Wrist-worn Device Guidance)
- FCC KDB Publication 865664 D01v01r04, D02v01r02 (SAR Measurements up to 6 GHz)
- IEEE 1528-2013

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 Stainless Steel. 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				
	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 (41493)
LTE Band 41: 10 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41493)
LTE Band 41: 15 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41493)
LTE Band 41: 20 MHz	2506 (39750)	2549.5 (40185)	2593 (40620)	2636.5 (41055)	2680 (41493)
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 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:

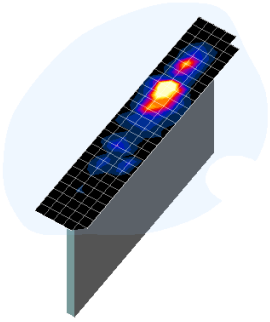

Figure 4-1
Sample SAR Area Scan

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*Δz_{zoom}(n-1)	≥ 30
2-3 GHz	≤ 12	≤ 5	≤ 5	≤ 4	≤ 1.5*Δz_{zoom}(n-1)	≥ 30
3-4 GHz	≤ 12	≤ 5	≤ 4	≤ 3	≤ 1.5*Δz_{zoom}(n-1)	≥ 28
4-5 GHz	≤ 10	≤ 4	≤ 3	≤ 2.5	≤ 1.5*Δz_{zoom}(n-1)	≥ 25
5-6 GHz	≤ 10	≤ 4	≤ 2	≤ 2	≤ 1.5*Δz_{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.

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.

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 D01v06, 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.

7.4.6 SAR Measurement Conditions with DC-HSDPA

SAR is required for Rel. 8 DC-HSDPA when SAR is required for Rel. 5 HSDPA; otherwise, the 3G SAR test reduction procedure is applied to DC-HSDPA with 12.2 kbps RMC as the primary mode. Power is measured for DC-HSDPA according to the H-Set 12, FRC configuration in Table C.8.1.12 of 3GPP TS 34.121-1 to determine SAR test reduction. A primary and a secondary serving HS-DSCH Cell are required to perform the power measurement and for the results to be acceptable.

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	24.08	24.10	24.12	22.98	23.05	22.87	23.43	23.31	23.42	-
99		12.2 kbps AMR	24.28	24.25	24.30	23.34	23.26	23.17	23.29	23.34	23.29	-
6	HSDPA	Subtest 1	24.68	24.21	24.79	23.45	23.38	23.44	22.99	22.98	22.96	0
6		Subtest 2	23.93	23.75	23.79	22.62	22.64	22.34	22.32	22.40	22.37	0
6		Subtest 3	22.75	22.85	23.05	22.15	22.20	22.06	21.74	21.76	21.69	0.5
6		Subtest 4	23.16	22.94	23.04	21.90	21.84	21.87	21.75	21.75	21.76	0.5
6	HSUPA	Subtest 1	22.61	22.49	22.57	21.90	21.96	21.87	22.70	22.76	22.70	0
6		Subtest 2	20.46	20.25	20.36	19.86	19.91	19.85	20.50	20.53	20.50	2
6		Subtest 3	21.05	21.04	21.09	20.90	20.86	20.78	21.27	21.31	21.27	1
6		Subtest 4	20.71	20.53	20.57	20.02	20.11	20.02	20.77	20.82	20.75	2
6		Subtest 5	22.70	22.52	22.61	22.19	22.17	22.14	22.76	22.74	22.76	0
8	DC-HSDPA	Subtest 1	23.64	23.47	23.59	21.57	21.54	21.35	21.35	21.43	21.30	0
8		Subtest 2	22.66	22.51	22.60	20.37	20.47	20.34	20.25	20.41	20.47	0
8		Subtest 3	22.14	22.04	22.10	19.97	19.97	19.83	19.84	19.81	19.75	0.5
8		Subtest 4	21.84	21.78	21.81	19.72	19.71	19.65	19.64	19.69	19.70	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]**	**Design MPR [dB]**
QPSK	1	0	**24.60**	0	0
	1	25	24.50		0
	1	49	24.40		0
	25	0	**23.60**	0-1	1
	25	12	23.50		1
	25	25	23.45		1
	50	0	23.50		1
	15	0	23.45	0-1	1
	15	17	23.38		1
	15	35	23.42		1
	27	0	23.50	0-2	1
	27	12	23.34		1
	27	23	23.45		1
16QAM	1	0	23.68	0-2	1
	1	25	23.64		1
	1	49	23.71		1
	25	0	22.22	0-3	2
	25	12	22.25		2
	25	25	22.34		2
	15	0	22.30	0-5	2
	15	17	22.28		2
	15	35	22.37		2
	27	0	22.27		2
	27	12	22.23		2
	27	23	22.31		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]	Design MPR [dB]
QPSK	1	0	**24.69**	0	0
	1	25	24.40		0
	1	49	24.57		0
	25	0	23.51	0-1	1
	25	12	23.48		1
	25	25	**23.54**		1
	50	0	23.50		1
	15	0	23.56	0-1	1
	15	17	23.46		1
	15	35	23.66		1
	27	0	23.56	0-2	1
	27	12	23.58		1
	27	23	23.57		1
16QAM	1	0	23.71	0-2	1
	1	25	23.60		1
	1	49	23.75		1
	25	0	22.54	0-3	2
	25	12	22.40		2
	25	25	22.47		2
	15	0	22.54	0-5	2
	15	17	22.38		2
	15	35	22.50		2
	27	0	22.47		2
	27	12	22.45		2
	27	23	22.42		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]**	**Design MPR [dB]**
QPSK	1	0	**24.64**	0	0
	1	25	24.63		0
	1	49	24.59		0
	25	0	**23.52**	0-1	1
	25	12	23.47		1
	25	25	23.41		1
	50	0	23.34		1
	15	0	23.33	0-1	1
	15	17	23.44		1
	15	35	23.55		1
	27	0	23.44	0-2	1
	27	12	23.53		1
	27	23	23.56		1
16QAM	1	0	23.82	0-2	1
	1	25	23.95		1
	1	49	23.74		1
	25	0	22.27	0-3	2
	25	12	22.28		2
	25	25	22.32		2
	15	0	22.20	0-5	2
	15	17	22.37		2
	15	35	22.41		2
	27	0	22.27		2
	27	12	22.35		2
	27	23	22.32		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]	Design MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	24.84	24.96	24.94	0	0
	1	25	**25.05**	25.03	25.01		0
	1	49	24.98	24.91	24.83		0
	25	0	23.99	24.11	24.11	0-1	1
	25	12	23.93	24.01	23.97		1
	25	25	**24.14**	23.96	24.06		1
	50	0	23.99	24.05	23.97		1
	15	0	24.05	24.13	24.06	0-1	1
	15	17	23.94	24.03	24.12		1
	15	35	24.02	23.99	23.98		1
	27	0	24.01	24.14	24.07	0-2	1
	27	12	23.94	24.03	24.1		1
	27	23	23.95	23.96	24.11		1
16QAM	1	0	23.85	23.99	23.95	0-2	1
	1	25	23.96	24.08	24.02		1
	1	49	23.81	24.11	24.16		1
	25	0	22.71	22.58	22.62	0-3	2
	25	12	22.72	22.63	22.51		2
	25	25	22.66	22.68	22.56		2
	15	0	22.66	22.58	22.64	0-5	2
	15	17	22.77	22.70	22.56		2
	15	35	22.69	22.72	22.63		2
	27	0	22.71	22.58	22.54		2
	27	12	22.69	22.64	22.52		2
	27	23	22.69	22.67	22.56		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	25.02	0	0
	1	25	24.90		0
	1	49	**25.09**		0
	25	0	24.01	0-1	1
	25	12	23.96		1
	25	25	**24.02**		1
	50	0	23.96		1
	15	0	23.98	0-1	1
	15	17	23.95		1
	15	35	24.00		1
	27	0	23.99	0-2	1
	27	12	23.94		1
	27	23	24.00		1
16QAM	1	0	24.05	0-2	1
	1	25	23.82		1
	1	49	23.93		1
	25	0	23.08	0-3	2
	25	12	23.02		2
	25	25	23.05		2
	15	0	23.01	0-5	2
	15	17	23.00		2
	15	35	23.05		2
	27	0	23.04		2
	27	12	23.01		2
	27	23	23.06		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]	Design MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.50	23.60	23.55	0	0
	1	50	23.20	**23.85**	23.40		0
	1	99	23.30	23.54	23.44		0
	50	0	22.80	**22.83**	22.50	0-1	1
	50	25	22.75	22.70	22.60		1
	50	50	22.65	22.75	22.70		1
	100	0	22.70	22.82	22.78		1
	15	0	23.60	23.60	23.28	0-1	0
	15	42	23.80	23.78	23.50		0
	15	85	23.55	23.65	23.48		0
	27	0	22.66	22.60	22.30	0-2	1
	27	37	22.80	22.74	22.50		1
	27	73	22.60	22.65	22.55		1
16QAM	1	0	22.40	22.70	22.70	0-2	1
	1	50	22.80	22.90	22.80		1
	1	99	22.70	22.70	22.85		1
	15	0	22.40	22.60	22.40	0-3	1
	15	42	22.45	22.80	22.50		1
	15	85	22.40	22.60	22.53		1
	27	0	21.63	21.63	21.30	0-5	2
	27	37	21.90	21.80	21.50		2
	27	73	21.70	21.60	21.50		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]	Design MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	23.60	23.50	23.40	0	0
	1	50	23.67	**23.80**	23.70		0
	1	99	23.57	23.72	23.30		0
	50	0	22.75	22.70	22.65	0-1	1
	50	25	22.68	22.72	22.74		1
	50	50	22.55	22.75	**22.78**		1
	100	0	22.72	22.74	22.75		1
	15	0	23.58	23.60	23.50	0-1	0
	15	42	23.60	23.85	23.75		0
	15	85	23.45	23.82	23.42		0
	27	0	22.65	22.65	22.55	0-2	1
	27	37	22.65	22.82	22.82		1
	27	73	22.50	22.80	22.55		1
16QAM	1	0	22.85	22.75	22.60	0-2	1
	1	50	22.95	22.90	22.80		1
	1	99	22.80	22.85	22.75		1
	15	0	22.70	22.70	22.60	0-3	1
	15	42	22.76	22.95	22.80		1
	15	85	22.65	22.83	22.50		1
	27	0	21.70	21.70	21.60	0-5	2
	27	37	21.73	21.90	21.95		2
	27	73	21.55	21.80	21.60		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]	Design MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	22.76	22.95	22.85	0	0
	1	50	22.94	22.85	22.69		0
	1	99	**23.00**	22.98	22.91		0
	50	0	21.65	21.87	21.84	0-1	1
	50	25	21.91	21.93	21.79		1
	50	50	**22.10**	22.02	21.94		1
	100	0	22.09	22.08	22.08		1
	15	0	22.71	22.88	22.88	0-1	0
	15	42	22.89	22.85	22.74		0
	15	85	23.02	22.97	22.98		0
	27	0	21.72	21.83	21.85	0-2	1
	27	37	21.92	21.89	21.73		1
	27	73	22.05	21.93	21.91		1
16QAM	1	0	22.04	22.39	22.55	0-2	1
	1	50	22.32	22.23	22.27		1
	1	99	22.55	22.46	22.66		1
	15	0	21.71	21.98	21.95	0-3	1
	15	42	22.02	21.93	21.86		1
	15	85	22.09	22.04	21.87		1
	27	0	20.67	20.89	20.88	0-5	2
	27	37	21.05	20.91	20.86		2
	27	73	21.16	20.93	20.93		2

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

LTE Band 7 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2510.0 MHz)	Mid Channel 21100 (2535.0 MHz)	High Channel 21350 (2560.0 MHz)	MPR Allowed per 3GPP [dB]	Design MPR [dB]
			Conducted Power [dBm]				
QPSK	1	0	21.54	21.76	21.65	0	0
	1	50	21.57	21.62	21.45		0
	1	99	**22.07**	21.98	21.91		0
	50	0	20.66	20.78	20.74	0-1	1
	50	25	20.82	20.78	20.75		1
	50	50	**21.05**	20.87	20.88		1
	100	0	20.98	21.01	21.04		1
	15	0	21.51	21.76	21.80	0-1	0
	15	42	21.82	21.77	21.71		0
	15	85	21.88	21.88	21.94		0
	27	0	20.49	20.72	20.76	0-2	1
	27	37	20.80	20.75	20.69		1
	27	73	20.89	20.80	20.82		1
16QAM	1	0	20.75	21.24	21.19	0-2	1
	1	50	21.09	21.11	21.06		1
	1	99	21.29	21.37	21.30		1
	15	0	20.49	20.83	20.84	0-3	1
	15	42	20.84	20.80	20.79		1
	15	85	20.97	20.91	20.98		1
	27	0	19.48	19.73	19.81	0-5	2
	27	37	19.77	19.74	19.73		2
	27	73	19.89	19.84	19.84		2

8.2.9 LTE Band 41

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

LTE Band 41 20 MHz Bandwidth									
Modulation	RB Size	RB Offset	Low Channel	Low-Mid Channel	Mid Channel	Mid-High Channel	High Channel	MPR Allowed per 3GPP [dB]	Design 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	22.80	**23.16**	23.02	22.99	22.96	0	0
	1	50	22.85	23.12	23.07	22.95	22.84		0
	1	99	23.01	23.05	22.97	22.83	22.72		0
	50	0	21.99	**22.10**	22.01	21.94	21.67	0-1	1
	50	25	21.98	22.04	21.99	21.85	21.66		1
	50	50	22.01	22.01	21.98	21.81	21.70		1
	100	0	22.08	22.05	22.02	21.87	21.74		1
	15	0	23.01	23.15	23.03	22.97	22.72	0-1	0
	15	42	23.04	23.10	23.07	22.91	22.70		0
	15	85	23.11	23.03	23.05	22.81	22.69		0
	27	0	21.99	22.14	22.00	21.96	21.70	0-2	1
	27	37	22.02	22.08	22.02	21.88	21.65		1
	27	73	22.03	22.00	21.97	21.77	21.62		1
16QAM	1	0	21.49	22.04	22.05	21.74	21.71	0-2	1
	1	50	21.82	22.02	21.94	21.79	21.33		1
	1	99	21.68	21.90	22.23	21.55	21.28		1
	15	0	21.43	21.75	21.62	21.72	21.16	0-3	1
	15	42	21.30	21.60	21.55	21.59	21.27		1
	15	85	21.50	21.72	21.56	21.52	21.29		1
	27	0	20.72	21.04	20.85	20.74	20.96	0-5	2
	27	37	20.65	21.03	20.95	20.85	20.94		2
	27	73	20.57	20.88	21.05	21.00	20.86		2

Figure 8-2
Power Measurement Setup

8.3 WLAN Conducted Powers

Table 8-12
2.4 GHz WLAN Maximum Average RF Power

2.4GHz Conducted Power [dBm]				
Freq [MHz]	Channel	IEEE Transmission Mode		
		802.11b	802.11g	802.11n
		Average	Average	Average
2412	1	18.20	16.09	16.00
2417	2		17.50	17.49
2437	6	17.97	17.47	17.43
2452	9		17.53	17.51
2462	11	18.06	15.00	14.99

Table 8-13
5 GHz WLAN Maximum Average RF Power

5GHz (20MHz) Conducted Power [dBm]			
Freq [MHz]	Channel	IEEE Transmission Mode	
		802.11a	802.11n
		Average	Average
5180	36	16.18	16.14
5200	40	16.21	16.40
5220	44	16.20	16.44
5240	48	16.11	16.37
5260	52	16.19	16.30
5280	56	16.15	16.26
5300	60	16.20	16.25
5320	64	16.23	16.29
5500	100	16.23	16.39
5600	120	16.15	16.38
5620	124	16.14	16.24
5720	144	16.10	16.20
5745	149	16.21	16.19
5785	157	16.15	16.15
5825	165	16.19	16.22

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

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

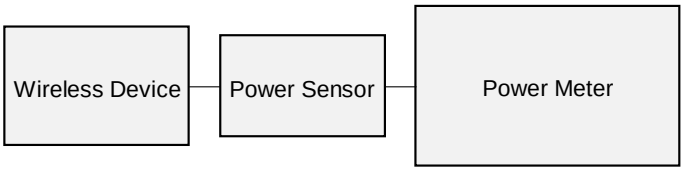

Figure 8-3
Power Measurement Setup

8.4 Bluetooth Conducted Powers

Table 8-14
Bluetooth Average Max RF Power

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	16.07	40.458
2441	GFSK	1.0	39	16.55	45.186
2480	GFSK	1.0	78	16.11	40.832

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

Table 8-15
Bluetooth Average Reduced RF Power

Frequency [MHz]	Modulation	Data Rate [Mbps]	Channel No.	Avg Conducted Power	
				[dBm]	[mW]
2402	GFSK	1.0	0	12.08	16.144
2441	GFSK	1.0	39	12.19	16.558
2480	GFSK	1.0	78	11.82	15.205

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

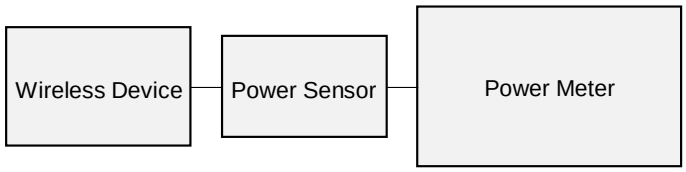

Figure 8-4
Power Measurement Setup

8.5 802.15.4ab-NB Conducted Powers

Table 8-16
802.15.4ab-NB Average RF Power

Band	Frequency	Channel	Average
802.15.4ab-NB	5728.75	Low	15.89
	5786.25	Middle	15.82
	5846.25	High	15.8

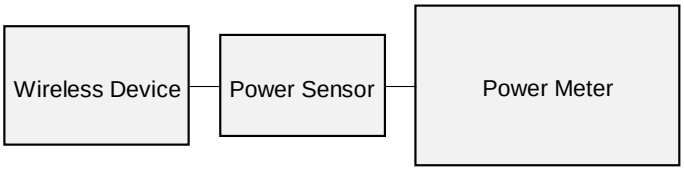

Figure 8-5
Power Measurement Setup

8.6 802.15.4ab-NB Duty Cycle

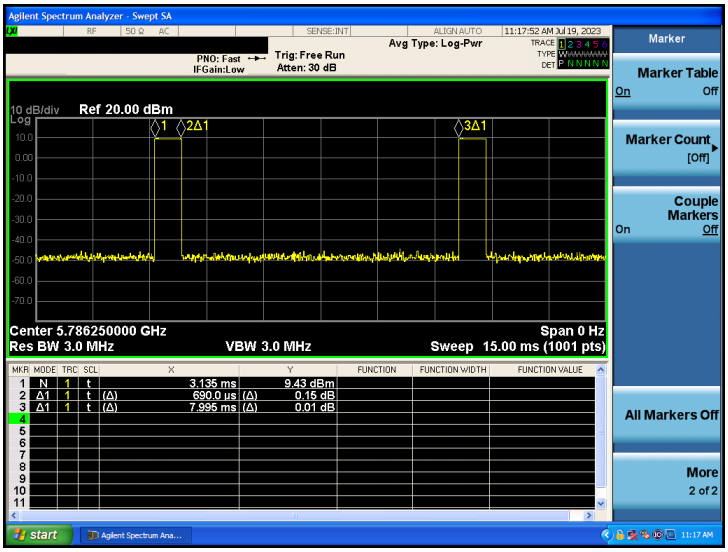

Figure 8-6
802.15.4ab-NB Transmission Plot

Equation 8-1
802.15.4ab-NB Duty Cycle Calculation

$$\boldsymbol{Duty\ Cycle} = \frac{\boldsymbol{Pulse\ Width}}{\boldsymbol{Period}} * \mathbf{100\%} = \frac{\mathbf{0.69}}{\mathbf{7.995}} * \mathbf{100\%} = \mathbf{8.6\%}$$

