TEST REPORT

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1. Report No : DRRFCC2010-0102
2. Customer
   - Name : Point Mobile Co., LTD.
   - Address : B-9F, Kabul Great Valley 32 Digital-ro 9-gil, Geumcheon-gu Seoul South Korea 153-709
3. Use of Report : FCC Original Grant
4. Product Name / Model Name : Mobile POS terminal / PM500
   FCC ID: V2X-PM500
5. FCC Regulation(s) : CFR 47 Part 2 subpart 2.1093
   Test Method Used : IEEE 1528-2013, FCC SAR KDB Publications (Details in test report)
6. Date of Test : 2020.09.07 ~ 2020.09.14
7. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing
8. Testing Environment : Refer to appended test report.
9. Test Result : Refer to the attached test result.

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.

Affirmation	Tested by Name : BumJun Park (Signature)	Reviewed by Name : HakMin Kim (Signature)

2020 . 10 . 22 .

DT&C Co., Ltd.

Unconnected with KS Q ISO / IEC 17025 and KOLAS accreditation.

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Test Report Version

Test Report No.	Date	Description	Tested by	Reviewed by
DRRFCC2010-0102	Oct. 22, 2020	Initial issue	BumJun Park	HakMin Kim

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1. DESCRIPTION OF DEVICE

1.1 General Information

EUT type	Mobile POS terminal				
FCC ID	V2X-PM500				
Equipment model name	PM500				
Equipment add model name	N/A				
Equipment serial no.	Identical prototype				
FCC & ISED MRA Designation No.	KR0034				
ISED#	5740A				
Mode(s) of Operation (Mobile Computer)	GSM 850, GSM 1900, WCDMA 850, WCDMA 1700, WCDMA 1900, LTE Band 12, 13, 26, 5, 4, 25, 2, 7, 2.4 G W-LAN (802.11b/g/n-HT20), 5 G W-LAN (802.11a/n-HT20/n-HT40/ac-VHT20/ac-VHT40/ac-VHT80), Bluetooth				
	Band	**Mode**	**Operating Modes**	**Bandwidth**	**Frequency**
TX Frequency Range	GSM 850	GSM/GPRS/EDGE	Voice/Data	-	824.2 ~ 848.8 MHz
	GSM 1900	GSM/GPRS/EDGE	Voice/Data	-	1 850.2 ~ 1 909.8 MHz
	WCDMA 850	WCDMA	Voice/Data	-	826.4 ~ 846.6 MHz
	WCDMA 1700	WCDMA	Voice/Data	-	1 712.4 ~ 1 752.6 MHz
	WCDMA 1900	WCDMA	Voice/Data	-	1 852.4 ~ 1 907.6 MHz
	LTE Band 12	LTE	Voice/Data	1.4/3/5/10MHz	699.7 ~ 715.3 MHz
	LTE Band 13	LTE	Voice/Data	5/10MHz	779.5 ~ 784.5 MHz
	LTE Band 26	LTE	Voice/Data	1.4/3/5/10/15MHz	814.7 ~ 848.3 MHz
	LTE Band 5	LTE	Voice/Data	1.4/3/5/10MHz	824.7 ~ 848.3 MHz
	LTE Band 4	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1 710.7 ~ 1 754.3 MHz
	LTE Band 25	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1 850.7 ~ 1 914.3 MHz
	LTE Band 2	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1 850.7 ~ 1 909.3 MHz
	LTE Band 7	LTE	Voice/Data	5/10/15/20MHz	2 502.5 ~ 2 567.5 MHz
	2.4 GHz W-LAN	802.11b/g/n	Voice/Data	HT20	2 412 ~ 2 462 MHz
	5.2 GHz W-LAN	802.11a/n	Voice/Data	HT20	5 180 ~ 5 240 MHz
		802.11n	Voice/Data	HT40	5 190 ~ 5 230 MHz
	5.3 GHz W-LAN	802.11a/n	Voice/Data	HT20	5 260 ~ 5 320 MHz
		802.11n	Voice/Data	HT40	5 270 ~ 5 310 MHz
	5.6 GHz W-LAN	802.11a/n	Voice/Data	HT20	5 500 ~ 5 700 MHz
		802.11n	Voice/Data	HT40	5 510 ~ 5 670 MHz
	5.8 GHz W-LAN	802.11a/n	Voice/Data	HT20	5 745 ~ 5 825 MHz
		802.11n	Voice/Data	HT40	5 755 ~ 5 795 MHz
	Bluetooth	-	Data	-	2 402 ~ 2 480 MHz
RX Frequency Range	GSM 850	GSM/GPRS/EDGE	Voice/Data	-	869.2 ~ 893.8 MHz
	GSM 1900	GSM/GPRS/EDGE	Voice/Data	-	1 930.2 ~ 1 989.8 MHz
	WCDMA 850	WCDMA	Voice/Data	-	871.4 ~ 891.6 MHz
	WCDMA 1700	WCDMA	Voice/Data	-	2 112.4 ~ 2 152.6 MHz
	WCDMA 1900	WCDMA	Voice/Data	-	1 932.4 ~ 1 987.6 MHz
	LTE Band 12	LTE	Voice/Data	1.4/3/5/10MHz	729.7 ~ 745.3 MHz
	LTE Band 13	LTE	Voice/Data	5/10MHz	748.5 ~ 753.5 MHz
	LTE Band 26	LTE	Voice/Data	1.4/3/5/10/15MHz	859.7 ~ 893.3 MHz
	LTE Band 5	LTE	Voice/Data	1.4/3/5/10MHz	869.7 ~ 893.3 MHz
	LTE Band 4	LTE	Voice/Data	1.4/3/5/10/15/20MHz	2 110.7 ~ 2 154.3 MHz
	LTE Band 25	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1 930.7 ~ 1 994.3 MHz
	LTE Band 2	LTE	Voice/Data	1.4/3/5/10/15/20MHz	1 930.7 ~ 1 989.3 MHz
	LTE Band 7	LTE	Voice/Data	5/10/15/20MHz	2 622.5 ~ 2 687.5 MHz
	2.4 GHz W-LAN	802.11b/g/n	Voice/Data	HT20	2 412 ~ 2 462 MHz
	5.2 GHz W-LAN	802.11a/n	Voice/Data	HT20	5 180 ~ 5 240 MHz
		802.11n	Voice/Data	HT40	5 190 ~ 5 230 MHz
	5.3 GHz W-LAN	802.11a/n	Voice/Data	HT20	5 260 ~ 5 320 MHz
		802.11n	Voice/Data	HT40	5 270 ~ 5 310 MHz
	5.6 GHz W-LAN	802.11a/n	Voice/Data	HT20	5 500 ~ 5 700 MHz
		802.11n	Voice/Data	HT40	5 510 ~ 5 670 MHz
	5.8 GHz W-LAN	802.11a/n	Voice/Data	HT20	5 745 ~ 5 825 MHz
		802.11n	Voice/Data	HT40	5 755 ~ 5 795 MHz
	Bluetooth	-	Data	-	2 402 ~ 2 480 MHz

SAR Summary Table (Mobile Computer)

Equipment Class	Band	Reported SAR 10g SAR (W/kg) Extremity
PCE	GPRS 850	1.54
	GPRS 1900	2.43
	WCDMA 850	1.42
	WCDMA 1700	**3.49**
	WCDMA 1900	3.14
	LTE Band 12	1.04
	LTE Band 13	0.88
	LTE Band 26	1.07
	LTE Band 5	-
	LTE Band 4	3.21
	LTE Band 25	2.60
	LTE Band 2	-
	LTE Band 7	3.45
DTS	2.4 GHz W-LAN	0.35
U-NII-1	5.2 GHz W-LAN	-
U-NII-2A	5.3 GHz W-LAN	< 0.1
U-NII-2C	5.6 GHz W-LAN	< 0.1
U-NII-3	5.8 GHz W-LAN	< 0.1
DSS	Bluetooth	< 0.1
Simultaneous SAR per KDB 690783 D01v01r03		**3.84**
FCC Equipment Class	Licensed Portable Transmitter Held to Ear (PCE) Part 15 Spread Spectrum Transmitter(DSS) Digital Transmission System(DTS) Unlicensed National Information Infrastructure (UNII)	
Date(s) of Tests	2020.09.07 ~ 2020.09.14	
Antenna Type	Internal Antenna	
Functions	● GSM/GPRS/EDGE (GPRS/EDGE Class: 33) supported. ● No simultaneous transmission between BT & 2.4GHz WLAN	
Information	● The Body SAR is not applicable because the RFID reader only transmits when user presses the scanning button and big separation distance from the human body in normal usage condition. ● When evaluating SAR only for RFID readers, test was performed 6 sides (Top, Bottom, Rear, Right, Left, Pistol grip) for conservative evaluation. ● The SAR of modified (i.e. break/cut) device so the side in question can be placed against the flat phantom was performed. ● A non-standard setup was used for SAR testing based on guidance from the FCC. ● The operational description contains additional information.	

1.2 Power Reduction for SAR

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

1.3 Nominal and Maximum Output Power Specifications

The Nominal and Maximum Output Power Specifications are in section 7 of this test report.

1.4 Simultaneous Transmission Capabilities

The Simultaneous Transmission Capabilities are in section 10 of this test report.

1.5 Miscellaneous SAR Test Considerations

Licensed Transmitter(s)

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 lager 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.

1.6 Guidance Applied

- IEEE 1528-2013
- FCC KDB Publication 941225 D01v03r01 (3G SAR Procedures)
- FCC KDB Publication 941225 D05v02r05 (SAR for LTE Devices)
- FCC KDB Publication 941225 D05Av01r02 (LTE Rel.10 KDB Inquiry Sheet)
- FCC KDB Publication 248227 D01v02r02 (802.11 Wi-Fi SAR)
- FCC KDB Publication 447498 D01v06 (General RF Exposure Guidance)
- FCC KDB Publication 648474 D04v01r03 (Handset SAR)
- FCC KDB Publication 690783 D01v01r03 (SAR Listings on Grants)
- FCC KDB Publication 865664 D01v01r04 (SAR Measurement 100 MHz to 6 GHz)
- FCC KDB Publication 865664 D02v01r02 (RF Exposure Reporting)
- October 2013 TCB Workshop Notes (GPRS testing criteria)
- April 2015 TCB Workshop Notes (Simultaneous transmission summation clarified)

1.7 FCC & ISED MRA test lab designation no. : KR0034

1.8 ISED# : 5740A

2. LTE INFORMATION

LTE Information					
Frequency Range of each LTE transmission Band	LTE Band 12 (699.7 ~ 715.3 MHz) LTE Band 13 (779.5 ~ 784.5 MHz) LTE Band 26 (Cell) (814.7 ~ 848.3 MHz) LTE Band 5 (Cell) (824.7 ~ 848.3 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)				
Channel Bandwidths	LTE Band 12 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz LTE Band 13 : 5 MHz, 10 MHz LTE Band 26 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz LTE Band 5 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz LTE Band 4 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 25 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 2 : 1.4 MHz, 3 MHz, 5 MHz, 10 MHz, 15 MHz, 20 MHz LTE Band 7: 5 MHz, 10 MHz, 15 MHz, 20 MHz				
Channel Number and Frequencies(MHz)	Low	Low-Mid	Mid	Mid-High	High
LTE Band 12: 1.4 MHz	699.7 (23017)	N/A	707.5 (23095)	N/A	715.3 (23173)
LTE Band 12: 3 MHz	700.5 (23025)	N/A	707.5 (23095)	N/A	714.5 (23165)
LTE Band 12: 5 MHz	701.5 (23035)	N/A	707.5 (23095)	N/A	713.5 (23155)
LTE Band 12: 10 MHz	704.0 (23060)	N/A	**707.5 (23095)**[Note1]	N/A	711.0 (23130)
LTE Band 13: 5 MHz	779.5(23205)	N/A	782.0(23230)[Note2]	N/A	784.5(23255)
LTE Band 13: 10 MHz	N/A	N/A	**782.0(23230)**	N/A	N/A
LTE Band 26 (Cell): 1.4 MHz	814.7 (26697)	N/A	831.5 (26865)	N/A	848.3 (27033)
LTE Band 26 (Cell): 3 MHz	815.5 (26705)	N/A	831.5 (26865)	N/A	847.5 (27025)
LTE Band 26 (Cell): 5 MHz	816.5 (26715)	N/A	831.5 (26865)	N/A	846.5 (27015)
LTE Band 26 (Cell): 10 MHz	819.0 (26740)	N/A	831.5 (26865)	N/A	844.0 (26990)
LTE Band 26 (Cell): 15 MHz	821.5 (26765)	N/A	**831.5 (26865)** [Note3]	N/A	841.5 (26965)
LTE Band 5 (Cell): 1.4 MHz	824.7 (20407)	N/A	836.5 (20525)	N/A	848.3 (20643)
LTE Band 5 (Cell): 3 MHz	825.5 (20415)	N/A	836.5 (20525)	N/A	847.5 (20635)
LTE Band 5 (Cell): 5 MHz	826.5 (20425)	N/A	836.5 (20525)	N/A	846.5 (20625)
LTE Band 5 (Cell): 10 MHz	829.0 (20450)	N/A	836.5 (20525)[Note4]	N/A	844.0 (20600)
LTE Band 4 (AWS): 1.4 MHz	1 710.7 (19957)	N/A	1 732.5 (20175)	N/A	1 754.3 (20393)
LTE Band 4 (AWS): 3 MHz	1 711.5 (19965)	N/A	1 732.5 (20175)	N/A	1 753.5 (20385)
LTE Band 4 (AWS): 5 MHz	1 712.5 (19975)	N/A	1 732.5 (20175)	N/A	1 752.5 (20375)
LTE Band 4 (AWS): 10 MHz	1 715.0 (20000)	N/A	1 732.5 (20175)	N/A	1 750.0 (20350)
LTE Band 4 (AWS): 15 MHz	1 717.5 (20025)	N/A	1 732.5 (20175)	N/A	1 747.5 (20325)
LTE Band 4 (AWS): 20 MHz	1 720.0 (20050)	N/A	**1 732.5 (20175)** [Note5]	N/A	1 745.0 (20300)
LTE Band 25 (PCS): 1.4 MHz	1 850.7 (26047)	N/A	1 882.5 (26365)	N/A	1 914.3 (26683)
LTE Band 25 (PCS): 3 MHz	1 851.5 (26055)	N/A	1 882.5 (26365)	N/A	1 913.5 (26675)
LTE Band 25 (PCS): 5 MHz	1 852.5 (26065)	N/A	1 882.5 (26365)	N/A	1 912.5 (26665)
LTE Band 25 (PCS): 10 MHz	1 855.0 (26090)	N/A	1 882.5 (26365)	N/A	1 910.0 (26640)
LTE Band 25 (PCS): 15 MHz	1 857.5 (26115)	N/A	1 882.5 (26365)	N/A	1 907.5 (26615)
LTE Band 25 (PCS): 20 MHz	**1 860.0 (26140)**	N/A	**1 882.5 (26365)**	N/A	**1 905.0 (26590)**
LTE Band 2 (PCS): 1.4 MHz	1 850.7 (18607)	N/A	1 880.0 (18900)	N/A	1 909.3 (19193)
LTE Band 2 (PCS): 3 MHz	1 851.5 (18615)	N/A	1 880.0 (18900)	N/A	1 908.5 (19185)
LTE Band 2 (PCS): 5 MHz	1 852.5 (18625)	N/A	1 880.0 (18900)	N/A	1 907.5 (19175)
LTE Band 2 (PCS): 10 MHz	1 855.0 (18650)	N/A	1 880.0 (18900)	N/A	1 905.0 (19150)
LTE Band 2 (PCS): 15 MHz	1 857.5 (18675)	N/A	1 880.0 (18900)	N/A	1 902.5 (19125)
LTE Band 2 (PCS): 20 MHz	1 860.0 (18700)	N/A	1 880.0 (18900)	N/A	1 900.0 (19100)
LTE Band 7: 5 MHz	2 502.5 (20775)	N/A	2 535.0 (21100)	N/A	2 567.5 (21425)
LTE Band 7: 10 MHz	2 505.0 (20800)	N/A	2 535.0 (21100)	N/A	2 565.0 (21400)
LTE Band 7: 15 MHz	2 507.5 (20825)	N/A	2 535.0 (21100)	N/A	2 562.5 (21375)
LTE Band 7: 20 MHz	**2 510.0 (20850)**	N/A	**2 535.0 (21100)**	N/A	**2 560.0 (21350)**
UE Category	LTE Rel.10, UE Cat 4				
Modulations Supported in UL	QPSK, 16QAM				
LTE MPR Permanently implemented per 3GPP TS 36.101 section 6.2.3~6.2.5? (manufacturer attestation to be provided)	Yes				
A-MPR (Additional MPR) disabled for SAR Testing?	Yes				
LTE Carrier Aggregation Possible Combinations	LTE Carrier Aggregation is not supported.				
LTE Additional Information	This device does not support CA features on 3GPP Release 10. All uplink communications are identical to the Release 8 Specifications. The following LTE Release 10 Features are not supported: Relay, HetNet, Enhanced MIMO, eICIC, WIFI Offloading, MDH, eMBMS, Cross-Carrier Scheduling, Enhanced SC-FDMA.				

Note(s)
1. LTE B12 can not contain three non-overlapping channels of 10 MHz bandwidth.
   Per KDB 941225 D05v02r05, 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.
2. LTE B13 can not contain three non-overlapping channels of 5 MHz bandwidth.
   Per KDB 941225 D05v02r05, 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.
3. LTE B26 (Cell) can not contain three non-overlapping channels of 15 MHz bandwidth.
   Per KDB 941225 D05v02r05, 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.
4. LTE B5 (Cell) can not contain three non-overlapping channels of 10 MHz bandwidth.
   Per KDB 941225 D05v02r05, 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.
5. LTE B4 (AWS) can not contain three non-overlapping channels of 20 MHz bandwidth.
   Per KDB 941225 D05v02r05, 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.

3. INTROCUCTION

The FCC and Industry 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.

The FCC has adopted the guidelines for evaluating the environmental effects of radio frequency radiation in ET Docket 93-62 on Aug. 6, 1996 to protect the public and workers from the potential hazards of RF emissions due to FCC-regulated portable devices. 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. The measurement procedure described in IEEE/ANSI C95.3-2002 Recommended Practice for the Measurement of Potentially Hazardous Electromagnetic Fields - RF and Microwave is used for guidance in measuring 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 National Council on Radiation Protection and Measurements (NCRP) in Biological Effects and Exposure Criteria for Radio frequency Electromagnetic Fields," NCRP Report No. 86 NCRP, 1986, Bethesda, MD 20814. 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.

SAR Definition

Specific Absorption Rate (SAR) 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 Fig. 3.1)

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

Fig. 3.1 SAR Mathematical Equation

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 relations 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.

4. DOSIMETRIC ASSESSMENT

4.1 Measurement Procedure

The evaluation was performed using the following procedure compliant to FCC KDB Publication 865664 D01v01r04 and IEEE 1528-2013:

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) and IEEE1528-2013.

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.

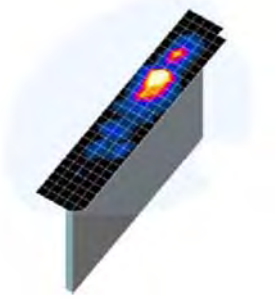

Figure 4.1
Sample SAR Area Scan

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) and IEEE 1528-2013. 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.

			≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface			5 mm ± 1 mm	½·δ·ln(2) mm ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location			30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}			≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
			When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see IEEE Std 1528-2013 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB Publication 447498 is ≤ 1.4 W/kg, ≤ 8 mm, ≤ 7 mm and ≤ 5 mm zoom scan resolution may be applied, respectively, for 2 GHz to 3 GHz, 3 GHz to 4 GHz and 4 GHz to 6 GHz.

Table 4.1 Area and Zoom Scan Resolutions per FCC KDB Publication 865664 D01v01r04*

5. RF EXPOSURE LIMITS

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.

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 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 5.1.SAR Human Exposure Specified in ANSI/IEEE C95.1-1992

	HUMAN EXPOSURE LIMITS	
	General Public Exposure (W/kg) or (mW/g)	Occupational Exposure (W/kg) or (mW/g)
SPATIAL PEAK SAR * (Brain)	1.60	8.00
SPATIAL AVERAGE SAR ** (Whole Body)	0.08	0.40
SPATIAL PEAK SAR *** (Hands / Feet / Ankle / Wrist)	4.00	20.0

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.

Uncontrolled Environments are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.

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).

6. FCC MEASUREMENT PROCEDURES

Power measurements were performed using a base station simulator under digital average power.

6.1 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.

6.2 Procedures Used to Establish RF Signal for SAR

The following procedures are according to FCC KDB Publication 941225 D01v03r01.

The device was 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 were 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 was 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 deviated by more than 5%, the SAR test and drift measurements were repeated.

6.3 SAR Measurement Conditions for WCDMA (UMTS)

6.3.1 Output Power Verification

Maximum output power is measured on the High, Middle and Low channels for each applicable transmission band according to the general descriptions in section 5.2 of 3GPP TS 34.121, using the appropriate RMC or AMR with TPC (transmit power control) set to all “1s”.

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 (release 5), 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.

6.3.2 Head SAR Measurements for Handsets

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 in12.2 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.

6.3.3 Body SAR Measurements

SAR for body exposure configurations is measured using the 12.2 kbps RMC with the TPC bits all“1s”.

6.3.4 Release 5 HSDPA Data Devices

The following procedures are applicable to HSDPA data devices operating under 3GPP Release 5. SAR is required for devices in body-worn accessory and other body exposure conditions, including handsets and data modems operating in various electronic devices. HSDPA operates in conjunction with WCDMA and requires an active DPCCH. The default test configuration is to measure SAR in WCDMA with HSDPA remain inactive, to establish a radio link between the test device and a communication test set using a 12.2 kbps RMC configured in Test Loop Mode 1. SAR for HSDPA is selectively measured using the highest reported SAR configuration in WCDMA, with an FRC in H-set 1 and a 12.2 kbps RMC. SAR is selectively confirmed for other physical channel configurations (DPCCH & DPDCHn) according to exposure conditions, device operating capabilities and maximum output power specified for production units, including tune-up tolerance by applying the 3G SAR test reduction procedures. Maximum output power is verified according to the applicable versions of 3GPP TS 34.121. SAR must be measured based on these maximum output conditions and requirements in KDB Publication 447498, with respect to the UE Categories, and explained in the SAR report. When Maximum Power Reduction (MPR) applies, the implementations must be clearly identified in the SAR report to support test results according to Cubic Metric (CM) and, as appropriate, Enhanced MPR (E-MPR) requirements.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs} (1)	CM (dB)(2)
1	2/15	15/15	64	2/15	4/15	0.0
2	12/15(3)	15/15(3)	64	12/15(3)	24/15	1.0
3	15/15	8/15	64	15/8	30/15	1.5
4	15/15	4/15	64	15/4	30/15	1.5

Note 1: Δ_{ACK}, Δ_{NACK} and $\Delta_{CQI} = 8 \Leftrightarrow A_{hs} = \beta_{hs}/\beta_c = 30/15 \Leftrightarrow \beta_{hs} = 30/15 * \beta_c$
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15.
Note 3: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 11/15 and β_d = 15/15.

Figure 6.1 Table 1

6.3.5 Release 6 HSUPA Data Devices

The following procedures are applicable to HSPA (HSUPA/HSDPA) data devices operating under 3GPP Release 6. SAR is required for devices in body-worn accessory and other body exposure conditions, including handsets and data modems operating in various electronic devices. HSUPA operates in conjunction with WCDMA and HSDPA. SAR is initially measured in WCDMA test configurations with HSPA remain inactive. The default test configuration is to establish a radio link between the test device and a communication test set to configure a 12.2 kbps RMC in Test Loop Mode 1. SAR for HSPA is selectively measured with HS-DPCCH, E-DPCCH and E-DPDCH, all enabled, along with a 12.2 kbps RMC using the highest reported SAR configuration in WCDMA with 12.2 kbps RMC only.
An FRC is configured according to HS-DPCCH Sub-test 1 using H-set 1 and QPSK. HSPA is configured according to E-DCH Sub-test 5 requirements. SAR for other HSPA sub-test configurations is confirmed selectively according to exposure conditions, E-DCH UE Category and maximum output power of production units, including tune-up tolerance by applying the 3G SAR test reduction procedure. Maximum output power is verified according to procedures in applicable versions of 3GPP TS 34.121. SAR must be measured based on these maximum output conditions and requirements in KDB Publication 447498, with respect to the UE Categories for HS-DPCCH and HSPA, and explained in the SAR report. When Maximum Power Reduction (MPR) applies, the implementations must be clearly identified in the SAR report to support test results according to Cubic Metric (CM) and, as appropriate, Enhanced MPR (E-MPR) requirements.

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{hs}(1)	β_{ec}	β_{ed}	β_{ed} (SF)	β_{ed} (codes)	CM(2) (dB)	MPR (dB)	AG(4) Index	E-TFCI
1	11/15(3)	15/15(3)	64	11/15(3)	22/15	209/225	1039/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	β_{ed1}: 47/15 β_{ed2}: 47/15	4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15(4)	15/15(4)	64	15/15(4)	30/15	24/15	134/15	4	1	1.0	0.0	21	81

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 8 ⇔ $A_{hs} = \beta_{hs}/\beta_c$ = 30/15 ⇔ β_{hs}= 30/15 *β_c.
Note 2: CM = 1 for β_c/β_d =12/15, β_{hs}/β_c=24/15. For all other combinations of DPDCH, DPCCH, HS- DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.
Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 10/15 and β_d = 15/15.
Note 4: For subtest 5 the β_c/β_d ratio of 15/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signaled gain factors for the reference TFC (TF1, TF1) to β_c = 14/15 and β_d = 15/15.
Note 5: Testing UE using E-DPDCH Physical Layer category 1 Sub-test 3 is not required according to TS 25.306 Table 5.1g.
Note 6: β_{ed} cannot be set directly; it is set by Absolute Grant Value.

Figure 6.2 Table 2

6.3.6 SAR Measurement Conditions for DC-HSDPA

In the following DB 941225 D01v03r01 procedures, the mode tested for SAR is referred to as the primary mode. The equivalent modes considered for SAR test reduction are denoted as secondary modes. Both primary and secondary modes must be in the same frequency band. When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode. This is referred to as the 3G SAR test reduction procedure in the following SAR test guidance, where the primary mode is identified in the applicable wireless mode test procedures and the secondary mode is wireless mode being considered for SAR test reduction by that procedure. When the 3G SAR test reduction procedure is not satisfied, it is identified as “otherwise” in the applicable procedures; SAR measurement is required for the secondary mode.

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.

6.4 SAR Measurement Conditions for LTE

LTE modes were tested according to FCC KDB 941225 D05v02r05 publication. Please see notes after the tabulated SAR data for required test configurations. Establishing connections with base station simulators ensure a consistent means for testing SAR and are recommended for evaluating SAR. The call simulator was used for LTE output power measurement 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).

6.4.1 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.

6.4.2 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.

6.4.3 A-MPR

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

6.4.4 Required RB Size and RB Offsets for SAR Testing

According to FCC KDB 941225 D05v02r05:

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 channel 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. Otherwise, SAR is measured for the highest output power channel; and if the reported SAR is > 1.45 W/kg, the remaining required test channels must also be tested.
d. 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 0.5 dB higher than the equivalent configuration using QPSK modulation and when the QPSK SAR for those configurations is < 1.45 W/kg.

6.5 SAR Testing with 802.11 Transmitters

The normal network operating configurations are not suitable for measuring the SAR of 802.11 b/g/n transmitters. 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 248227D01v02r02 for more details.

6.5.1 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. The test frequencies should correspond to actual channel frequencies defined for domestic use. SAR for devices with switched diversity should be measured with only one antenna transmitting at a time during each SAR measurement, according to a fixed modulation and data rate. The same data pattern should be used for all measurements.

A periodic duty factor is required for current generation SAR systems to measure SAR. When 802.11 frame gaps are accounted for in the 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.

6.5.2 U-NII and U-NII-2A

For devices that operate in only one of the U-NII-1 and U-NII-2A bands, the normally required SAR procedures for OFDM configurations are applied. For devices that operate in both U-NII bands using the same transmitter and antenna(s), SAR test reduction is determined according to the following, with respect to the highest reported SAR and maximum output power specified for production units. The procedures are applied independently to each exposure configuration; for example, head, body, hotspot mode etc.

1) When the same maximum output power is specified for both bands, begin SAR measurement in U-NII-2A band by applying the OFDM SAR requirements. If the highest reported SAR for a test configuration is ≤ 1.2 W/kg, SAR is not required for U-NII-1 band for that configuration (802.11 mode and exposure condition); otherwise, each band is tested independently for SAR.
2) When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 1.2 W/kg, SAR is not required for the band with lower maximum output power in that test configuration; otherwise, each band is tested independently for SAR.

6.5.3 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 Rader (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. When band gap channels are disabled, each band is tested independently according to the normally required OFDM SAR measurements and probe calibration frequency points requirements.

6.5.4 Initial Test Position Procedure

For exposure conditions with multiple test positions, such as handset operating next to the ear, devices with hotspot mode or UMPC mini-tablet, procedures for initial test position can be applied. Using the transmission mode determined by the DSSS procedure or initial test configuration, area scans are measured for all position in an exposure condition. The test position with the highest extrapolated (peak) SAR is used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions is required. Otherwise, SAR is evaluated at the subsequent highest peak SAR position until the reported SAR result is ≤ 0.8 W/kg or all test position are measured.

6.5.5 2.4 GHz SAR Test Requirements

SAR is measured for 2.4 GHz 802.11b DSSS using either a 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 exposure configuration 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.

6.5.6 OFDM Transmission Mode and SAR Test Channel Selection

For the 2.4 GHz and 5 GHz bands, 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 80211n or 802.11g then 802.11n is used for SAR measurement. When the maximum output power ware 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.

6.5.7 Initial Test Configuration Procedure

For OFDM, in both 2.4 and 5 GHz bands, 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 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, and lowest data rate. 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.

6.5.8 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 applicable. When the highest reported SAR for the initial test configuration, adjusted by the ratio of the subsequent test configuration to initial test configuration specified maximum output power is ≤ 1.2 W/kg, no additional SAR testing for the subsequent test configurations is required.

7. Nominal and Maximum Output Power Spec and RF Conducted Powers

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.

7.1 GSM Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Burst Average GMSK [dBm]				Burst Average GMSK [dBm]			
		1 TX Slot	2 TX Slot	3 TX Slot	4 TX Slot	1 TX Slot	2 TX Slot	3 TX Slot	4 TX Slot
GPRS/EDGE 850	Maximum	32.60	31.40	29.00	27.80	26.10	25.50	23.50	22.30
	Nominal	32.10	30.90	28.50	27.30	25.60	25.00	23.00	21.80
GPRSEDGE 1900	Maximum	27.50	27.00	26.50	25.50	27.00	26.50	26.00	25.00
	Nominal	27.00	26.50	26.00	25.00	26.50	26.00	25.50	24.50

Table 7.1.1 GSM Nominal and Maximum Output Power Spec

Band	Channel	Maximum Burst-Averaged Output Power(dBm)							
		GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
		GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
GSM 850	128	32.47	31.35	28.91	27.71	26.03	25.19	23.11	22.21
	190	32.58	31.08	28.85	27.65	26.08	25.49	23.41	22.01
	251	32.48	31.28	28.84	27.64	26.00	25.41	23.33	22.24
PCS 1900	512	27.10	26.94	26.37	25.14	26.85	26.41	25.91	24.91
	661	26.91	26.74	26.03	24.96	26.77	26.44	25.97	24.89
	810	26.69	26.51	26.04	24.81	26.59	26.48	25.97	24.65
Band	Channel	Calculated Maximum Frame-Averaged Output Power(dBm)							
		GPRS/EDGE Data (GMSK)				EDGE Data (8-PSK)			
		GPRS 1 TX Slot	GPRS 2 TX Slot	GPRS 3 TX Slot	GPRS 4 TX Slot	EDGE 1 TX Slot	EDGE 2 TX Slot	EDGE 3 TX Slot	EDGE 4 TX Slot
GSM 850	128	23.44	25.33	24.65	24.70	17.00	19.17	18.85	19.20
	190	23.55	25.06	24.59	24.64	17.05	19.47	19.15	19.00
	251	23.45	25.26	24.58	24.63	16.97	19.39	19.07	19.23
PCS 1900	512	18.07	20.92	22.11	22.13	17.82	20.39	21.65	21.90
	661	17.88	20.72	21.77	21.95	17.74	20.42	21.71	21.88
	810	17.66	20.49	21.78	21.80	17.56	20.46	21.71	21.64
GSM 850	Frame Avg. Targets:	23.07	24.88	24.24	24.29	16.57	18.98	18.74	18.79
PCS 1900		17.97	20.48	21.74	21.99	17.47	19.98	21.24	21.49

Table 7.1.2 GSM Conducted Power

Note:

1. Both burst-averaged and calculated frame-averaged powers are included. Frame-averaged power was calculated from the measured burst-averaged power by converting the slot powers into linear units and calculating the energy over 8 timeslots.
2. GPRS (GMSK) output powers were measured with coding scheme setting of 1 (CS1) on the base station simulator. CS1 was configured to measure GPRS output power measurements and SAR to ensure GMSK modulation in the signal. Our Investigation has shown that CS1 - CS4 settings do not have any impact on the output levels or modulation in the GPRS modes.
3. EDGE (8-PSK) output powers were measured with MCS7 on the base station simulator. MCS7 coding scheme was used to measure the output powers for EDGE since investigation has shown that choosing MCS7 coding scheme will ensure 8-PSK modulation. It has been shown that MCS levels that produce 8PSK modulation do not have an impact on output power.

GPRS Multislot class: 33 (max 4 TX Uplink slots)
EDGE Multislot class: 33 (max 4 TX Uplink slots)
DTM Multislot Class: N/A

Figure 7.1 Power Measurement Setup

7.2 WCDMA Nominal and Maximum Output Power Spec and Conducted Powers

3GPP Release Version	Mode			Cellular Band (dBm)	AWS Band (dBm)	PCS Band (dBm)	3GPP MPR (dB)
99	WCDMA	RMC	Maximum	23.5	23.5	23.0	-
			Nominal	23.0	23.0	22.5	
5	HSDPA	Subtest 1	Maximum	23.5	23.5	23.0	0
			Nominal	23.0	23.0	22.5	
5		Subtest 2	Maximum	23.5	23.5	23.0	0
			Nominal	23.0	23.0	22.5	
5		Subtest 3	Maximum	23.0	23.0	22.5	0.5
			Nominal	22.5	22.5	22.0	
5		Subtest 4	Maximum	23.0	23.0	22.5	0.5
			Nominal	22.5	22.5	22.0	
6	HSUPA	Subtest 1	Maximum	23.5	23.5	23.0	0
			Nominal	23.0	23.0	22.5	
6		Subtest 2	Maximum	21.5	21.5	21.0	2
			Nominal	21.0	21.0	20.5	
6		Subtest 3	Maximum	22.5	22.5	22.0	1
			Nominal	22.0	22.0	21.5	
6		Subtest 4	Maximum	21.5	21.5	21.0	2
			Nominal	21.0	21.0	20.5	
6		Subtest 5	Maximum	23.5	23.5	23.0	0
			Nominal	23.0	23.0	22.5	
8	DC-HSDPA	Subtest 1	Maximum	23.5	23.5	23.0	0
			Nominal	23.0	23.0	22.5	
8		Subtest 2	Maximum	23.5	23.5	23.0	0
			Nominal	23.0	23.0	22.5	
8		Subtest 3	Maximum	23.0	23.0	22.5	0.5
			Nominal	22.5	22.5	22.0	
8		Subtest 4	Maximum	23.0	23.0	22.5	0.5
			Nominal	22.5	22.5	22.0	

Table 7.2.1 WCDMA Nominal and Maximum Output Power Spec

3GPP Release Version	Mode	3GPP 34.121 Subtest	Cellular Band (dBm)			AWS Band (dBm)			PCS Band (dBm)			3GPP MPR (dB)
			4132	4183	4233	1312	1412	1513	9262	9400	9538	
99	WCDMA	12.2 kbps RMC	23.29	23.19	23.17	23.35	23.37	23.38	22.84	22.92	22.90	-
5	HSDPA	Subtest 1	22.97	22.99	22.97	22.65	22.73	22.74	22.57	22.61	22.55	0
5		Subtest 2	22.99	22.91	22.85	22.63	22.73	22.71	22.59	22.65	22.61	0
5		Subtest 3	22.48	22.43	22.47	22.24	22.33	22.23	22.01	22.08	22.06	0.5
5		Subtest 4	22.47	22.49	22.45	22.23	22.31	22.31	22.03	22.08	22.04	0.5
6	HSUPA	Subtest 1	22.92	22.97	22.96	22.65	22.72	22.73	22.54	22.62	22.57	0
6		Subtest 2	20.98	20.92	20.93	20.72	20.81	20.79	20.71	20.68	20.61	2
6		Subtest 3	21.99	21.95	21.93	21.72	21.77	21.69	21.67	21.62	21.59	1
6		Subtest 4	20.91	20.97	20.96	20.74	20.80	20.80	20.71	20.66	20.54	2
6		Subtest 5	22.98	22.93	22.98	22.70	22.76	22.76	22.56	22.63	22.57	0
8	DC-HSDPA	Subtest 1	22.93	23.01	22.93	22.87	22.97	22.98	22.57	22.63	22.63	0
8		Subtest 2	22.91	22.99	22.97	22.91	22.86	22.95	22.53	22.60	22.53	0
8		Subtest 3	22.63	22.65	22.56	22.45	22.47	22.41	22.05	22.12	21.99	0.5
8		Subtest 4	22.59	22.58	22.57	22.48	22.41	22.52	22.06	22.03	22.02	0.5

Table 7.2.2 WCDMA Conducted Power

WCDMA SAR was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.

The manufacturer declares that the HSDPA, HSUPA and DC-HSDPA transmitter's power will not exceed the R99 maximum transmit power in devices based on Qualcomm's HSPA chipset solutions.

DC-HSDPA considerations

- 3GPP Specification 34.121-1 Release 8 Ver 8.10.0 was used for DC-HSDPA guidance.
- H-Set 12 (QPSK) was confirmed to be used during DC-HSDPA measurements.
- The DUT supports UE category 24 for HSDPA.

Figure 7.2 Power Measurement Setup

7.3 LTE Nominal and Maximum Output Power Spec and Conducted Powers

Band & Mode		Modulated Average[dBm]
LTE Band 12	Maximum	23.2
	Nominal	22.7

Table 7.3.1.1 Nominal and Maximum Output Power Spec

1) LTE Band 12

LTE Band 12 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23095 (707.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	22.98	≤ 1	0
	1	**25**	**23.18**		
	1	49	22.92		
	25	0	22.06		1
	25	**12**	**22.13**		
	25	25	22.01		
	50	0	22.08		1
16QAM	1	0	21.99	≤ 1	1
	1	25	22.18		
	1	49	21.96		
	25	0	21.15	≤ 2	2
	25	12	21.19		
	25	25	21.10		
	50	0	21.10		2

Table 7.3.1.2 LTE Conducted Power

Note : LTE B12 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, 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.

LTE Band 12 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 23035 (701.5 MHz)	Mid Channel 23095 (707.5 MHz)	High Channel 23155 (713.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	22.95	22.98	22.93	≤ 1	0
	1	12	23.05	23.10	23.00		
	1	24	22.92	22.96	22.90		
	12	0	21.97	22.04	21.88		1
	12	6	22.04	22.06	21.90		
	12	13	21.96	22.01	21.86		
	25	0	21.93	22.04	21.88		1
16QAM	1	0	22.05	22.07	22.01	≤ 1	1
	1	12	22.07	22.13	22.03		
	1	24	22.01	22.05	21.98		
	12	0	20.87	21.10	20.83	≤ 2	2
	12	6	20.90	21.13	20.85		
	12	13	20.84	21.02	20.81		
	25	0	20.87	21.12	20.77		2

Table 7.3.1.3 LTE Conducted Power

LTE Band 12 Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23025 (700.5 MHz)	23095 (707.5 MHz)	23165 (714.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	22.91	23.08	22.83	≤ 1	0
	1	7	22.98	23.10	22.91		
	1	14	22.88	23.04	22.81		
	8	0	21.98	22.07	21.89		1
	8	4	22.07	22.11	22.00		
	8	7	21.79	22.03	21.77		
	15	0	21.89	22.01	21.81		1
16QAM	1	0	21.90	22.11	21.85	≤ 1	1
	1	7	22.02	22.14	21.99		
	1	14	21.86	22.10	21.82		
	8	0	21.02	21.13	20.91	≤ 2	2
	8	4	21.07	21.16	21.01		
	8	7	20.77	21.11	20.75		
	15	0	20.90	21.10	20.83		2

Table 7.3.1.4 LTE Conducted Power

LTE Band 12 Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			23017 (699.7 MHz)	23095 (707.5 MHz)	23173 (715.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.10	23.14	23.06	≤ 1	0
	1	2	23.13	23.15	23.10		
	1	5	23.07	23.11	23.03		
	3	0	23.01	23.12	22.97		0
	3	2	23.03	23.14	23.02		
	3	3	22.98	23.06	22.96		
	6	0	21.93	22.05	21.83		1
16QAM	1	0	22.01	22.06	21.98	≤ 1	1
	1	2	22.11	22.15	22.05		
	1	5	21.96	22.01	21.91		
	3	0	22.01	22.07	21.93		1
	3	2	22.08	22.10	22.01		
	3	3	21.99	22.06	21.90		
	6	0	20.81	21.11	20.79	≤ 2	2

Table 7.3.1.5 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 13	Maximum	23.5
	Nominal	23.0

Table 7.3.2.1 Nominal and Maximum Output Power Spec

2) LTE Band 13

LTE Band 13 Conducted Power– 10 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	23.40	≤ 1	0
	1	**25**	**23.44**		
	1	49	23.36		
	25	0	22.19		1
	25	**12**	**22.21**		
	25	25	22.17		
	50	0	22.14		1
16QAM	1	0	22.40	≤ 1	1
	1	25	22.43		
	1	49	22.38		
	25	0	21.14	≤ 2	2
	25	12	21.19		
	25	25	21.10		
	50	0	21.11		2

Table 7.3.2.2 LTE Conducted Power

LTE Band 13 Conducted Power– 5 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 23230 (782.0 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	23.38	≤ 1	0
	1	12	23.40		
	1	24	23.35		
	12	0	22.17		1
	12	6	22.20		
	12	13	22.14		
	25	0	22.11		1
16QAM	1	0	22.39	≤ 1	1
	1	12	22.41		
	1	24	22.34		
	12	0	21.10	≤ 2	2
	12	6	21.11		
	12	13	21.08		
	25	0	21.08		2

Table 7.3.2.3 LTE Conducted Power

Note : LTE B13 can not contain three non-overlapping channels of 5 MHz bandwidth.
Per KDB 941225 D05v02r05, 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.

Band & Mode		Modulated Average[dBm]
LTE Band 26	Maximum	23.7
	Nominal	23.2

Table 7.3.3.1 Nominal and Maximum Output Power Spec

3) LTE Band 26 (Cell)

LTE Band 26 (Cell) Conducted Power– 15 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 26865 (831.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	23.67	≤ 1	0
	1	**36**	**23.69**		
	1	74	23.64		
	36	0	22.65		1
	36	**18**	**22.68**		
	36	37	22.61		
	75	0	22.66		1
16QAM	1	0	22.66	≤ 1	1
	1	36	22.67		
	1	74	22.63		
	36	0	21.65	≤ 2	2
	36	18	21.67		
	36	37	21.61		
	75	0	21.64		2

Table 7.3.3.2 LTE Conducted Power

Note : LTE B26 can not contain three non-overlapping channels of 10 MHz bandwidth.
Per KDB 941225 D05v02r05, 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.