8.7 Bluetooth Power Reduction Verification Summary

Table 8-17
Bluetooth Power Reduction Verification

Mode/Band	Antenna	Maximum Scenario Maximum Conducted Power (dBm)	Reduced Scenario Maximum Conducted Power (dBm)	Conducted Power [dBm]		
				Maximum	Test Case 1	Verdict
2.4 GHz Bluetooth	FCM	16.50 (± 1.0)	12.00 (± 1.0)	16.59	11.66	PASS

Conducted powers were measured for each Mode/Band and applied condition. All conducted power measurements were verified to be within tolerance

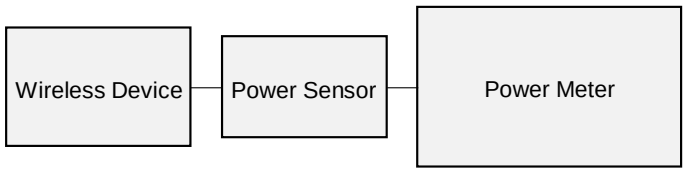

Figure 8-7
Power Measurement Setup

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
06/12/2023	750 Head	22.5	680	0.894	41.327	0.888	42.305	0.68%	-2.31%
			695	0.898	41.279	0.889	42.227	1.01%	-2.25%
			700	0.899	41.266	0.889	42.201	1.12%	-2.22%
			710	0.903	41.245	0.890	42.149	1.46%	-2.14%
			725	0.908	41.219	0.891	42.071	1.91%	-2.03%
			750	0.917	41.162	0.894	41.942	2.57%	-1.86%
			770	0.922	41.101	0.895	41.838	3.02%	-1.76%
			785	0.927	41.052	0.896	41.760	3.46%	-1.70%
			800	0.932	41.009	0.897	41.682	3.90%	-1.61%
06/14/2023	750 Head	22.1	680	0.849	40.485	0.888	42.305	-4.39%	-4.30%
			695	0.853	40.426	0.889	42.227	-4.05%	-4.27%
			700	0.855	40.409	0.889	42.201	-3.82%	-4.25%
			710	0.858	40.375	0.890	42.149	-3.60%	-4.21%
			725	0.865	40.336	0.891	42.071	-2.92%	-4.12%
			750	0.874	40.281	0.894	41.942	-2.24%	-3.96%
			770	0.880	40.235	0.895	41.838	-1.68%	-3.83%
			785	0.884	40.194	0.896	41.760	-1.34%	-3.75%
			800	0.888	40.152	0.897	41.682	-1.00%	-3.67%
06/21/2023	750 Head	22.9	680	0.848	41.172	0.888	42.305	-4.50%	-2.68%
			695	0.852	41.139	0.889	42.227	-4.16%	-2.58%
			700	0.853	41.128	0.889	42.201	-4.05%	-2.54%
			710	0.856	41.105	0.890	42.149	-3.82%	-2.48%
			725	0.861	41.060	0.891	42.071	-3.37%	-2.40%
			750	0.870	40.986	0.894	41.942	-2.68%	-2.28%
			770	0.876	40.928	0.895	41.838	-2.12%	-2.18%
			785	0.880	40.884	0.896	41.760	-1.79%	-2.10%
			800	0.884	40.852	0.897	41.682	-1.45%	-1.99%
06/21/2023	835 Head	22.0	815	0.919	41.422	0.898	41.594	2.34%	-0.41%
			820	0.921	41.410	0.899	41.578	2.45%	-0.40%
			835	0.926	41.383	0.900	41.500	2.89%	-0.28%
			850	0.930	41.361	0.916	41.500	1.53%	-0.33%
06/28/2023	835 Head	24.5	815	0.926	41.476	0.898	41.594	3.12%	-0.28%
			820	0.928	41.463	0.899	41.578	3.23%	-0.28%
			835	0.933	41.426	0.900	41.500	3.67%	-0.18%
			850	0.938	41.385	0.916	41.500	2.40%	-0.28%
07/04/2023	835 Head	21.7	815	0.907	40.141	0.898	41.594	1.00%	-3.49%
			820	0.909	40.130	0.899	41.578	1.11%	-3.48%
			835	0.915	40.093	0.900	41.500	1.67%	-3.39%
			850	0.919	40.057	0.916	41.500	0.33%	-3.48%
07/06/2023	835 Head	20.0	815	0.914	41.111	0.898	41.594	1.78%	-1.16%
			820	0.916	41.099	0.899	41.578	1.89%	-1.15%
			835	0.922	41.069	0.900	41.500	2.44%	-1.04%
			850	0.927	41.042	0.916	41.500	1.20%	-1.10%

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
06/16/2023	1750 Head	20.6	1710	1.364	39.288	1.348	40.142	1.19%	-2.13%
			1720	1.374	39.241	1.354	40.126	1.48%	-2.21%
			1745	1.401	39.127	1.368	40.087	2.41%	-2.39%
			1750	1.406	39.107	1.371	40.079	2.55%	-2.43%
			1770	1.428	39.014	1.383	40.047	3.25%	-2.58%
			1790	1.450	38.921	1.394	40.016	4.02%	-2.74%
06/19/2023	1750 Head	20.5	1710	1.367	38.813	1.348	40.142	1.41%	-3.31%
			1720	1.379	38.762	1.354	40.126	1.85%	-3.40%
			1745	1.407	38.646	1.368	40.087	2.85%	-3.59%
			1750	1.412	38.623	1.371	40.079	2.99%	-3.63%
			1770	1.432	38.528	1.383	40.047	3.54%	-3.79%
			1790	1.453	38.426	1.394	40.016	4.23%	-3.97%
06/28/2023	1750 Head	20.5	1710	1.284	40.759	1.348	40.142	-4.75%	1.54%
			1720	1.293	40.711	1.354	40.126	-4.51%	1.46%
			1745	1.317	40.599	1.368	40.087	-3.73%	1.28%
			1750	1.322	40.577	1.371	40.079	-3.57%	1.24%
			1770	1.342	40.494	1.383	40.047	-2.96%	1.12%
			1790	1.360	40.411	1.394	40.016	-2.44%	0.99%
06/14/2023	1900 Head	21.1	1850	1.370	39.833	1.400	40.000	-2.14%	-0.42%
			1860	1.376	39.812	1.400	40.000	-1.71%	-0.47%
			1880	1.387	39.774	1.400	40.000	-0.93%	-0.56%
			1900	1.398	39.743	1.400	40.000	-0.14%	-0.64%
			1905	1.401	39.737	1.400	40.000	0.07%	-0.66%
			1910	1.404	39.733	1.400	40.000	0.29%	-0.67%
			1920	1.409	39.723	1.400	40.000	0.64%	-0.69%
06/19/2023	1900 Head	21.2	1850	1.341	40.056	1.400	40.000	-4.21%	0.14%
			1860	1.346	40.041	1.400	40.000	-3.86%	0.10%
			1880	1.357	40.016	1.400	40.000	-3.07%	0.04%
			1900	1.369	39.995	1.400	40.000	-2.21%	-0.01%
			1905	1.372	39.989	1.400	40.000	-2.00%	-0.03%
			1910	1.375	39.986	1.400	40.000	-1.79%	-0.04%
			1920	1.381	39.975	1.400	40.000	-1.36%	-0.06%
06/06/2023	2450 Head	20.9	2300	1.749	40.365	1.670	39.500	4.73%	2.19%
			2310	1.757	40.354	1.679	39.480	4.65%	2.21%
			2320	1.764	40.346	1.687	39.460	4.56%	2.25%
			2400	1.827	40.218	1.756	39.289	4.04%	2.36%
			2450	1.864	40.159	1.800	39.200	3.56%	2.45%
			2480	1.889	40.085	1.833	39.162	3.06%	2.36%
			2500	1.907	40.065	1.855	39.136	2.80%	2.37%
			2510	1.915	40.059	1.866	39.123	2.63%	2.39%
			2535	1.934	40.028	1.893	39.092	2.17%	2.39%
			2550	1.946	39.996	1.909	39.073	1.94%	2.36%
			2560	1.955	39.975	1.920	39.060	1.82%	2.34%
			2600	1.991	39.916	1.964	39.009	1.37%	2.33%
			2650	2.031	39.842	2.018	38.945	0.64%	2.30%
			2680	2.056	39.781	2.051	38.907	0.24%	2.25%
			2700	2.073	39.748	2.073	38.882	0.00%	2.23%
06/14/2023	2450 Head	21.2	2400	1.839	39.756	1.756	39.289	4.73%	1.19%
			2450	1.875	39.666	1.800	39.200	4.17%	1.19%
			2480	1.900	39.618	1.833	39.162	3.66%	1.16%
			2500	1.915	39.590	1.855	39.136	3.23%	1.16%
			2510	1.922	39.575	1.866	39.123	3.00%	1.16%
			2535	1.941	39.522	1.893	39.092	2.54%	1.10%
			2550	1.955	39.493	1.909	39.073	2.41%	1.07%
			2560	1.964	39.481	1.920	39.060	2.29%	1.08%
			2600	1.998	39.440	1.964	39.009	1.73%	1.10%
			2650	2.038	39.361	2.018	38.945	0.99%	1.07%
			2680	2.061	39.319	2.051	38.907	0.49%	1.06%
			2700	2.076	39.292	2.073	38.882	0.14%	1.05%

Calibrated for Tests Performed on:	Tissue Type	Tissue Temp During Calibration (˚C)	Measured Frequency (MHz)	Measured Conductivity, σ (S/m)	Measured Dielectric Constant, ε	TARGET Conductivity, σ (S/m)	TARGET Dielectric Constant, ε	% dev σ	% dev ε
06/16/2023	2450 Head	22.3	2400	1.836	39.490	1.756	39.289	4.56%	0.51%
			2450	1.870	39.393	1.800	39.200	3.89%	0.49%
			2480	1.895	39.351	1.833	39.162	3.38%	0.48%
			2500	1.908	39.334	1.855	39.136	2.86%	0.51%
			2510	1.914	39.322	1.866	39.123	2.57%	0.51%
			2535	1.930	39.274	1.893	39.092	1.95%	0.47%
			2550	1.943	39.247	1.909	39.073	1.78%	0.45%
			2560	1.952	39.237	1.920	39.060	1.67%	0.45%
			2600	1.983	39.217	1.964	39.009	0.97%	0.53%
			2650	2.023	39.126	2.018	38.945	0.25%	0.46%
			2680	2.052	39.084	2.051	38.907	0.05%	0.45%
			2700	2.068	39.056	2.073	38.882	-0.24%	0.45%
06/28/2023	2450 Head	20.2	2300	1.655	40.037	1.670	39.500	-0.90%	1.36%
			2310	1.662	40.030	1.679	39.480	-1.01%	1.39%
			2320	1.669	40.022	1.687	39.460	-1.07%	1.42%
			2400	1.730	39.916	1.756	39.289	-1.48%	1.60%
			2450	1.766	39.835	1.800	39.200	-1.89%	1.62%
			2480	1.792	39.790	1.833	39.162	-2.24%	1.60%
			2500	1.810	39.780	1.855	39.136	-2.43%	1.65%
			2510	1.818	39.769	1.866	39.123	-2.57%	1.65%
			2535	1.836	39.717	1.893	39.092	-3.01%	1.60%
			2550	1.848	39.683	1.909	39.073	-3.20%	1.56%
			2560	1.857	39.664	1.920	39.060	-3.28%	1.55%
			2600	1.891	39.611	1.964	39.009	-3.72%	1.54%
			2650	1.930	39.520	2.018	38.945	-4.36%	1.48%
			2680	1.955	39.464	2.051	38.907	-4.68%	1.43%
			2700	1.972	39.438	2.073	38.882	-4.87%	1.43%
06/28/2023	2450 Head	19.3	2300	1.650	39.686	1.670	39.500	-1.20%	0.47%
			2310	1.658	39.678	1.679	39.480	-1.25%	0.50%
			2320	1.665	39.672	1.687	39.460	-1.30%	0.54%
			2400	1.726	39.548	1.756	39.289	-1.71%	0.66%
			2450	1.761	39.482	1.800	39.200	-2.17%	0.72%
			2480	1.787	39.441	1.833	39.162	-2.51%	0.71%
			2500	1.804	39.432	1.855	39.136	-2.75%	0.76%
			2510	1.811	39.423	1.866	39.123	-2.95%	0.77%
			2535	1.831	39.380	1.893	39.092	-3.28%	0.74%
			2550	1.844	39.343	1.909	39.073	-3.40%	0.69%
			2560	1.853	39.322	1.920	39.060	-3.49%	0.67%
			2600	1.886	39.263	1.964	39.009	-3.97%	0.65%
			2650	1.926	39.170	2.018	38.945	-4.56%	0.58%
			2680	1.953	39.124	2.051	38.907	-4.78%	0.56%
07/04/2023	2450 Head	20.0	2300	1.640	40.796	1.670	39.500	-1.80%	3.28%
			2310	1.648	40.789	1.679	39.480	-1.85%	3.32%
			2320	1.656	40.782	1.687	39.460	-1.84%	3.35%
			2400	1.719	40.678	1.756	39.289	-2.11%	3.54%
			2450	1.756	40.619	1.800	39.200	-2.44%	3.62%
			2480	1.781	40.570	1.833	39.162	-2.84%	3.60%
			2500	1.798	40.552	1.855	39.136	-3.07%	3.62%
			2510	1.807	40.543	1.866	39.123	-3.16%	3.63%
			2535	1.826	40.502	1.893	39.092	-3.54%	3.61%
			2550	1.839	40.470	1.909	39.073	-3.67%	3.58%
			2560	1.847	40.452	1.920	39.060	-3.80%	3.56%
			2600	1.882	40.399	1.964	39.009	-4.18%	3.56%
			2650	1.922	40.313	2.018	38.945	-4.76%	3.51%

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
06/08/2023	5200-5800 Head	20.8	5180	4.658	36.832	4.635	36.009	0.50%	2.29%
			5190	4.668	36.823	4.645	35.998	0.50%	2.29%
			5200	4.675	36.809	4.655	35.986	0.43%	2.29%
			5210	4.684	36.788	4.666	35.975	0.39%	2.26%
			5220	4.694	36.752	4.676	35.963	0.38%	2.19%
			5240	4.719	36.692	4.696	35.940	0.49%	2.09%
			5250	4.734	36.680	4.706	35.929	0.59%	2.09%
			5260	4.748	36.675	4.717	35.917	0.66%	2.11%
			5270	4.757	36.663	4.727	35.906	0.63%	2.11%
			5280	4.764	36.650	4.737	35.894	0.57%	2.11%
			5290	4.776	36.630	4.748	35.883	0.59%	2.08%
			5300	4.787	36.602	4.758	35.871	0.61%	2.04%
			5310	4.799	36.575	4.768	35.860	0.65%	1.99%
			5320	4.811	36.553	4.778	35.849	0.69%	1.96%
			5500	5.022	36.239	4.963	35.643	1.19%	1.67%
			5510	5.033	36.212	4.973	35.632	1.21%	1.63%
			5520	5.046	36.196	4.983	35.620	1.26%	1.62%
			5530	5.059	36.178	4.994	35.609	1.30%	1.60%
			5540	5.073	36.156	5.004	35.597	1.38%	1.57%
			5550	5.087	36.138	5.014	35.586	1.46%	1.55%
			5560	5.101	36.122	5.024	35.574	1.53%	1.54%
			5580	5.120	36.108	5.045	35.551	1.49%	1.57%
			5600	5.139	36.059	5.065	35.529	1.46%	1.49%
			5610	5.153	36.034	5.076	35.518	1.52%	1.45%
			5620	5.168	36.016	5.086	35.506	1.61%	1.44%
			5640	5.193	35.988	5.106	35.483	1.70%	1.42%
			5660	5.215	35.969	5.127	35.460	1.72%	1.44%
			5670	5.226	35.950	5.137	35.449	1.73%	1.41%
			5680	5.234	35.930	5.147	35.437	1.69%	1.39%
			5690	5.242	35.907	5.158	35.426	1.63%	1.36%
			5700	5.253	35.879	5.168	35.414	1.64%	1.31%
			5710	5.268	35.853	5.178	35.403	1.74%	1.27%
			5720	5.284	35.833	5.188	35.391	1.85%	1.25%
			5745	5.317	35.798	5.214	35.363	1.98%	1.23%
			5750	5.322	35.793	5.219	35.357	1.97%	1.23%
			5755	5.326	35.787	5.224	35.351	1.95%	1.23%
			5765	5.333	35.772	5.234	35.340	1.89%	1.22%
			5775	5.342	35.748	5.245	35.329	1.85%	1.19%
			5785	5.354	35.720	5.255	35.317	1.88%	1.14%
			5795	5.366	35.689	5.265	35.305	1.92%	1.09%
			5800	5.373	35.675	5.270	35.300	1.95%	1.06%
			5800	5.373	35.675	5.270	35.300	1.95%	1.06%
			5805	5.380	35.665	5.275	35.294	1.99%	1.05%
			5825	5.410	35.635	5.296	35.271	2.15%	1.03%
			5835	5.424	35.626	5.305	35.230	2.24%	1.12%
			5845	5.438	35.616	5.315	35.210	2.31%	1.15%
			5855	5.448	35.605	5.325	35.197	2.31%	1.16%
			5865	5.456	35.586	5.336	35.190	2.25%	1.13%
			5865	5.456	35.586	5.336	35.190	2.25%	1.13%
			5865	5.456	35.586	5.336	35.190	2.25%	1.13%
			5865	5.456	35.586	5.336	35.190	2.25%	1.13%
			5875	5.467	35.560	5.347	35.183	2.24%	1.07%
			5885	5.481	35.529	5.357	35.177	2.31%	1.00%
			5905	5.503	35.486	5.379	35.163	2.31%	0.92%

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
06/19/2023	5200-5800 Head	20.5	5180	4.639	35.340	4.635	36.009	0.09%	-1.86%
			5190	4.653	35.334	4.645	35.998	0.17%	-1.84%
			5200	4.668	35.314	4.655	35.986	0.28%	-1.87%
			5210	4.682	35.285	4.666	35.975	0.34%	-1.92%
			5220	4.692	35.258	4.676	35.963	0.34%	-1.96%
			5240	4.715	35.227	4.696	35.940	0.40%	-1.98%
			5250	4.729	35.203	4.706	35.929	0.49%	-2.02%
			5260	4.741	35.184	4.717	35.917	0.51%	-2.04%
			5270	4.750	35.164	4.727	35.906	0.49%	-2.07%
			5280	4.758	35.150	4.737	35.894	0.44%	-2.07%
			5290	4.773	35.130	4.748	35.883	0.53%	-2.10%
			5300	4.788	35.103	4.758	35.871	0.63%	-2.14%
			5310	4.800	35.091	4.768	35.860	0.67%	-2.14%
			5320	4.810	35.084	4.778	35.849	0.67%	-2.13%
			5500	5.004	34.733	4.963	35.643	0.83%	-2.55%
			5510	5.019	34.712	4.973	35.632	0.92%	-2.58%
			5520	5.030	34.691	4.983	35.620	0.94%	-2.61%
			5530	5.038	34.671	4.994	35.609	0.88%	-2.63%
			5540	5.048	34.649	5.004	35.597	0.88%	-2.66%
			5550	5.061	34.628	5.014	35.586	0.94%	-2.69%
			5560	5.075	34.606	5.024	35.574	1.02%	-2.72%
			5580	5.098	34.583	5.045	35.551	1.05%	-2.72%
			5600	5.123	34.526	5.065	35.529	1.15%	-2.82%
			5610	5.136	34.501	5.076	35.518	1.18%	-2.86%
			5620	5.148	34.487	5.086	35.506	1.22%	-2.87%
			5640	5.175	34.450	5.106	35.483	1.35%	-2.91%
			5660	5.195	34.404	5.127	35.460	1.33%	-2.98%
			5670	5.208	34.389	5.137	35.449	1.38%	-2.99%
			5680	5.224	34.366	5.147	35.437	1.50%	-3.02%
			5690	5.238	34.342	5.158	35.426	1.55%	-3.06%
			5700	5.249	34.333	5.168	35.414	1.57%	-3.05%
			5710	5.262	34.325	5.178	35.403	1.62%	-3.04%
			5720	5.278	34.302	5.188	35.391	1.73%	-3.08%
			5745	5.306	34.246	5.214	35.363	1.76%	-3.16%
			5750	5.309	34.243	5.219	35.357	1.72%	-3.15%
			5755	5.315	34.241	5.224	35.351	1.74%	-3.14%
			5765	5.330	34.227	5.234	35.340	1.83%	-3.15%
			5775	5.342	34.202	5.245	35.329	1.85%	-3.19%
			5785	5.353	34.177	5.255	35.317	1.86%	-3.23%
			5795	5.369	34.161	5.265	35.305	1.98%	-3.24%
			5800	5.376	34.159	5.270	35.300	2.01%	-3.23%
			5800	5.376	34.159	5.270	35.300	2.01%	-3.23%
			5805	5.385	34.157	5.275	35.294	2.09%	-3.22%
			5825	5.401	34.115	5.296	35.271	1.98%	-3.28%
			5835	5.405	34.097	5.305	35.230	1.89%	-3.22%
			5845	5.419	34.081	5.315	35.210	1.96%	-3.21%
			5855	5.433	34.056	5.325	35.197	2.03%	-3.24%
			5865	5.444	34.038	5.336	35.190	2.02%	-3.27%
			5865	5.444	34.038	5.336	35.190	2.02%	-3.27%
			5865	5.444	34.038	5.336	35.190	2.02%	-3.27%
			5865	5.444	34.038	5.336	35.190	2.02%	-3.27%
			5875	5.452	34.030	5.347	35.183	1.96%	-3.28%
			5885	5.463	34.026	5.357	35.177	1.98%	-3.27%
			5905	5.496	33.990	5.379	35.163	2.18%	-3.34%

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
07/18/2023	5200-5800 Head	21.0	5180	4.412	35.749	4.635	36.009	-4.81%	-0.72%
			5190	4.425	35.728	4.645	35.998	-4.74%	-0.75%
			5200	4.434	35.714	4.655	35.986	-4.75%	-0.76%
			5210	4.443	35.706	4.666	35.975	-4.78%	-0.75%
			5220	4.455	35.688	4.676	35.963	-4.73%	-0.76%
			5240	4.478	35.642	4.696	35.940	-4.64%	-0.83%
			5250	4.487	35.622	4.706	35.929	-4.65%	-0.85%
			5260	4.499	35.606	4.717	35.917	-4.62%	-0.87%
			5270	4.512	35.585	4.727	35.906	-4.55%	-0.89%
			5280	4.524	35.577	4.737	35.894	-4.50%	-0.88%
			5290	4.534	35.563	4.748	35.883	-4.51%	-0.89%
			5300	4.545	35.543	4.758	35.871	-4.48%	-0.91%
			5310	4.554	35.528	4.768	35.860	-4.49%	-0.93%
			5320	4.567	35.510	4.778	35.849	-4.42%	-0.95%
			5500	4.759	35.201	4.963	35.643	-4.11%	-1.24%
			5510	4.770	35.180	4.973	35.632	-4.08%	-1.27%
			5520	4.783	35.165	4.983	35.620	-4.01%	-1.28%
			5530	4.795	35.151	4.994	35.609	-3.98%	-1.29%
			5540	4.808	35.131	5.004	35.597	-3.92%	-1.31%
			5550	4.821	35.103	5.014	35.586	-3.85%	-1.36%
			5560	4.833	35.082	5.024	35.574	-3.80%	-1.38%
			5580	4.854	35.051	5.045	35.551	-3.79%	-1.41%
			5600	4.874	35.021	5.065	35.529	-3.77%	-1.43%
			5610	4.886	35.001	5.076	35.518	-3.74%	-1.46%
			5620	4.898	34.976	5.086	35.506	-3.70%	-1.49%
			5640	4.923	34.930	5.106	35.483	-3.58%	-1.56%
			5660	4.947	34.919	5.127	35.460	-3.51%	-1.53%
			5670	4.957	34.905	5.137	35.449	-3.50%	-1.53%
			5680	4.967	34.885	5.147	35.437	-3.50%	-1.56%
			5690	4.977	34.868	5.158	35.426	-3.51%	-1.58%
			5700	4.989	34.848	5.168	35.414	-3.46%	-1.60%
			5710	5.003	34.824	5.178	35.403	-3.38%	-1.64%
			5720	5.015	34.805	5.188	35.391	-3.33%	-1.66%
			5745	5.042	34.767	5.214	35.363	-3.30%	-1.69%
			5750	5.048	34.758	5.219	35.357	-3.28%	-1.69%
			5755	5.056	34.750	5.224	35.351	-3.22%	-1.70%
			5765	5.067	34.731	5.234	35.340	-3.19%	-1.72%
			5775	5.076	34.718	5.245	35.329	-3.22%	-1.73%
			5785	5.090	34.706	5.255	35.317	-3.14%	-1.73%
			5795	5.101	34.697	5.265	35.305	-3.11%	-1.72%
			5800	5.107	34.691	5.270	35.300	-3.09%	-1.73%
			5800	5.107	34.691	5.270	35.300	-3.09%	-1.73%
			5805	5.112	34.683	5.275	35.294	-3.09%	-1.73%
			5825	5.132	34.641	5.296	35.271	-3.10%	-1.79%
			5835	5.144	34.629	5.305	35.230	-3.03%	-1.71%
			5845	5.154	34.610	5.315	35.210	-3.03%	-1.70%
			5855	5.162	34.590	5.325	35.197	-3.06%	-1.72%
			5865	5.172	34.576	5.336	35.190	-3.07%	-1.74%
			5865	5.172	34.576	5.336	35.190	-3.07%	-1.74%
			5865	5.172	34.576	5.336	35.190	-3.07%	-1.74%
			5865	5.172	34.576	5.336	35.190	-3.07%	-1.74%
			5875	5.185	34.566	5.347	35.183	-3.03%	-1.75%
			5885	5.198	34.551	5.357	35.177	-2.97%	-1.78%
			5905	5.222	34.504	5.379	35.163	-2.92%	-1.87%

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 10g (W/kg)	1W Target SAR 10g (W/kg)	1W Normalized SAR 10g (W/kg)	Deviation 10g (%)
AM8	750	HEAD	06/12/2023	21.0	21.0	0.20	1034	7421	604	1.130	5.610	5.650	0.71%
AM8	750	HEAD	06/14/2023	22.0	22.1	0.20	1034	7421	604	1.090	5.610	5.450	-2.85%
AM8	750	HEAD	06/21/2023	21.4	23.0	0.20	1097	7421	604	1.110	5.340	5.550	3.93%
AM4	835	HEAD	06/21/2023	21.7	21.5	0.20	460	7490	1644	1.290	6.340	6.450	1.74%
AM10	835	HEAD	07/04/2023	20.1	20.8	0.20	460	3746	1237	1.360	6.340	6.800	7.26%
AM10	1750	HEAD	06/16/2023	22.0	19.8	0.10	1083	3746	1237	1.930	19.200	19.300	0.52%
AM8	1750	HEAD	06/28/2023	20.7	19.8	0.10	1104	7421	604	1.890	18.800	18.900	0.53%
AM4	1900	HEAD	06/14/2023	21.7	21.4	0.10	5d030	7490	1644	2.110	20.400	21.100	3.43%
AM4	1900	HEAD	06/19/2023	21.7	21.1	0.10	5d181	7490	1644	2.200	20.800	22.000	5.77%
AM2	2450	HEAD	06/16/2023	21.9	20.7	0.10	921	7308	467	2.560	25.500	25.600	0.39%
AM7	2450	HEAD	06/28/2023	21.4	19.4	0.10	921	7532	501	2.590	25.500	25.900	1.57%
AM7	2450	HEAD	07/04/2023	20.0	20.1	0.10	921	7532	501	2.520	25.500	25.200	-1.18%
AM7	2600	HEAD	06/28/2023	21.4	19.4	0.10	1069	7532	501	2.460	24.900	24.600	-1.20%
AM7	2600	HEAD	07/04/2023	20.0	20.1	0.10	1068	7532	501	2.470	25.400	24.700	-2.76%
AM1	5250	HEAD	06/08/2023	20.7	20.8	0.05	1066	7420	1333	1.120	23.100	22.400	-3.03%
AM1	5250	HEAD	07/18/2023	22.5	20.7	0.05	1123	7420	1333	1.100	22.900	22.000	-3.93%
AM1	5600	HEAD	06/08/2023	20.7	20.8	0.05	1066	7420	1333	1.110	24.100	22.200	-7.88%
AM1	5600	HEAD	07/18/2023	22.5	20.7	0.05	1123	7420	1333	1.210	23.700	24.200	2.11%
AM1	5750	HEAD	06/08/2023	20.7	20.8	0.05	1066	7420	1333	1.060	22.600	21.200	-6.19%
AM1	5750	HEAD	07/18/2023	22.5	20.7	0.05	1123	7420	1333	1.080	22.700	21.600	-4.85%

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 (%)
AM8	750	HEAD	06/14/2023	22.0	22.1	0.20	1034	7421	604	1.090	5.610	5.450	-2.85%
AM8	750	HEAD	06/21/2023	21.4	23.0	0.20	1097	7421	604	1.110	5.340	5.550	3.93%
AM4	835	HEAD	06/21/2023	21.7	21.5	0.20	460	7490	1644	1.290	6.340	6.450	1.74%
AM4	835	HEAD	06/28/2023	22.0	22.6	0.20	4d040	7490	1644	1.310	6.380	6.550	2.66%
AM10	835	HEAD	07/06/2023	20.9	20.7	0.20	460	3746	1237	1.320	6.340	6.600	4.10%
AM10	1750	HEAD	06/19/2023	20.5	20.5	0.10	1104	3746	1237	1.850	18.800	18.500	-1.60%
AM8	1750	HEAD	06/28/2023	20.7	19.8	0.10	1104	7421	604	1.890	18.800	18.900	0.53%
AM4	1900	HEAD	06/14/2023	21.7	21.4	0.10	5d030	7490	1644	2.110	20.400	21.100	3.43%
AM4	1900	HEAD	06/19/2023	21.7	21.1	0.10	5d181	7490	1644	2.200	20.800	22.000	5.77%
AM2	2450	HEAD	06/06/2023	21.1	21.1	0.10	921	7308	467	2.460	25.500	24.600	-3.53%
AM2	2450	HEAD	06/14/2023	21.1	21.2	0.10	921	7308	467	2.420	25.500	24.200	-5.10%
AM2	2450	HEAD	06/28/2023	22.9	20.9	0.10	921	7308	467	2.450	25.500	24.500	-3.92%
AM2	2600	HEAD	06/06/2023	21.1	21.1	0.10	1069	7308	467	2.540	24.900	25.400	2.01%
AM2	2600	HEAD	06/14/2023	21.1	21.2	0.10	1069	7308	467	2.600	24.900	26.000	4.42%
AM1	5250	HEAD	06/19/2023	22.0	20.5	0.05	1123	7420	1333	1.140	22.900	22.800	-0.44%
AM1	5250	HEAD	07/18/2023	22.5	20.7	0.05	1123	7420	1333	1.100	22.900	22.000	-3.93%
AM1	5600	HEAD	06/19/2023	22.0	20.5	0.05	1123	7420	1333	1.200	23.700	24.000	1.27%
AM1	5600	HEAD	07/18/2023	22.5	20.7	0.05	1123	7420	1333	1.210	23.700	24.200	2.11%
AM1	5750	HEAD	06/19/2023	22.0	20.5	0.05	1123	7420	1333	1.080	22.700	21.600	-4.85%
AM1	5750	HEAD	07/18/2023	22.5	20.7	0.05	1123	7420	1333	1.080	22.700	21.600	-4.85%

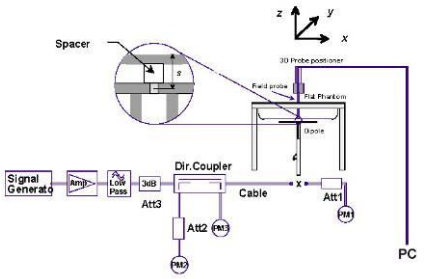

Figure 9-1
System Verification Setup Diagram

Figure 9-2
System Verification Setup Photo

10 SAR DATA SUMMARY

10.1 Standalone Head SAR Data

Table 10-1
UMTS 850 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
846.60	4233	front	10 mm	UMTS 850	RMC	Aluminum	Sport	CQMDXNP0CG	25.0	24.12	0.05	1:1	0.000	1.225	0.000	
846.60	4233	front	10 mm	UMTS 850	RMC	Aluminum	Metal Links	CQMDXNP0CG	25.0	24.12	0.01	1:1	0.000	1.225	0.000	
846.60	4233	front	10 mm	UMTS 850	RMC	Aluminum	Metal Loop	CQMDXNP0CG	25.0	24.12	0.08	1:1	0.000	1.225	0.000	
826.40	4132	front	10 mm	UMTS 850	RMC	Stainless Steel	Sport	C7JYF6NPN2	25.0	24.08	0.08	1:1	0.000	1.236	0.000	
836.60	4183	front	10 mm	UMTS 850	RMC	Stainless Steel	Sport	C7JYF6NPN2	25.0	24.10	0.07	1:1	0.000	1.230	0.000	
846.60	4233	front	10 mm	UMTS 850	RMC	Stainless Steel	Sport	C7JYF6NPN2	25.0	24.12	0.03	1:1	0.000	1.225	0.000	A1
846.60	4233	front	10 mm	UMTS 850	RMC	Stainless Steel	Metal Links	C7JYF6NPN2	25.0	24.12	0.03	1:1	0.000	1.225	0.000	
846.60	4233	front	10 mm	UMTS 850	RMC	Stainless Steel	Metal Loop	C7JYF6NPN2	25.0	24.12	0.04	1:1	0.000	1.225	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 10-2
UMTS 1750 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1732.40	1412	front	10 mm	UMTS 1750	RMC	Aluminum	Sport	JG2M0VXVGC	24.0	23.05	0.05	1:1	0.112	1.245	0.139	
1732.40	1412	front	10 mm	UMTS 1750	RMC	Aluminum	Metal Links	JG2M0VXVGC	24.0	23.05	0.04	1:1	0.175	1.245	0.218	
1732.40	1412	front	10 mm	UMTS 1750	RMC	Aluminum	Metal Loop	JXGVQVTDVW	24.0	23.05	0.16	1:1	0.191	1.245	0.238	
1732.40	1412	front	10 mm	UMTS 1750	RMC	Stainless Steel	Sport	C32J7VL2QG	24.0	23.05	0.01	1:1	0.087	1.245	0.108	
1732.40	1412	front	10 mm	UMTS 1750	RMC	Stainless Steel	Metal Links	C32J7VL2QG	24.0	23.05	0.02	1:1	0.182	1.245	0.227	
1712.40	1312	front	10 mm	UMTS 1750	RMC	Stainless Steel	Metal Loop	C32J7VL2QG	24.0	22.98	0.11	1:1	0.191	1.265	0.242	
1732.40	1412	front	10 mm	UMTS 1750	RMC	Stainless Steel	Metal Loop	C32J7VL2QG	24.0	23.05	0.00	1:1	0.201	1.245	0.250	
1752.60	1513	front	10 mm	UMTS 1750	RMC	Stainless Steel	Metal Loop	C32J7VL2QG	24.0	22.87	0.05	1:1	0.217	1.297	0.281	A2
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population								Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 10-3
UMTS 1900 Head SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.												(W/kg)		(W/kg)	
1852.40	9262	front	10 mm	UMTS 1900	RMC	Aluminum	Sport	JHWDFQ7G5	24.0	23.43	-0.01	1:1	0.104	1.140	0.119	
1852.40	9262	front	10 mm	UMTS 1900	RMC	Aluminum	Metal Links	JHWDFQ7G5	24.0	23.43	0.03	1:1	0.173	1.140	0.197	
1852.40	9262	front	10 mm	UMTS 1900	RMC	Aluminum	Metal Loop	JHWDFQ7G5	24.0	23.43	0.00	1:1	0.252	1.140	0.287	
1852.40	9262	front	10 mm	UMTS 1900	RMC	Stainless Steel	Sport	C4K6J4J4G6	24.0	23.43	-0.06	1:1	0.110	1.140	0.125	
1852.40	9262	front	10 mm	UMTS 1900	RMC	Stainless Steel	Metal Links	C4K6J4J4G6	24.0	23.43	0.01	1:1	0.233	1.140	0.266	
1852.40	9262	front	10 mm	UMTS 1900	RMC	Stainless Steel	Metal Loop	C4K6J4J4G6	24.0	23.43	0.05	1:1	0.277	1.140	0.316	
1880.00	9400	front	10 mm	UMTS 1900	RMC	Stainless Steel	Metal Loop	C4K6J4J4G6	24.0	23.31	0.05	1:1	0.307	1.172	0.360	
1907.60	9538	front	10 mm	UMTS 1900	RMC	Stainless Steel	Metal Loop	C4K6J4J4G6	24.0	23.42	0.00	1:1	0.344	1.143	0.393	A3
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Head 1.6 W/kg (mW/g) averaged over 1 gram							

Table 10-4
LTE Band 12 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
707.50	23095	Mid	front	10 mm	LTE Band 12	Aluminum	Sport	JXGVQVTDVW	10	QPSK	1	0	25.5	24.60	0	0.04	1:1	0.000	1.230	0.000	
707.50	23095	Mid	front	10 mm	LTE Band 12	Aluminum	Sport	JXGVQVTDVW	10	QPSK	25	0	24.5	23.60	1	0.06	1:1	0.000	1.230	0.000	
707.50	23095	Mid	front	10 mm	LTE Band 12	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	1	0	25.5	24.60	0	0.08	1:1	0.001	1.230	0.001	
707.50	23095	Mid	front	10 mm	LTE Band 12	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	25	0	24.5	23.60	1	0.05	1:1	0.000	1.230	0.000	
707.50	23095	Mid	front	10 mm	LTE Band 12	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	1	0	25.5	24.60	0	0.05	1:1	0.000	1.230	0.000	
707.50	23095	Mid	front	10 mm	LTE Band 12	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	25	0	24.5	23.60	1	0.07	1:1	0.000	1.230	0.000	
707.50	23095	Mid	front	10 mm	LTE Band 12	Stainless Steel	Sport	K04F2K57HG	10	QPSK	1	0	25.5	24.60	0	0.20	1:1	0.000	1.230	0.000	
707.50	23095	Mid	front	10 mm	LTE Band 12	Stainless Steel	Sport	K04F2K57HG	10	QPSK	25	0	24.5	23.60	1	0.03	1:1	0.000	1.230	0.000	
707.50	23095	Mid	front	10 mm	LTE Band 12	Stainless Steel	Metal Links	K04F2K57HG	10	QPSK	1	0	25.5	24.60	0	0.02	1:1	0.002	1.230	0.002	A4
707.50	23095	Mid	front	10 mm	LTE Band 12	Stainless Steel	Metal Links	K04F2K57HG	10	QPSK	25	0	24.5	23.60	1	0.07	1:1	0.002	1.230	0.002	
707.50	23095	Mid	front	10 mm	LTE Band 12	Stainless Steel	Metal Loop	K04F2K57HG	10	QPSK	1	0	25.5	24.60	0	0.03	1:1	0.000	1.230	0.000	
707.50	23095	Mid	front	10 mm	LTE Band 12	Stainless Steel	Metal Loop	K04F2K57HG	10	QPSK	25	0	24.5	23.60	1	0.04	1:1	0.000	1.230	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1.6 W/kg (mW/g) averaged over 1 gram											