LTE Band 26 (Cell) Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26740 (819.0 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 26990 (844.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.58	23.64	23.61	≤ 1	0
	1	25	23.61	23.66	23.64		
	1	49	23.56	23.61	23.59		
	25	0	22.44	22.49	22.46		1
	25	12	22.49	22.53	22.51		
	25	25	22.41	22.46	22.42		
	50	0	22.45	22.51	22.46		1
16QAM	1	0	22.53	22.61	22.58	≤ 1	1
	1	25	22.56	22.64	22.61		
	1	49	22.51	22.58	22.55		
	25	0	21.48	21.56	21.54	≤ 2	2
	25	12	21.50	21.60	21.56		
	25	25	21.44	21.53	21.51		
	50	0	21.48	21.55	21.51		2

Table 7.3.3.3 LTE Conducted Power

LTE Band 26 (Cell) Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26715 (816.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27015 (846.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.52	23.60	23.56	≤ 1	0
	1	12	23.55	23.64	23.60		
	1	24	23.40	23.59	23.48		
	12	0	22.40	22.57	22.53		1
	12	6	22.46	22.61	22.55		
	12	13	22.38	22.56	22.50		
	25	0	22.42	22.53	22.48		1
16QAM	1	0	22.49	22.61	22.54	≤ 1	1
	1	12	22.51	22.65	22.59		
	1	24	22.41	22.56	22.50		
	12	0	21.49	21.63	21.58	≤ 2	2
	12	6	21.53	21.67	21.61		
	12	13	21.47	21.60	21.54		
	25	0	21.48	21.60	21.54		2

Table 7.3.3.4 LTE Conducted Power

LTE Band 26 (Cell) Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26705 (815.5 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27025 (847.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.41	23.56	23.48	0	0
	1	7	23.49	23.57	23.53		
	1	14	23.38	23.51	23.46		
	8	0	22.36	22.51	22.43	0-1	1
	8	4	22.39	22.55	22.47		
	8	7	22.34	22.48	22.40		
	15	0	22.38	22.47	22.42	0-1	1
16QAM	1	0	22.45	22.57	22.49	0-1	1
	1	7	22.50	22.59	22.54		
	1	14	22.43	22.53	22.47		
	8	0	21.40	21.53	21.42	0-2	2
	8	4	21.42	21.56	21.45		
	8	7	21.38	21.51	21.39		
	15	0	21.38	21.53	21.41	0-2	2

Table 7.3.3.5 LTE Conducted Power

LTE Band 26 (Cell) Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26697 (814.7 MHz)	Mid Channel 26865 (831.5 MHz)	High Channel 27033 (848.3 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.36	23.56	23.50	0	0
	1	2	23.39	23.58	23.56		
	1	5	23.33	23.50	23.44		
	3	0	23.33	23.48	23.46	0	0
	3	2	23.35	23.50	23.49		
	3	3	23.30	23.42	23.38		
	6	0	22.38	22.51	22.43	0-1	1
16QAM	1	0	22.44	22.51	22.47	0-1	1
	1	2	22.47	22.59	22.55		
	1	5	22.42	22.48	22.45		
	3	0	22.31	22.49	22.44	0-1	1
	3	2	22.46	22.54	22.49		
	3	3	22.28	22.43	22.41		
	6	0	21.42	21.50	21.48	0-2	2

Table 7.3.3.6 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 4	Maximum	23.5
	Nominal	23.0

Table 7.3.4.1 Nominal and Maximum Output Power Spec

4) LTE Band 4

LTE Band 4 (AWS) Conducted Power– 20 MHz Bandwidth					
Modulation	RB Size	RB Offset	Mid Channel 20175 (1 732.5 MHz) Conducted Power (dBm)	MPR Allowed Per 3GPP(dB)	MPR (dB)
QPSK	1	0	23.46	≤ 1	0
	1	**50**	**23.49**		
	1	99	23.44		
	50	0	22.43		1
	50	**25**	**22.49**		
	50	50	22.41		
	100	**0**	22.48		1
16QAM	1	0	22.48	≤ 1	1
	1	50	22.49		
	1	99	22.44		
	50	0	21.41	≤ 2	2
	50	25	21.49		
	50	50	21.40		
	100	0	21.44		2

Table 7.3.4.2 LTE Conducted Power

Note: LTE B4 (AWS) can not contain three non-overlapping channels of 20 MHz bandwidth.
Per KDB 941225 D05v02r05, 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.

LTE Band 4 (AWS) Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20025 (1 717.5 MHz)	Mid Channel 20175 (1 732.5 MHz)	High Channel 20325 (1 747.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.13	23.37	23.35	≤ 1	0
	1	36	23.18	23.42	23.37		
	1	74	23.06	23.31	23.28		
	36	0	21.87	22.47	22.30		1
	36	18	21.95	22.48	22.37		
	36	37	21.85	22.43	22.27		
	75	0	21.89	22.25	22.33		1
16QAM	1	0	22.21	22.41	22.37	≤ 1	1
	1	36	22.23	22.44	22.38		
	1	74	22.18	22.39	22.35		
	36	0	20.96	21.41	21.19	≤ 2	2
	36	18	21.01	21.44	21.28		
	36	37	20.91	21.39	21.17		
	75	0	21.00	21.41	21.26		2

Table 7.3.4.3 LTE Conducted Power

LTE Band 4 (AWS) Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20000 (1 715.0 MHz)	Mid Channel 20175 (1 732.5 MHz)	High Channel 20350 (1 750.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.05	23.37	23.30	≤ 1	0
	1	25	23.09	23.41	23.31		
	1	49	23.03	23.32	23.28		
	25	0	21.91	22.43	22.33		1
	25	12	21.94	22.47	22.36		
	25	25	21.84	22.41	22.30		
	50	0	21.90	22.44	22.32		1
16QAM	1	0	21.97	22.44	22.38	≤ 1	1
	1	25	22.06	22.47	22.39		
	1	49	21.95	22.40	22.31		
	25	0	20.99	21.44	21.36	≤ 2	2
	25	12	21.03	21.48	21.40		
	25	25	20.86	21.42	21.33		
	50	0	20.96	21.46	21.37		2

Table 7.3.4.4 LTE Conducted Power

LTE Band 4 (AWS) Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 19975 (1 712.5 MHz)	Mid Channel 20175 (1 732.5 MHz)	High Channel 20375 (1 752.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	22.96	23.17	23.05	≤ 1	0
	1	12	23.01	23.24	23.07		
	1	24	22.88	23.06	23.02		
	12	0	22.20	22.40	22.36		1
	12	6	22.21	22.41	22.38		
	12	13	22.17	22.37	22.32		
	25	0	22.11	22.38	22.35		1
16QAM	1	0	21.99	22.20	22.08	≤ 1	1
	1	12	22.06	22.25	22.11		
	1	24	21.91	22.06	22.07		
	12	0	21.21	21.41	21.35	≤ 2	2
	12	6	21.28	21.44	21.40		
	12	13	21.20	21.36	21.33		
	25	0	21.08	21.31	21.30		2

Table 7.3.4.5 LTE Conducted Power

LTE Band 4 (AWS) Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 19965 (1 711.5 MHz)	Mid Channel 20175 (1 732.5 MHz)	High Channel 20385 (1 753.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.06	23.44	23.40	≤ 1	0
	1	7	23.07	23.46	23.43		
	1	14	23.01	23.37	23.36		
	8	0	21.96	22.19	22.15		1
	8	4	21.99	22.22	22.18		
	8	7	21.92	22.18	22.13		
	15	0	21.94	22.15	22.05		1
16QAM	1	0	22.10	22.38	22.37	≤ 1	1
	1	7	22.11	22.41	22.38		
	1	14	22.08	22.35	22.31		
	8	0	20.94	21.21	21.19	≤ 2	2
	8	4	20.98	21.25	21.21		
	8	7	20.91	21.20	21.16		
	15	0	20.91	21.21	21.18		2

Table 7.3.4.6 LTE Conducted Power

TE Band 4 (AWS) Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 19957 (1 710.7 MHz)	Mid Channel 20175 (1 732.5 MHz)	High Channel 20393 (1 754.3 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.13	23.46	23.41	≤ 1	0
	1	2	23.22	23.47	23.43		
	1	5	23.07	23.40	23.36		
	3	0	23.06	23.41	23.35		0
	3	2	23.11	23.44	23.38		
	3	3	23.05	23.38	23.33		
	6	0	22.10	22.45	22.13		1
16QAM	1	0	22.09	22.44	22.35	≤ 1	1
	1	2	22.28	22.46	22.39		
	1	5	22.01	22.41	22.31		
	3	0	21.97	22.35	22.33		1
	3	2	21.98	22.38	22.35		
	3	3	21.91	22.31	22.28		
	6	0	21.01	21.43	21.15	≤ 2	2

Table 7.3.4.7 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 25(PCS)	Maximum	24.2
	Nominal	23.7

Table 7.3.5.1 Nominal and Maximum Output Power Spec

5) LTE Band 25 (PCS)

LTE Band 25 (PCS) Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26140 (1 860.0 MHz)	Mid Channel 26365 (1 882.5 MHz)	High Channel 26590 (1 905.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	24.08	24.16	24.12	≤ 1	0
	1	**50**	**24.13**	**24.19**	**24.17**		
	1	99	24.04	24.11	24.09		
	50	0	22.95	23.13	23.10		1
	50	**25**	**22.99**	**23.18**	**23.14**		
	50	50	22.90	23.08	23.05		
	100	0	22.91	23.11	23.07		1
16QAM	1	0	23.03	23.15	23.10	≤ 1	1
	1	50	23.11	23.17	23.16		
	1	99	23.01	23.12	23.07		
	50	0	21.95	22.15	22.02	≤ 2	2
	50	25	22.01	22.19	22.03		
	50	50	21.91	22.11	22.00		
	100	0	21.87	22.08	21.96		2

Table 7.3.5.2 LTE Conducted Power

LTE Band 25 (PCS) Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26115 (1 857.5 MHz)	Mid Channel 26365 (1 882.5 MHz)	High Channel 26615 (1 907.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.95	24.13	24.08	≤ 1	0
	1	36	24.10	24.16	24.12		
	1	74	23.94	24.06	24.05		
	36	0	22.95	23.01	22.99		1
	36	18	22.99	23.05	23.04		
	36	37	22.92	22.96	22.95		
	75	0	22.93	23.00	22.94		1
16QAM	1	0	23.06	23.13	23.09	≤ 1	1
	1	36	23.09	23.14	23.12		
	1	74	23.05	23.11	23.08		
	36	0	21.90	22.05	21.93	≤ 2	2
	36	18	21.95	22.06	21.96		
	36	37	21.89	21.98	21.92		
	75	0	21.78	21.99	21.88		2

Table 7.3.5.3 LTE Conducted Power

LTE Band 25 (PCS) Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 26090 (1 855.0 MHz)	Mid Channel 26365 (1 882.5 MHz)	High Channel 26640 (1 910.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.99	24.04	24.00	≤ 1	0
	1	25	24.01	24.08	24.06		
	1	49	23.83	23.99	23.95		
	25	0	22.95	23.01	22.97		1
	25	12	23.01	23.08	23.03		
	25	25	22.85	22.96	22.95		
	50	0	22.90	22.95	22.91		1
16QAM	1	0	23.02	23.18	23.14	≤ 1	1
	1	25	23.14	23.19	23.18		
	1	49	22.77	23.10	23.00		
	25	0	21.83	22.18	22.07	≤ 2	2
	25	12	22.11	22.19	22.17		
	25	25	21.81	22.10	22.04		
	50	0	21.85	22.01	21.96		2

Table 7.3.5.4 LTE Conducted Power

LTE Band 25 (PCS) Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			26065 (1 852.5 MHz)	26365 (1 882.5 MHz)	26665 (1 912.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.81	23.90	23.87	≤ 1	0
	1	12	23.88	23.95	23.91		
	1	24	23.79	23.83	23.82		
	12	0	22.87	22.99	22.96		1
	12	6	22.97	23.05	22.99		
	12	13	22.86	22.89	22.88		
	25	0	22.86	23.01	22.91		1
16QAM	1	0	22.94	23.01	22.99	≤ 1	1
	1	12	23.01	23.08	23.03		
	1	24	22.93	22.98	22.95		
	12	0	21.84	21.94	21.93	≤ 2	2
	12	6	22.02	22.14	22.04		
	12	13	21.79	21.88	21.80		
	25	0	21.85	22.01	21.90		2

Table 7.3.5.5 LTE Conducted Power

LTE Band 25 (PCS) Conducted Power– 3 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			26055 (1 851.5 MHz)	26365 (1 882.5 MHz)	26675 (1 913.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.79	24.00	23.85	≤ 1	0
	1	7	23.82	24.01	23.92		
	1	14	23.72	23.91	23.79		
	8	0	22.83	23.01	22.95		1
	8	4	22.89	23.02	23.00		
	8	7	22.79	22.93	22.90		
	15	0	22.86	22.91	22.90		1
16QAM	1	0	22.91	23.12	22.97	≤ 1	1
	1	7	23.01	23.15	23.06		
	1	14	22.90	23.02	22.95		
	8	0	21.99	22.13	22.08	≤ 2	2
	8	4	22.01	22.15	22.13		
	8	7	21.98	22.05	22.03		
	15	0	21.98	22.09	22.04		2

Table 7.3.5.6 LTE Conducted Power

LTE Band 25 (PCS) Conducted Power– 1.4 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			26047 (1 850.7 MHz)	26365 (1 882.5 MHz)	26683 (1 914.3 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.83	24.01	23.85	≤ 1	0
	1	2	23.91	24.07	24.04		
	1	5	23.80	24.00	23.82		
	3	0	23.73	23.85	23.80		0
	3	2	23.81	23.90	23.88		
	3	3	23.70	23.79	23.75		
	6	0	22.73	22.90	22.84		1
16QAM	1	0	22.78	23.15	22.95	≤ 1	1
	1	2	22.97	23.19	23.17		
	1	5	22.73	23.13	22.77		
	3	0	22.74	22.91	22.83		1
	3	2	22.87	22.96	22.89		
	3	3	22.70	22.87	22.82		
	6	0	21.69	21.84	21.73	≤ 2	2

Table 7.3.5.7 LTE Conducted Power

Band & Mode		Modulated Average[dBm]
LTE Band 7	Maximum	23.7
	Nominal	23.2

Table 7.3.6.1 Nominal and Maximum Output Power Spec

6) LTE Band 7

LTE Band 7 Conducted Power– 20 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20850 (2 510.0 MHz)	Mid Channel 21100 (2 535.0 MHz)	High Channel 21350 (2 560.0 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.55	23.61	23.42	≤ 1	0
	1	**50**	**23.66**	**23.69**	**23.65**		
	1	99	23.64	23.65	23.63		
	50	0	22.49	22.55	22.42		1
	50	**25**	**22.60**	**22.67**	**22.47**		
	50	50	22.59	22.61	22.46		
	100	**0**	22.45	**22.66**	22.44		1
16QAM	1	0	22.52	22.60	22.41	≤ 1	1
	1	50	22.67	22.68	22.63		
	1	99	22.63	22.66	22.60		
	50	0	21.44	21.48	21.40	≤ 2	2
	50	25	21.58	21.66	21.53		
	50	50	21.53	21.61	21.44		
	100	0	21.45	21.61	21.35		2

Table 7.3.6.2 LTE Conducted Power

LTE Band 7 Conducted Power– 15 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel 20825 (2 507.5 MHz)	Mid Channel 21100 (2 535.0 MHz)	High Channel 21375 (2 562.5 MHz)	MPR Allowed Per 3GPP(dB)	MPR (dB)
			Conducted Power (dBm)				
QPSK	1	0	23.50	23.53	23.32	≤ 1	0
	1	36	23.54	23.58	23.43		
	1	74	23.51	23.57	23.40		
	36	0	22.38	22.50	22.35		1
	36	18	22.50	22.63	22.47		
	36	37	22.43	22.51	22.40		
	75	0	22.49	22.60	22.46		1
16QAM	1	0	22.41	22.45	22.35	≤ 1	1
	1	36	22.48	22.51	22.42		
	1	74	22.44	22.47	22.39		
	36	0	21.36	21.56	21.31	≤ 2	2
	36	18	21.46	21.60	21.41		
	36	37	21.40	21.57	21.34		
	75	0	21.44	21.58	21.40		2

Table 7.3.6.3 LTE Conducted Power

LTE Band 7 Conducted Power– 10 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20800 (2 505.0 MHz)	21100 (2 535.0 MHz)	21400 (2 565.0 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.40	23.51	23.34	≤ 1	0
	1	25	23.44	23.55	23.38		
	1	49	23.41	23.54	23.35		
	25	0	22.44	22.51	22.35		1
	25	12	22.50	22.61	22.41		
	25	25	22.48	22.58	22.38		
	50	0	22.44	22.53	22.40		1
16QAM	1	0	22.43	22.49	22.35	≤ 1	1
	1	25	22.50	22.57	22.41		
	1	49	22.47	22.53	22.39		
	25	0	21.48	21.55	21.33	≤ 2	2
	25	12	21.55	21.63	21.38		
	25	25	21.50	21.60	21.35		
	50	0	21.46	21.60	21.36		2

Table 7.3.6.4 LTE Conducted Power

LTE Band 7 Conducted Power– 5 MHz Bandwidth							
Modulation	RB Size	RB Offset	Low Channel	Mid Channel	High Channel	MPR Allowed Per 3GPP(dB)	MPR (dB)
			20775 (2 502.5 MHz)	21100 (2 535.0 MHz)	21425 (2 567.5 MHz)		
			Conducted Power (dBm)				
QPSK	1	0	23.40	23.58	23.31	≤ 1	0
	1	12	23.44	23.63	23.39		
	1	24	23.41	23.60	23.37		
	12	0	22.35	22.48	22.25		1
	12	6	22.40	22.56	22.31		
	12	13	22.37	22.51	22.27		
	25	0	22.36	22.51	22.30		1
16QAM	1	0	22.41	22.61	22.30	≤ 1	1
	1	12	22.46	22.66	22.38		
	1	24	22.44	22.64	22.35		
	12	0	21.30	21.50	21.23	≤ 2	2
	12	6	21.35	21.60	21.33		
	12	13	21.33	21.53	21.29		
	25	0	21.33	21.53	21.31		2

Table 7.3.6.5 LTE Conducted Power

7.4 WLAN Nominal and Maximum Output Power Spec and Conducted Powers

Band (GHz)	Mode	Ch	Modulated Average[dBm]	
			Maximum	Nominal
2.4	802.11b	1	15.0	14.5
		6	15.0	14.5
		11	15.0	14.5
	802.11g	1	13.5	13.0
		6	13.5	13.0
		11	9.0	8.5
	802.11n	1	12.5	12.0
		6	12.5	12.0
		11	8.0	7.5

Table 7.4.1 Nominal and Maximum Output Power Spec

Mode	Freq. (MHz)	Channel	IEEE 802.11 (2.4 GHz) Conducted Power[dBm]
802.11b	**2 412**	**1**	14.99
	2 437	6	14.96
	2 462	11	14.97
802.11g	2 412	1	13.25
	2 437	6	13.13
	2 462	11	8.70
802.11n (HT-20)	2 412	1	12.39
	2 437	6	12.25
	2 462	11	7.61

Table 7.4.2 IEEE 802.11 Average RF Power

Band (GHz)	Mode	Ch	Modulated Average[dBm]	
			Maximum	Nominal
5 (UNII)	802.11a	36-48	12.5	12.0
		52-64	12.5	12.0
		100-140	13.0	12.5
		149-165	12.0	11.5
	802.11n (20MHz)	36-48	14.0	13.5
		52-64	14.0	13.5
		100-140	12.5	12.0
		149-165	12.0	11.5
	802.11n (40MHz)	38-46	13.0	12.5
		54	13.5	13.0
		62	10.0	9.5
		102	9.0	8.5
		110	10.5	10.0
		134	12.5	12.0
		151-159	10.5	10.0

Table 7.4.3 Nominal and Maximum Output Power Spec

Mode	Freq. (MHz)	Channel	IEEE 802.11a (5 GHz) Conducted Power[dBm]
802.11a	5 180	36	11.85
	5 200	40	12.02
	5 220	44	12.16
	5 240	48	12.19
	5 260	52	12.28
	5 280	56	12.37
	5 300	60	12.45
	5 320	64	12.03
	5 500	100	11.82
	5 580	**116**	12.89
	5 660	132	12.61
	5 700	140	12.56
	5 745	149	11.36
	5 785	**157**	11.58
	5 825	165	11.22

Table 7.4.4 IEEE 802.11a Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11n HT20 (5 GHz) Conducted Power[dBm]
802.11n (HT-20)	5 180	36	12.83
	5 200	40	12.85
	5 220	44	13.62
	5 240	48	13.63
	5 260	52	13.75
	5 280	**56**	**13.82**
	5 300	60	13.80
	5 320	64	13.49
	5 500	100	11.87
	5 580	116	12.38
	5 660	132	12.41
	5 700	140	11.45
	5 745	149	11.56
	5 785	157	11.50
	5 825	165	10.70

Table 7.4.5 IEEE 802.11n HT20 Average RF Power

Mode	Freq. (MHz)	Channel	IEEE 802.11n HT40 (5 GHz) Conducted Power[dBm]
802.11n (HT-40)	5 190	38	12.15
	5 230	46	12.83
	5 270	54	13.02
	5 310	62	9.60
	5 510	102	8.53
	5 550	110	10.29
	5 670	134	12.28
	5 755	151	10.33
	5 795	159	10.45

Table 7.4.6 IEEE 802.11n HT40 Average RF Power

Justification for reduced test configurations for WIFI channels 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, duo to an even number of channels, both channels were measured.
- Output Power and SAR is not required for 802.11 g/n HT20/ac VHT20 channels when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjust SAR is ≤ 1.2 W/kg.
- The underlined data rate and channel above were tested for SAR.

The average output powers of this device were tested by below configuration.

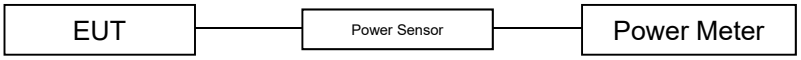

Figure 7.4 Power Measurement Setup

7.5 Bluetooth Conducted Powers

Frame Modulated Average[dBm]		Low Ch.	Mid Ch.	High Ch.
Bluetooth 1 Mbps	Maximum	6.5	6.5	6.5
	Nominal	6.0	6.0	6.0
Bluetooth 2 Mbps	Maximum	4.5	4.5	4.5
	Nominal	4.0	4.0	4.0
Bluetooth 3 Mbps	Maximum	4.5	4.5	4.5
	Nominal	4.0	4.0	4.0

Table 7.5.1 Nominal and Maximum Output Power Spec (Frame)

Burst Modulated Average[dBm]		Low Ch.	Mid Ch.	High Ch.
Bluetooth LE	Maximum	-1.0	-1.0	-1.0
	Nominal	-1.5	-1.5	-1.5

Table 7.5.2 Nominal and Maximum Output Power Spec (Burst)

Channel	Frequency (MHz)	Frame AVG Output Power (1Mbps) (dBm)	Frame AVG Output Power (2Mbps) (dBm)	Frame AVG Output Power (3Mbps) (dBm)
Low	2 402	6.41	4.01	4.02
Mid	2 441	6.44	4.05	4.03
High	2 480	6.43	4.01	4.02

Table 7.5.3 Bluetooth Frame Average RF Power

Channel	Frequency (MHz)	Burst AVG Output Power(LE) (dBm)
Low	2 402	-1.48
Mid	2 440	-1.64
High	2 480	-1.69

Table 7.5.4 Bluetooth LE Burst Average RF Power

- **Bluetooth Conducted Powers procedures**

1. Bluetooth (BDR, EDR)
   1) Enter DUT mode in EUT and operate it.
      When it operating, The EUT is transmitting at maximum power level and duty cycle fixed.
   2) Instruments and EUT were connected like Figure 7.5.1(A).
   3) The maximum output powers of BDR(1 Mbps), EDR(2, 3 Mbps) and each frequency were set by a Bluetooth Tester.
   4) Power levels were measured by a Power Meter.

2. Bluetooth (LE)
   1) Enter LE mode in EUT and operate it.
      When it operating, The EUT is transmitting at maximum power level and duty cycle fixed.
   2) Instruments and EUT were connected like Figure 7.5.1(B).
   3) The average conducted output powers of LE and each frequency can measurement according to setting program in EUT.
   4) Power levels were measured by a Power Meter.