Table 10-5
LTE Band 13 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
782.00	23230	Mid	front	10 mm	LTE Band 13	Aluminum	Sport	JXGVQVTDVW	10	QPSK	1	0	25.5	24.69	0	0.20	1:1	0.001	1.205	0.001	A5
782.00	23230	Mid	front	10 mm	LTE Band 13	Aluminum	Sport	JXGVQVTDVW	10	QPSK	25	25	24.5	23.54	1	0.20	1:1	0.001	1.247	0.001	
782.00	23230	Mid	front	10 mm	LTE Band 13	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	1	0	25.5	24.69	0	0.09	1:1	0.000	1.205	0.000	
782.00	23230	Mid	front	10 mm	LTE Band 13	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	25	25	24.5	23.54	1	-0.06	1:1	0.000	1.247	0.000	
782.00	23230	Mid	front	10 mm	LTE Band 13	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	1	0	25.5	24.69	0	0.20	1:1	0.000	1.205	0.000	
782.00	23230	Mid	front	10 mm	LTE Band 13	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	25	25	24.5	23.54	1	0.20	1:1	0.001	1.247	0.001	
782.00	23230	Mid	front	10 mm	LTE Band 13	Stainless Steel	Sport	JJV0WT39HT	10	QPSK	1	0	25.5	24.69	0	0.07	1:1	0.000	1.205	0.000	
782.00	23230	Mid	front	10 mm	LTE Band 13	Stainless Steel	Sport	JJV0WT39HT	10	QPSK	25	25	24.5	23.54	1	0.04	1:1	0.000	1.247	0.000	
782.00	23230	Mid	front	10 mm	LTE Band 13	Stainless Steel	Metal Links	JJV0WT39HT	10	QPSK	1	0	25.5	24.69	0	0.04	1:1	0.000	1.205	0.000	
782.00	23230	Mid	front	10 mm	LTE Band 13	Stainless Steel	Metal Links	JJV0WT39HT	10	QPSK	25	25	24.5	23.54	1	0.06	1:1	0.000	1.247	0.000	
782.00	23230	Mid	front	10 mm	LTE Band 13	Stainless Steel	Metal Loop	JJV0WT39HT	10	QPSK	1	0	25.5	24.69	0	0.04	1:1	0.000	1.205	0.000	
782.00	23230	Mid	front	10 mm	LTE Band 13	Stainless Steel	Metal Loop	JJV0WT39HT	10	QPSK	25	25	24.5	23.54	1	0.08	1:1	0.000	1.247	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 10-6
LTE Band 14 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
793.00	23330	Mid	front	10 mm	LTE Band 14	Aluminum	Sport	JXGVQVTDVW	10	QPSK	1	0	25.5	24.64	0	0.01	1:1	0.000	1.219	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Aluminum	Sport	JXGVQVTDVW	10	QPSK	25	0	24.5	23.52	1	0.05	1:1	0.000	1.253	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	1	0	25.5	24.64	0	0.03	1:1	0.000	1.219	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	25	0	24.5	23.52	1	0.03	1:1	0.001	1.253	0.001	A6
793.00	23330	Mid	front	10 mm	LTE Band 14	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	1	0	25.5	24.64	0	-0.01	1:1	0.000	1.219	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	25	0	24.5	23.52	1	-0.02	1:1	0.000	1.253	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Stainless Steel	Sport	JJV0WT39HT	10	QPSK	1	0	25.5	24.64	0	0.04	1:1	0.000	1.219	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Stainless Steel	Sport	JJV0WT39HT	10	QPSK	25	0	24.5	23.52	1	0.05	1:1	0.000	1.253	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Stainless Steel	Metal Links	JJV0WT39HT	10	QPSK	1	0	25.5	24.64	0	0.09	1:1	0.000	1.219	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Stainless Steel	Metal Links	JJV0WT39HT	10	QPSK	25	0	24.5	23.52	1	0.20	1:1	0.000	1.253	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Stainless Steel	Metal Loop	JJV0WT39HT	10	QPSK	1	0	25.5	24.64	0	0.20	1:1	0.000	1.219	0.000	
793.00	23330	Mid	front	10 mm	LTE Band 14	Stainless Steel	Metal Loop	JJV0WT39HT	10	QPSK	25	0	24.5	23.52	1	0.01	1:1	0.000	1.253	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 10-7
LTE Band 26 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Aluminum	Sport	CVQ07J3FM0	10	QPSK	1	25	25.5	25.05	0	0.19	1:1	0.000	1.109	0.000	
831.50	26865	Mid	front	10 mm	LTE Band 26 (Cell)	Aluminum	Sport	CVQ07J3FM0	10	QPSK	1	25	25.5	25.03	0	0.01	1:1	0.000	1.114	0.000	
844.00	26990	High	front	10 mm	LTE Band 26 (Cell)	Aluminum	Sport	CVQ07J3FM0	10	QPSK	1	25	25.5	25.01	0	0.05	1:1	0.000	1.119	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Aluminum	Sport	CVQ07J3FM0	10	QPSK	25	25	24.5	24.14	1	0.20	1:1	0.000	1.086	0.000	A7
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Aluminum	Metal Links	CVQ07J3FM0	10	QPSK	1	25	25.5	25.05	0	0.20	1:1	0.000	1.109	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Aluminum	Metal Links	CVQ07J3FM0	10	QPSK	25	25	24.5	24.14	1	0.01	1:1	0.000	1.086	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Aluminum	Metal Loop	CVQ07J3FM0	10	QPSK	1	25	25.5	25.05	0	0.09	1:1	0.000	1.109	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Aluminum	Metal Loop	CVQ07J3FM0	10	QPSK	25	25	24.5	24.14	1	0.20	1:1	0.000	1.086	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Stainless Steel	Sport	C7JYF6NPN2	10	QPSK	1	25	25.5	25.05	0	0.02	1:1	0.000	1.109	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Stainless Steel	Sport	C7JYF6NPN2	10	QPSK	25	25	24.5	24.14	1	0.20	1:1	0.000	1.086	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Stainless Steel	Metal Links	C7JYF6NPN2	10	QPSK	1	25	25.5	25.05	0	0.04	1:1	0.000	1.109	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Stainless Steel	Metal Links	C7JYF6NPN2	10	QPSK	25	25	24.5	24.14	1	0.04	1:1	0.000	1.086	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Stainless Steel	Metal Loop	C7JYF6NPN2	10	QPSK	1	25	25.5	25.05	0	0.20	1:1	0.000	1.109	0.000	
819.00	26740	Low	front	10 mm	LTE Band 26 (Cell)	Stainless Steel	Metal Loop	C7JYF6NPN2	10	QPSK	25	25	24.5	24.14	1	0.03	1:1	0.000	1.086	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 10-8
LTE Band 5 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Aluminum	Sport	JXGVQVTDVW	10	QPSK	1	49	25.5	25.09	0	0.08	1:1	0.000	1.099	0.000	A8
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Aluminum	Sport	JXGVQVTDVW	10	QPSK	25	25	24.5	24.02	1	0.02	1:1	0.000	1.117	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	1	49	25.5	25.09	0	0.08	1:1	0.000	1.099	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	25	25	24.5	24.02	1	0.20	1:1	0.000	1.117	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	1	49	25.5	25.09	0	0.05	1:1	0.000	1.099	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	25	25	24.5	24.02	1	0.07	1:1	0.000	1.117	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Stainless Steel	Sport	JJV0WT39HT	10	QPSK	1	49	25.5	25.09	0	0.07	1:1	0.000	1.099	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Stainless Steel	Sport	JJV0WT39HT	10	QPSK	25	25	24.5	24.02	1	0.03	1:1	0.000	1.117	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Stainless Steel	Metal Links	JJV0WT39HT	10	QPSK	1	49	25.5	25.09	0	0.20	1:1	0.000	1.099	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Stainless Steel	Metal Links	JJV0WT39HT	10	QPSK	25	25	24.5	24.02	1	0.04	1:1	0.000	1.117	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Stainless Steel	Metal Loop	JJV0WT39HT	10	QPSK	1	49	25.5	25.09	0	0.20	1:1	0.000	1.099	0.000	
836.50	20525	Mid	front	10 mm	LTE Band 5 (Cell)	Stainless Steel	Metal Loop	JJV0WT39HT	10	QPSK	25	25	24.5	24.02	1	0.02	1:1	0.000	1.117	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 10-9
LTE Band 66 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Aluminum	Sport	JG2M0VXVGC	20	QPSK	1	50	24.5	23.85	0	0.03	1:1	0.174	1.161	0.202	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Aluminum	Sport	JG2M0VXVGC	20	QPSK	50	0	23.5	22.83	1	0.01	1:1	0.134	1.167	0.156	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Aluminum	Metal Links	JG2M0VXVGC	20	QPSK	1	50	24.5	23.85	0	0.00	1:1	0.294	1.161	0.341	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Aluminum	Metal Links	JG2M0VXVGC	20	QPSK	50	0	23.5	22.83	1	0.04	1:1	0.166	1.167	0.194	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Aluminum	Metal Loop	JG2M0VXVGC	20	QPSK	1	50	24.5	23.85	0	-0.03	1:1	0.391	1.161	0.454	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Aluminum	Metal Loop	JG2M0VXVGC	20	QPSK	50	0	23.5	22.83	1	0.06	1:1	0.227	1.167	0.265	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Stainless Steel	Sport	C4K6J4J4G6	20	QPSK	1	50	24.5	23.85	0	-0.09	1:1	0.199	1.161	0.231	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Stainless Steel	Sport	C4K6J4J4G6	20	QPSK	50	0	23.5	22.83	1	-0.05	1:1	0.141	1.167	0.165	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Links	C4K6J4J4G6	20	QPSK	1	50	24.5	23.85	0	0.01	1:1	0.321	1.161	0.373	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Links	C4K6J4J4G6	20	QPSK	50	0	23.5	22.83	1	-0.09	1:1	0.185	1.167	0.216	
1720.00	132072	Low	front	10 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	1	0	24.5	23.50	0	-0.13	1:1	0.342	1.259	0.431	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	1	50	24.5	23.85	0	-0.03	1:1	0.402	1.161	0.467	A9
1770.00	132572	High	front	10 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	1	0	24.5	23.55	0	0.03	1:1	0.370	1.245	0.461	
1745.00	132322	Mid	front	10 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	50	0	23.5	22.83	1	0.11	1:1	0.285	1.167	0.333	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 10-10
LTE Band 25 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
1882.50	26365	Mid	front	10 mm	LTE Band 25 (PCS)	Aluminum	Sport	JG2M0VXVGC	20	QPSK	1	50	24.5	23.80	0	0.06	1:1	0.123	1.175	0.145	
1905.00	26590	High	front	10 mm	LTE Band 25 (PCS)	Aluminum	Sport	JG2M0VXVGC	20	QPSK	50	50	23.5	22.78	1	0.03	1:1	0.094	1.180	0.111	
1882.50	26365	Mid	front	10 mm	LTE Band 25 (PCS)	Aluminum	Metal Links	JG2M0VXVGC	20	QPSK	1	50	24.5	23.80	0	0.02	1:1	0.224	1.175	0.263	
1905.00	26590	High	front	10 mm	LTE Band 25 (PCS)	Aluminum	Metal Links	JG2M0VXVGC	20	QPSK	50	50	23.5	22.78	1	-0.03	1:1	0.210	1.180	0.248	
1882.50	26365	Mid	front	10 mm	LTE Band 25 (PCS)	Aluminum	Metal Loop	JG2M0VXVGC	20	QPSK	1	50	24.5	23.80	0	0.00	1:1	0.271	1.175	0.318	
1905.00	26590	High	front	10 mm	LTE Band 25 (PCS)	Aluminum	Metal Loop	JG2M0VXVGC	20	QPSK	50	50	23.5	22.78	1	-0.01	1:1	0.260	1.180	0.307	
1882.50	26365	Mid	front	10 mm	LTE Band 25 (PCS)	Stainless Steel	Sport	G7W9P39H65	20	QPSK	1	50	24.5	23.80	0	0.02	1:1	0.158	1.175	0.186	
1905.00	26590	High	front	10 mm	LTE Band 25 (PCS)	Stainless Steel	Sport	G7W9P39H65	20	QPSK	50	50	23.5	22.78	1	0.03	1:1	0.139	1.180	0.164	
1882.50	26365	Mid	front	10 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Links	G7W9P39H65	20	QPSK	1	50	24.5	23.80	0	-0.03	1:1	0.260	1.175	0.306	
1905.00	26590	High	front	10 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Links	G7W9P39H65	20	QPSK	50	50	23.5	22.78	1	-0.04	1:1	0.231	1.180	0.273	
1860.00	26140	Low	front	10 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Loop	G7W9P39H65	20	QPSK	1	50	24.5	23.67	0	0.04	1:1	0.306	1.211	0.371	
1882.50	26365	Mid	front	10 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Loop	G7W9P39H65	20	QPSK	1	50	24.5	23.80	0	0.01	1:1	0.373	1.175	0.438	
1905.00	26590	High	front	10 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Loop	G7W9P39H65	20	QPSK	1	50	24.5	23.70	0	0.01	1:1	0.398	1.202	0.478	A10
1905.00	26590	High	front	10 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Loop	G7W9P39H65	20	QPSK	50	50	23.5	22.78	1	-0.13	1:1	0.340	1.180	0.401	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Table 10-11
LTE Band 7 Head SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2510.00	20850	Low	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	1	99	23.0	22.07	0	0.01	1:1	0.811	1.239	1.005	
2535.00	21100	Mid	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	1	99	23.0	21.98	0	-0.06	1:1	0.788	1.265	0.997	
2560.00	21350	High	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	1	99	23.0	21.91	0	0.08	1:1	0.895	1.285	1.150	A11
2510.00	20850	Low	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	50	50	22.0	21.05	1	0.02	1:1	0.683	1.245	0.850	
2535.00	21100	Mid	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	50	50	22.0	20.87	1	0.02	1:1	0.633	1.297	0.821	
2560.00	21350	High	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	50	50	22.0	20.88	1	-0.05	1:1	0.619	1.294	0.801	
2560.00	21350	High	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	100	0	22.0	21.04	1	0.01	1:1	0.618	1.247	0.771	
2510.00	20850	Low	front	10 mm	LTE Band 7	Aluminum	Metal Links	TH9JMWNHVV	20	QPSK	1	99	23.0	22.07	0	-0.17	1:1	0.438	1.239	0.543	
2510.00	20850	Low	front	10 mm	LTE Band 7	Aluminum	Metal Links	TH9JMWNHVV	20	QPSK	50	50	22.0	21.05	1	-0.02	1:1	0.348	1.245	0.433	
2510.00	20850	Low	front	10 mm	LTE Band 7	Aluminum	Metal Loop	TH9JMWNHVV	20	QPSK	1	99	23.0	22.07	0	0.02	1:1	0.526	1.239	0.652	
2510.00	20850	Low	front	10 mm	LTE Band 7	Aluminum	Metal Loop	TH9JMWNHVV	20	QPSK	50	50	22.0	21.05	1	0.06	1:1	0.404	1.245	0.503	
2510.00	20850	Low	front	10 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	99	23.0	22.07	0	-0.06	1:1	0.782	1.239	0.969	
2535.00	21100	Mid	front	10 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	99	23.0	21.98	0	-0.05	1:1	0.619	1.265	0.783	
2560.00	21350	High	front	10 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	99	23.0	21.91	0	-0.01	1:1	0.635	1.285	0.816	
2510.00	20850	Low	front	10 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	50	50	22.0	21.05	1	0.03	1:1	0.553	1.245	0.688	
2535.00	21100	Mid	front	10 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	50	50	22.0	20.87	1	-0.02	1:1	0.422	1.297	0.547	
2560.00	21350	High	front	10 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	50	50	22.0	20.88	1	-0.05	1:1	0.417	1.294	0.540	
2560.00	21350	High	front	10 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	100	0	22.0	21.04	1	0.00	1:1	0.475	1.247	0.592	
2510.00	20850	Low	front	10 mm	LTE Band 7	Stainless Steel	Metal Links	JQ9962Y6XW	20	QPSK	1	99	23.0	22.07	0	-0.08	1:1	0.330	1.239	0.409	
2510.00	20850	Low	front	10 mm	LTE Band 7	Stainless Steel	Metal Links	JQ9962Y6XW	20	QPSK	50	50	22.0	21.05	1	-0.02	1:1	0.274	1.245	0.341	
2510.00	20850	Low	front	10 mm	LTE Band 7	Stainless Steel	Metal Loop	JQ9962Y6XW	20	QPSK	1	99	23.0	22.07	0	-0.08	1:1	0.408	1.239	0.506	
2510.00	20850	Low	front	10 mm	LTE Band 7	Stainless Steel	Metal Loop	JQ9962Y6XW	20	QPSK	50	50	22.0	21.05	1	-0.02	1:1	0.323	1.245	0.402	
2510.00	20850	Low	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	1	99	23.0	22.07	0	0.00	1:1	0.791	1.239	0.980	
2560.00	21350	High	front	10 mm	LTE Band 7	Aluminum	Sport	TH9JMWNHVV	20	QPSK	1	99	23.0	21.91	0	-0.04	1:1	0.842	1.285	1.082	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Head 1.6 W/kg (mW/g) averaged over 1 gram								

Note: Blue entry represents variability measurement.

Table 10-12
LTE Band 41 Head SAR

MEASUREMENT RESULTS																						
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	SAR (1g)	Scaling Factor	Reported SAR (1g)	Plot #
MHz	Ch.																	(W/kg)		(W/kg)	
2506.00	39750	Low	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	1	99	24.0	23.01	0	0.08	1:1.58	0.586	1.256	0.736	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	1	0	24.0	23.16	0	-0.03	1:1.58	0.630	1.213	0.764	
2593.00	40620	Mid	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	1	50	24.0	23.07	0	0.03	1:1.58	0.640	1.239	0.793	A12
2636.50	41055	Mid-High	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	1	0	24.0	22.99	0	-0.09	1:1.58	0.560	1.262	0.707	
2680.00	41490	High	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	1	0	24.0	22.96	0	0.02	1:1.58	0.493	1.271	0.627	
2506.00	39750	Low	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	50	50	23.0	22.01	1	-0.02	1:1.58	0.439	1.256	0.551	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	50	0	23.0	22.10	1	-0.01	1:1.58	0.499	1.230	0.614	
2593.00	40620	Mid	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	50	0	23.0	22.01	1	-0.03	1:1.58	0.478	1.256	0.600	
2636.50	41055	Mid-High	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	50	0	23.0	21.94	1	-0.04	1:1.58	0.453	1.276	0.578	
2680.00	41490	High	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	50	50	23.0	21.70	1	-0.05	1:1.58	0.357	1.349	0.482	
2506.00	39750	Low	front	10 mm	LTE Band 41	Aluminum	Sport	QVP4JJF7P0	20	QPSK	100	0	23.0	22.08	1	0.01	1:1.58	0.426	1.236	0.527	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Aluminum	Metal Links	QVP4JJF7P0	20	QPSK	1	0	24.0	23.16	0	0.07	1:1.58	0.317	1.213	0.385	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Aluminum	Metal Links	QVP4JJF7P0	20	QPSK	50	0	23.0	22.10	1	0.05	1:1.58	0.245	1.230	0.301	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Aluminum	Metal Loop	QVP4JJF7P0	20	QPSK	1	0	24.0	23.16	0	-0.05	1:1.58	0.330	1.213	0.400	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Aluminum	Metal Loop	QVP4JJF7P0	20	QPSK	50	0	23.0	22.10	1	0.00	1:1.58	0.255	1.230	0.314	
2506.00	39750	Low	front	10 mm	LTE Band 41	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	99	24.0	23.01	0	0.12	1:1.58	0.393	1.256	0.494	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	0	24.0	23.16	0	0.01	1:1.58	0.433	1.213	0.525	
2593.00	40620	Mid	front	10 mm	LTE Band 41	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	50	24.0	23.07	0	-0.18	1:1.58	0.407	1.239	0.504	
2636.50	41055	Mid-High	front	10 mm	LTE Band 41	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	0	24.0	22.99	0	0.07	1:1.58	0.350	1.262	0.442	
2680.00	41490	High	front	10 mm	LTE Band 41	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	0	24.0	22.96	0	0.02	1:1.58	0.402	1.271	0.511	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	50	0	23.0	22.10	1	-0.02	1:1.58	0.327	1.230	0.402	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Stainless Steel	Metal Links	JQ9962Y6XW	20	QPSK	1	0	24.0	23.16	0	-0.02	1:1.58	0.226	1.213	0.274	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Stainless Steel	Metal Links	JQ9962Y6XW	20	QPSK	50	0	23.0	22.10	1	0.01	1:1.58	0.168	1.230	0.207	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Stainless Steel	Metal Loop	JQ9962Y6XW	20	QPSK	1	0	24.0	23.16	0	-0.03	1:1.58	0.313	1.213	0.380	
2549.50	40185	Low-Mid	front	10 mm	LTE Band 41	Stainless Steel	Metal Loop	JQ9962Y6XW	20	QPSK	50	0	23.0	22.10	1	-0.01	1:1.58	0.242	1.230	0.298	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	Head 1.6 W/kg (mW/g) averaged over 1 gram

Table 10-13
2.4 GHz WLAN Head SAR

MEASUREMENT RESULTS																					
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)			(W/kg)	
2412	1	front	10 mm	802.11b	DSSS	Aluminum	Sport	JWFMHW6XHC	22	1	19.0	18.20	0.05	100	99.6	0.246	1.202	1.004	0.297	A13
2412	1	front	10 mm	802.11b	DSSS	Aluminum	Metal Links	JWFMHW6XHC	22	1	19.0	18.20	0.13	100	99.6	0.140	1.202	1.004	0.169	
2412	1	front	10 mm	802.11b	DSSS	Aluminum	Metal Loop	JWFMHW6XHC	22	1	19.0	18.20	-0.06	100	99.6	0.171	1.202	1.004	0.206	
2412	1	front	10 mm	802.11b	DSSS	Stainless Steel	Sport	C7JYF6NPN2	22	1	19.0	18.20	-0.10	100	99.6	0.205	1.202	1.004	0.247	
2412	1	front	10 mm	802.11b	DSSS	Stainless Steel	Metal Links	C7JYF6NPN2	22	1	19.0	18.20	0.01	100	99.6	0.109	1.202	1.004	0.132	
2412	1	front	10 mm	802.11b	DSSS	Stainless Steel	Metal Loop	C7JYF6NPN2	22	1	19.0	18.20	-0.04	100	99.6	0.154	1.202	1.004	0.186	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population	Head 1.6 W/kg (mW/g) averaged over 1 gram

Table 10-14
5 GHz WLAN Head SAR

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.															(W/kg)			(W/kg)	
5320	64	front	10 mm	802.11a	OFDM	Aluminum	Sport	JWFMHW6XHC	20	6	17.0	16.23	-0.18	100	98.6	0.075	1.194	1.014	0.091	
5320	64	front	10 mm	802.11a	OFDM	Aluminum	Metal Links	JWFMHW6XHC	20	6	17.0	16.23	0.08	100	98.6	0.084	1.194	1.014	0.102	
5320	64	front	10 mm	802.11a	OFDM	Aluminum	Metal Loop	JWFMHW6XHC	20	6	17.0	16.23	0.14	100	98.6	0.085	1.194	1.014	0.103	
5320	64	front	10 mm	802.11a	OFDM	Stainless Steel	Sport	DLW7PF0Y2N	20	6	17.0	16.23	0.04	100	98.6	0.152	1.194	1.014	0.184	
5320	64	front	10 mm	802.11a	OFDM	Stainless Steel	Metal Links	DLW7PF0Y2N	20	6	17.0	16.23	0.11	100	98.6	0.164	1.194	1.014	0.199	
5320	64	front	10 mm	802.11a	OFDM	Stainless Steel	Metal Loop	DLW7PF0Y2N	20	6	17.0	16.23	0.06	100	98.6	0.124	1.194	1.014	0.150	
5500	100	front	10 mm	802.11a	OFDM	Aluminum	Sport	JWFMHW6XHC	20	6	17.0	16.23	0.00	100	98.6	0.224	1.194	1.014	0.271	A14
5500	100	front	10 mm	802.11a	OFDM	Aluminum	Metal Links	JWFMHW6XHC	20	6	17.0	16.23	0.06	100	98.6	0.210	1.194	1.014	0.254	
5500	100	front	10 mm	802.11a	OFDM	Aluminum	Metal Loop	JWFMHW6XHC	20	6	17.0	16.23	-0.04	100	98.6	0.156	1.194	1.014	0.189	
5500	100	front	10 mm	802.11a	OFDM	Stainless Steel	Sport	C7JYF6NPN2	20	6	17.0	16.23	0.06	100	98.6	0.149	1.194	1.014	0.180	
5500	100	front	10 mm	802.11a	OFDM	Stainless Steel	Metal Links	C7JYF6NPN2	20	6	17.0	16.23	0.01	100	98.6	0.124	1.194	1.014	0.150	
5500	100	front	10 mm	802.11a	OFDM	Stainless Steel	Metal Loop	C7JYF6NPN2	20	6	17.0	16.23	-0.12	100	98.6	0.164	1.194	1.014	0.199	
5745	149	front	10 mm	802.11a	OFDM	Aluminum	Sport	JWFMHW6XHC	20	6	17.0	16.21	0.10	100	98.6	0.109	1.199	1.014	0.133	
5745	149	front	10 mm	802.11a	OFDM	Aluminum	Metal Links	JWFMHW6XHC	20	6	17.0	16.21	0.01	100	98.6	0.107	1.199	1.014	0.130	
5745	149	front	10 mm	802.11a	OFDM	Aluminum	Metal Loop	JWFMHW6XHC	20	6	17.0	16.21	-0.02	100	98.6	0.090	1.199	1.014	0.109	
5745	149	front	10 mm	802.11a	OFDM	Stainless Steel	Sport	DLW7PF0Y2N	20	6	17.0	16.21	0.19	100	98.6	0.123	1.199	1.014	0.150	
5745	149	front	10 mm	802.11a	OFDM	Stainless Steel	Metal Links	DLW7PF0Y2N	20	6	17.0	16.21	0.07	100	98.6	0.146	1.199	1.014	0.178	
5745	149	front	10 mm	802.11a	OFDM	Stainless Steel	Metal Loop	DLW7PF0Y2N	20	6	17.0	16.21	0.09	100	98.6	0.126	1.199	1.014	0.153	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population																Head 1.6 W/kg (mW/g) averaged over 1 gram				

Table 10-15
Bluetooth Head SAR

MEASUREMENT RESULTS																			
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	SAR (1g)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)			(W/kg)	
2441	39	front	10 mm	Bluetooth	FHSS	Aluminum	Sport	RMVKP66V79	1	17.5	16.55	-0.04	100	0.272	1.245	1.000	0.339	A15
2441	39	front	10 mm	Bluetooth	FHSS	Aluminum	Metal Loop	RMVKP66V79	1	17.5	16.55	-0.01	100	0.174	1.245	1.000	0.217	
2441	39	front	10 mm	Bluetooth	FHSS	Aluminum	Metal Links	RMVKP66V79	1	17.5	16.55	-0.05	100	0.146	1.245	1.000	0.182	
2441	39	front	10 mm	Bluetooth	FHSS	Stainless Steel	Sport	JQ9962Y6XW	1	17.5	16.55	-0.02	100	0.233	1.245	1.000	0.290	
2441	39	front	10 mm	Bluetooth	FHSS	Stainless Steel	Metal Links	JQ9962Y6XW	1	17.5	16.55	-0.04	100	0.112	1.245	1.000	0.139	
2441	39	front	10 mm	Bluetooth	FHSS	Stainless Steel	Metal Loop	JQ9962Y6XW	1	17.5	16.55	0.01	100	0.148	1.245	1.000	0.184	
2441	39	front	10 mm	Bluetooth	FHSS	Aluminum	Sport	RMVKP66V79	1	13.0	12.19	-0.03	100	0.091	1.205	1.000	0.110	
2441	39	front	10 mm	Bluetooth	FHSS	Aluminum	Metal Loop	RMVKP66V79	1	13.0	12.19	-0.06	100	0.041	1.205	1.000	0.049	
2441	39	front	10 mm	Bluetooth	FHSS	Aluminum	Metal Links	RMVKP66V79	1	13.0	12.19	0.00	100	0.060	1.205	1.000	0.072	
2441	39	front	10 mm	Bluetooth	FHSS	Stainless Steel	Sport	JQ9962Y6XW	1	13.0	12.19	0.03	100	0.071	1.205	1.000	0.086	
2441	39	front	10 mm	Bluetooth	FHSS	Stainless Steel	Metal Links	JQ9962Y6XW	1	13.0	12.19	0.08	100	0.031	1.205	1.000	0.037	
2441	39	front	10 mm	Bluetooth	FHSS	Stainless Steel	Metal Loop	JQ9962Y6XW	1	13.0	12.19	0.11	100	0.040	1.205	1.000	0.048	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population														Head 1.6 W/kg (mW/g) averaged over 1 gram				

Table 10-16
802.15.4ab-NB Head SAR

MEASUREMENT RESULTS																		
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	SAR (1g)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	Reported SAR (1g)	Plot #
MHz	Ch.													(W/kg)			(W/kg)	
5728.75	Low	front	10 mm	802.15.4ab-NB	OFDM	Aluminum	Metal Links	JJC9NC7YPG	1	16.00	15.89	-0.21	8.6	0.000	1.026	1.035	0.000	
5728.75	Low	front	10 mm	802.15.4ab-NB	OFDM	Aluminum	Metal Loops	JJC9NC7YPG	1	16.00	15.89	0.21	8.6	0.000	1.026	1.035	0.000	
5728.75	Low	front	10 mm	802.15.4ab-NB	OFDM	Aluminum	Sport	JJC9NC7YPG	1	16.00	15.89	-0.21	8.6	0.000	1.026	1.035	0.000	
5728.75	Low	front	10 mm	802.15.4ab-NB	OFDM	Stainless Steel	Metal Links	G7W9P39H65	1	16.00	15.89	0.21	8.6	0.000	1.026	1.035	0.000	
5728.75	Low	front	10 mm	802.15.4ab-NB	OFDM	Stainless Steel	Metal Loops	G7W9P39H65	1	16.00	15.89	0.21	8.6	0.000	1.026	1.035	0.000	
5728.75	Low	front	10 mm	802.15.4ab-NB	OFDM	Stainless Steel	Sport	G7W9P39H65	1	16.00	15.89	-0.21	8.6	0.000	1.026	1.035	0.000	A16
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population										Head 1 W/kg (mW/g) averaged over 1 gram								

Note: The reported SAR was scaled to the 8.9% transmission duty factor to determine compliance since the duty factor of the device is permanently limited to 8.9% per manufacturer.

10.2 Standalone Extremity SAR Data

Table 10-17
UMTS 850 Extremity SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.													(W/kg)	(W/kg)	
846.60	4233	back	0 mm	UMTS 850	RMC	Aluminum	Sport	GQCTG229Y9	25.0	24.12	0.09	1:1	1.225	0.116	0.142	
846.60	4233	back	0 mm	UMTS 850	RMC	Aluminum	Metal Links	GQCTG229Y9	25.0	24.12	-0.16	1:1	1.225	0.207	0.254	
846.60	4233	back	0 mm	UMTS 850	RMC	Aluminum	Metal Loop	GQCTG229Y9	25.0	24.12	0.07	1:1	1.225	0.189	0.232	
846.60	4233	back	0 mm	UMTS 850	RMC	Stainless Steel	Sport	C7JYF6NPN2	25.0	24.12	0.01	1:1	1.225	0.107	0.131	
826.40	4132	back	0 mm	UMTS 850	RMC	Stainless Steel	Metal Links	C7JYF6NPN2	25.0	24.08	-0.02	1:1	1.236	0.177	0.219	
836.60	4183	back	0 mm	UMTS 850	RMC	Stainless Steel	Metal Links	C7JYF6NPN2	25.0	24.10	0.01	1:1	1.230	0.226	0.278	
846.60	4233	back	0 mm	UMTS 850	RMC	Stainless Steel	Metal Links	C7JYF6NPN2	25.0	24.12	-0.13	1:1	1.225	0.228	0.279	A17
846.60	4233	back	0 mm	UMTS 850	RMC	Stainless Steel	Metal Loop	C7JYF6NPN2	25.0	24.12	0.01	1:1	1.225	0.179	0.219	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Extremity 4 W/kg (mW/g) averaged over 10 grams							

Table 10-18
UMTS 1750 Extremity SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.													(W/kg)	(W/kg)	
1732.40	1412	back	0 mm	UMTS 1750	RMC	Aluminum	Sport	JXGVQVTDVW	24.0	23.05	-0.05	1:1	1.245	0.035	0.044	
1732.40	1412	back	0 mm	UMTS 1750	RMC	Aluminum	Metal Links	JXGVQVTDVW	24.0	23.05	-0.08	1:1	1.245	0.033	0.041	
1712.40	1312	back	0 mm	UMTS 1750	RMC	Aluminum	Metal Loop	JXGVQVTDVW	24.0	22.98	-0.07	1:1	1.265	0.049	0.062	
1732.40	1412	back	0 mm	UMTS 1750	RMC	Aluminum	Metal Loop	JXGVQVTDVW	24.0	23.05	0.09	1:1	1.245	0.074	0.092	
1752.60	1513	back	0 mm	UMTS 1750	RMC	Aluminum	Metal Loop	JXGVQVTDVW	24.0	22.87	0.14	1:1	1.297	0.079	0.102	
1732.40	1412	back	0 mm	UMTS 1750	RMC	Stainless Steel	Sport	C32J7VL2QG	24.0	23.05	0.06	1:1	1.245	0.020	0.025	
1712.40	1312	back	0 mm	UMTS 1750	RMC	Stainless Steel	Metal Links	C32J7VL2QG	24.0	22.98	-0.03	1:1	1.265	0.070	0.089	
1732.40	1412	back	0 mm	UMTS 1750	RMC	Stainless Steel	Metal Links	C32J7VL2QG	24.0	23.05	-0.03	1:1	1.245	0.067	0.083	
1752.60	1513	back	0 mm	UMTS 1750	RMC	Stainless Steel	Metal Links	C32J7VL2QG	24.0	22.87	0.06	1:1	1.297	0.089	0.115	A18
1732.40	1412	back	0 mm	UMTS 1750	RMC	Stainless Steel	Metal Loop	C32J7VL2QG	24.0	23.05	0.04	1:1	1.245	0.050	0.062	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Extremity 4 W/kg (mW/g) averaged over 10 grams							

Table 10-19
UMTS 1900 Extremity SAR

MEASUREMENT RESULTS																
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.													(W/kg)	(W/kg)	
1852.40	9262	back	0 mm	UMTS 1900	RMC	Aluminum	Sport	C95PWN79PX	24.0	23.43	0.01	1:1	1.140	0.044	0.050	
1852.40	9262	back	0 mm	UMTS 1900	RMC	Aluminum	Metal Links	C95PWN79PX	24.0	23.43	-0.02	1:1	1.140	0.132	0.150	
1852.40	9262	back	0 mm	UMTS 1900	RMC	Aluminum	Metal Loop	C95PWN79PX	24.0	23.43	0.01	1:1	1.140	0.069	0.079	
1852.40	9262	back	0 mm	UMTS 1900	RMC	Stainless Steel	Sport	G7W9P39H65	24.0	23.43	0.06	1:1	1.140	0.041	0.047	
1852.40	9262	back	0 mm	UMTS 1900	RMC	Stainless Steel	Metal Links	G7W9P39H65	24.0	23.43	-0.02	1:1	1.140	0.138	0.157	
1880.00	9400	back	0 mm	UMTS 1900	RMC	Stainless Steel	Metal Links	G7W9P39H65	24.0	23.31	0.08	1:1	1.172	0.147	0.172	A19
1907.60	9538	back	0 mm	UMTS 1900	RMC	Stainless Steel	Metal Links	G7W9P39H65	24.0	23.42	-0.01	1:1	1.143	0.124	0.142	
1852.40	9262	back	0 mm	UMTS 1900	RMC	Stainless Steel	Metal Loop	G7W9P39H65	24.0	23.43	0.07	1:1	1.140	0.093	0.106	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population									Extremity 4 W/kg (mW/g) averaged over 10 grams							

Table 10-20
LTE Band 12 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
707.50	23095	Mid	back	0 mm	LTE Band 12	Aluminum	Sport	GQCTG229Y9	10	QPSK	1	0	25.5	24.60	0	-0.04	1:1	1.230	0.070	0.086	
707.50	23095	Mid	back	0 mm	LTE Band 12	Aluminum	Sport	GQCTG229Y9	10	QPSK	25	0	24.5	23.60	1	0.00	1:1	1.230	0.060	0.074	
707.50	23095	Mid	back	0 mm	LTE Band 12	Aluminum	Metal Links	GQCTG229Y9	10	QPSK	1	0	25.5	24.60	0	-0.03	1:1	1.230	0.123	0.151	A20
707.50	23095	Mid	back	0 mm	LTE Band 12	Aluminum	Metal Links	GQCTG229Y9	10	QPSK	25	0	24.5	23.60	1	-0.18	1:1	1.230	0.091	0.112	
707.50	23095	Mid	back	0 mm	LTE Band 12	Aluminum	Metal Loop	GQCTG229Y9	10	QPSK	1	0	25.5	24.60	0	-0.06	1:1	1.230	0.097	0.119	
707.50	23095	Mid	back	0 mm	LTE Band 12	Aluminum	Metal Loop	GQCTG229Y9	10	QPSK	25	0	24.5	23.60	1	0.01	1:1	1.230	0.083	0.102	
707.50	23095	Mid	back	0 mm	LTE Band 12	Stainless Steel	Sport	C7JYF6NPN2	10	QPSK	1	0	25.5	24.60	0	-0.15	1:1	1.230	0.060	0.074	
707.50	23095	Mid	back	0 mm	LTE Band 12	Stainless Steel	Sport	C7JYF6NPN2	10	QPSK	25	0	24.5	23.60	1	-0.11	1:1	1.230	0.048	0.059	
707.50	23095	Mid	back	0 mm	LTE Band 12	Stainless Steel	Metal Links	C7JYF6NPN2	10	QPSK	1	0	25.5	24.60	0	-0.07	1:1	1.230	0.104	0.128	
707.50	23095	Mid	back	0 mm	LTE Band 12	Stainless Steel	Metal Links	C7JYF6NPN2	10	QPSK	25	0	24.5	23.60	1	-0.07	1:1	1.230	0.084	0.103	
707.50	23095	Mid	back	0 mm	LTE Band 12	Stainless Steel	Metal Loop	C7JYF6NPN2	10	QPSK	1	0	25.5	24.60	0	-0.16	1:1	1.230	0.076	0.093	
707.50	23095	Mid	back	0 mm	LTE Band 12	Stainless Steel	Metal Loop	C7JYF6NPN2	10	QPSK	25	0	24.5	23.60	1	0.02	1:1	1.230	0.057	0.070	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Extremity 4 W/kg (mW/g) averaged over 10 gram								