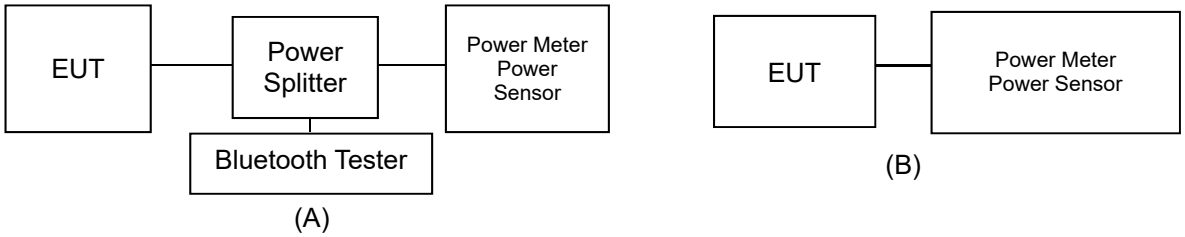

Figure 7.5.1 Average Power Measurement Setup

8. SYSTEM VERIFICATION

8.1 Tissue Verification

MEASURED TISSUE PARAMETERS										
Date(s)	Tissue Type	Ambient Temp.[°C]	Liquid Temp.[°C]	Measured Frequency [MHz]	Target Dielectric Constant, εr	Target Conductivity, σ (S/m)	Measured Dielectric Constant, εr	Measured Conductivity, σ (S/m)	Er Deviation [%]	σ Deviation [%]
Sep. 10. 2020	750 Head	20.5	20.4	707.5	42.129	0.887	42.199	0.864	0.17	-2.59
				750.0	41.900	0.890	41.883	0.899	-0.04	1.01
				782.0	41.749	0.894	41.528	0.928	-0.53	3.80
Sep. 9. 2020	835 Head	20.8	20.5	821.5	41.566	0.898	42.460	0.886	2.15	-1.34
				824.2	41.552	0.899	42.433	0.888	2.12	-1.22
				826.4	41.542	0.899	42.407	0.890	2.08	-1.00
				829.0	41.528	0.899	42.377	0.893	2.04	-0.67
				831.5	41.519	0.900	42.345	0.895	1.99	-0.56
				835.0	41.500	0.900	42.308	0.898	1.95	-0.22
				836.5	41.500	0.901	42.290	0.899	1.90	-0.22
				836.6	41.500	0.901	42.286	0.899	1.89	-0.22
				841.5	41.500	0.906	42.223	0.903	1.74	-0.33
				844.0	41.500	0.910	42.189	0.906	1.66	-0.44
				846.6	41.500	0.912	42.155	0.908	1.58	-0.44
				848.8	41.500	0.914	42.128	0.909	1.51	-0.55
Sep. 11. 2020	1 800 Head	21.8	21.6	1 712.4	40.126	1.350	41.575	1.330	3.61	-1.48
				1 720.0	40.114	1.354	41.544	1.337	3.56	-1.26
				1 732.4	40.097	1.361	41.479	1.348	3.45	-0.96
				1 732.5	40.097	1.361	41.478	1.348	3.44	-0.96
				1 745.0	40.079	1.369	41.410	1.359	3.32	-0.73
				1 752.6	40.069	1.373	41.371	1.366	3.25	-0.51
				1 800.0	40.000	1.400	41.198	1.415	3.00	1.07
Sep. 14. 2020	1 900 Head	21.2	21.0	1 850.2	40.000	1.400	38.863	1.348	-2.84	-3.71
				1 852.4	40.000	1.400	38.862	1.348	-2.85	-3.71
				1 860.0	40.000	1.400	38.841	1.357	-2.90	-3.07
				1 880.0	40.000	1.400	38.790	1.377	-3.03	-1.64
				1 882.5	40.000	1.400	38.782	1.380	-3.05	-1.43
				1 900.0	40.000	1.400	38.730	1.397	-3.18	-0.21
				1 905.0	40.000	1.400	38.718	1.401	-3.20	0.07
				1 907.6	40.000	1.400	38.710	1.404	-3.23	0.29
				1 909.8	40.000	1.400	38.704	1.406	-3.24	0.43
Sep. 10. 2020	2 450 Head	20.9	20.8	2 402.0	39.282	1.757	40.206	1.752	2.35	-0.28
				2 412.0	39.265	1.766	40.187	1.765	2.35	-0.06
				2 437.0	39.222	1.788	40.123	1.795	2.30	0.39
				2 441.0	39.215	1.792	40.109	1.799	2.28	0.39
				2 450.0	39.200	1.800	40.082	1.809	2.25	0.50
				2 462.0	39.184	1.813	40.038	1.821	2.18	0.44
				2 480.0	39.160	1.832	39.981	1.842	2.10	0.55
Sep. 10. 2020	2 600 Head	20.9	20.8	2 510.0	39.120	1.864	38.518	1.922	-1.54	3.11
				2 535.0	39.087	1.891	38.407	1.950	-1.74	3.12
				2 560.0	39.053	1.917	38.321	1.979	-1.87	3.23
				2 600.0	39.000	1.960	38.156	2.021	-2.16	3.11
Sep. 7. 2020	5 300 Head	20.6	20.5	5 260.0	35.940	4.720	36.697	4.842	2.11	2.58
				5 270.0	35.930	4.730	36.685	4.854	2.10	2.62
				5 280.0	35.920	4.740	36.673	4.863	2.10	2.59
				5 290.0	35.910	4.750	36.655	4.872	2.07	2.57
				5 300.0	35.900	4.760	36.632	4.884	2.04	2.61
				5 310.0	35.890	4.770	36.609	4.897	2.00	2.66
				5 320.0	35.880	4.780	36.593	4.910	1.99	2.72
Sep. 7. 2020	5 600 Head	20.6	20.5	5 500.0	35.650	4.965	36.469	5.104	2.30	2.80
				5 510.0	35.635	4.976	36.443	5.115	2.27	2.79
				5 530.0	35.605	4.997	36.390	5.145	2.20	2.96
				5 550.0	35.575	5.018	36.366	5.168	2.22	2.99
				5 580.0	35.530	5.049	36.312	5.208	2.20	3.15
				5 600.0	35.500	5.070	36.292	5.233	2.23	3.21
				5 660.0	35.440	5.130	36.192	5.297	2.12	3.26
				5 670.0	35.430	5.140	36.170	5.308	2.09	3.27
				5 690.0	35.410	5.160	36.127	5.337	2.02	3.43
				5 700.0	35.400	5.170	36.113	5.351	2.01	3.50
				5 800.0	35.300	5.270	35.947	5.468	1.83	3.76
Sep. 7. 2020	5 800 Head	20.6	20.5	5 745.0	35.355	5.215	35.872	5.343	1.46	2.45
				5 755.0	35.345	5.225	35.856	5.355	1.45	2.49
				5 775.0	35.325	5.245	35.817	5.374	1.39	2.46
				5 785.0	35.315	5.255	35.792	5.388	1.35	2.53
				5 795.0	35.305	5.265	35.773	5.404	1.33	2.64
				5 800.0	35.300	5.270	35.765	5.412	1.32	2.69
				5 825.0	35.275	5.296	35.752	5.440	1.35	2.72

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 865664 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.

Measurement Procedure for Tissue verification:

1) The network analyzer and probe system was configured and calibrated.
2) The probe was immersed in the sample which was placed in a nonmetallic container. Trapped air bubbles beneath the flange were minimized by placing the probe at a slight angle.
3) The complex admittance with respect to the probe aperture was measured
4) The complex relative permittivity , for example from the below equation (Pournaropoulos and Misra):

$$Y = \frac{j2\omega\varepsilon_r\varepsilon_0}{[\ln(b/a)]^2}\int_a^b\int_a^b\int_0^\pi \cos\phi' \frac{\exp\left[-j\omega r(\mu_0\varepsilon_r'\varepsilon_0)^{1/2}\right]}{r} d\phi' d\rho' d\rho$$

where Y is the admittance of the probe in contact with the sample, the primed and unprimed coordinates refer to source and observation points, respectively, $r^2 = \rho^2 + \rho'^2 - 2\rho\rho'\cos\phi'$, ω is the angular frequency, and $j = \sqrt{-1}$.

8.2 Test System Verification

Prior to assessment, the system is verified to the ± 10 % of the specifications by using the SAR Dipole kit(s). (Graphic Plots Attached)

Table 8.2.1 System Verification Results (10g)

SYSTEM DIPOLE VERIFICATION TARGET & MEASURED												
SAR System #	Freq. [MHz]	SAR Dipole kits	Date(s)	Tissue Type	Ambient Temp. [°C]	Liquid Temp. [°C]	Probe S/N	Input Power (mW)	1 W Target SAR_{10g} (W/kg)	Measured SAR_{10g} (W/kg)	1 W Normalized SAR_{10g} (W/kg)	Deviation [%]
C	750	D750V3, SN:1049	Sep. 10. 2020	Head	20.5	20.4	3866	250	5.58	1.33	5.32	-4.66
C	835	D835V2, SN:4d159	Sep. 9. 2020	Head	20.8	20.5	3866	250	6.17	1.59	6.36	3.08
F	1 800	D1800V2, SN:2d202	Sep. 11. 2020	Head	21.8	21.6	7368	100	20.7	2.13	21.30	2.90
F	1 900	D1900V2, SN:5d176	Sep. 14. 2020	Head	21.2	21.0	7368	100	20.4	2.14	21.40	4.90
F	2 450	D2450V2, SN: 920	Sep. 10. 2020	Head	20.9	20.8	7368	100	24.3	2.51	25.10	3.29
F	2 600	D2600V2, SN: 1103	Sep. 10. 2020	Head	20.9	20.8	7368	100	25.7	2.44	24.40	-5.06
F	5 300	D5GHzV2, SN:1212	Sep. 7. 2020	Head	20.6	20.5	7368	100	23.0	2.36	23.60	2.61
F	5 600	D5GHzV2, SN:1212	Sep. 7. 2020	Head	20.6	20.5	7368	100	23.6	2.33	23.30	-1.27
F	5 800	D5GHzV2, SN:1212	Sep. 7. 2020	Head	20.6	20.5	7368	100	22.7	2.30	23.00	1.32

Note: Full system validation status and results can be found in Attachment 3.

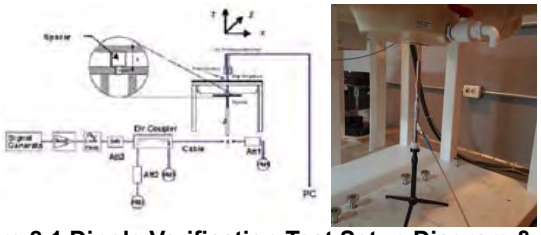

Figure 8.1 Dipole Verification Test Setup Diagram & Photo

9. SAR TEST RESULTS

9.1 Extremity SAR Results

Table 9.1.1 GSM/PCS/GPRS/WCDMA Extremity SAR

MEASUREMENT RESULTS														
FREQUENCY		Mode/ Band	Service	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Spacing [Side]	Device Serial Number	# of Time Slots	Duty Cycle	10g SAR (W/kg)	Scaling Factor	10g Scaled SAR (W/kg)	Plots #
MHz	Ch													
836.6	190	GSM850	GPRS	31.40	31.08	-0.140	0 mm [Top]	FCC #1	2	1:4.15	0.183	1.076	0.197	
836.6	190	GSM850	GPRS	31.40	31.08	0.030	0 mm [Bottom]	FCC #1	2	1:4.15	0.057	1.076	0.061	
836.6	190	GSM850	GPRS	31.40	31.08	-0.020	0 mm [Front]	FCC #1	2	1:4.15	0.095	1.076	0.102	
836.6	190	GSM850	GPRS	31.40	31.08	-0.010	0 mm [Rear #1]	FCC #1	2	1:4.15	0.366	1.076	0.394	
836.6	190	GSM850	GPRS	31.40	31.08	0.010	0 mm [Rear #2]	FCC #1	2	1:4.15	0.162	1.076	0.174	
836.6	190	GSM850	GPRS	31.40	31.08	-0.070	0 mm [Rear #3]	FCC #1	2	1:4.15	0.374	1.076	0.402	
836.6	190	GSM850	GPRS	31.40	31.08	-0.020	0 mm [Rear #4]	FCC #1	2	1:4.15	0.340	1.076	0.366	
836.6	190	GSM850	GPRS	31.40	31.08	-0.080	0 mm [Right]	FCC #1	2	1:4.15	0.443	1.076	0.477	
836.6	190	GSM850	GPRS	31.40	31.08	-0.020	0 mm [Left]	FCC #1	2	1:4.15	1.430	1.076	**1.539**	A1
836.6	190	GSM850	GPRS	31.40	31.08	-0.060	0 mm [Left]	FCC #1	2	1:4.15	1.240	1.076	1.334	
1 880.0	661	PCS1900	GPRS	25.50	24.96	0.060	0 mm [Top]	FCC #1	4	1:2.075	0.134	1.132	0.152	
1 880.0	661	PCS1900	GPRS	25.50	24.96	0.040	0 mm [Bottom]	FCC #1	4	1:2.075	0.119	1.132	0.135	
1 880.0	661	PCS1900	GPRS	25.50	24.96	0.040	0 mm [Front]	FCC #1	4	1:2.075	0.429	1.132	0.486	
1 880.0	661	PCS1900	GPRS	25.50	24.96	0.190	0 mm [Rear #1]	FCC #1	4	1:2.075	0.296	1.132	0.335	
1 880.0	661	PCS1900	GPRS	25.50	24.96	0.170	0 mm [Rear #2]	FCC #1	4	1:2.075	0.129	1.132	0.146	
1 880.0	661	PCS1900	GPRS	25.50	24.96	0.120	0 mm [Rear #3]	FCC #1	4	1:2.075	0.349	1.132	0.395	
1 880.0	661	PCS1900	GPRS	25.50	24.96	-0.030	0 mm [Rear #4]	FCC #1	4	1:2.075	0.276	1.132	0.312	
1 880.0	661	PCS1900	GPRS	25.50	24.96	-0.070	0 mm [Right]	FCC #1	4	1:2.075	0.182	1.132	0.206	
1 850.2	512	PCS1900	GPRS	25.50	25.14	0.190	0 mm [Left]	FCC #1	4	1:2.075	2.240	1.086	**2.433**	A2
1 880.0	661	PCS1900	GPRS	25.50	24.96	0.150	0 mm [Left]	FCC #1	4	1:2.075	2.030	1.132	2.298	
1 909.8	810	PCS1900	GPRS	25.50	24.81	0.180	0 mm [Left]	FCC #1	4	1:2.075	2.010	1.172	2.356	
1 850.2	512	PCS1900	GPRS	25.50	25.14	0.180	0 mm [Left]	FCC #1	4	1:2.075	2.180	1.086	2.367	
1 850.2	512	PCS1900	GPRS	25.50	25.14	-0.010	0 mm [Left]	FCC #1	4	1:2.075	2.210	1.086	2.400	
836.6	4183	WCDMA 850	RMC	23.50	23.19	0.060	0 mm [Top]	FCC #1	N/A	1:1	0.116	1.074	0.125	
836.6	4183	WCDMA 850	RMC	23.50	23.19	0.160	0 mm [Bottom]	FCC #1	N/A	1:1	0.085	1.074	0.091	
836.6	4183	WCDMA 850	RMC	23.50	23.19	-0.020	0 mm [Front]	FCC #1	N/A	1:1	0.556	1.074	0.597	
836.6	4183	WCDMA 850	RMC	23.50	23.19	0.130	0 mm [Rear #1]	FCC #1	N/A	1:1	0.249	1.074	0.267	
836.6	4183	WCDMA 850	RMC	23.50	23.19	0.010	0 mm [Rear #2]	FCC #1	N/A	1:1	0.154	1.074	0.165	
836.6	4183	WCDMA 850	RMC	23.50	23.19	0.030	0 mm [Rear #3]	FCC #1	N/A	1:1	0.252	1.074	0.271	
836.6	4183	WCDMA 850	RMC	23.50	23.19	0.060	0 mm [Rear #4]	FCC #1	N/A	1:1	0.248	1.074	0.266	
836.6	4183	WCDMA 850	RMC	23.50	23.19	-0.060	0 mm [Right]	FCC #1	N/A	1:1	0.353	1.074	0.379	
836.6	4183	WCDMA 850	RMC	23.50	23.19	-0.030	0 mm [Left]	FCC #1	N/A	1:1	1.320	1.074	**1.418**	A3
836.6	4183	WCDMA 850	RMC	23.50	23.19	0.070	0 mm [Left]	FCC #1	N/A	1:1	1.310	1.074	1.407	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	-0.020	0 mm [Top]	FCC #1	N/A	1:1	0.152	1.030	0.157	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	-0.030	0 mm [Bottom]	FCC #1	N/A	1:1	0.128	1.030	0.132	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	-0.060	0 mm [Front]	FCC #1	N/A	1:1	0.545	1.030	0.561	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	-0.180	0 mm [Rear #1]	FCC #1	N/A	1:1	0.359	1.030	0.370	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	0.040	0 mm [Rear #2]	FCC #1	N/A	1:1	0.156	1.030	0.161	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	0.030	0 mm [Rear #3]	FCC #1	N/A	1:1	0.398	1.030	0.410	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	0.180	0 mm [Rear #4]	FCC #1	N/A	1:1	0.326	1.030	0.336	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	-0.080	0 mm [Right]	FCC #1	N/A	1:1	0.358	1.030	0.369	
1 712.4	1312	WCDMA 1700	RMC	23.50	23.35	0.170	0 mm [Left]	FCC #1	N/A	1:1	3.250	1.035	3.364	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	-0.090	0 mm [Left]	FCC #1	N/A	1:1	3.390	1.030	**3.492**	A4
1 752.6	1513	WCDMA 1700	RMC	23.50	23.38	0.190	0 mm [Left]	FCC #1	N/A	1:1	3.360	1.028	3.454	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	0.060	0 mm [Left]	FCC #1	N/A	1:1	3.370	1.030	3.471	
1 732.4	1412	WCDMA 1700	RMC	23.50	23.37	-0.130	0 mm [Left]	FCC #1	N/A	1:1	3.350	1.030	3.451	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.000	0 mm [Top]	FCC #1	N/A	1:1	0.143	1.019	0.146	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.150	0 mm [Bottom]	FCC #1	N/A	1:1	0.122	1.019	0.124	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.060	0 mm [Front]	FCC #1	N/A	1:1	0.415	1.019	0.423	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.000	0 mm [Rear #1]	FCC #1	N/A	1:1	0.366	1.019	0.373	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.130	0 mm [Rear #2]	FCC #1	N/A	1:1	0.175	1.019	0.178	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.140	0 mm [Rear #3]	FCC #1	N/A	1:1	0.398	1.019	0.406	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	-0.150	0 mm [Rear #4]	FCC #1	N/A	1:1	0.338	1.019	0.344	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	-0.190	0 mm [Right]	FCC #1	N/A	1:1	0.129	1.019	0.131	
1 852.4	9262	WCDMA 1900	RMC	23.00	22.84	0.170	0 mm [Left]	FCC #1	N/A	1:1	2.890	1.038	3.000	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.170	0 mm [Left]	FCC #1	N/A	1:1	3.080	1.019	**3.139**	A5
1 907.6	9538	WCDMA 1900	RMC	23.00	22.90	0.170	0 mm [Left]	FCC #1	N/A	1:1	3.050	1.023	3.120	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.160	0 mm [Left]	FCC #1	N/A	1:1	2.970	1.019	3.026	
1 880.0	9400	WCDMA 1900	RMC	23.00	22.92	0.140	0 mm [Left]	FCC #1	N/A	1:1	3.040	1.019	3.098	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Extremity 4.0 W/kg (mW/g) averaged over 10 gram**						

Note(s):
1. Please refer to the Test photo (SAR) for details on the test position indicated by blue entries represent.
2. Green entries represent additional extremity SAR Test Position (with hand strap) with the worst case position.
3. Yellow entries represent variability measurements.