Table 10-21
LTE Band 13 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
782.00	23230	Mid	back	0 mm	LTE Band 13	Aluminum	Sport	JXGVQVTDVW	10	QPSK	1	0	25.5	24.69	0	0.02	1:1	1.205	0.125	0.151	
782.00	23230	Mid	back	0 mm	LTE Band 13	Aluminum	Sport	JXGVQVTDVW	10	QPSK	25	25	24.5	23.54	1	0.01	1:1	1.247	0.095	0.118	
782.00	23230	Mid	back	0 mm	LTE Band 13	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	1	0	25.5	24.69	0	-0.09	1:1	1.205	0.223	0.269	A21
782.00	23230	Mid	back	0 mm	LTE Band 13	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	25	25	24.5	23.54	1	0.04	1:1	1.247	0.164	0.205	
782.00	23230	Mid	back	0 mm	LTE Band 13	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	1	0	25.5	24.69	0	0.08	1:1	1.205	0.172	0.207	
782.00	23230	Mid	back	0 mm	LTE Band 13	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	25	25	24.5	23.54	1	-0.11	1:1	1.247	0.133	0.166	
782.00	23230	Mid	back	0 mm	LTE Band 13	Stainless Steel	Sport	K04F2K57HG	10	QPSK	1	0	25.5	24.69	0	-0.03	1:1	1.205	0.094	0.113	
782.00	23230	Mid	back	0 mm	LTE Band 13	Stainless Steel	Sport	K04F2K57HG	10	QPSK	25	25	24.5	23.54	1	-0.14	1:1	1.247	0.089	0.111	
782.00	23230	Mid	back	0 mm	LTE Band 13	Stainless Steel	Metal Links	K04F2K57HG	10	QPSK	1	0	25.5	24.69	0	0.07	1:1	1.205	0.173	0.208	
782.00	23230	Mid	back	0 mm	LTE Band 13	Stainless Steel	Metal Links	K04F2K57HG	10	QPSK	25	25	24.5	23.54	1	-0.10	1:1	1.247	0.159	0.198	
782.00	23230	Mid	back	0 mm	LTE Band 13	Stainless Steel	Metal Loop	K04F2K57HG	10	QPSK	1	0	25.5	24.69	0	-0.16	1:1	1.205	0.110	0.133	
782.00	23230	Mid	back	0 mm	LTE Band 13	Stainless Steel	Metal Loop	K04F2K57HG	10	QPSK	25	25	24.5	23.54	1	-0.05	1:1	1.247	0.102	0.127	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Extremity 4 W/kg (mW/g) averaged over 10 gram								

Table 10-22
LTE Band 14 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
793.00	23330	Mid	back	0 mm	LTE Band 14	Aluminum	Sport	JXGVQVTDVW	10	QPSK	1	0	25.5	24.64	0	-0.13	1:1	1.219	0.128	0.156	
793.00	23330	Mid	back	0 mm	LTE Band 14	Aluminum	Sport	JXGVQVTDVW	10	QPSK	25	0	24.5	23.52	1	-0.04	1:1	1.253	0.099	0.124	
793.00	23330	Mid	back	0 mm	LTE Band 14	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	1	0	25.5	24.64	0	0.08	1:1	1.219	0.211	0.257	A22
793.00	23330	Mid	back	0 mm	LTE Band 14	Aluminum	Metal Links	JXGVQVTDVW	10	QPSK	25	0	24.5	23.52	1	-0.12	1:1	1.253	0.181	0.227	
793.00	23330	Mid	back	0 mm	LTE Band 14	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	1	0	25.5	24.64	0	-0.09	1:1	1.219	0.165	0.201	
793.00	23330	Mid	back	0 mm	LTE Band 14	Aluminum	Metal Loop	JXGVQVTDVW	10	QPSK	25	0	24.5	23.52	1	0.20	1:1	1.253	0.123	0.154	
793.00	23330	Mid	back	0 mm	LTE Band 14	Stainless Steel	Sport	C7JYF6NPN2	10	QPSK	1	0	25.5	24.64	0	-0.10	1:1	1.219	0.107	0.130	
793.00	23330	Mid	back	0 mm	LTE Band 14	Stainless Steel	Sport	C7JYF6NPN2	10	QPSK	25	0	24.5	23.52	1	0.05	1:1	1.253	0.081	0.101	
793.00	23330	Mid	back	0 mm	LTE Band 14	Stainless Steel	Metal Links	C7JYF6NPN2	10	QPSK	1	0	25.5	24.64	0	-0.14	1:1	1.219	0.197	0.240	
793.00	23330	Mid	back	0 mm	LTE Band 14	Stainless Steel	Metal Links	C7JYF6NPN2	10	QPSK	25	0	24.5	23.52	1	-0.09	1:1	1.253	0.157	0.197	
793.00	23330	Mid	back	0 mm	LTE Band 14	Stainless Steel	Metal Loop	C7JYF6NPN2	10	QPSK	1	0	25.5	24.64	0	-0.09	1:1	1.219	0.169	0.206	
793.00	23330	Mid	back	0 mm	LTE Band 14	Stainless Steel	Metal Loop	C7JYF6NPN2	10	QPSK	25	0	24.5	23.52	1	0.01	1:1	1.253	0.101	0.127	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Extremity 4 W/kg (mW/g) averaged over 10 gram								

Table 10-23
LTE Band 26 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Aluminum	Sport	GQCTG229Y9	10	QPSK	1	25	25.5	25.05	0	0.06	1:1	1.109	0.109	0.121	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Aluminum	Sport	GQCTG229Y9	10	QPSK	25	25	24.5	24.14	1	0.02	1:1	1.086	0.082	0.089	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Aluminum	Metal Links	GQCTG229Y9	10	QPSK	1	25	25.5	25.05	0	-0.14	1:1	1.109	0.158	0.175	
831.50	26865	Mid	back	0 mm	LTE Band 26 (Cell)	Aluminum	Metal Links	GQCTG229Y9	10	QPSK	1	25	25.5	25.03	0	0.06	1:1	1.114	0.193	0.215	
844.00	26990	High	back	0 mm	LTE Band 26 (Cell)	Aluminum	Metal Links	GQCTG229Y9	10	QPSK	1	25	25.5	25.01	0	0.13	1:1	1.119	0.215	0.241	A23
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Aluminum	Metal Links	GQCTG229Y9	10	QPSK	25	25	24.5	24.14	1	0.09	1:1	1.086	0.144	0.156	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Aluminum	Metal Loop	GQCTG229Y9	10	QPSK	1	25	25.5	25.05	0	0.02	1:1	1.109	0.124	0.138	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Aluminum	Metal Loop	GQCTG229Y9	10	QPSK	25	25	24.5	24.14	1	0.05	1:1	1.086	0.101	0.110	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Stainless Steel	Sport	JJV0WT39HT	10	QPSK	1	25	25.5	25.05	0	-0.02	1:1	1.109	0.100	0.111	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Stainless Steel	Sport	JJV0WT39HT	10	QPSK	25	25	24.5	24.14	1	-0.09	1:1	1.086	0.080	0.087	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Stainless Steel	Metal Links	JJV0WT39HT	10	QPSK	1	25	25.5	25.05	0	0.05	1:1	1.109	0.151	0.167	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Stainless Steel	Metal Links	JJV0WT39HT	10	QPSK	25	25	24.5	24.14	1	0.00	1:1	1.086	0.126	0.137	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Stainless Steel	Metal Loop	JJV0WT39HT	10	QPSK	1	25	25.5	25.05	0	-0.09	1:1	1.109	0.126	0.140	
819.00	26740	Low	back	0 mm	LTE Band 26 (Cell)	Stainless Steel	Metal Loop	JJV0WT39HT	10	QPSK	25	25	24.5	24.14	1	-0.06	1:1	1.086	0.086	0.093	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Extremity 4 W/kg (mW/g) averaged over 10 gram								

Table 10-24
LTE Band 5 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Aluminum	Sport	GQCTG229Y9	10	QPSK	1	49	25.5	25.09	0	0.06	1:1	1.099	0.102	0.112	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Aluminum	Sport	GQCTG229Y9	10	QPSK	25	25	24.5	24.02	1	0.16	1:1	1.117	0.090	0.101	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Aluminum	Metal Links	GQCTG229Y9	10	QPSK	1	49	25.5	25.09	0	-0.09	1:1	1.099	0.199	0.219	A24
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Aluminum	Metal Links	GQCTG229Y9	10	QPSK	25	25	24.5	24.02	1	-0.11	1:1	1.117	0.163	0.182	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Aluminum	Metal Loop	GQCTG229Y9	10	QPSK	1	49	25.5	25.09	0	0.04	1:1	1.099	0.158	0.174	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Aluminum	Metal Loop	GQCTG229Y9	10	QPSK	25	25	24.5	24.02	1	-0.05	1:1	1.117	0.121	0.135	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Stainless Steel	Sport	H7DFDV7Q4V	10	QPSK	1	49	25.5	25.09	0	0.02	1:1	1.099	0.119	0.131	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Stainless Steel	Sport	H7DFDV7Q4V	10	QPSK	25	25	24.5	24.02	1	0.03	1:1	1.117	0.083	0.093	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Stainless Steel	Metal Links	H7DFDV7Q4V	10	QPSK	1	49	25.5	25.09	0	0.20	1:1	1.099	0.195	0.214	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Stainless Steel	Metal Links	H7DFDV7Q4V	10	QPSK	25	25	24.5	24.02	1	-0.04	1:1	1.117	0.164	0.183	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Stainless Steel	Metal Loop	H7DFDV7Q4V	10	QPSK	1	49	25.5	25.09	0	0.09	1:1	1.099	0.145	0.159	
836.50	20525	Mid	back	0 mm	LTE Band 5 (Cell)	Stainless Steel	Metal Loop	H7DFDV7Q4V	10	QPSK	25	25	24.5	24.02	1	-0.11	1:1	1.117	0.113	0.126	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Extremity 4 W/kg (mW/g) averaged over 10 gram								

Table 10-25
LTE Band 66 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Aluminum	Sport	JXGVQVTDVW	20	QPSK	1	50	24.5	23.85	0	-0.02	1:1	1.161	0.042	0.049	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Aluminum	Sport	JXGVQVTDVW	20	QPSK	50	0	23.5	22.83	1	-0.18	1:1	1.167	0.029	0.034	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Aluminum	Metal Links	JXGVQVTDVW	20	QPSK	1	50	24.5	23.85	0	0.04	1:1	1.161	0.091	0.106	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Aluminum	Metal Links	JXGVQVTDVW	20	QPSK	50	0	23.5	22.83	1	0.03	1:1	1.167	0.065	0.076	
1720.00	132072	Low	back	0 mm	LTE Band 66 (AWS)	Aluminum	Metal Loop	JXGVQVTDVW	20	QPSK	1	0	24.5	23.50	0	0.05	1:1	1.259	0.106	0.133	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Aluminum	Metal Loop	JXGVQVTDVW	20	QPSK	1	50	24.5	23.85	0	-0.01	1:1	1.161	0.147	0.171	A25
1770.00	132572	High	back	0 mm	LTE Band 66 (AWS)	Aluminum	Metal Loop	JXGVQVTDVW	20	QPSK	1	0	24.5	23.55	0	-0.06	1:1	1.245	0.114	0.142	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Aluminum	Metal Loop	JXGVQVTDVW	20	QPSK	50	0	23.5	22.83	1	-0.06	1:1	1.167	0.103	0.120	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Stainless Steel	Sport	C32J7VL2QG	20	QPSK	1	50	24.5	23.85	0	-0.06	1:1	1.161	0.047	0.055	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Stainless Steel	Sport	C32J7VL2QG	20	QPSK	50	0	23.5	22.83	1	0.00	1:1	1.167	0.031	0.036	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Links	C32J7VL2QG	20	QPSK	1	50	24.5	23.85	0	-0.02	1:1	1.161	0.054	0.063	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Links	C32J7VL2QG	20	QPSK	50	0	23.5	22.83	1	0.09	1:1	1.167	0.038	0.044	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Loop	C32J7VL2QG	20	QPSK	1	50	24.5	23.85	0	0.05	1:1	1.161	0.134	0.156	
1745.00	132322	Mid	back	0 mm	LTE Band 66 (AWS)	Stainless Steel	Metal Loop	C32J7VL2QG	20	QPSK	50	0	23.5	22.83	1	0.14	1:1	1.167	0.114	0.133	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Extremity 4 W/kg (mW/g) averaged over 10 gram								

Table 10-26
LTE Band 25 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
1882.50	26365	Mid	back	0 mm	LTE Band 25 (PCS)	Aluminum	Sport	H20GC7M22L	20	QPSK	1	50	24.5	23.80	0	-0.08	1:1	1.175	0.047	0.055	
1905.00	26590	High	back	0 mm	LTE Band 25 (PCS)	Aluminum	Sport	H20GC7M22L	20	QPSK	50	50	23.5	22.78	1	-0.10	1:1	1.180	0.038	0.045	
1882.50	26365	Mid	back	0 mm	LTE Band 25 (PCS)	Aluminum	Metal Links	H20GC7M22L	20	QPSK	1	50	24.5	23.80	0	0.04	1:1	1.175	0.157	0.184	
1905.00	26590	High	back	0 mm	LTE Band 25 (PCS)	Aluminum	Metal Links	H20GC7M22L	20	QPSK	50	50	23.5	22.78	1	0.03	1:1	1.180	0.075	0.089	
1882.50	26365	Mid	back	0 mm	LTE Band 25 (PCS)	Aluminum	Metal Loop	H20GC7M22L	20	QPSK	1	50	24.5	23.80	0	0.00	1:1	1.175	0.077	0.090	
1905.00	26590	High	back	0 mm	LTE Band 25 (PCS)	Aluminum	Metal Loop	H20GC7M22L	20	QPSK	50	50	23.5	22.78	1	-0.14	1:1	1.180	0.070	0.083	
1882.50	26365	Mid	back	0 mm	LTE Band 25 (PCS)	Stainless Steel	Sport	H7DFDV7Q4V	20	QPSK	1	50	24.5	23.80	0	-0.13	1:1	1.175	0.059	0.069	
1905.00	26590	High	back	0 mm	LTE Band 25 (PCS)	Stainless Steel	Sport	H7DFDV7Q4V	20	QPSK	50	50	23.5	22.78	1	0.07	1:1	1.180	0.041	0.048	
1860.00	26140	Low	back	0 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Links	H7DFDV7Q4V	20	QPSK	1	50	24.5	23.67	0	0.12	1:1	1.211	0.168	0.203	
1882.50	26365	Mid	back	0 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Links	H7DFDV7Q4V	20	QPSK	1	50	24.5	23.80	0	0.04	1:1	1.175	0.191	0.224	A26
1905.00	26590	High	back	0 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Links	H7DFDV7Q4V	20	QPSK	1	50	24.5	23.70	0	-0.14	1:1	1.202	0.167	0.201	
1905.00	26590	High	back	0 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Links	H7DFDV7Q4V	20	QPSK	50	50	23.5	22.78	1	0.05	1:1	1.180	0.133	0.157	
1882.50	26365	Mid	back	0 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Loop	H7DFDV7Q4V	20	QPSK	1	50	24.5	23.80	0	0.20	1:1	1.175	0.110	0.129	
1905.00	26590	High	back	0 mm	LTE Band 25 (PCS)	Stainless Steel	Metal Loop	H7DFDV7Q4V	20	QPSK	50	50	23.5	22.78	1	0.03	1:1	1.180	0.083	0.098	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Extremity 4 W/kg (mW/g) averaged over 10 gram								

Table 10-27
LTE Band 7 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
2510.00	20850	Low	back	0 mm	LTE Band 7	Aluminum	Sport	QVP4JJF7P0	20	QPSK	1	99	24.0	23.00	0	0.20	1:1	1.259	0.724	0.912	
2510.00	20850	Low	back	0 mm	LTE Band 7	Aluminum	Sport	QVP4JJF7P0	20	QPSK	50	50	23.0	22.10	1	0.00	1:1	1.230	0.521	0.641	
2510.00	20850	Low	back	0 mm	LTE Band 7	Aluminum	Metal Links	QVP4JJF7P0	20	QPSK	1	99	24.0	23.00	0	0.05	1:1	1.259	0.926	1.166	
2510.00	20850	Low	back	0 mm	LTE Band 7	Aluminum	Metal Links	QVP4JJF7P0	20	QPSK	50	50	23.0	22.10	1	0.02	1:1	1.230	0.564	0.694	
2510.00	20850	Low	back	0 mm	LTE Band 7	Aluminum	Metal Loop	QVP4JJF7P0	20	QPSK	1	99	24.0	23.00	0	-0.02	1:1	1.259	1.010	1.272	
2535.00	21100	Mid	back	0 mm	LTE Band 7	Aluminum	Metal Loop	QVP4JJF7P0	20	QPSK	1	99	24.0	22.98	0	0.01	1:1	1.265	1.000	1.265	
2560.00	21350	High	back	0 mm	LTE Band 7	Aluminum	Metal Loop	QVP4JJF7P0	20	QPSK	1	99	24.0	22.91	0	0.01	1:1	1.285	1.180	1.516	A27
2510.00	20850	Low	back	0 mm	LTE Band 7	Aluminum	Metal Loop	QVP4JJF7P0	20	QPSK	50	50	23.0	22.10	1	0.03	1:1	1.230	0.518	0.637	
2510.00	20850	Low	back	0 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	1	99	24.0	23.00	0	-0.15	1:1	1.259	0.468	0.589	
2510.00	20850	Low	back	0 mm	LTE Band 7	Stainless Steel	Sport	JQ9962Y6XW	20	QPSK	50	50	23.0	22.10	1	-0.03	1:1	1.230	0.360	0.443	
2510.00	20850	Low	back	0 mm	LTE Band 7	Stainless Steel	Metal Links	JQ9962Y6XW	20	QPSK	1	99	24.0	23.00	0	0.06	1:1	1.259	0.715	0.900	
2510.00	20850	Low	back	0 mm	LTE Band 7	Stainless Steel	Metal Links	JQ9962Y6XW	20	QPSK	50	50	23.0	22.10	1	0.03	1:1	1.230	0.472	0.581	
2510.00	20850	Low	back	0 mm	LTE Band 7	Stainless Steel	Metal Loop	JQ9962Y6XW	20	QPSK	1	99	24.0	23.00	0	-0.01	1:1	1.259	0.660	0.831	
2510.00	20850	Low	back	0 mm	LTE Band 7	Stainless Steel	Metal Loop	JQ9962Y6XW	20	QPSK	50	50	23.0	22.10	1	-0.04	1:1	1.230	0.514	0.632	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population													Extremity 4 W/kg (mW/g) averaged over 10 gram								

Table 10-28
LTE Band 41 Extremity SAR

MEASUREMENT RESULTS																					
FREQUENCY			Side	Spacing	Mode	Housing Type	Wristband Type	Device Serial Number	Bandwidth [MHz]	Modulation	RB Size	RB Offset	Maximum Allowed Power [dBm]	Conducted Power [dBm]	MPR [dB]	Power Drift [dB]	Duty Cycle	Scaling Factor	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																		(W/kg)	(W/kg)	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Aluminum	Sport	TH9JMWNHVV	20	QPSK	1	0	24.0	23.16	0	0.03	1:1.58	1.213	0.318	0.386	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Aluminum	Sport	TH9JMWNHVV	20	QPSK	50	0	23.0	22.10	1	-0.01	1:1.58	1.230	0.241	0.296	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Aluminum	Metal Links	TH9JMWNHVV	20	QPSK	1	0	24.0	23.16	0	-0.04	1:1.58	1.213	0.343	0.416	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Aluminum	Metal Links	TH9JMWNHVV	20	QPSK	50	0	23.0	22.10	1	-0.04	1:1.58	1.230	0.232	0.285	
2506.00	39750	Low	back	0 mm	LTE Band 41	Aluminum	Metal Loop	TH9JMWNHVV	20	QPSK	1	99	24.0	23.01	0	-0.04	1:1.58	1.256	0.380	0.477	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Aluminum	Metal Loop	TH9JMWNHVV	20	QPSK	1	0	24.0	23.16	0	0.03	1:1.58	1.213	0.363	0.440	
2593.00	40620	Mid	back	0 mm	LTE Band 41	Aluminum	Metal Loop	TH9JMWNHVV	20	QPSK	1	50	24.0	23.07	0	0.00	1:1.58	1.239	0.364	0.451	
2636.50	41055	Mid-High	back	0 mm	LTE Band 41	Aluminum	Metal Loop	TH9JMWNHVV	20	QPSK	1	0	24.0	22.99	0	-0.01	1:1.58	1.262	0.378	0.477	
2680.00	41490	High	back	0 mm	LTE Band 41	Aluminum	Metal Loop	TH9JMWNHVV	20	QPSK	1	0	24.0	22.96	0	-0.03	1:1.58	1.271	0.351	0.446	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Aluminum	Metal Loop	TH9JMWNHVV	20	QPSK	50	0	23.0	22.10	1	0.02	1:1.58	1.230	0.195	0.240	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Stainless Steel	Sport	C4K6J4J4G6	20	QPSK	1	0	24.0	23.16	0	0.00	1:1.58	1.213	0.223	0.270	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Stainless Steel	Sport	C4K6J4J4G6	20	QPSK	50	0	23.0	22.10	1	-0.08	1:1.58	1.230	0.168	0.207	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Stainless Steel	Metal Links	C4K6J4J4G6	20	QPSK	1	0	24.0	23.16	0	-0.04	1:1.58	1.213	0.319	0.387	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Stainless Steel	Metal Links	C4K6J4J4G6	20	QPSK	50	0	23.0	22.10	1	-0.04	1:1.58	1.230	0.248	0.305	
2506.00	39750	Low	back	0 mm	LTE Band 41	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	1	99	24.0	23.01	0	-0.05	1:1.58	1.256	0.239	0.300	
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	1	0	24.0	23.16	0	-0.03	1:1.58	1.213	0.341	0.414	
2593.00	40620	Mid	back	0 mm	LTE Band 41	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	1	50	24.0	23.07	0	-0.06	1:1.58	1.239	0.260	0.322	
2636.50	41055	Mid-High	back	0 mm	LTE Band 41	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	1	0	24.0	22.99	0	-0.10	1:1.58	1.262	0.305	0.385	
2680.00	41490	High	back	0 mm	LTE Band 41	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	1	0	24.0	22.96	0	0.03	1:1.58	1.271	0.405	0.515	A28
2549.50	40185	Low-Mid	back	0 mm	LTE Band 41	Stainless Steel	Metal Loop	C4K6J4J4G6	20	QPSK	50	0	23.0	22.10	1	-0.03	1:1.58	1.230	0.264	0.325	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	Extremity
Spatial Peak	4 W/kg (mW/g)
Uncontrolled Exposure/General Population	averaged over 10 gram

Table 10-29
2.4 GHz WLAN Extremity SAR

MEASUREMENT RESULTS																				
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Band Type	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)	(W/kg)	
2412	1	back	0 mm	802.11b	DSSS	Aluminum	Sport	JWFMHW6XHC	22	1	19.0	18.20	-0.02	100	99.6	1.202	1.004	0.150	0.181	
2412	1	back	0 mm	802.11b	DSSS	Aluminum	Metal Links	JWFMHW6XHC	22	1	19.0	18.20	-0.09	100	99.6	1.202	1.004	0.180	0.217	A27
2412	1	back	0 mm	802.11b	DSSS	Aluminum	Metal Loop	JWFMHW6XHC	22	1	19.0	18.20	-0.03	100	99.6	1.202	1.004	0.152	0.183	
2412	1	back	0 mm	802.11b	DSSS	Stainless Steel	Sport	C7JYF6NPN2	22	1	19.0	18.20	0.11	100	99.6	1.202	1.004	0.125	0.151	
2412	1	back	0 mm	802.11b	DSSS	Stainless Steel	Metal Links	C7JYF6NPN2	22	1	19.0	18.20	-0.03	100	99.6	1.202	1.004	0.175	0.211	
2412	1	back	0 mm	802.11b	DSSS	Stainless Steel	Metal Loop	C7JYF6NPN2	22	1	19.0	18.20	0.01	100	99.6	1.202	1.004	0.136	0.164	

ANSI / IEEE C95.1 1992 - SAFETY LIMIT	Extremity
Spatial Peak	4 W/kg (mW/g)
Uncontrolled Exposure/General Population	averaged over 10 gram

Table 10-30
5 GHz WLAN Extremity SAR

MEASUREMENT RESULTS																			
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Band Type	Device Serial Number	Bandwidth [MHz]	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Maximum Duty Cycle (%)	Duty Cycle (%)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.																	(W/kg)	(W/kg)	
5320	64	back	0 mm	802.11a	OFDM	Aluminum	Sport	JWFMHW6XHC	20	6	17.0	16.23	0.05	100	98.6	1.194	1.014	0.000	0.000	
5320	64	back	0 mm	802.11a	OFDM	Aluminum	Metal Links	JWFMHW6XHC	20	6	17.0	16.23	0.02	100	98.6	1.194	1.014	0.000	0.000	
5320	64	back	0 mm	802.11a	OFDM	Aluminum	Metal Loop	JWFMHW6XHC	20	6	17.0	16.23	0.07	100	98.6	1.194	1.014	0.003	0.004	
5320	64	back	0 mm	802.11a	OFDM	Stainless Steel	Sport	DLW7PF0Y2N	20	6	17.0	16.23	0.05	100	98.6	1.194	1.014	0.000	0.000	
5320	64	back	0 mm	802.11a	OFDM	Stainless Steel	Metal Links	DLW7PF0Y2N	20	6	17.0	16.23	0.08	100	98.6	1.194	1.014	0.010	0.012	
5320	64	back	0 mm	802.11a	OFDM	Stainless Steel	Metal Loop	DLW7PF0Y2N	20	6	17.0	16.23	0.03	100	98.6	1.194	1.014	0.011	0.013	
5500	100	back	0 mm	802.11a	OFDM	Aluminum	Sport	JWFMHW6XHC	20	6	17.0	16.23	0.02	100	98.6	1.194	1.014	0.006	0.007	
5500	100	back	0 mm	802.11a	OFDM	Aluminum	Metal Links	JWFMHW6XHC	20	6	17.0	16.23	0.05	100	98.6	1.194	1.014	0.012	0.015	
5500	100	back	0 mm	802.11a	OFDM	Aluminum	Metal Loop	JWFMHW6XHC	20	6	17.0	16.23	0.10	100	98.6	1.194	1.014	0.011	0.013	
5500	100	back	0 mm	802.11a	OFDM	Stainless Steel	Sport	DLW7PF0Y2N	20	6	17.0	16.23	0.04	100	98.6	1.194	1.014	0.000	0.000	
5500	100	back	0 mm	802.11a	OFDM	Stainless Steel	Metal Links	DLW7PF0Y2N	20	6	17.0	16.23	0.20	100	98.6	1.194	1.014	0.000	0.000	
5500	100	back	0 mm	802.11a	OFDM	Stainless Steel	Metal Loop	DLW7PF0Y2N	20	6	17.0	16.23	0.20	100	98.6	1.194	1.014	0.001	0.001	
5745	149	back	0 mm	802.11a	OFDM	Aluminum	Sport	JWFMHW6XHC	20	6	17.0	16.21	0.02	100	98.6	1.199	1.014	0.009	0.011	
5745	149	back	0 mm	802.11a	OFDM	Aluminum	Metal Links	JWFMHW6XHC	20	6	17.0	16.21	0.02	100	98.6	1.199	1.014	0.015	0.018	
5745	149	back	0 mm	802.11a	OFDM	Aluminum	Metal Loop	JWFMHW6XHC	20	6	17.0	16.21	0.09	100	98.6	1.199	1.014	0.015	0.018	
5745	149	back	0 mm	802.11a	OFDM	Stainless Steel	Sport	DLW7PF0Y2N	20	6	17.0	16.21	-0.04	100	98.6	1.199	1.014	0.009	0.011	
5745	149	back	0 mm	802.11a	OFDM	Stainless Steel	Metal Links	DLW7PF0Y2N	20	6	17.0	16.21	0.06	100	98.6	1.199	1.014	0.017	0.021	A30
5745	149	back	0 mm	802.11a	OFDM	Stainless Steel	Metal Loop	DLW7PF0Y2N	20	6	17.0	16.21	0.04	100	98.6	1.199	1.014	0.016	0.019	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Extremity 4 W/kg (mW/g) averaged over 10 gram							

Table 10-31
Bluetooth Extremity SAR

MEASUREMENT RESULTS																		
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	Scaling Factor (Cond Power)	Scaling Factor (Duty Cycle)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)	(W/kg)	
2441	39	back	0 mm	Bluetooth	FHSS	Aluminum	Sport	QVP4JJF7P0	1	17.5	16.55	-0.01	100	1.245	1.000	0.147	0.183	
2441	39	back	0 mm	Bluetooth	FHSS	Aluminum	Metal Links	QVP4JJF7P0	1	17.5	16.55	0.03	100	1.245	1.000	0.160	0.199	
2441	39	back	0 mm	Bluetooth	FHSS	Aluminum	Metal Loop	QVP4JJF7P0	1	17.5	16.55	0.02	100	1.245	1.000	0.163	0.203	A31
2441	39	back	0 mm	Bluetooth	FHSS	Stainless Steel	Sport	JQ9962Y6XW	1	17.5	16.55	-0.03	100	1.245	1.000	0.105	0.131	
2441	39	back	0 mm	Bluetooth	FHSS	Stainless Steel	Metal Links	JQ9962Y6XW	1	17.5	16.55	0.02	100	1.245	1.000	0.114	0.142	
2441	39	back	0 mm	Bluetooth	FHSS	Stainless Steel	Metal Loop	JQ9962Y6XW	1	17.5	16.55	0.00	100	1.245	1.000	0.118	0.147	
2441	39	back	0 mm	Bluetooth	FHSS	Aluminum	Sport	QVP4JJF7P0	1	13.0	12.19	-0.08	100	1.205	1.000	0.052	0.063	
2441	39	back	0 mm	Bluetooth	FHSS	Aluminum	Metal Links	QVP4JJF7P0	1	13.0	12.19	-0.03	100	1.205	1.000	0.058	0.070	
2441	39	back	0 mm	Bluetooth	FHSS	Aluminum	Metal Loop	QVP4JJF7P0	1	13.0	12.19	-0.03	100	1.205	1.000	0.059	0.071	
2441	39	back	0 mm	Bluetooth	FHSS	Stainless Steel	Sport	JQ9962Y6XW	1	13.0	12.19	-0.05	100	1.205	1.000	0.034	0.041	
2441	39	back	0 mm	Bluetooth	FHSS	Stainless Steel	Metal Links	JQ9962Y6XW	1	13.0	12.19	-0.03	100	1.205	1.000	0.042	0.051	
2441	39	back	0 mm	Bluetooth	FHSS	Stainless Steel	Metal Loop	JQ9962Y6XW	1	13.0	12.19	-0.08	100	1.205	1.000	0.033	0.040	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population												Extremity 4 W/kg (mW/g) averaged over 10 gram						

Table 10-32
802.15.4ab-NB Extremity SAR

MEASUREMENT RESULTS																	
FREQUENCY		Side	Spacing	Mode	Service	Housing Type	Wristband Type	Device Serial Number	Data Rate (Mbps)	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Power Drift [dB]	Duty Cycle (%)	Scaling Factor (Power)	Scaling Factor (Duty Cycle)	SAR (10g)	Reported SAR (10g)	Plot #
MHz	Ch.															(W/kg)	(W/kg)	
5728.75	Low	back	0 mm	802.15.4ab-NB	OFDM	Aluminum	Metal Links	JJC9NC7YPG	1	16.00	15.89	0.21	8.6	1.026	1.035	0.000	0.000	
5728.75	Low	back	0 mm	802.15.4ab-NB	OFDM	Aluminum	Metal Loops	JJC9NC7YPG	1	16.00	15.89	0.21	8.6	1.026	1.035	0.000	0.000	A32
5728.75	Low	back	0 mm	802.15.4ab-NB	OFDM	Aluminum	Sport	JJC9NC7YPG	1	16.00	15.89	0.21	8.6	1.026	1.035	0.000	0.000	
5728.75	Low	back	0 mm	802.15.4ab-NB	OFDM	Stainless Steal	Metal Links	G7W9P39H65	1	16.00	15.89	-0.21	8.6	1.026	1.035	0.000	0.000	
5728.75	Low	back	0 mm	802.15.4ab-NB	OFDM	Stainless Steal	Metal Loops	G7W9P39H65	1	16.00	15.89	-0.21	8.6	1.026	1.035	0.000	0.000	
5728.75	Low	back	0 mm	802.15.4ab-NB	OFDM	Stainless Steal	Sport	G7W9P39H65	1	16.00	15.89	0.21	8.6	1.026	1.035	0.000	0.000	
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population							Extremity 4 W/kg (mW/g) averaged over 10 gram											

Note: The reported SAR was scaled to the 8.9% transmission duty factor to determine compliance since the duty factor of the device is permanently limited to 8.9% per manufacturer

10.3 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 D01v06.
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 D01v06.
6. Per FCC KDB 865664 D01v01r04, variability SAR tests were performed when the measured SAR results for a frequency band were greater than or equal to 0.8 W/kg. Repeated SAR measurements are highlighted in the tables above for clarity. Please see Section 12 for variability analysis.
7. This device has two housing types: Aluminum and Stainless Steel. 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 D01v06 Section 6.2 have been applied for extremity and next to mouth (head) conditions.
9. Unless otherwise noted, when 10g SAR measurement is considered, a factor of 2.5 is applied to the thresholds below.

UMTS Notes:

1. UMTS mode was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required per the 3G Test Reduction Procedure in KDB Publication 941225 D01v03r01.
2. Per FCC KDB Publication 447498 D01v06, 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 D01v06, 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 0 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.

802.15.4ab-NB Notes

1. To determine compliance, 802.15.4 ab-NB reported 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 the manufacturer. See Section 8.6 for the time domain plot and calculation for the duty factor of the device.

11 FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

11.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 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 D01v06 4.3.2, simultaneous transmission SAR test exclusion may be applied when the sum of the 1g SAR for all the simultaneous transmitting antennas in a specific a 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.

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 the simultaneous transmission analysis.

Table 11-1
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	UMTS 850	0.000	0.297	0.297
	UMTS 1750	0.281	0.297	0.578
	UMTS 1900	0.393	0.297	0.690
	LTE Band 12	0.002	0.297	0.299
	LTE Band 13	0.001	0.297	0.298
	LTE Band 14	0.001	0.297	0.298
	LTE Band 26 (Cell)	0.000	0.297	0.297
	LTE Band 5 (Cell)	0.000	0.297	0.297
	LTE Band 66 (AWS)	0.467	0.297	0.764
	LTE Band 25 (PCS)	0.478	0.297	0.775
	LTE Band 7	1.150	0.297	1.447
	LTE Band 41	0.793	0.297	1.090

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

Exposure Condition	Mode	3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	UMTS 850	0.000	0.271	0.271
	UMTS 1750	0.281	0.271	0.552
	UMTS 1900	0.393	0.271	0.664
	LTE Band 12	0.002	0.271	0.273
	LTE Band 13	0.001	0.271	0.272
	LTE Band 14	0.001	0.271	0.272
	LTE Band 26 (Cell)	0.000	0.271	0.271
	LTE Band 5 (Cell)	0.000	0.271	0.271
	LTE Band 66 (AWS)	0.467	0.271	0.738
	LTE Band 25 (PCS)	0.478	0.271	0.749
	LTE Band 7	1.150	0.271	1.421
	LTE Band 41	0.793	0.271	1.064

Table 11-3
Simultaneous Transmission Scenario with Bluetooth at 13 dBm (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	UMTS 850	0.000	0.110	0.110
	UMTS 1750	0.281	0.110	0.391
	UMTS 1900	0.393	0.110	0.503
	LTE Band 12	0.002	0.110	0.112
	LTE Band 13	0.001	0.110	0.111
	LTE Band 14	0.001	0.110	0.111
	LTE Band 26 (Cell)	0.000	0.110	0.110
	LTE Band 5 (Cell)	0.000	0.110	0.110
	LTE Band 66 (AWS)	0.467	0.110	0.577
	LTE Band 25 (PCS)	0.478	0.110	0.588
	LTE Band 7	1.150	0.110	1.260
	LTE Band 41	0.793	0.110	0.903

Table 11-4
Simultaneous Transmission Scenario with 802.15.4ab-NB (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Head SAR	UMTS 850	0.000	0.000	0.000
	UMTS 1750	0.281	0.000	0.281
	UMTS 1900	0.393	0.000	0.393
	LTE Band 12	0.002	0.000	0.002
	LTE Band 13	0.001	0.000	0.001
	LTE Band 14	0.001	0.000	0.001
	LTE Band 26 (Cell)	0.000	0.000	0.000
	LTE Band 5 (Cell)	0.000	0.000	0.000
	LTE Band 66 (AWS)	0.467	0.000	0.467
	LTE Band 25 (PCS)	0.478	0.000	0.478
	LTE Band 7	1.150	0.000	1.150
	LTE Band 41	0.793	0.000	0.793

Table 11-5
Simultaneous Transmission Scenario with Bluetooth at 13 dBm and 5 GHz WLAN (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 850	0.000	0.110	0.271	0.381
	UMTS 1750	0.281	0.110	0.271	0.662
	UMTS 1900	0.393	0.110	0.271	0.774
	LTE Band 12	0.002	0.110	0.271	0.383
	LTE Band 13	0.001	0.110	0.271	0.382
	LTE Band 14	0.001	0.110	0.271	0.382
	LTE Band 26 (Cell)	0.000	0.110	0.271	0.381
	LTE Band 5 (Cell)	0.000	0.110	0.271	0.381
	LTE Band 66 (AWS)	0.467	0.110	0.271	0.848
	LTE Band 25 (PCS)	0.478	0.110	0.271	0.859
	LTE Band 7	1.150	0.110	0.271	1.531
	LTE Band 41	0.793	0.110	0.271	1.174

Table 11-6
Simultaneous Transmission Scenario with 802.15.4ab-NB and 2.4 GHz WLAN (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 850	0.000	0.000	0.297	0.297
	UMTS 1750	0.281	0.000	0.297	0.578
	UMTS 1900	0.393	0.000	0.297	0.690
	LTE Band 12	0.002	0.000	0.297	0.299
	LTE Band 13	0.001	0.000	0.297	0.298
	LTE Band 14	0.001	0.000	0.297	0.298
	LTE Band 26 (Cell)	0.000	0.000	0.297	0.297
	LTE Band 5 (Cell)	0.000	0.000	0.297	0.297
	LTE Band 66 (AWS)	0.467	0.000	0.297	0.764
	LTE Band 25 (PCS)	0.478	0.000	0.297	0.775
	LTE Band 7	1.150	0.000	0.297	1.447
	LTE Band 41	0.793	0.000	0.297	1.090

Table 11-7
Simultaneous Transmission Scenario with Bluetooth at 13 dBm and 802.15.4ab-NB (Head at 1.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Head SAR	UMTS 850	0.000	0.110	0.000	0.110
	UMTS 1750	0.281	0.110	0.000	0.391
	UMTS 1900	0.393	0.110	0.000	0.503
	LTE Band 12	0.002	0.110	0.000	0.112
	LTE Band 13	0.001	0.110	0.000	0.111
	LTE Band 14	0.001	0.110	0.000	0.111
	LTE Band 26 (Cell)	0.000	0.110	0.000	0.110
	LTE Band 5 (Cell)	0.000	0.110	0.000	0.110
	LTE Band 66 (AWS)	0.467	0.110	0.000	0.577
	LTE Band 25 (PCS)	0.478	0.110	0.000	0.588
	LTE Band 7	1.150	0.110	0.000	1.260
	LTE Band 41	0.793	0.110	0.000	0.903

Table 11-8
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN (Head at 1.0 cm)

Exposure Condition	2.4 GHz Bluetooth SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Head SAR	0.339	0.271	0.610

Table 11-9
Simultaneous Transmission Scenario with Bluetooth and 802.15.4ab-NB (Head at 1.0 cm)

Exposure Condition	2.4 GHz Bluetooth SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Head SAR	0.339	0.000	0.339

Table 11-10
Simultaneous Transmission Scenario with 2.4 GHz WLAN and 802.15.4ab-NB (Head at 1.0 cm)

Exposure Condition	2.4 GHz WLAN SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Head SAR	0.297	0.000	0.297

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 the simultaneous transmission analysis.