Table 9.1.2 LTE B12, B13, B26, B4 Extremity SAR

MEASUREMENT RESULTS																		
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	10g SAR (W/kg)	Scaling Factor	10g Scaled SAR (W/kg)	Plots #
MHz	Ch																
707.5	23095	LTE B12	10	23.20	23.18	0.030	0	0 mm [Top]	FCC #1	QPSK	1	25	1:1	0.045	1.005	0.045	
707.5	23095	LTE B12	10	22.20	22.13	-0.020	1	0 mm [Top]	FCC #1	QPSK	25	12	1:1	0.040	1.016	0.041	
707.5	23095	LTE B12	10	23.20	23.18	-0.180	0	0 mm [Bottom]	FCC #1	QPSK	1	25	1:1	0.030	1.005	0.030	
707.5	23095	LTE B12	10	22.20	22.13	-0.150	1	0 mm [Bottom]	FCC #1	QPSK	25	12	1:1	0.024	1.016	0.024	
707.5	23095	LTE B12	10	23.20	23.18	0.030	0	0 mm [Front]	FCC #1	QPSK	1	25	1:1	0.496	1.005	0.498	
707.5	23095	LTE B12	10	22.20	22.13	-0.030	1	0 mm [Front]	FCC #1	QPSK	25	12	1:1	0.393	1.016	0.399	
707.5	23095	LTE B12	10	23.20	23.18	0.050	0	0 mm [Rear #1]	FCC #1	QPSK	1	25	1:1	0.139	1.005	0.140	
707.5	23095	LTE B12	10	22.20	22.13	0.090	1	0 mm [Rear #1]	FCC #1	QPSK	25	12	1:1	0.109	1.016	0.111	
707.5	23095	LTE B12	10	23.20	23.18	0.170	0	0 mm [Rear #2]	FCC #1	QPSK	1	25	1:1	0.052	1.005	0.052	
707.5	23095	LTE B12	10	22.20	22.13	-0.140	1	0 mm [Rear #2]	FCC #1	QPSK	25	12	1:1	0.042	1.016	0.043	
707.5	23095	LTE B12	10	23.20	23.18	-0.020	0	0 mm [Rear #3]	FCC #1	QPSK	1	25	1:1	0.145	1.005	0.146	
707.5	23095	LTE B12	10	22.20	22.13	0.000	1	0 mm [Rear #3]	FCC #1	QPSK	25	12	1:1	0.112	1.016	0.114	
707.5	23095	LTE B12	10	23.20	23.18	0.020	0	0 mm [Rear #4]	FCC #1	QPSK	1	25	1:1	0.406	1.005	0.408	
707.5	23095	LTE B12	10	22.20	22.13	0.040	1	0 mm [Rear #4]	FCC #1	QPSK	25	12	1:1	0.327	1.016	0.332	
707.5	23095	LTE B12	10	23.20	23.18	0.090	0	0 mm [Right]	FCC #1	QPSK	1	25	1:1	0.278	1.005	0.279	
707.5	23095	LTE B12	10	22.20	22.13	-0.040	1	0 mm [Right]	FCC #1	QPSK	25	12	1:1	0.219	1.016	0.223	
707.5	23095	LTE B12	10	23.20	23.18	-0.120	0	0 mm [Left]	FCC #1	QPSK	1	25	1:1	1.030	1.005	**1.035**	A6
707.5	23095	LTE B12	10	22.20	22.13	0.040	1	0 mm [Left]	FCC #1	QPSK	25	12	1:1	0.781	1.016	0.793	
707.5	23095	LTE B12	10	23.20	23.18	0.030	0	0 mm [Left]	FCC #1	QPSK	1	25	1:1	0.988	1.005	0.993	
782.0	23230	LTE B13	10	23.50	23.44	-0.130	0	0 mm [Top]	FCC #1	QPSK	1	25	1:1	0.081	1.014	0.082	
782.0	23230	LTE B13	10	22.50	22.21	-0.120	1	0 mm [Top]	FCC #1	QPSK	25	12	1:1	0.057	1.069	0.061	
782.0	23230	LTE B13	10	23.50	23.44	-0.100	0	0 mm [Bottom]	FCC #1	QPSK	1	25	1:1	0.019	1.014	0.019	
782.0	23230	LTE B13	10	22.50	22.21	0.170	1	0 mm [Bottom]	FCC #1	QPSK	25	12	1:1	0.017	1.069	0.018	
782.0	23230	LTE B13	10	23.50	23.44	-0.120	0	0 mm [Front]	FCC #1	QPSK	1	25	1:1	0.635	1.014	0.644	
782.0	23230	LTE B13	10	22.50	22.21	0.150	1	0 mm [Front]	FCC #1	QPSK	25	12	1:1	0.459	1.069	0.491	
782.0	23230	LTE B13	10	23.50	23.44	0.020	0	0 mm [Rear #1]	FCC #1	QPSK	1	25	1:1	0.163	1.014	0.165	
782.0	23230	LTE B13	10	22.50	22.21	-0.130	1	0 mm [Rear #1]	FCC #1	QPSK	25	12	1:1	0.119	1.069	0.127	
782.0	23230	LTE B13	10	23.50	23.44	0.060	0	0 mm [Rear #2]	FCC #1	QPSK	1	25	1:1	0.037	1.014	0.038	
782.0	23230	LTE B13	10	22.50	22.21	0.120	1	0 mm [Rear #2]	FCC #1	QPSK	25	12	1:1	0.027	1.069	0.029	
782.0	23230	LTE B13	10	23.50	23.44	-0.090	0	0 mm [Rear #3]	FCC #1	QPSK	1	25	1:1	0.156	1.014	0.158	
782.0	23230	LTE B13	10	22.50	22.21	-0.140	1	0 mm [Rear #3]	FCC #1	QPSK	25	12	1:1	0.125	1.069	0.134	
782.0	23230	LTE B13	10	23.50	23.44	0.010	0	0 mm [Rear #4]	FCC #1	QPSK	1	25	1:1	0.192	1.014	0.195	
782.0	23230	LTE B13	10	22.50	22.21	0.040	1	0 mm [Rear #4]	FCC #1	QPSK	25	12	1:1	0.139	1.069	0.149	
782.0	23230	LTE B13	10	23.50	23.44	0.050	0	0 mm [Right]	FCC #1	QPSK	1	25	1:1	0.130	1.014	0.132	
782.0	23230	LTE B13	10	22.50	22.21	0.070	1	0 mm [Right]	FCC #1	QPSK	25	12	1:1	0.105	1.069	0.112	
782.0	23230	LTE B13	10	23.50	23.44	-0.190	0	0 mm [Left]	FCC #1	QPSK	1	25	1:1	0.870	1.014	**0.882**	A7
782.0	23230	LTE B13	10	22.50	22.21	0.030	1	0 mm [Left]	FCC #1	QPSK	25	12	1:1	0.599	1.069	0.640	
782.0	23230	LTE B13	10	22.50	23.44	0.110	0	0 mm [Left]	FCC #1	QPSK	1	25	1:1	0.816	1.014	0.827	
831.5	26865	LTE B26	15	23.70	23.69	0.140	0	0 mm [Top]	FCC #1	QPSK	1	36	1:1	0.126	1.002	0.126	
831.5	26865	LTE B26	15	22.70	22.68	0.170	1	0 mm [Top]	FCC #1	QPSK	25	18	1:1	0.094	1.005	0.094	
831.5	26865	LTE B26	15	23.70	23.69	0.120	0	0 mm [Bottom]	FCC #1	QPSK	1	36	1:1	0.041	1.002	0.041	
831.5	26865	LTE B26	15	22.70	22.68	-0.020	1	0 mm [Bottom]	FCC #1	QPSK	25	18	1:1	0.029	1.005	0.029	
831.5	26865	LTE B26	15	23.70	23.69	0.040	0	0 mm [Front]	FCC #1	QPSK	1	36	1:1	0.425	1.002	0.426	
831.5	26865	LTE B26	15	22.70	22.68	-0.080	1	0 mm [Front]	FCC #1	QPSK	25	18	1:1	0.324	1.005	0.326	
831.5	26865	LTE B26	15	23.70	23.69	-0.150	0	0 mm [Rear #1]	FCC #1	QPSK	1	36	1:1	0.239	1.002	0.239	
831.5	26865	LTE B26	15	22.70	22.68	0.030	1	0 mm [Rear #1]	FCC #1	QPSK	25	18	1:1	0.167	1.005	0.168	
831.5	26865	LTE B26	15	23.70	23.69	-0.040	0	0 mm [Rear #2]	FCC #1	QPSK	1	36	1:1	0.122	1.002	0.122	
831.5	26865	LTE B26	15	22.70	22.68	0.060	1	0 mm [Rear #2]	FCC #1	QPSK	25	18	1:1	0.100	1.005	0.101	
831.5	26865	LTE B26	15	23.70	23.69	-0.020	0	0 mm [Rear #3]	FCC #1	QPSK	1	36	1:1	0.285	1.002	0.286	
831.5	26865	LTE B26	15	22.70	22.68	-0.030	1	0 mm [Rear #3]	FCC #1	QPSK	25	18	1:1	0.233	1.005	0.234	
831.5	26865	LTE B26	15	23.70	23.69	0.020	0	0 mm [Rear #4]	FCC #1	QPSK	1	36	1:1	0.156	1.002	0.156	
831.5	26865	LTE B26	15	22.70	22.68	0.010	1	0 mm [Rear #4]	FCC #1	QPSK	25	18	1:1	0.116	1.005	0.117	
831.5	26865	LTE B26	15	23.70	23.69	-0.160	0	0 mm [Right]	FCC #1	QPSK	1	36	1:1	0.207	1.002	0.207	
831.5	26865	LTE B26	15	22.70	22.68	-0.050	1	0 mm [Right]	FCC #1	QPSK	25	18	1:1	0.157	1.005	0.158	
831.5	26865	LTE B26	15	23.70	23.69	0.000	0	0 mm [Left]	FCC #1	QPSK	1	36	1:1	1.070	1.002	**1.072**	A8
831.5	26865	LTE B26	15	22.70	22.68	-0.040	1	0 mm [Left]	FCC #1	QPSK	25	18	1:1	0.825	1.005	0.829	
831.5	26865	LTE B26	15	23.70	23.69	-0.070	0	0 mm [Left]	FCC #1	QPSK	1	36	1:1	1.060	1.002	1.062	
1 732.5	20175	LTE B4	20	23.50	23.49	0.070	0	0 mm [Top]	FCC #1	QPSK	1	50	1:1	0.175	1.002	0.175	
1 732.5	20175	LTE B4	20	22.50	22.49	0.050	1	0 mm [Top]	FCC #1	QPSK	50	25	1:1	0.132	1.002	0.132	
1 732.5	20175	LTE B4	20	23.50	23.49	-0.100	0	0 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.122	1.002	0.122	
1 732.5	20175	LTE B4	20	22.50	22.49	-0.050	1	0 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.113	1.002	0.113	
1 732.5	20175	LTE B4	20	23.50	23.49	-0.040	0	0 mm [Front]	FCC #1	QPSK	1	50	1:1	0.565	1.002	0.566	
1 732.5	20175	LTE B4	20	22.50	22.49	0.010	1	0 mm [Front]	FCC #1	QPSK	50	25	1:1	0.440	1.002	0.441	
1 732.5	20175	LTE B4	20	23.50	23.49	-0.180	0	0 mm [Rear #1]	FCC #1	QPSK	1	50	1:1	0.350	1.002	0.351	
1 732.5	20175	LTE B4	20	22.50	22.49	0.030	1	0 mm [Rear #1]	FCC #1	QPSK	50	25	1:1	0.298	1.002	0.299	
1 732.5	20175	LTE B4	20	23.50	23.49	-0.110	0	0 mm [Rear #2]	FCC #1	QPSK	1	50	1:1	0.166	1.002	0.166	
1 732.5	20175	LTE B4	20	23.50	22.49	0.140	1	0 mm [Rear #2]	FCC #1	QPSK	50	25	1:1	0.120	1.262	0.151	
1 732.5	20175	LTE B4	20	23.50	23.49	0.150	0	0 mm [Rear #3]	FCC #1	QPSK	1	50	1:1	0.378	1.002	0.379	
1 732.5	20175	LTE B4	20	22.50	22.49	0.090	1	0 mm [Rear #3]	FCC #1	QPSK	50	25	1:1	0.307	1.002	0.308	
1 732.5	20175	LTE B4	20	23.50	23.49	0.120	0	0 mm [Rear #4]	FCC #1	QPSK	1	50	1:1	0.334	1.002	0.335	
1 732.5	20175	LTE B4	20	22.50	22.49	0.010	1	0 mm [Rear #4]	FCC #1	QPSK	50	25	1:1	0.241	1.002	0.241	
1 732.5	20175	LTE B4	20	23.50	23.49	0.020	0	0 mm [Right]	FCC #1	QPSK	1	50	1:1	0.343	1.002	0.344	
1 732.5	20175	LTE B4	20	22.50	22.49	-0.010	1	0 mm [Right]	FCC #1	QPSK	50	25	1:1	0.276	1.002	0.277	
1 732.5	20175	LTE B4	20	23.50	23.49	0.030	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	3.200	1.002	**3.206**	A9
1 732.5	20175	LTE B4	20	22.50	22.49	0.050	1	0 mm [Left]	FCC #1	QPSK	50	25	1:1	2.870	1.002	2.876	
1 732.5	20175	LTE B4	20	22.50	22.48	0.010	1	0 mm [Left]	FCC #1	QPSK	100	0	1:1	2.840	1.005	2.854	
1 732.5	20175	LTE B4	20	23.50	23.49	0.080	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	3.180	1.002	3.186	
1 732.5	20175	LTE B4	20	23.50	23.49	-0.060	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	3.190	1.002	3.196	
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Note(s):
1. Please refer to the Test photo (SAR) for details on the test position indicated by blue entries represent.
2. Green entries represent additional extremity SAR Test Position (with hand strap) with the worst case position.
3. Yellow entries represent variability measurements.

Table 9.1.3 LTE B25, B7 Extremity SAR

MEASUREMENT RESULTS																	
FREQUENCY		Mode/ Band	BW [MHz]	Max Allowed Power [dBm]	Cond. PWR [dBm]	Drift Power [dB]	MPR	Position	Device Serial Number	Mod.	RB Size	RB Offs.	Duty Cycle	10g SAR (W/kg)	Scaling Factor	10g Scaled SAR (W/kg)	Plots #
MHz	Ch																
1 882.5	26365	LTE B25	20	24.20	24.19	-0.120	0	0 mm [Top]	FCC #1	QPSK	1	50	1:1	0.165	1.002	0.165	
1 882.5	26365	LTE B25	20	23.20	23.18	-0.110	1	0 mm [Top]	FCC #1	QPSK	50	25	1:1	0.125	1.005	0.126	
1 882.5	26365	LTE B25	20	24.20	24.19	-0.040	0	0 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.116	1.002	0.116	
1 882.5	26365	LTE B25	20	23.20	23.18	0.120	1	0 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.100	1.005	0.101	
1 882.5	26365	LTE B25	20	24.20	24.19	-0.040	0	0 mm [Front]	FCC #1	QPSK	1	50	1:1	0.314	1.002	0.315	
1 882.5	26365	LTE B25	20	23.20	23.18	0.090	1	0 mm [Front]	FCC #1	QPSK	50	25	1:1	0.297	1.005	0.298	
1 882.5	26365	LTE B25	20	24.20	24.19	0.130	0	0 mm [Rear #1]	FCC #1	QPSK	1	50	1:1	0.371	1.002	0.372	
1 882.5	26365	LTE B25	20	23.20	23.18	0.160	1	0 mm [Rear #1]	FCC #1	QPSK	50	25	1:1	0.281	1.005	0.282	
1 882.5	26365	LTE B25	20	24.20	24.19	-0.060	0	0 mm [Rear #2]	FCC #1	QPSK	1	50	1:1	0.180	1.002	0.180	
1 882.5	26365	LTE B25	20	23.20	23.18	0.050	1	0 mm [Rear #2]	FCC #1	QPSK	50	25	1:1	0.134	1.005	0.135	
1 882.5	26365	LTE B25	20	24.20	24.19	0.120	0	0 mm [Rear #3]	FCC #1	QPSK	1	50	1:1	0.392	1.002	0.393	
1 882.5	26365	LTE B25	20	23.20	23.18	0.090	1	0 mm [Rear #3]	FCC #1	QPSK	50	25	1:1	0.313	1.005	0.315	
1 882.5	26365	LTE B25	20	24.20	24.19	-0.010	0	0 mm [Rear #4]	FCC #1	QPSK	1	50	1:1	0.304	1.002	0.305	
1 882.5	26365	LTE B25	20	23.20	23.18	0.050	1	0 mm [Rear #4]	FCC #1	QPSK	50	25	1:1	0.262	1.005	0.263	
1 882.5	26365	LTE B25	20	24.20	24.19	0.130	0	0 mm [Right]	FCC #1	QPSK	1	50	1:1	0.192	1.002	0.192	
1 882.5	26365	LTE B25	20	23.20	23.18	0.030	1	0 mm [Right]	FCC #1	QPSK	50	25	1:1	0.151	1.005	0.152	
1 860.0	26140	LTE B25	20	24.20	24.13	-0.180	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	2.490	1.016	2.530	
1 860.0	26140	LTE B25	20	23.20	22.99	0.150	1	0 mm [Left]	FCC #1	QPSK	50	25	1:1	2.240	1.050	2.352	
1 882.5	26365	LTE B25	20	24.20	24.19	0.180	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	2.590	1.002	**2.595**	A10
1 882.5	26365	LTE B25	20	23.20	23.18	-0.170	1	0 mm [Left]	FCC #1	QPSK	50	25	1:1	2.540	1.005	2.553	
1 882.5	26365	LTE B25	20	24.00	23.11	0.160	1	0 mm [Left]	FCC #1	QPSK	100	0	1:1	1.900	1.227	2.331	
1 905.0	26590	LTE B25	20	24.20	24.17	0.040	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	2.510	1.007	2.528	
1 905.0	26590	LTE B25	20	23.20	23.14	0.190	1	0 mm [Left]	FCC #1	QPSK	50	25	1:1	2.450	1.014	2.484	
1 905.0	26590	LTE B25	20	24.20	24.17	-0.180	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	2.540	1.007	2.558	
1 905.0	26590	LTE B25	20	24.20	24.17	0.030	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	2.530	1.007	2.548	
2 535.0	21100	LTE B7	20	23.70	23.69	0.070	0	0 mm [Top]	FCC #1	QPSK	1	50	1:1	0.151	1.002	0.151	
2 535.0	21100	LTE B7	20	22.70	22.67	0.010	1	0 mm [Top]	FCC #1	QPSK	50	25	1:1	0.123	1.007	0.124	
2 535.0	21100	LTE B7	20	23.70	23.69	-0.100	0	0 mm [Bottom]	FCC #1	QPSK	1	50	1:1	0.034	1.002	0.034	
2 535.0	21100	LTE B7	20	22.70	22.67	-0.130	1	0 mm [Bottom]	FCC #1	QPSK	50	25	1:1	0.029	1.007	0.029	
2 535.0	21100	LTE B7	20	23.70	23.69	-0.170	0	0 mm [Front]	FCC #1	QPSK	1	50	1:1	0.439	1.002	0.440	
2 535.0	21100	LTE B7	20	22.70	22.67	0.150	1	0 mm [Front]	FCC #1	QPSK	50	25	1:1	0.335	1.007	0.337	
2 535.0	21100	LTE B7	20	23.70	23.69	0.090	0	0 mm [Rear #1]	FCC #1	QPSK	1	50	1:1	0.520	1.002	0.521	
2 535.0	21100	LTE B7	20	22.70	22.67	-0.140	1	0 mm [Rear #1]	FCC #1	QPSK	50	25	1:1	0.487	1.007	0.490	
2 535.0	21100	LTE B7	20	23.70	23.69	-0.010	0	0 mm [Rear #2]	FCC #1	QPSK	1	50	1:1	0.263	1.002	0.264	
2 535.0	21100	LTE B7	20	22.70	22.67	0.070	1	0 mm [Rear #2]	FCC #1	QPSK	50	25	1:1	0.227	1.007	0.229	
2 535.0	21100	LTE B7	20	23.70	23.69	-0.190	0	0 mm [Rear #3]	FCC #1	QPSK	1	50	1:1	0.668	1.002	0.669	
2 535.0	21100	LTE B7	20	22.70	22.67	0.040	1	0 mm [Rear #3]	FCC #1	QPSK	50	25	1:1	0.601	1.007	0.605	
2 535.0	21100	LTE B7	20	23.70	23.69	0.110	0	0 mm [Rear #4]	FCC #1	QPSK	1	50	1:1	0.495	1.002	0.496	
2 535.0	21100	LTE B7	20	22.70	22.67	-0.180	1	0 mm [Rear #4]	FCC #1	QPSK	50	25	1:1	0.438	1.007	0.441	
2 535.0	21100	LTE B7	20	23.70	23.69	0.020	0	0 mm [Right]	FCC #1	QPSK	1	50	1:1	0.127	1.002	0.127	
2 535.0	21100	LTE B7	20	22.70	22.67	-0.090	1	0 mm [Right]	FCC #1	QPSK	50	25	1:1	0.103	1.007	0.104	
2 510.0	20850	LTE B7	20	23.70	23.66	0.180	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	3.340	1.009	3.370	
2 510.0	20850	LTE B7	20	22.70	22.60	-0.190	1	0 mm [Left]	FCC #1	QPSK	50	25	1:1	2.910	1.023	2.977	
2 535.0	21100	LTE B7	20	23.70	23.69	0.040	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	3.440	1.002	**3.447**	A11
2 535.0	21100	LTE B7	20	22.70	22.67	-0.060	1	0 mm [Left]	FCC #1	QPSK	50	25	1:1	3.200	1.007	3.222	
2 535.0	21100	LTE B7	20	22.70	22.66	0.130	1	0 mm [Left]	FCC #1	QPSK	100	0	1:1	2.650	1.009	2.674	
2 560.0	21350	LTE B7	20	23.70	23.65	0.140	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	2.990	1.012	3.026	
2 560.0	21350	LTE B7	20	22.70	22.47	0.110	1	0 mm [Left]	FCC #1	QPSK	50	25	1:1	2.880	1.054	3.036	
2 510.0	20850	LTE B7	20	23.70	23.66	0.180	0	0 mm [Left]	FCC #1	QPSK	1	50	1:1	3.420	1.009	3.451	
2 510.0	20850	LTE B7	20	23.70	23.66	0.020	0	0 mm [Left]	FCC #1	QPSK	1	25	1:1	3.430	1.009	3.461	
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Note(s):
1. Please refer to the Test photo (SAR) for details on the test position indicated by blue entries represent.
2. Green entries represent additional extremity SAR Test Position (with hand strap) with the worst case position.
3. Yellow entries represent variability measurements.

Table 9.1.4 DTS Extremity SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	10g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	SAR (W/kg)	Plots #
MHz	Ch														
2 412.0	1	802.11b	15.00	14.99	-0.050	0 mm [Top]	FCC #2	0.001	1	97.9	< 0.001	1.002	1.021	< 0.001	
2 412.0	1	802.11b	15.00	14.99	0.170	0 mm [Bottom]	FCC #2	0.098	1	97.9	0.098	1.002	1.021	0.100	
2 412.0	1	802.11b	15.00	14.99	0.000	0 mm [Front]	FCC #2	0.103	1	97.9	0.096	1.002	1.021	0.098	
2 412.0	1	802.11b	15.00	14.99	-0.050	0 mm [Rear #1]	FCC #2	0.098	1	97.9	0.080	1.002	1.021	0.082	
2 412.0	1	802.11b	15.00	14.99	-0.130	0 mm [Rear #5]	FCC #2	0.136	1	97.9	0.114	1.002	1.021	0.117	
2 412.0	1	802.11b	15.00	14.99	-0.080	0 mm [Right]	FCC #2	0.037	1	97.9	0.033	1.002	1.021	0.034	
2 412.0	1	802.11b	15.00	14.99	0.060	0 mm [Left]	FCC #2	0.396	1	97.9	0.337	1.002	1.021	**0.345**	A12
2 412.0	1	802.11b	15.00	14.99	0.060	0 mm [Left]	FCC #2	0.378	1	97.9	0.332	1.002	1.021	0.340	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Extremity 4.0 W/kg (mW/g) averaged over 10 gram**							

Note(s):
1. Please refer to the Test photo (SAR) for details on the test position indicated by blue entries represent.
2. Green entries represent additional extremity SAR Test Position (with hand strap) with the worst case position.

Adjusted SAR results for OFDM SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	10g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm	Ratio of OFDM to DSSS	10g Adjusted SAR (W/kg)	Determine OFDM SAR
MHz	Ch											
2 412.0	1	802.11b	DSSS	15.50	0.345	2 412.0	802.11g	OFDM	14.0	0.708	**0.244**	X
2 412.0	1	802.11b	DSSS	15.50	0.345	2 412.0	802.11n	OFDM	13.0	0.562	**0.194**	X
2 412.0	1	802.11b	DSSS	15.50	0.345	2 412.0	802.11ac	OFDM	13.0	0.562	**0.194**	X
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure						**Extremity 4.0 W/kg (mW/g) averaged over 10 gram**						

Note: SAR is not required for the following 2.4 GHz OFDM conditions. When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 3.0 W/kg.