Table 11-11
Simultaneous Transmission Scenario with 2.4 GHz WLAN (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Extremity SAR	UMTS 850	0.279	0.217	0.496
	UMTS 1750	0.115	0.217	0.332
	UMTS 1900	0.172	0.217	0.389
	LTE Band 12	0.151	0.217	0.368
	LTE Band 13	0.269	0.217	0.486
	LTE Band 14	0.257	0.217	0.474
	LTE Band 26 (Cell)	0.241	0.217	0.458
	LTE Band 5 (Cell)	0.219	0.217	0.436
	LTE Band 66 (AWS)	0.171	0.217	0.388
	LTE Band 25 (PCS)	0.224	0.217	0.441
	LTE Band 7	1.516	0.217	1.733
	LTE Band 41	0.515	0.217	0.732

Table 11-12
Simultaneous Transmission Scenario with 5 GHz WLAN (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Extremity SAR	UMTS 850	0.279	0.021	0.300
	UMTS 1750	0.115	0.021	0.136
	UMTS 1900	0.172	0.021	0.193
	LTE Band 12	0.151	0.021	0.172
	LTE Band 13	0.269	0.021	0.290
	LTE Band 14	0.257	0.021	0.278
	LTE Band 26 (Cell)	0.241	0.021	0.262
	LTE Band 5 (Cell)	0.219	0.021	0.240
	LTE Band 66 (AWS)	0.171	0.021	0.192
	LTE Band 25 (PCS)	0.224	0.021	0.245
	LTE Band 7	1.516	0.021	1.537
	LTE Band 41	0.515	0.021	0.536

Table 11-13
Simultaneous Transmission Scenario with Bluetooth at 13 dBm (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Extremity SAR	UMTS 850	0.279	0.071	0.350
	UMTS 1750	0.115	0.071	0.186
	UMTS 1900	0.172	0.071	0.243
	LTE Band 12	0.151	0.071	0.222
	LTE Band 13	0.269	0.071	0.340
	LTE Band 14	0.257	0.071	0.328
	LTE Band 26 (Cell)	0.241	0.071	0.312
	LTE Band 5 (Cell)	0.219	0.071	0.290
	LTE Band 66 (AWS)	0.171	0.071	0.242
	LTE Band 25 (PCS)	0.224	0.071	0.295
	LTE Band 7	1.516	0.071	1.587
	LTE Band 41	0.515	0.071	0.586

Table 11-14
Simultaneous Transmission Scenario with 802.15.4ab-NB (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	Σ SAR (W/kg)
		1	2	1+2
Extremity SAR	UMTS 850	0.279	0.000	0.279
	UMTS 1750	0.115	0.000	0.115
	UMTS 1900	0.172	0.000	0.172
	LTE Band 12	0.151	0.000	0.151
	LTE Band 13	0.269	0.000	0.269
	LTE Band 14	0.257	0.000	0.257
	LTE Band 26 (Cell)	0.241	0.000	0.241
	LTE Band 5 (Cell)	0.219	0.000	0.219
	LTE Band 66 (AWS)	0.171	0.000	0.171
	LTE Band 25 (PCS)	0.224	0.000	0.224
	LTE Band 7	1.516	0.000	1.516
	LTE Band 41	0.515	0.000	0.515

Table 11-15
Simultaneous Transmission Scenario with Bluetooth at 13 dBm and 5 GHz WLAN (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Extremity SAR	UMTS 850	0.279	0.071	0.021	0.371
	UMTS 1750	0.115	0.071	0.021	0.207
	UMTS 1900	0.172	0.071	0.021	0.264
	LTE Band 12	0.151	0.071	0.021	0.243
	LTE Band 13	0.269	0.071	0.021	0.361
	LTE Band 14	0.257	0.071	0.021	0.349
	LTE Band 26 (Cell)	0.241	0.071	0.021	0.333
	LTE Band 5 (Cell)	0.219	0.071	0.021	0.311
	LTE Band 66 (AWS)	0.171	0.071	0.021	0.263
	LTE Band 25 (PCS)	0.224	0.071	0.021	0.316
	LTE Band 7	1.516	0.071	0.021	1.608
	LTE Band 41	0.515	0.071	0.021	0.607

Table 11-16
Simultaneous Transmission Scenario with 802.15.4ab-NB and 2.4 GHz WLAN (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	2.4 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Extremity SAR	UMTS 850	0.279	0.000	0.217	0.496
	UMTS 1750	0.115	0.000	0.217	0.332
	UMTS 1900	0.172	0.000	0.217	0.389
	LTE Band 12	0.151	0.000	0.217	0.368
	LTE Band 13	0.269	0.000	0.217	0.486
	LTE Band 14	0.257	0.000	0.217	0.474
	LTE Band 26 (Cell)	0.241	0.000	0.217	0.458
	LTE Band 5 (Cell)	0.219	0.000	0.217	0.436
	LTE Band 66 (AWS)	0.171	0.000	0.217	0.388
	LTE Band 25 (PCS)	0.224	0.000	0.217	0.441
	LTE Band 7	1.516	0.000	0.217	1.733
	LTE Band 41	0.515	0.000	0.217	0.732

Table 11-17
Simultaneous Transmission Scenario with Bluetooth at 13 dBm and 802.15.4ab-NB (Extremity at 0.0 cm)

Exposure Condition	Mode	3G/4G SAR (W/kg)	2.4 GHz Bluetooth Reduced at 13 dBm SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	Σ SAR (W/kg)
		1	2	3	1+2+3
Extremity SAR	UMTS 850	0.279	0.071	0.000	0.350
	UMTS 1750	0.115	0.071	0.000	0.186
	UMTS 1900	0.172	0.071	0.000	0.243
	LTE Band 12	0.151	0.071	0.000	0.222
	LTE Band 13	0.269	0.071	0.000	0.340
	LTE Band 14	0.257	0.071	0.000	0.328
	LTE Band 26 (Cell)	0.241	0.071	0.000	0.312
	LTE Band 5 (Cell)	0.219	0.071	0.000	0.290
	LTE Band 66 (AWS)	0.171	0.071	0.000	0.242
	LTE Band 25 (PCS)	0.224	0.071	0.000	0.295
	LTE Band 7	1.516	0.071	0.000	1.587
	LTE Band 41	0.515	0.071	0.000	0.586

Table 11-18
Simultaneous Transmission Scenario with Bluetooth and 5 GHz WLAN (Extremity at 0.0 cm)

Exposure Condition	2.4 GHz Bluetooth SAR (W/kg)	5 GHz WLAN SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Extremity SAR	0.203	0.021	0.224

Table 11-19
Simultaneous Transmission Scenario with Bluetooth and 802.15.4ab-NB (Extremity at 0.0 cm)

Exposure Condition	2.4 GHz Bluetooth SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Extremity SAR	0.203	0.000	0.203

Table 11-20
Simultaneous Transmission Scenario with 2.4 GHz WLAN and 802.15.4ab-NB (Extremity at 0.0 cm)

Exposure Condition	2.4 GHz WLAN SAR (W/kg)	802.15.4ab-NB SAR (W/kg)	Σ SAR (W/kg)
	1	2	1+2
Extremity SAR	0.217	0.000	0.217

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 D01v06.

12 SAR MEASUREMENT VARIABILITY

12.1 Measurement Variability

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

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

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

Table 12-1
Head SAR Measurement Variability Results

HEAD VARIABILITY RESULTS																	
Band	FREQUENCY		Mode	Service	Data Rate (Mbps)	Side	Spacing	Housing Type	Wristband Type	Measured SAR (1g)	1st Repeated SAR (1g)	Ratio	2nd Repeated SAR (1g)	Ratio	3rd Repeated SAR (1g)	Ratio
	MHz	Ch.								(W/kg)	(W/kg)		(W/kg)		(W/kg)	
2450	2510	Low	LTE Band 7, 20 MHz Bandwidth	QPSK, 1 RB, 99 RB Offset	N/A	front	10 mm	Aluminum	Sport	0.811	0.791	1.03	N/A	N/A	N/A	N/A
2600	2560	High	LTE Band 7, 20 MHz Bandwidth	QPSK, 1 RB, 99 RB Offset	N/A	front	10 mm	Aluminum	Sport	0.895	0.842	1.06	N/A	N/A	N/A	N/A
ANSI / IEEE C95.1 1992 - SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population						Head 1.6 W/kg (mW/g) averaged over 1 gram										

12.2 Measurement Uncertainty

The measured SAR was <1.5 W/kg for 1g and <3.75 W/kg for 10g for all frequency bands. Therefore, per KDB Publication 865664 D01v01r04, the extended measurement uncertainty analysis per IEEE 1528-2013 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	4/25/2023	Annual	4/25/2024	US41460739
Agilent	E4438C	ESG Vector Signal Generator	11/17/2022	Annual	11/17/2023	MY45093852
Agilent	N5182A	MXG Vector Signal Generator	4/1/2023	Annual	4/1/2024	MY47420837
Agilent	N5182A	MXG Vector Signal Generator	11/17/2022	Annual	11/17/2023	US46240505
Agilent	N9020A	MXA Vector Signal Analyzer	5/8/2023	Annual	5/8/2024	MY50200571
Agilent	8753ES	S-Parameter Vector Network Analyzer	6/2/2023	Annual	6/2/2024	MY40003841
Agilent	N4010A	Wireless Connectivity Test Set	N/A	N/A	N/A	GB46170464
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	343972
Amplifier Research	15S1G6	Amplifier	CBT	N/A	CBT	343971
Anritsu	MN8110B	I/O Adaptor	CBT	N/A	CBT	6261747881
Anritsu	ML2496A	Power Meter	6/15/2023	Annual	6/15/2024	1138001
Anritsu	ML2496A	Power Meter	8/16/2022	Annual	8/16/2023	1351001
Anritsu	MA2411B	Pulse Power Sensor	6/15/2023	Annual	6/15/2024	1126066
Anritsu	MA2411B	Pulse Power Sensor	6/15/2023	Annual	6/15/2024	1339007
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	3/31/2023	Annual	3/31/2024	6201381794
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	1/20/2023	Annual	1/20/2024	6201144419
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	1/10/2023	Annual	1/10/2024	6201524637
Anritsu	MT8821C	Radio Communication Analyzer MT8821C	11/28/2022	Annual	11/28/2023	6262150047
Anritsu	MA24106A	USB Power Sensor	6/15/2023	Annual	6/15/2024	1827530
Anritsu	MA24106A	USB Power Sensor	6/15/2023	Annual	6/15/2024	1827532
Mini-Circuits	PWR-4GHS	USB Power Sensor	11/11/2022	Annual	11/11/2023	11710030062
Control Company	4352	Long Stem Thermometer	9/10/2021	Biennial	9/10/2023	210774678
Control Company	4352	Long Stem Thermometer	9/10/2021	Biennial	9/10/2023	210774685
Control Company	4352	Long Stem Thermometer	9/10/2021	Biennial	9/10/2023	210774675
Control Company	4040	Therm./ Clock/ Humidity Monitor	1/17/2023	Annual	1/17/2024	160574418
Mitutoyo	500-196-30	CD-6"ASX 6Inch Digital Caliper	2/16/2022	Triennial	2/16/2025	A20238413
Keysight Technologies	N6705B	DC Power Analyzer	5/5/2021	Triennial	5/5/2024	MY53004059
Keysight Technologies	N9020A	MXA Signal Analyzer	3/15/2023	Annual	3/15/2024	US46470561
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
Pasternack	NC-100	Torque Wrench	11/29/2022	Biennial	11/29/2024	82527
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	6/1/2023	Annual	6/1/2024	108843
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	6/1/2023	Annual	6/1/2024	168543
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	4/5/2023	Annual	4/5/2024	167284
Rohde & Schwarz	CMW500	Wideband Radio Communication Tester	3/24/2023	Annual	3/24/2024	167285
SPEAG	DAK-3.5	Dielectric Assessment Kit	5/9/2023	Annual	5/9/2024	1070
SPEAG	DAKS-3.5	Portable Dielectric Assessment Kit	9/19/2022	Annual	9/19/2023	1045
SPEAG	MAIA	Modulation and Audio Interference Analyzer	N/A	N/A	N/A	1243
SPEAG	D750V3	750 MHz SAR Dipole	5/11/2021	Triennial	5/11/2024	1034
SPEAG	D750V3	750 MHz SAR Dipole	9/8/2020	Triennial	9/8/2023	1097
SPEAG	D835V2	835 MHz SAR Dipole	5/16/2022	Biennial	5/16/2024	4d040
SPEAG	D835V2	835 MHz SAR Dipole	5/16/2022	Biennial	5/16/2024	460
SPEAG	D1750V2	1750 MHz SAR Dipole	5/10/2022	Biennial	5/10/2024	1083
SPEAG	D1750V2	1750 MHz SAR Dipole	9/9/2020	Triennial	9/9/2023	1104
SPEAG	D1900V2	1900 MHz SAR Dipole	5/16/2022	Biennial	5/16/2024	5d030
SPEAG	D1900V2	1900 MHz SAR Dipole	9/10/2020	Triennial	9/10/2023	5d181
SPEAG	D2450V2	2450 MHz SAR Dipole	11/9/2021	Biennial	11/9/2023	921
SPEAG	D2600V2	2600 MHz SAR Dipole	9/9/2020	Triennial	9/9/2023	1069
SPEAG	D2600V2	2600MHz SAR Dipole	11/15/2022	Annual	11/15/2023	1068
SPEAG	D5GHzV2	5GHz SAR Dipole	11/17/2022	Annual	11/17/2023	1066
SPEAG	D5GHzV2	5 GHz SAR Dipole	3/22/2022	Biennial	3/22/2024	1123
SPEAG	DAE4	Dasy Data Acquisition Electronics	3/15/2023	Annual	3/15/2024	604
SPEAG	DAE4	Dasy Data Acquisition Electronics	12/13/2022	Annual	12/13/2023	1644
SPEAG	DAE4	Dasy Data Acquisition Electronics	4/14/2023	Annual	4/14/2024	501
SPEAG	DAE4	Dasy Data Acquisition Electronics	10/13/2022	Annual	10/13/2023	1333
SPEAG	DAE4	Dasy Data Acquisition Electronics	11/14/2022	Annual	12/14/2023	1237
SPEAG	DAE4	Dasy Data Acquisition Electronics	2/15/2023	Annual	2/15/2024	467
SPEAG	EX3DV4	SAR Probe	3/16/2023	Annual	3/16/2024	7421
SPEAG	EX3DV4	SAR Probe	12/9/2022	Annual	12/9/2023	7490
SPEAG	EX3DV4	SAR Probe	11/14/2022	Annual	11/14/2023	3746
SPEAG	EX3DV4	SAR Probe	4/18/2023	Annual	4/18/2024	7532
SPEAG	EX3DV4	SAR Probe	2/13/2023	Annual	2/13/2024	7308
SPEAG	EX3DV4	SAR Probe	10/20/2022	Annual	10/20/2023	7420

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

a	b	c	d	e= f(d,k)	f	g	h = c x f/e	i = c x g/e	k
Uncertainty Component	IEEE 1528 Sec.	Tol. (± %)	Prob. Dist.	Div.	c_i 1gm	c_i 10 gms	1gm u_i (± %)	10gms u_i (± %)	v_i
Measurement System									
Probe Calibration	E.2.1	7	N	1	1	1	7.0	7.0	∞
Axial Isotropy	E.2.2	0.25	N	1	0.7	0.7	0.2	0.2	∞
Hemishperical Isotropy	E.2.2	1.3	N	1	0.7	0.7	0.9	0.9	∞
Boundary Effect	E.2.3	2	R	1.732	1	1	1.2	1.2	∞
Linearity	E.2.4	0.3	N	1	1	1	0.3	0.3	∞
System Detection Limits	E.2.4	0.25	R	1.732	1	1	0.1	0.1	∞
Modulation Response	E.2.5	4.8	R	1.732	1	1	2.8	2.8	∞
Readout Electronics	E.2.6	0.3	N	1	1	1	0.3	0.3	∞
Response Time	E.2.7	0.8	R	1.732	1	1	0.5	0.5	∞
Integration Time	E.2.8	2.6	R	1.732	1	1	1.5	1.5	∞
RF Ambient Conditions - Noise	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
RF Ambient Conditions - Reflections	E.6.1	3	R	1.732	1	1	1.7	1.7	∞
Probe Positioner Mechanical Tolerance	E.6.2	0.8	R	1.732	1	1	0.5	0.5	∞
Probe Positioning w/ respect to Phantom	E.6.3	6.7	R	1.732	1	1	3.9	3.9	∞
Extrapolation, Interpolation & Integration algorithms for Max. SAR Evaluation	E.5	4	R	1.732	1	1	2.3	2.3	∞
Test Sample Related									
Test Sample Positioning	E.4.2	3.12	N	1	1	1	3.1	3.1	35
Device Holder Uncertainty	E.4.1	1.67	N	1	1	1	1.7	1.7	5
Output Power Variation - SAR drift measurement	E.2.9	5	R	1.732	1	1	2.9	2.9	∞
SAR Scaling	E.6.5	0	R	1.732	1	1	0.0	0.0	∞
Phantom & Tissue Parameters									
Phantom Uncertainty (Shape & Thickness tolerances)	E.3.1	7.6	R	1.73	1.0	1.0	4.4	4.4	∞
Liquid Conductivity - measurement uncertainty	E.3.3	4.3	N	1	0.78	0.71	3.3	3.0	76
Liquid Permittivity - measurement uncertainty	E.3.3	4.2	N	1	0.23	0.26	1.0	1.1	75
Liquid Conductivity - Temperature Uncertainty	E.3.4	3.4	R	1.732	0.78	0.71	1.5	1.4	∞
Liquid Permittivity - Temperature Unceritainty	E.3.4	0.6	R	1.732	0.23	0.26	0.1	0.1	∞
Liquid Conductivity - deviation from target values	E.3.2	5.0	R	1.73	0.64	0.43	1.8	1.2	∞
Liquid Permittivity - deviation from target values	E.3.2	5.0	R	1.73	0.60	0.49	1.7	1.4	∞
Combined Standard Uncertainty (k=1)			RSS				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

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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