Table 9.1.5 UNII Extremity SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	10g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	10g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 280.0	56	802.11n	14.00	13.82	0.000	0 mm [Top]	FCC #2	0.002	MCS0	86.4	< 0.001	1.042	1.157	< 0.001	
5 280.0	56	802.11n	14.00	13.82	-0.060	0 mm [Bottom]	FCC #2	0.030	MCS0	86.4	0.021	1.042	1.157	0.025	
5 280.0	56	802.11n	14.00	13.82	0.000	0 mm [Front]	FCC #2	0.001	MCS0	86.4	0.002	1.042	1.157	0.002	
5 280.0	56	802.11n	14.00	13.82	0.160	0 mm [Rear #1]	FCC #2	0.034	MCS0	86.4	0.034	1.042	1.157	0.041	
5 280.0	56	802.11n	14.00	13.82	0.110	0 mm [Rear #5]	FCC #2	0.061	MCS0	86.4	0.060	1.042	1.157	**0.072**	A13
5 280.0	56	802.11n	14.00	13.82	0.000	0 mm [Right]	FCC #2	0.013	MCS0	86.4	0.010	1.042	1.157	0.012	
5 280.0	56	802.11n	14.00	13.82	-0.110	0 mm [Left]	FCC #2	0.036	MCS0	86.4	0.034	1.042	1.157	0.041	
5 280.0	56	802.11n	14.00	13.82	0.070	0 mm [Rear #5]	FCC #2	0.031	MCS0	86.4	0.027	1.042	1.157	0.033	
ANSI / IEEE C95.1-2005– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Extremity 4.0 W/kg (mW/g) averaged over 10 gram**							

Adjusted SAR results for UNII-1 and UNII-2A SAR												
FREQUENCY		Mode/ Antenna	Service	Maximum Allowed Power [dBm]	10g Scaled SAR (W/kg)	FREQUENCY [MHz]	Mode	Service	Maximum Allowed Power [dBm	Adjusted Factor	10g Adjusted SAR (W/kg)	SAR for the band with lower maximum output power
MHz	Ch											
5 280.0	56	802.11n	OFDM	14.0	0.072	5 240.0	802.11n	OFDM	14.0	1.000	**0.072**	X
5 280.0	56	802.11n	OFDM	14.0	0.072	5 240.0	802.11n	OFDM	14.0	1.000	**0.072**	X
5 280.0	56	802.11n	OFDM	14.0	0.072	5 240.0	802.11n	OFDM	14.0	1.000	**0.072**	X
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure						**Extremity 4.0 W/kg (mW/g) averaged over 10 gram**						

Note: U-NII-1 and U-NII-2A Bands: When different maximum output power is specified for the bands, begin SAR measurement in the band with higher specified maximum output power. The highest reported SAR for the tested configuration is adjusted by the ratio of lower to higher specified maximum output power for the two bands. When the adjusted SAR is ≤ 3.0 W/kg, SAR is not required for the band with lower maximum output power in that test configuration.

Table 9.1.6 UNII Extremity SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Peak SAR of Area Scan	Data Rate [Mbps]	Duty Cycle	10g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	10g Scaled SAR (W/kg)	Plots #
MHz	Ch														
5 580.0	116	802.11a	13.00	12.89	0.000	0 mm [Top]	FCC #2	0.002	6	87.5	< 0.001	1.026	1.143	< 0.001	
5 580.0	116	802.11a	13.00	12.89	-0.060	0 mm [Bottom]	FCC #2	0.032	6	87.5	0.022	1.026	1.143	0.026	
5 580.0	116	802.11a	13.00	12.89	0.000	0 mm [Front]	FCC #2	0.003	6	87.5	0.002	1.026	1.143	0.002	
5 580.0	116	802.11a	13.00	12.89	0.160	0 mm [Rear #1]	FCC #2	0.035	6	87.5	0.033	1.026	1.143	0.039	
5 580.0	116	802.11a	13.00	12.89	0.080	0 mm [Rear #5]	FCC #2	0.055	6	87.5	0.062	1.026	1.143	**0.073**	A14
5 580.0	116	802.11a	13.00	12.89	-0.030	0 mm [Right]	FCC #2	0.022	6	87.5	0.018	1.026	1.143	0.021	
5 580.0	116	802.11a	13.00	12.89	-0.120	0 mm [Left]	FCC #2	0.056	6	87.5	0.049	1.026	1.143	0.057	
5 580.0	116	802.11a	13.00	12.89	0.050	0 mm [Rear #5]	FCC #2	0.021	6	87.5	0.018	1.026	1.143	0.021	
5 785.0	157	802.11a	12.00	11.58	0.000	0 mm [Top]	FCC #2	0.022	6	87.5	< 0.001	1.102	1.143	< 0.001	
5 785.0	157	802.11a	12.00	11.58	0.060	0 mm [Bottom]	FCC #2	0.033	6	87.5	0.033	1.102	1.143	0.042	
5 785.0	157	802.11a	12.00	11.58	0.000	0 mm [Front]	FCC #2	0.001	6	87.5	0.002	1.102	1.143	0.003	
5 785.0	157	802.11a	12.00	11.58	0.070	0 mm [Rear #1]	FCC #2	0.037	6	87.5	0.041	1.102	1.143	0.052	
5 785.0	157	802.11a	12.00	11.58	0.110	0 mm [Rear #5]	FCC #2	0.068	6	87.5	0.072	1.102	1.143	**0.091**	A15
5 785.0	157	802.11a	12.00	11.58	0.000	0 mm [Right]	FCC #2	0.014	6	87.5	0.012	1.102	1.143	0.015	
5 785.0	157	802.11a	12.00	11.58	0.130	0 mm [Left]	FCC #2	0.040	6	87.5	0.041	1.102	1.143	0.052	
5 785.0	157	802.11a	12.00	11.58	0.050	0 mm [Rear #5]	FCC #2	0.034	6	87.5	0.033	1.102	1.143	0.042	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Extremity 4.0 W/kg (mW/g) averaged over 10 gram**							

Note(s):
1. Please refer to the Test photo (SAR) for details on the test position indicated by blue entries represent.
2. Green entries represent additional extremity SAR Test Position (with hand strap) with the worst case position.

Table 9.1.7 Bluetooth Extremity SAR

MEASUREMENT RESULTS															
FREQUENCY		Mode	Maximum Allowed Power [dBm]	Conducted Power [dBm]	Drift Power [dB]	Phantom Position	Device Serial Number	Rate [Mbps]	Duty Cycle (%)	1g SAR (W/kg)	Scaling Factor	Scaling Factor (Duty Cycle)	1g Scaled SAR (W/kg)	Plots #
MHz	Ch													
2 441.0	39	Bluetooth	6.50	6.44	0.150	0 mm [Top]	FCC #2	1	76.8	0.009	1.014	1.302	0.012	
2 441.0	39	Bluetooth	6.50	6.44	0.000	0 mm [Bottom]	FCC #2	1	76.8	< 0.001	1.014	1.302	< 0.001	
2 441.0	39	Bluetooth	6.50	6.44	0.000	0 mm [Front]	FCC #2	1	76.8	0.004	1.014	1.302	0.005	
2 441.0	39	Bluetooth	6.50	6.44	0.000	0 mm [Rear #1]	FCC #2	1	76.8	0.005	1.014	1.302	0.007	
2 441.0	39	Bluetooth	6.50	6.44	0.000	0 mm [Rear #5]	FCC #2	1	76.8	0.008	1.014	1.302	0.011	
2 441.0	39	Bluetooth	6.50	6.44	0.090	0 mm [Right]	FCC #2	1	76.8	0.005	1.014	1.302	0.007	
2 441.0	39	Bluetooth	6.50	6.44	-0.070	0 mm [Left]	FCC #2	1	76.8	0.026	1.014	1.302	**0.034**	A16
2 441.0	39	Bluetooth	6.50	6.44	0.010	0 mm [Rear #5]	FCC #2	1	76.8	0.007	1.014	1.302	0.009	
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure								**Extremity 4.0 W/kg (mW/g) averaged over 10 gram**							

Note(s):
1. Please refer to the Test photo (SAR) for details on the test position indicated by blue entries represent.
2. Green entries represent additional extremity SAR Test Position (with hand strap) with the worst case position.

9.2 SAR Test Notes

General Notes:

1. The test data reported are the worst-case SAR values according to test procedures specified in IEEE 1528-2013, and FCC KDB Publication 447498 D01v06.
2. Batteries are fully charged at the beginning of the SAR measurements. A standard battery was used for all 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. SAR measurements were performed using the DASY5 automated system. The procedure for spatial peak SAR evaluation has been implemented according to the IEEE 1528 standard. During a maximum search, global and local maxima searches are automatically performed in 2-D after each area scan measurement. The algorithm will find the global maximum and all local maxima within 2 dB of the global maxima for all SAR distributions. All local maxima within 2 dB of the global maximum were searched and passed for the Zoom Scan measurement.

GSM Notes:

1. Justification for reduced test configurations per KDB Publication 941225 D01v03r01 and October2013 TCB Workshop Notes: The source-based frame-averaged output power was evaluated for all GPRS/EDGE slot configurations.
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 then testing at the other channels is not required for such test configuration(s). Since the maximum output power variation across the required test channels is not > ½ dB, the middle channel was used for testing.

WCDMA (UMTS) Notes:

1. WCDMA (UMTS) mode in was tested under RMC 12.2 kbps with HSPA Inactive per KDB Publication 941225 D01v03r01. AMR and HSPA SAR was not required since the average output power of the HSPA subtests was not more than 0.25 dB higher than the RMC level and SAR was less than 1.2 W/kg.
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 then testing at the other channels is not required for such test configuration(s). When the maximum output power variation across the required test channels is > ½ dB, instead of the middle channel, the highest output power channel was used.

LTE Notes:

1. LTE Considerations: LTE test configurations are determined according to SAR Evaluation Considerations for LTE Devices in FCC KDB Publication 941225 D05v02r05. The general test procedures used for testing can be found in Section 6.4.4.
2. According to FCC KDB 941225 D05v02r05, when the reported SAR is ≤ 0.8 W/kg, testing of the 100% RB allocation and required test channels is not required.
   Otherwise, SAR is required for the remaining required test channels using the 1 RB, 50% RB and 100% RB allocation with highest output power for that channel.
   Only one channel, and as reported SAR values for 1 RB allocation and 50% RB allocation were less than 1.45 W/kg only the highest power RB offset for each allocation was required.
3. 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 TS 36.101 Section 6.2.3 – 6.2.5 under Table 6.2.3-1.
4. A-MPR was disabled for all SAR tests by setting NS=1 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).
5. Per FCC KDB Publication 447498 D01v06, when the reported (scaled) for 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, testing at the other channels was required for such test configurations.
6. TDD LTE was tested per the guidance provided in FCC KDB Publication 941225 D05v02r05. Testing was performed using UL-DL configuration 0 with 6 UL sub frames and 2S sub frames using extended cyclic prefix only and special sub frame configuration 6. SAR tests were performed at maximum output power and worst-case transmission duty factor in extended cyclic prefix. Per 3GPP 36.211 Sec. 4, the duty factor using extended cyclic prefix is 0.633 (cf=1.58).
7. SAR test reduction is applied using the following criteria:
   Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel. When the reported SAR is > 0.8 W/kg, testing for other channels is performed at the highest output power level for 1 RB, and 50% RB configuration for that channel. Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg, Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg. Testing for 16QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/kg and its output power is not more than 0.5 dB higher than that a QPSK. Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.

WLAN Notes:

1. The initial test position procedures were applied. The test position with the highest extrapolated peak SAR will be used as the initial test position. When reported SAR for the initial test position is ≤ 0.4 W/kg, no additional testing for the remaining test positions was required. Otherwise, SAR is evaluated at the subsequent highest peak SAR positions until the reported SAR result is ≤ 0.8 W/kg or all test positions are measured.
2. 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 duo to the maximum allowed powers and the highest reported DSSS SAR when the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output and the adjust SAR is ≤ 1.2 W/kg.
3. 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.
4. When the maximum reported 1g averaged SAR ≤ 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 or all test channels were measured.
5. The device was configured to transmit continuously at the required data rate, channel bandwidth and signal modulation, using the highest transmission duty factor to determine compliance.

10. FCC MULTI-TX AND ANTENNA SAR CONSIDERATIONS

10.1 Introduction

The following procedures adopted from FCC KDB Publication 447498 D01v06 are applicable to handsets with built-in unlicensed transmitters such as Bluetooth LE devices which may simultaneously transmit with the licensed transmitter.

10.2 Simultaneous Transmission Procedures

This device contains transmitters that may operate simultaneously. Therefore simultaneous transmission analysis is required. Per FCC KDB 447498 D01v06 4.3.2 and IEEE 1528-2013 Section 6.3.4.1.2,simultaneous transmission SAR test exclusion may be applied when the sum of the sum 1-g SAR for all the simultaneous transmitting antennas in a specific a physical test configuration is ≤ 1.6 W/kg. The different test positon in an exposure condition may be considered collectively to determine SAR test exclusion according to the sum of 1-g or 10-g SAR.

10.3 Simultaneous Transmission Capabilities

According to FCC KDB Publication 447498 D01v06, transmitters are considered to be transmitting simultaneously when there is overlapping transmission, with the exception of transmissions during network hand-offs with maximum hand-off duration less than 30 seconds.

Table 10.3.1 Simultaneous SAR Cases

No.	Capable Transmit Configuration	Extremity SAR	Note
1	WCDMA + Wi-Fi 2.4 GHz	Yes	
2	WCDMA + Wi-Fi 5 GHz	Yes	
3	WCDMA + Bluetooth 2.4 GHz	Yes	
4	WCMDA + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	
5	LTE + Wi-Fi 2.4 GHz	Yes	
6	LTE + Wi-Fi 5 GHz	Yes	
7	LTE + Bluetooth 2.4 GHz	Yes	
8	LTE + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	
9	GPRS/EDGE + Wi-Fi 2.4 GHz	Yes	
10	GPRS/EDGE + Wi-Fi 5 GHz	Yes	
11	GPRS/EDGE + Bluetooth 2.4 GHz	Yes	
12	GPRS/EDGE + Bluetooth 2.4 GHz + Wi-Fi 5GHz	Yes	

Notes:
1. Bluetooth and WiFi can not transmit simultaneously at 2.4G band.
2. GSM, WCDMA and LTE can not transmit simultaneously since they share the same chip.

10.4 Extremity Simultaneous Transmission Analysis

Table 10.4.1 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth + 5.3 GHz W-LAN (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5.3G W-LAN SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Extremity SAR	GPRS 850	Top	0.197	0.012	< 0.001	0.209	0.197	0.209
		Bottom	0.061	< 0.001	0.025	0.061	0.086	0.086
		Front	0.102	0.005	0.002	0.107	0.104	0.109
		Rear	0.402	0.011	0.072	0.413	0.474	0.485
		Right	0.477	0.007	0.012	0.484	0.489	0.496
		Left	1.539	0.034	0.041	1.573	1.580	**1.614**
	GPRS 1900	Top	0.152	0.012	< 0.001	0.164	0.152	0.164
		Bottom	0.135	< 0.001	0.025	0.135	0.160	0.160
		Front	0.486	0.005	0.002	0.491	0.488	0.493
		Rear	0.395	0.011	0.072	0.406	0.467	0.478
		Right	0.206	0.007	0.012	0.213	0.218	0.225
		Left	2.433	0.034	0.041	2.467	2.474	**2.508**
	WCDMA 850	Top	0.125	0.012	< 0.001	0.137	0.125	0.137
		Bottom	0.091	< 0.001	0.025	0.091	0.116	0.116
		Front	0.597	0.005	0.002	0.602	0.599	0.604
		Rear	0.271	0.011	0.072	0.282	0.343	0.354
		Right	0.379	0.007	0.012	0.386	0.391	0.398
		Left	1.418	0.034	0.041	1.452	1.459	**1.493**
	WCDMA 1700	Top	0.157	0.012	< 0.001	0.169	0.157	0.169
		Bottom	0.132	< 0.001	0.025	0.132	0.157	0.157
		Front	0.561	0.005	0.002	0.566	0.563	0.568
		Rear	0.410	0.011	0.072	0.421	0.482	0.493
		Right	0.369	0.007	0.012	0.376	0.381	0.388
		Left	3.492	0.034	0.041	3.526	3.533	**3.567**
	WCDMA 1900	Top	0.146	0.012	< 0.001	0.158	0.146	0.158
		Bottom	0.124	< 0.001	0.025	0.124	0.149	0.149
		Front	0.423	0.005	0.002	0.428	0.425	0.430
		Rear	0.406	0.011	0.072	0.417	0.478	0.489
		Right	0.131	0.007	0.012	0.138	0.143	0.150
		Left	3.139	0.034	0.041	3.173	3.180	**3.214**
	LTE Band 12	Top	0.045	0.012	< 0.001	0.057	0.045	0.057
		Bottom	0.030	< 0.001	0.025	0.030	0.055	0.055
		Front	0.498	0.005	0.002	0.503	0.500	0.505
		Rear	0.408	0.011	0.072	0.419	0.480	0.491
		Right	0.279	0.007	0.012	0.286	0.291	0.298
		Left	1.035	0.034	0.041	1.069	1.076	**1.110**
	LTE Band 13	Top	0.082	0.012	< 0.001	0.094	0.082	0.094
		Bottom	0.019	< 0.001	0.025	0.019	0.044	0.044
		Front	0.644	0.005	0.002	0.649	0.646	0.651
		Rear	0.195	0.011	0.072	0.206	0.267	0.278
		Right	0.132	0.007	0.012	0.139	0.144	0.151
		Left	0.882	0.034	0.041	0.916	0.923	**0.957**
	LTE Band 26	Top	0.126	0.012	< 0.001	0.138	0.126	0.138
		Bottom	0.041	< 0.001	0.025	0.041	0.066	0.066
		Front	0.426	0.005	0.002	0.431	0.428	0.433
		Rear	0.286	0.011	0.072	0.297	0.358	0.369
		Right	0.207	0.007	0.012	0.214	0.219	0.226
		Left	1.072	0.034	0.041	1.106	1.113	**1.147**
	LTE Band 4	Top	0.175	0.012	< 0.001	0.187	0.175	0.187
		Bottom	0.122	< 0.001	0.025	0.122	0.147	0.147
		Front	0.566	0.005	0.002	0.571	0.568	0.573
		Rear	0.379	0.011	0.072	0.390	0.451	0.462
		Right	0.344	0.007	0.012	0.351	0.356	0.363
		Left	3.206	0.034	0.041	3.240	3.247	**3.281**
	LTE Band 25	Top	0.165	0.012	< 0.001	0.177	0.165	0.177
		Bottom	0.116	< 0.001	0.025	0.116	0.141	0.141
		Front	0.315	0.005	0.002	0.320	0.317	0.322
		Rear	0.393	0.011	0.072	0.404	0.465	0.476
		Right	0.192	0.007	0.012	0.199	0.204	0.211
		Left	2.595	0.034	0.041	2.629	2.636	**2.670**
	LTE Band 7	Top	0.151	0.012	< 0.001	0.163	0.151	0.163
		Bottom	0.034	< 0.001	0.025	0.034	0.059	0.059
		Front	0.440	0.005	0.002	0.445	0.442	0.447
		Rear	0.669	0.011	0.072	0.680	0.741	0.752
		Right	0.127	0.007	0.012	0.134	0.139	0.146
		Left	3.447	0.034	0.041	3.481	3.488	**3.522**

Table 10.4.2 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth + 5.6 GHz W-LAN (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5.6G W-LAN SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Extremity SAR	GPRS 850	Top	0.197	0.012	< 0.001	0.209	0.197	0.209
		Bottom	0.061	< 0.001	0.026	0.061	0.087	0.087
		Front	0.102	0.005	0.002	0.107	0.104	0.109
		Rear	0.402	0.011	0.073	0.413	0.475	0.486
		Right	0.477	0.007	0.021	0.484	0.498	0.505
		Left	1.539	0.034	0.057	1.573	1.596	**1.630**
	GPRS 1900	Top	0.152	0.012	< 0.001	0.164	0.152	0.164
		Bottom	0.135	< 0.001	0.026	0.135	0.161	0.161
		Front	0.486	0.005	0.002	0.491	0.488	0.493
		Rear	0.395	0.011	0.073	0.406	0.468	0.479
		Right	0.206	0.007	0.021	0.213	0.227	0.234
		Left	2.433	0.034	0.057	2.467	2.490	**2.524**
	WCDMA 850	Top	0.125	0.012	< 0.001	0.137	0.125	0.137
		Bottom	0.091	< 0.001	0.026	0.091	0.117	0.117
		Front	0.597	0.005	0.002	0.602	0.599	0.604
		Rear	0.271	0.011	0.073	0.282	0.344	0.355
		Right	0.379	0.007	0.021	0.386	0.400	0.407
		Left	1.418	0.034	0.057	1.452	1.475	**1.509**
	WCDMA 1700	Top	0.157	0.012	< 0.001	0.169	0.157	0.169
		Bottom	0.132	< 0.001	0.026	0.132	0.158	0.158
		Front	0.561	0.005	0.002	0.566	0.563	0.568
		Rear	0.410	0.011	0.073	0.421	0.483	0.494
		Right	0.369	0.007	0.021	0.376	0.390	0.397
		Left	3.492	0.034	0.057	3.526	3.549	**3.583**
	WCDMA 1900	Top	0.146	0.012	< 0.001	0.158	0.146	0.158
		Bottom	0.124	< 0.001	0.026	0.124	0.150	0.150
		Front	0.423	0.005	0.002	0.428	0.425	0.430
		Rear	0.406	0.011	0.073	0.417	0.479	0.490
		Right	0.131	0.007	0.021	0.138	0.152	0.159
		Left	3.139	0.034	0.057	3.173	3.196	**3.230**
	LTE Band 12	Top	0.045	0.012	< 0.001	0.057	0.045	0.057
		Bottom	0.030	< 0.001	0.026	0.030	0.056	0.056
		Front	0.498	0.005	0.002	0.503	0.500	0.505
		Rear	0.408	0.011	0.073	0.419	0.481	0.492
		Right	0.279	0.007	0.021	0.286	0.300	0.307
		Left	1.035	0.034	0.057	1.069	1.092	**1.126**
	LTE Band 13	Top	0.082	0.012	< 0.001	0.094	0.082	0.094
		Bottom	0.019	< 0.001	0.026	0.019	0.045	0.045
		Front	0.644	0.005	0.002	0.649	0.646	0.651
		Rear	0.195	0.011	0.073	0.206	0.268	0.279
		Right	0.132	0.007	0.021	0.139	0.153	0.160
		Left	0.882	0.034	0.057	0.916	0.939	**0.973**
	LTE Band 26	Top	0.126	0.012	< 0.001	0.138	0.126	0.138
		Bottom	0.041	< 0.001	0.026	0.041	0.067	0.067
		Front	0.426	0.005	0.002	0.431	0.428	0.433
		Rear	0.286	0.011	0.073	0.297	0.359	0.370
		Right	0.207	0.007	0.021	0.214	0.228	0.235
		Left	1.072	0.034	0.057	1.106	1.129	**1.163**
	LTE Band 4	Top	0.175	0.012	< 0.001	0.187	0.175	0.187
		Bottom	0.122	< 0.001	0.026	0.122	0.148	0.148
		Front	0.566	0.005	0.002	0.571	0.568	0.573
		Rear	0.379	0.011	0.073	0.390	0.452	0.463
		Right	0.344	0.007	0.021	0.351	0.365	0.372
		Left	3.206	0.034	0.057	3.240	3.263	**3.297**
	LTE Band 25	Top	0.165	0.012	< 0.001	0.177	0.165	0.177
		Bottom	0.116	< 0.001	0.026	0.116	0.142	0.142
		Front	0.315	0.005	0.002	0.320	0.317	0.322
		Rear	0.393	0.011	0.073	0.404	0.466	0.477
		Right	0.192	0.007	0.021	0.199	0.213	0.220
		Left	2.595	0.034	0.057	2.629	2.652	**2.686**
	LTE Band 7	Top	0.151	0.012	< 0.001	0.163	0.151	0.163
		Bottom	0.034	< 0.001	0.026	0.034	0.060	0.060
		Front	0.440	0.005	0.002	0.445	0.442	0.447
		Rear	0.669	0.011	0.073	0.680	0.742	0.753
		Right	0.127	0.007	0.021	0.134	0.148	0.155
		Left	3.447	0.034	0.057	3.481	3.504	**3.538**

Table 10.4.3 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth + 5.8 GHz W-LAN (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	5.8G W-LAN SAR (W/kg)	ΣSAR (W/kg)		
			1	2	3	1+2	1+3	1+2+3
Extremity SAR	GPRS 850	Top	0.197	0.012	< 0.001	0.209	0.197	0.209
		Bottom	0.061	< 0.001	0.042	0.061	0.103	0.103
		Front	0.102	0.005	0.003	0.107	0.105	0.110
		Rear	0.402	0.011	0.091	0.413	0.493	0.504
		Right	0.477	0.007	0.015	0.484	0.492	0.499
		Left	1.539	0.034	0.052	1.573	1.591	**1.625**
	GPRS 1900	Top	0.152	0.012	< 0.001	0.164	0.152	0.164
		Bottom	0.135	< 0.001	0.042	0.135	0.177	0.177
		Front	0.486	0.005	0.003	0.491	0.489	0.494
		Rear	0.395	0.011	0.091	0.406	0.486	0.497
		Right	0.206	0.007	0.015	0.213	0.221	0.228
		Left	2.433	0.034	0.052	2.467	2.485	**2.519**
	WCDMA 850	Top	0.125	0.012	< 0.001	0.137	0.125	0.137
		Bottom	0.091	< 0.001	0.042	0.091	0.133	0.133
		Front	0.597	0.005	0.003	0.602	0.600	0.605
		Rear	0.271	0.011	0.091	0.282	0.362	0.373
		Right	0.379	0.007	0.015	0.386	0.394	0.401
		Left	1.418	0.034	0.052	1.452	1.470	**1.504**
	WCDMA 1700	Top	0.157	0.012	< 0.001	0.169	0.157	0.169
		Bottom	0.132	< 0.001	0.042	0.132	0.174	0.174
		Front	0.561	0.005	0.003	0.566	0.564	0.569
		Rear	0.410	0.011	0.091	0.421	0.501	0.512
		Right	0.369	0.007	0.015	0.376	0.384	0.391
		Left	3.492	0.034	0.052	3.526	3.544	**3.578**
	WCDMA 1900	Top	0.146	0.012	< 0.001	0.158	0.146	0.158
		Bottom	0.124	< 0.001	0.042	0.124	0.166	0.166
		Front	0.423	0.005	0.003	0.428	0.426	0.431
		Rear	0.406	0.011	0.091	0.417	0.497	0.508
		Right	0.131	0.007	0.015	0.138	0.146	0.153
		Left	3.139	0.034	0.052	3.173	3.191	**3.225**
	LTE Band 12	Top	0.045	0.012	< 0.001	0.057	0.045	0.057
		Bottom	0.030	< 0.001	0.042	0.030	0.072	0.072
		Front	0.498	0.005	0.003	0.503	0.501	0.506
		Rear	0.408	0.011	0.091	0.419	0.499	0.510
		Right	0.279	0.007	0.015	0.286	0.294	0.301
		Left	1.035	0.034	0.052	1.069	1.087	**1.121**
	LTE Band 13	Top	0.082	0.012	< 0.001	0.094	0.082	0.094
		Bottom	0.019	< 0.001	0.042	0.019	0.061	0.061
		Front	0.644	0.005	0.003	0.649	0.647	0.652
		Rear	0.195	0.011	0.091	0.206	0.286	0.297
		Right	0.132	0.007	0.015	0.139	0.147	0.154
		Left	0.882	0.034	0.052	0.916	0.934	**0.968**
	LTE Band 26	Top	0.126	0.012	< 0.001	0.138	0.126	0.138
		Bottom	0.041	< 0.001	0.042	0.041	0.083	0.083
		Front	0.426	0.005	0.003	0.431	0.429	0.434
		Rear	0.286	0.011	0.091	0.297	0.377	0.388
		Right	0.207	0.007	0.015	0.214	0.222	0.229
		Left	1.072	0.034	0.052	1.106	1.124	**1.158**
	LTE Band 4	Top	0.175	0.012	< 0.001	0.187	0.175	0.187
		Bottom	0.122	< 0.001	0.042	0.122	0.164	0.164
		Front	0.566	0.005	0.003	0.571	0.569	0.574
		Rear	0.379	0.011	0.091	0.390	0.470	0.481
		Right	0.344	0.007	0.015	0.351	0.359	0.366
		Left	3.206	0.034	0.052	3.240	3.258	**3.292**
	LTE Band 25	Top	0.165	0.012	< 0.001	0.177	0.165	0.177
		Bottom	0.116	< 0.001	0.042	0.116	0.158	0.158
		Front	0.315	0.005	0.003	0.320	0.318	0.323
		Rear	0.393	0.011	0.091	0.404	0.484	0.495
		Right	0.192	0.007	0.015	0.199	0.207	0.214
		Left	2.595	0.034	0.052	2.629	2.647	**2.681**
	LTE Band 7	Top	0.151	0.012	< 0.001	0.163	0.151	0.163
		Bottom	0.034	< 0.001	0.042	0.034	0.076	0.076
		Front	0.440	0.005	0.003	0.445	0.443	0.448
		Rear	0.669	0.011	0.091	0.680	0.760	0.771
		Right	0.127	0.007	0.015	0.134	0.142	0.149
		Left	3.447	0.034	0.052	3.481	3.499	**3.533**

Table 10.4.4 Simultaneous Transmission Scenario : 2G/3G/4G + 2.4 GHz W-LAN (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	2.4G W-LAN SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Extremity SAR	GPRS 850	Top	0.197	< 0.001	0.197
		Bottom	0.061	0.100	0.161
		Front	0.102	0.098	0.200
		Rear	0.402	0.117	0.519
		Right	0.477	0.034	0.511
		Left	1.539	0.345	**1.884**
	GPRS 1900	Top	0.152	< 0.001	0.152
		Bottom	0.135	0.100	0.235
		Front	0.486	0.098	0.584
		Rear	0.395	0.117	0.512
		Right	0.206	0.034	0.240
		Left	2.433	0.345	**2.778**
	WCDMA 850	Top	0.125	< 0.001	0.125
		Bottom	0.091	0.100	0.191
		Front	0.597	0.098	0.695
		Rear	0.271	0.117	0.388
		Right	0.379	0.034	0.413
		Left	1.418	0.345	**1.763**
	WCDMA 1700	Top	0.157	< 0.001	0.157
		Bottom	0.132	0.100	0.232
		Front	0.561	0.098	0.659
		Rear	0.410	0.117	0.527
		Right	0.369	0.034	0.403
		Left	**3.492**	0.345	3.837
	WCDMA 1900	Top	0.146	< 0.001	0.146
		Bottom	0.124	0.100	0.224
		Front	0.423	0.098	0.521
		Rear	0.406	0.117	0.523
		Right	0.131	0.034	0.165
		Left	3.139	0.345	**3.484**
	LTE Band 12	Top	0.045	< 0.001	0.045
		Bottom	0.030	0.100	0.130
		Front	0.498	0.098	0.596
		Rear	0.408	0.117	0.525
		Right	0.279	0.034	0.313
		Left	1.035	0.345	**1.380**
	LTE Band 13	Top	0.082	< 0.001	0.082
		Bottom	0.019	0.100	0.119
		Front	0.644	0.098	0.742
		Rear	0.195	0.117	0.312
		Right	0.132	0.034	0.166
		Left	0.882	0.345	**1.227**
	LTE Band 26	Top	0.126	< 0.001	0.126
		Bottom	0.041	0.100	0.141
		Front	0.426	0.098	0.524
		Rear	0.286	0.117	0.403
		Right	0.207	0.034	0.241
		Left	1.072	0.345	**1.417**
	LTE Band 4	Top	0.175	< 0.001	0.175
		Bottom	0.122	0.100	0.222
		Front	0.566	0.098	0.664
		Rear	0.379	0.117	0.496
		Right	0.344	0.034	0.378
		Left	3.206	0.345	**3.551**
	LTE Band 25	Top	0.165	< 0.001	0.165
		Bottom	0.116	0.100	0.216
		Front	0.315	0.098	0.413
		Rear	0.393	0.117	0.510
		Right	0.192	0.034	0.226
		Left	2.595	0.345	**2.940**
	LTE Band 7	Top	0.151	< 0.001	0.151
		Bottom	0.034	0.100	0.134
		Front	0.440	0.098	0.538
		Rear	0.669	0.117	0.786
		Right	0.127	0.034	0.161
		Left	3.447	0.345	**3.792**

Table 10.4.5 Simultaneous Transmission Scenario : 2G/3G/4G + 5.3 GHz W-LAN (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.3G W-LAN SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Extremity SAR	GPRS 850	Top	0.197	< 0.001	0.197
		Bottom	0.061	0.025	0.086
		Front	0.102	0.002	0.104
		Rear	0.402	0.072	0.474
		Right	0.477	0.012	0.489
		Left	1.539	0.041	**1.580**
	GPRS 1900	Top	0.152	< 0.001	0.152
		Bottom	0.135	0.025	0.160
		Front	0.486	0.002	0.488
		Rear	0.395	0.072	0.467
		Right	0.206	0.012	0.218
		Left	2.433	0.041	**2.474**
	WCDMA 850	Top	0.125	< 0.001	0.125
		Bottom	0.091	0.025	0.116
		Front	0.597	0.002	0.599
		Rear	0.271	0.072	0.343
		Right	0.379	0.012	0.391
		Left	1.418	0.041	**1.459**
	WCDMA 1700	Top	0.157	< 0.001	0.157
		Bottom	0.132	0.025	0.157
		Front	0.561	0.002	0.563
		Rear	0.410	0.072	0.482
		Right	0.369	0.012	0.381
		Left	3.492	0.041	**3.533**
	WCDMA 1900	Top	0.146	< 0.001	0.146
		Bottom	0.124	0.025	0.149
		Front	0.423	0.002	0.425
		Rear	0.406	0.072	0.478
		Right	0.131	0.012	0.143
		Left	3.139	0.041	**3.180**
	LTE Band 12	Top	0.045	< 0.001	0.045
		Bottom	0.030	0.025	0.055
		Front	0.498	0.002	0.500
		Rear	0.408	0.072	0.480
		Right	0.279	0.012	0.291
		Left	1.035	0.041	**1.076**
	LTE Band 13	Top	0.082	< 0.001	0.082
		Bottom	0.019	0.025	0.044
		Front	0.644	0.002	0.646
		Rear	0.195	0.072	0.267
		Right	0.132	0.012	0.144
		Left	0.882	0.041	**0.923**
	LTE Band 26	Top	0.126	< 0.001	0.126
		Bottom	0.041	0.025	0.066
		Front	0.426	0.002	0.428
		Rear	0.286	0.072	0.358
		Right	0.207	0.012	0.219
		Left	1.072	0.041	**1.113**
	LTE Band 4	Top	0.175	< 0.001	0.175
		Bottom	0.122	0.025	0.147
		Front	0.566	0.002	0.568
		Rear	0.379	0.072	0.451
		Right	0.344	0.012	0.356
		Left	3.206	0.041	**3.247**
	LTE Band 25	Top	0.165	< 0.001	0.165
		Bottom	0.116	0.025	0.141
		Front	0.315	0.002	0.317
		Rear	0.393	0.072	0.465
		Right	0.192	0.012	0.204
		Left	2.595	0.041	**2.636**
	LTE Band 7	Top	0.151	< 0.001	0.151
		Bottom	0.034	0.025	0.059
		Front	0.440	0.002	0.442
		Rear	0.669	0.072	0.741
		Right	0.127	0.012	0.139
		Left	3.447	0.041	**3.488**

Table 10.4.6 Simultaneous Transmission Scenario : 2G/3G/4G + 5.6 GHz W-LAN (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.6G W-LAN SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Extremity SAR	GPRS 850	Top	0.197	< 0.001	0.197
		Bottom	0.061	0.026	0.087
		Front	0.102	0.002	0.104
		Rear	0.402	0.073	0.475
		Right	0.477	0.021	0.498
		Left	1.539	0.057	**1.596**
	GPRS 1900	Top	0.152	< 0.001	0.152
		Bottom	0.135	0.026	0.161
		Front	0.486	0.002	0.488
		Rear	0.395	0.073	0.468
		Right	0.206	0.021	0.227
		Left	2.433	0.057	**2.490**
	WCDMA 850	Top	0.125	< 0.001	0.125
		Bottom	0.091	0.026	0.117
		Front	0.597	0.002	0.599
		Rear	0.271	0.073	0.344
		Right	0.379	0.021	0.400
		Left	1.418	0.057	**1.475**
	WCDMA 1700	Top	0.157	< 0.001	0.157
		Bottom	0.132	0.026	0.158
		Front	0.561	0.002	0.563
		Rear	0.410	0.073	0.483
		Right	0.369	0.021	0.390
		Left	3.492	0.057	**3.549**
	WCDMA 1900	Top	0.146	< 0.001	0.146
		Bottom	0.124	0.026	0.150
		Front	0.423	0.002	0.425
		Rear	0.406	0.073	0.479
		Right	0.131	0.021	0.152
		Left	3.139	0.057	**3.196**
	LTE Band 12	Top	0.045	< 0.001	0.045
		Bottom	0.030	0.026	0.056
		Front	0.498	0.002	0.500
		Rear	0.408	0.073	0.481
		Right	0.279	0.021	0.300
		Left	1.035	0.057	**1.092**
	LTE Band 13	Top	0.082	< 0.001	0.082
		Bottom	0.019	0.026	0.045
		Front	0.644	0.002	0.646
		Rear	0.195	0.073	0.268
		Right	0.132	0.021	0.153
		Left	0.882	0.057	**0.939**
	LTE Band 26	Top	0.126	< 0.001	0.126
		Bottom	0.041	0.026	0.067
		Front	0.426	0.002	0.428
		Rear	0.286	0.073	0.359
		Right	0.207	0.021	0.228
		Left	1.072	0.057	**1.129**
	LTE Band 4	Top	0.175	< 0.001	0.175
		Bottom	0.122	0.026	0.148
		Front	0.566	0.002	0.568
		Rear	0.379	0.073	0.452
		Right	0.344	0.021	0.365
		Left	3.206	0.057	**3.263**
	LTE Band 25	Top	0.165	< 0.001	0.165
		Bottom	0.116	0.026	0.142
		Front	0.315	0.002	0.317
		Rear	0.393	0.073	0.466
		Right	0.192	0.021	0.213
		Left	2.595	0.057	**2.652**
	LTE Band 7	Top	0.151	< 0.001	0.151
		Bottom	0.034	0.026	0.060
		Front	0.440	0.002	0.442
		Rear	0.669	0.073	0.742
		Right	0.127	0.021	0.148
		Left	3.447	0.057	**3.504**

Table 10.4.7 Simultaneous Transmission Scenario : 2G/3G/4G + 5.8 GHz W-LAN (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	5.8G W-LAN SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Extremity SAR	GPRS 850	Top	0.197	< 0.001	0.197
		Bottom	0.061	0.042	0.103
		Front	0.102	0.003	0.105
		Rear	0.402	0.091	0.493
		Right	0.477	0.015	0.492
		Left	1.539	0.052	**1.591**
	GPRS 1900	Top	0.152	< 0.001	0.152
		Bottom	0.135	0.042	0.177
		Front	0.486	0.003	0.489
		Rear	0.395	0.091	0.486
		Right	0.206	0.015	0.221
		Left	2.433	0.052	**2.485**
	WCDMA 850	Top	0.125	< 0.001	0.125
		Bottom	0.091	0.042	0.133
		Front	0.597	0.003	0.600
		Rear	0.271	0.091	0.362
		Right	0.379	0.015	0.394
		Left	1.418	0.052	**1.470**
	WCDMA 1700	Top	0.157	< 0.001	0.157
		Bottom	0.132	0.042	0.174
		Front	0.561	0.003	0.564
		Rear	0.410	0.091	0.501
		Right	0.369	0.015	0.384
		Left	3.492	0.052	**3.544**
	WCDMA 1900	Top	0.146	< 0.001	0.146
		Bottom	0.124	0.042	0.166
		Front	0.423	0.003	0.426
		Rear	0.406	0.091	0.497
		Right	0.131	0.015	0.146
		Left	3.139	0.052	**3.191**
	LTE Band 12	Top	0.045	< 0.001	0.045
		Bottom	0.030	0.042	0.072
		Front	0.498	0.003	0.501
		Rear	0.408	0.091	0.499
		Right	0.279	0.015	0.294
		Left	1.035	0.052	**1.087**
	LTE Band 13	Top	0.082	< 0.001	0.082
		Bottom	0.019	0.042	0.061
		Front	0.644	0.003	0.647
		Rear	0.195	0.091	0.286
		Right	0.132	0.015	0.147
		Left	0.882	0.052	**0.934**
	LTE Band 26	Top	0.126	< 0.001	0.126
		Bottom	0.041	0.042	0.083
		Front	0.426	0.003	0.429
		Rear	0.286	0.091	0.377
		Right	0.207	0.015	0.222
		Left	1.072	0.052	**1.124**
	LTE Band 4	Top	0.175	< 0.001	0.175
		Bottom	0.122	0.042	0.164
		Front	0.566	0.003	0.569
		Rear	0.379	0.091	0.470
		Right	0.344	0.015	0.359
		Left	3.206	0.052	**3.258**
	LTE Band 25	Top	0.165	< 0.001	0.165
		Bottom	0.116	0.042	0.158
		Front	0.315	0.003	0.318
		Rear	0.393	0.091	0.484
		Right	0.192	0.015	0.207
		Left	2.595	0.052	**2.647**
	LTE Band 7	Top	0.151	< 0.001	0.151
		Bottom	0.034	0.042	0.076
		Front	0.440	0.003	0.443
		Rear	0.669	0.091	0.760
		Right	0.127	0.015	0.142
		Left	3.447	0.052	**3.499**

Table 10.4.8 Simultaneous Transmission Scenario : 2G/3G/4G + Bluetooth (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	2G/3G/4G SAR (W/kg)	Bluetooth SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Extremity SAR	GPRS 850	Top	0.197	0.012	0.209
		Bottom	0.061	< 0.001	0.061
		Front	0.102	0.005	0.107
		Rear	0.402	0.011	0.413
		Right	0.477	0.007	0.484
		Left	1.539	0.034	**1.573**
	GPRS 1900	Top	0.152	0.012	0.164
		Bottom	0.135	< 0.001	0.135
		Front	0.486	0.005	0.491
		Rear	0.395	0.011	0.406
		Right	0.206	0.007	0.213
		Left	2.433	0.034	**2.467**
	WCDMA 850	Top	0.125	0.012	0.137
		Bottom	0.091	< 0.001	0.091
		Front	0.597	0.005	0.602
		Rear	0.271	0.011	0.282
		Right	0.379	0.007	0.386
		Left	1.418	0.034	**1.452**
	WCDMA 1700	Top	0.157	0.012	0.169
		Bottom	0.132	< 0.001	0.132
		Front	0.561	0.005	0.566
		Rear	0.410	0.011	0.421
		Right	0.369	0.007	0.376
		Left	3.492	0.034	**3.526**
	WCDMA 1900	Top	0.146	0.012	0.158
		Bottom	0.124	< 0.001	0.124
		Front	0.423	0.005	0.428
		Rear	0.406	0.011	0.417
		Right	0.131	0.007	0.138
		Left	3.139	0.034	**3.173**
	LTE Band 12	Top	0.045	0.012	0.057
		Bottom	0.030	< 0.001	0.030
		Front	0.498	0.005	0.503
		Rear	0.408	0.011	0.419
		Right	0.279	0.007	0.286
		Left	1.035	0.034	**1.069**
	LTE Band 13	Top	0.082	0.012	0.094
		Bottom	0.019	< 0.001	0.019
		Front	0.644	0.005	0.649
		Rear	0.195	0.011	0.206
		Right	0.132	0.007	0.139
		Left	0.882	0.034	**0.916**
	LTE Band 26	Top	0.126	0.012	0.138
		Bottom	0.041	< 0.001	0.041
		Front	0.426	0.005	0.431
		Rear	0.286	0.011	0.297
		Right	0.207	0.007	0.214
		Left	1.072	0.034	**1.106**
	LTE Band 4	Top	0.175	0.012	0.187
		Bottom	0.122	< 0.001	0.122
		Front	0.566	0.005	0.571
		Rear	0.379	0.011	0.390
		Right	0.344	0.007	0.351
		Left	3.206	0.034	**3.240**
	LTE Band 25	Top	0.165	0.012	0.177
		Bottom	0.116	< 0.001	0.116
		Front	0.315	0.005	0.320
		Rear	0.393	0.011	0.404
		Right	0.192	0.007	0.199
		Left	2.595	0.034	**2.629**
	LTE Band 7	Top	0.151	0.012	0.163
		Bottom	0.034	< 0.001	0.034
		Front	0.440	0.005	0.445
		Rear	0.669	0.011	0.680
		Right	0.127	0.007	0.134
		Left	3.447	0.034	**3.481**

Table 10.4.9 Simultaneous Transmission Scenario : Bluetooth + 5 GHz W-LAN (Extremity at 0 mm)

Exposure Condition	Mode	Configuration	Bluetooth SAR (W/kg)	5 GHz W-LAN SAR (W/kg)	ΣSAR (W/kg)
			1	2	1+2
Extremity SAR	5.3 GHz W-LAN	Top	0.012	< 0.001	0.012
		Bottom	< 0.001	0.025	0.025
		Front	0.005	0.002	0.007
		Rear	0.011	0.072	**0.083**
		Right	0.007	0.012	0.019
		Left	0.034	0.041	0.075
	5.6 GHz W-LAN	Top	0.012	< 0.001	0.012
		Bottom	< 0.001	0.026	0.026
		Front	0.005	0.002	0.007
		Rear	0.011	0.073	0.084
		Right	0.007	0.021	0.028
		Left	0.034	0.057	**0.091**
	5.8 GHz W-LAN	Top	0.012	< 0.001	0.012
		Bottom	< 0.001	0.042	0.042
		Front	0.005	0.003	0.008
		Rear	0.011	0.091	**0.102**
		Right	0.007	0.015	0.022
		Left	0.034	0.052	0.086

10.5 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 and IEEE 1528-2013 Section 6.3.4.1.2.

11. SAR MEASUREMENT VARIABILITY

11.1 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 1-g 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. The same procedures should be adapted for measurements according to extremity exposure limits by applying a factor of 2.5 for extremity exposure to the corresponding SAR thresholds.

Table 13.1 Extremity SAR Measurement Variability Results

Frequency		Mode	Service	# of Time Slots	Spacing [Side]	Measured SAR (10g)	1st Repeated SAR(10g)	Ratio	2nd Repeated SAR(10g)	Ratio	3rd Repeated SAR(10g)	Ratio
MHz	Ch.					(W/kg)	(W/kg)		(W/kg)		(W/kg)	
1 850.2	512	PCS1900	GPRS	4	0 mm [Left]	2.240	2.210	1.01	-	-	-	-
1 732.4	1412	WCDMA 1700	RMC	-	0 mm [Left]	3.390	3.350	1.01	-	-	-	-
1 880.0	9400	WCDMA 1900	RMC	-	0 mm [Left]	3.080	3.040	1.01	-	-	-	-
1 732.5	20175	LTE B4	-	-	0 mm [Left]	3.200	3.190	1.00	-	-	-	-
1 905.0	26590	LTE B2	-	-	0 mm [Left]	2.610	2.590	1.01	-	-	-	-
2 510.0	20850	LTE B7	-	-	0 mm [Left]	3.340	3.290	1.02	-	-	-	-
ANSI / IEEE C95.1-1992– SAFETY LIMIT Spatial Peak Uncontrolled Exposure/General Population Exposure							Extremity 4.0 W/kg (mW/g) averaged over 10 gram					

11.2 Measurement Uncertainty

The measured SAR was < 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.

12. EQUIPMENT LIST

Table 12.1.1 Test Equipment Calibration

	Type	Manufacturer	Model	Cal.Date	Next.Cal.Date	S/N
☒	SEMITEC Engineering	SEMITEC	N/A	N/A	N/A	Shield Room
☒	SEMITEC Engineering	SEMITEC	N/A	N/A	N/A	Shield Room
☒	Robot	SPEAG	TX90XL	N/A	N/A	F13/5P9GA1/A/01
☒	Robot	SPEAG	TX60L	N/A	N/A	F14/5WV5D1/A/01
☒	Robot Controller	SPEAG	CS8C	N/A	N/A	F13/5P9GA1/C/01
☒	Robot Controller	SPEAG	CS8C	N/A	N/A	F14/5WV5D1/C/01
☒	Joystick	SPEAG	N/A	N/A	N/A	S-12450905
☒	Joystick	SPEAG	P21142605A	N/A	N/A	005695
☒	Intel Core i7-3 770 3.40 GHz Windows 7 Professional	N/A	N/A	N/A	N/A	N/A
☒	Intel Core i7-3 770 3.40 GHz Windows 7 Professional	N/A	N/A	N/A	N/A	N/A
☒	Probe Alignment Unit LB	N/A	N/A	N/A	N/A	SE UKS 030 AA
☒	Probe Alignment Unit LB	N/A	N/A	N/A	N/A	SE UKS 030 AA
☒	Device Holder	SPEAG	SD000H01HA	N/A	N/A	N/A
☒	Device Holder	SPEAG	SD000H01KA	N/A	N/A	N/A
☒	Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1783
☒	Twin SAM Phantom	SPEAG	QD000P40CD	N/A	N/A	1837
☒	Data Acquisition Electronics	SPEAG	DAE4V1	2020-05-25	2021-05-25	1392
☒	Data Acquisition Electronics	SPEAG	DAE4V1	2020-07-30	2021-07-30	1335
☒	Dosimetric E-Field Probe	SPEAG	EX3DV4	2020-05-27	2021-05-27	3866
☒	Dosimetric E-Field Probe	SPEAG	EX3DV4	2020-01-30	2021-01-30	7368
☒	750MHz SAR Dipole	SPEAG	D750V3	2020-01-22	2022-01-22	1049
☒	835MHz SAR Dipole	SPEAG	D835V2	2020-05-19	2022-05-19	4d159
☒	1800MHz SAR Dipole	SPEAG	D1800V2	2020-03-20	2022-03-20	2d202
☒	1900MHz SAR Dipole	SPEAG	D1900V2	2020-05-19	2022-05-19	5d176
☒	2450MHz SAR Dipole	SPEAG	D2450V2	2020-08-18	2022-08-18	920
☒	2600MHz SAR Dipole	SPEAG	D2600V2	2020-02-20	2022-02-20	1103
☒	5GHz SAR Dipole	SPEAG	D5GHzV2	2020-02-27	2022-02-27	1212
☒	Network Analyzer	Agilent	E5071C	2020-06-24	2021-06-24	MY46106970
☒	Signal Generator	Agilent	E4438C	2020-06-24	2021-06-24	US41461520
☒	Amplifier	RFBAY.Inc	MPA-40-40	2019-12-16	2020-12-16	21151801
☒	Amplifier	EMPOWER	BBS3Q7ELU	2020-06-24	2021-06-24	1020
☒	High Power RF Amplifier	EMPOWER	BBS3Q8CCJ	2020-06-24	2021-06-24	1005
☒	Power Meter	HP	EPM-442A	2019-12-16	2020-12-16	GB37170267
☒	Power Meter	HP	EPM-442A	2019-12-16	2020-12-16	GB37170413
☒	Power Sensor	HP	8481A	2019-12-16	2020-12-16	US37294267
☒	Power Sensor	HP	8481A	2019-12-16	2020-12-16	3318A96566
☒	Power Sensor	HP	8481A	2019-12-16	2020-12-16	2702A65976
☒	Dual Directional Coupler	Agilent	778D-012	2019-12-16	2020-12-16	50228
☒	Directional Coupler	HP	772D	2020-06-24	2021-06-24	2889A01064
☒	Low Pass Filter 1GHz	Wainwright Instruments	WLK6-1000-1400-9000-60SS	2020-06-24	2021-06-24	165
☒	Low Pass Filter 1.5GHz	Micro LAB	LA-15N	2020-06-24	2021-06-24	2
☒	Low Pass Filter 3.0GHz	Micro LAB	LA-30N	2020-06-24	2021-06-24	2
☒	Low Pass Filter 6.0GHz	Micro LAB	LA-60N	2019-12-16	2020-12-16	03942
☒	Attenuators(10 dB)	WEINSCHEL	23-10-34	2019-12-16	2020-12-16	BP4387
☒	Attenuators	Cernexwave	CFADC2603U5	2020-06-24	2021-06-24	C11711
☒	Dielectric Probe kit	SPEAG	DAK-3.5	2019-11-19	2020-11-19	1092
☒	8960 Series 10 Wireless Comms. Test Set	Agilent	E5515C	2020-06-24	2021-06-24	GB41321164
☒	Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2019-12-16	2020-12-16	101414
☒	Wideband Radio Communication Tester	Rohde Schwarz	CMW500	2020-04-29	2021-04-29	147898
☒	Radio Communication Analyzer	Agilent	E5515E	2020-06-24	2021-06-24	MY52113012
☒	Power Splitter	Anritsu	K241B	2019-12-16	2020-12-16	1301183
☒	Bluetooth Tester	TESCOM	TC-3000C	2020-06-24	2021-06-24	3000C000563

NOTE(S):

1. The E-field probe was calibrated by SPEAG, by temperature measurement procedure. Dipole Verification measurement is performed by DT&C before each test. The brain and muscle simulating material are calibrated by DT&C using the dielectric probe system and network analyzer to determine the conductivity and permittivity (dielectric constant) of the brain and muscle-equivalent material. Each equipment item was used solely within its respective calibration period.
2. 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. 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.

13. MEASUREMENT UNCERTAINTIES

750 MHz Head (SN: 3866)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.0	Normal	1	0.78	0.71	3.1	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.9	1.0	10
Temp. unc. - Conductivity	1.8	Rectangular	√3	0.78	0.71	0.8	0.7	∞
Temp. unc. - Permittivity	2.0	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**11**	330
Expanded Uncertainty (k=2)						**24**	**22**	

$U(1\ g) = k \cdot u_c$
= 2 · 12 %
= 24 % (The confidence level is about 95 % k = 2)
$U(10\ g) = k \cdot u_c$
= 2 · 11 %
= 22 % (The confidence level is about 95 % k = 2)

The above measurement uncertainties are according to IEEE Std 1528

835 MHz Head (SN: 3866)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.1	Normal	1	0.78	0.71	3.2	2.9	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	3.9	Normal	1	0.23	0.26	0.9	1.0	10
Temp. unc. - Conductivity	2.0	Rectangular	√3	0.78	0.71	0.9	0.8	∞
Temp. unc. - Permittivity	2.0	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**11**	330
Expanded Uncertainty (k=2)						**24**	**22**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 11\ \%$
$= 22\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

1 800 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.0	Normal	1	0.78	0.71	3.1	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.2	Normal	1	0.23	0.26	1.0	1.1	10
Temp. unc. - Conductivity	2.1	Rectangular	√3	0.78	0.71	0.9	0.9	∞
Temp. unc. - Permittivity	2.1	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**11**	330
Expanded Uncertainty (k=2)						**24**	**22**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 11\ \%$
$= 22\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

1 900 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	3.8	Normal	1	0.78	0.71	3.0	2.7	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.9	1.0	10
Temp. unc. - Conductivity	1.8	Rectangular	√3	0.78	0.71	0.8	0.7	∞
Temp. unc. - Permittivity	1.9	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**11**	330
Expanded Uncertainty (k=2)						**24**	**22**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 11\ \%$
$= 22\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

2 450 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.2	Normal	1	0.78	0.71	3.3	3.0	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.9	1.0	10
Temp. unc. - Conductivity	2.0	Rectangular	√3	0.78	0.71	0.9	0.8	∞
Temp. unc. - Permittivity	1.8	Rectangular	√3	0.23	0.26	0.2	0.3	∞
Combined Standard Uncertainty						**12.**	**12**	330
Expanded Uncertainty (k=2)						**24**	**24**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

2 600 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.0	Normal	1	1	1	6.0	6.0	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.0	Normal	1	0.78	0.71	3.1	2.8	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.1	Normal	1	0.23	0.26	0.9	1.1	10
Temp. unc. - Conductivity	2.1	Rectangular	√3	0.78	0.71	0.9	0.9	∞
Temp. unc. - Permittivity	2.0	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12.**	**11**	330
Expanded Uncertainty (k=2)						**24**	**22**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 11\ \%$
$= 22\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

5 200 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.55	Normal	1	1	1	6.6	6.6	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.2	Normal	1	0.78	0.71	3.3	3.0	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.1	Normal	1	0.23	0.26	0.9	1.1	10
Temp. unc. - Conductivity	1.8	Rectangular	√3	0.78	0.71	0.8	0.7	∞
Temp. unc. - Permittivity	1.9	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**12**	330
Expanded Uncertainty (k=2)						**24**	**24**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

5 300 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.55	Normal	1	1	1	6.6	6.6	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	3.8	Normal	1	0.78	0.71	3.0	2.7	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.2	Normal	1	0.23	0.26	1.0	1.1	10
Temp. unc. - Conductivity	1.8	Rectangular	√3	0.78	0.71	0.8	0.7	∞
Temp. unc. - Permittivity	2.0	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**12**	330
Expanded Uncertainty (k=2)						**24**	**24**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

5 500 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.55	Normal	1	1	1	6.6	6.6	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	3.7	Normal	1	0.78	0.71	2.9	2.6	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	3.9	Normal	1	0.23	0.26	0.9	1.0	10
Temp. unc. - Conductivity	1.8	Rectangular	√3	0.78	0.71	0.8	0.7	∞
Temp. unc. - Permittivity	1.9	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**12**	330
Expanded Uncertainty (k=2)						**24**	**24**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

5 600 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.55	Normal	1	1	1	6.6	6.6	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	4.2	Normal	1	0.78	0.71	3.3	3.0	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.2	Normal	1	0.23	0.26	1.0	1.1	10
Temp. unc. - Conductivity	2.0	Rectangular	√3	0.78	0.71	0.9	0.8	∞
Temp. unc. - Permittivity	2.0	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**12**	330
Expanded Uncertainty (k=2)						**24**	**24**	

$U(1\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)
$U(10\ g) = k \cdot u_c$
$= 2 \cdot 12\ \%$
$= 24\ \%$ (The confidence level is about 95 % $k = 2$)

The above measurement uncertainties are according to IEEE Std 1528

5 800 MHz Head (SN: 7368)

Error Description	Uncertainty value ±%	Probability Distribution	Divisor	(Ci) 1 g	(Ci) 10 g	Standard 1 g (± %)	Standard 10 g (± %)	vi 2 or Veff
Measurement System								
Probe calibration	6.55	Normal	1	1	1	6.6	6.6	∞
Isotropy	1.3	Normal	1	1	1	1.3	1.3	∞
Boundary Effects	2.0	Rectangular	√3	1	1	1.2	1.2	∞
Probe Linearity	0.3	Normal	1	1	1	0.3	0.3	∞
Probe modulation response	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Detection limits	0.25	Rectangular	√3	1	1	0.14	0.14	∞
Readout Electronics	0.3	Normal	1	1	1	0.3	0.3	∞
Response time	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Integration time	2.6	Rectangular	√3	1	1	1.5	1.5	∞
RF Ambient Conditions – Noise	3.0	Rectangular	√3	1	1	1.7	1.7	∞
RF Ambient Conditions – Reflections	3.0	Rectangular	√3	1	1	1.7	1.7	∞
Probe Positioner	0.8	Rectangular	√3	1	1	0.46	0.46	∞
Probe Positioning	6.7	Rectangular	√3	1	1	3.9	3.9	∞
Algorithms for Max. SAR Eval.	4.0	Rectangular	√3	1	1	2.3	2.3	∞
Test Sample Related								
Device Positioning	2.9	Normal	1	1	1	2.9	2.9	145
Device Holder	3.6	Normal	1	1	1	3.6	3.6	5
Power Drift	5.0	Rectangular	√3	1	1	2.9	2.9	∞
SAR Scaling	0.0	Rectangular	√3	1	1	0.0	0.0	∞
Physical Parameters								
Phantom Shell	7.6	Rectangular	√3	1	1	4.4	4.4	∞
SAR correction	0.0	Normal	1	1	0.84	0.0	0.0	∞
Liquid conductivity (Target)	5.0	Rectangular	√3	0.64	0.43	1.8	1.2	∞
Liquid conductivity (Meas.)	3.8	Normal	1	0.78	0.71	3.0	2.7	10
Liquid permittivity (Target)	5.0	Rectangular	√3	0.60	0.49	1.7	1.4	∞
Liquid permittivity (Meas.)	4.0	Normal	1	0.23	0.26	0.9	1.0	10
Temp. unc. - Conductivity	1.8	Rectangular	√3	0.78	0.71	0.8	0.7	∞
Temp. unc. - Permittivity	1.9	Rectangular	√3	0.23	0.26	0.3	0.3	∞
Combined Standard Uncertainty						**12**	**12**	330
Expanded Uncertainty (k=2)						**24**	**24**	

$U(1\ g) = k \cdot u_c$
= 2 · 12 %
= 24 % (The confidence level is about 95 % k = 2)
$U(10\ g) = k \cdot u_c$
= 2 · 12 %
= 24 % (The confidence level is about 95 % k = 2)

The above measurement uncertainties are according to IEEE Std 1528

14. CONCLUSION

Measurement Conclusion

The SAR measurement indicates that the EUT complies with the RF radiation exposure limits of the FCC. These measurements are taken to simulate the RF effects exposure under the worst-case conditions. Precise laboratory measures were taken to assure repeatability of the tests. The tested device complies with the requirements in respect to all parameters subject to the test. The test results and statements relate only to the item(s) tested.

Please note that the absorption and distribution of electromagnetic energy in the body are every 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 impossible biological effect 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 innumerable factors may interact to determine the specific biological outcome of an exposure to electromagnetic fields, any protection guide shall consider maximal amplification of biological effects as a result of field-body interactions, environmental conditions, and physiological variables.

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APPENDIX A. – Probe Calibration Data

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
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Accreditation No.: SCS 0108

Client DT&C (Dymstec)

Certificate No: EX3-3866_May20

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:3866
Calibration procedure(s)	QA CAL-01.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes
Calibration date:	May 27, 2020

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	01-Apr-20 (No. 217-03100/03101)	Apr-21
Power sensor NRP-Z91	SN: 103244	01-Apr-20 (No. 217-03100)	Apr-21
Power sensor NRP-Z91	SN: 103245	01-Apr-20 (No. 217-03101)	Apr-21
Reference 20 dB Attenuator	SN: CC2552 (20x)	31-Mar-20 (No. 217-03106)	Apr-21
DAE4	SN: 660	27-Dec-19 (No. DAE4-660_Dec19)	Dec-20
Reference Probe ES3DV2	SN: 3013	31-Dec-19 (No. ES3-3013_Dec19)	Dec-20
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Leif Klysner	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: May 30, 2020

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

Certificate No: EX3-3866_May20 Page 1 of 22

Calibration Laboratory of
Schmid & Partner
Engineering AG
Zeughausstrasse 43, 8004 Zurich, Switzerland

S Schweizerischer Kalibrierdienst
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Accredited by the Swiss Accreditation Service (SAS)
The Swiss Accreditation Service is one of the signatories to the EA Multilateral Agreement for the recognition of calibration certificates

Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3866

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.42	0.33	0.36	± 10.1 %
DCP (mV)[B]	98.5	103.7	101.3	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB√µV	C	D dB	VR mV	Max dev.	Max Unc[E] (k=2)
0	CW	X	0.00	0.00	1.00	0.00	125.1	± 3.0 %	± 4.7 %
		Y	0.00	0.00	1.00		129.5		
		Z	0.00	0.00	1.00		133.6		
10352-AAA	Pulse Waveform (200Hz, 10%)	X	20.00	95.24	24.54	10.00	60.0	± 3.4 %	± 9.6 %
		Y	4.15	70.71	13.73		60.0		
		Z	20.00	90.90	20.57		60.0		
10353-AAA	Pulse Waveform (200Hz, 20%)	X	20.00	95.86	23.70	6.99	80.0	± 1.9 %	± 9.6 %
		Y	4.17	73.24	13.60		80.0		
		Z	20.00	93.13	20.51		80.0		
10354-AAA	Pulse Waveform (200Hz, 40%)	X	20.00	99.96	24.31	3.98	95.0	± 1.5 %	± 9.6 %
		Y	6.78	80.59	14.97		95.0		
		Z	20.00	99.54	22.28		95.0		
10355-AAA	Pulse Waveform (200Hz, 60%)	X	20.00	107.40	26.55	2.22	120.0	± 1.6 %	± 9.6 %
		Y	20.00	93.68	18.11		120.0		
		Z	20.00	105.04	23.76		120.0		
10387-AAA	QPSK Waveform, 1 MHz	X	2.02	66.38	15.96	1.00	150.0	± 1.4 %	± 9.6 %
		Y	1.75	65.90	15.07		150.0		
		Z	1.75	66.49	15.22		150.0		
10388-AAA	QPSK Waveform, 10 MHz	X	2.71	70.07	16.77	0.00	150.0	± 1.0 %	± 9.6 %
		Y	2.30	68.12	15.74		150.0		
		Z	2.29	68.22	15.87		150.0		
10396-AAA	64-QAM Waveform, 100 kHz	X	3.69	72.06	19.30	3.01	150.0	± 0.7 %	± 9.6 %
		Y	3.27	72.40	19.35		150.0		
		Z	2.86	70.61	18.64		150.0		
10399-AAA	64-QAM Waveform, 40 MHz	X	3.67	67.47	16.03	0.00	150.0	± 0.8 %	± 9.6 %
		Y	3.42	66.63	15.48		150.0		
		Z	3.44	66.76	15.56		150.0		
10414-AAA	WLAN CCDF, 64-QAM, 40MHz	X	5.10	65.61	15.52	0.00	150.0	± 1.0 %	± 9.6 %
		Y	4.80	65.30	15.26		150.0		
		Z	4.79	65.47	15.35		150.0		

Note: For details on UID parameters see Appendix

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Pages 5 and 6).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3866

Sensor Model Parameters

	C1 fF	C2 fF	α V^{-1}	T1 $ms.V^{-2}$	T2 $ms.V^{-1}$	T3 ms	T4 V^{-2}	T5 V^{-1}	T6
X	76.4	559.06	34.40	25.15	0.69	5.10	0.74	0.53	1.01
Y	50.8	365.67	33.33	9.41	0.71	4.95	2.00	0.09	1.01
Z	43.2	310.23	33.20	11.01	0.22	5.01	1.62	0.06	1.00

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	61.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

DASY/EASY - Parameters of Probe: EX3DV4 - SN:3866

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	9.46	9.46	9.46	0.50	0.90	± 12.0 %
835	41.5	0.90	9.20	9.20	9.20	0.51	0.80	± 12.0 %
900	41.5	0.97	9.07	9.07	9.07	0.46	0.80	± 12.0 %
1750	40.1	1.37	8.01	8.01	8.01	0.33	0.86	± 12.0 %
1900	40.0	1.40	7.80	7.80	7.80	0.29	0.86	± 12.0 %
2300	39.5	1.67	7.54	7.54	7.54	0.37	0.90	± 12.0 %
2450	39.2	1.80	7.20	7.20	7.20	0.35	0.94	± 12.0 %
2600	39.0	1.96	7.04	7.04	7.04	0.41	0.90	± 12.0 %
5200	36.0	4.66	5.09	5.09	5.09	0.40	1.80	± 13.1 %
5300	35.9	4.76	4.89	4.89	4.89	0.40	1.80	± 13.1 %
5500	35.6	4.96	4.51	4.51	4.51	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.42	4.42	4.42	0.40	1.80	± 13.1 %
5800	35.3	5.27	4.60	4.60	4.60	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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DASY/EASY - Parameters of Probe: EX3DV4 - SN:3866

Calibration Parameter Determined in Body Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	55.5	0.96	9.36	9.36	9.36	0.39	0.80	± 12.0 %
835	55.2	0.97	9.32	9.32	9.32	0.39	0.89	± 12.0 %
900	55.0	1.05	9.21	9.21	9.21	0.46	0.80	± 12.0 %
1750	53.4	1.49	7.92	7.92	7.92	0.35	0.86	± 12.0 %
1900	53.3	1.52	7.70	7.70	7.70	0.40	0.86	± 12.0 %
2300	52.9	1.81	7.45	7.45	7.45	0.41	0.90	± 12.0 %
2450	52.7	1.95	7.36	7.36	7.36	0.30	0.94	± 12.0 %
2600	52.5	2.16	7.19	7.19	7.19	0.38	0.90	± 12.0 %
5200	49.0	5.30	4.70	4.70	4.70	0.50	1.90	± 13.1 %
5300	48.9	5.42	4.51	4.51	4.51	0.50	1.90	± 13.1 %
5500	48.6	5.65	4.03	4.03	4.03	0.50	1.90	± 13.1 %
5600	48.5	5.77	3.87	3.87	3.87	0.50	1.90	± 13.1 %
5800	48.2	6.00	4.00	4.00	4.00	0.50	1.90	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.
[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.
[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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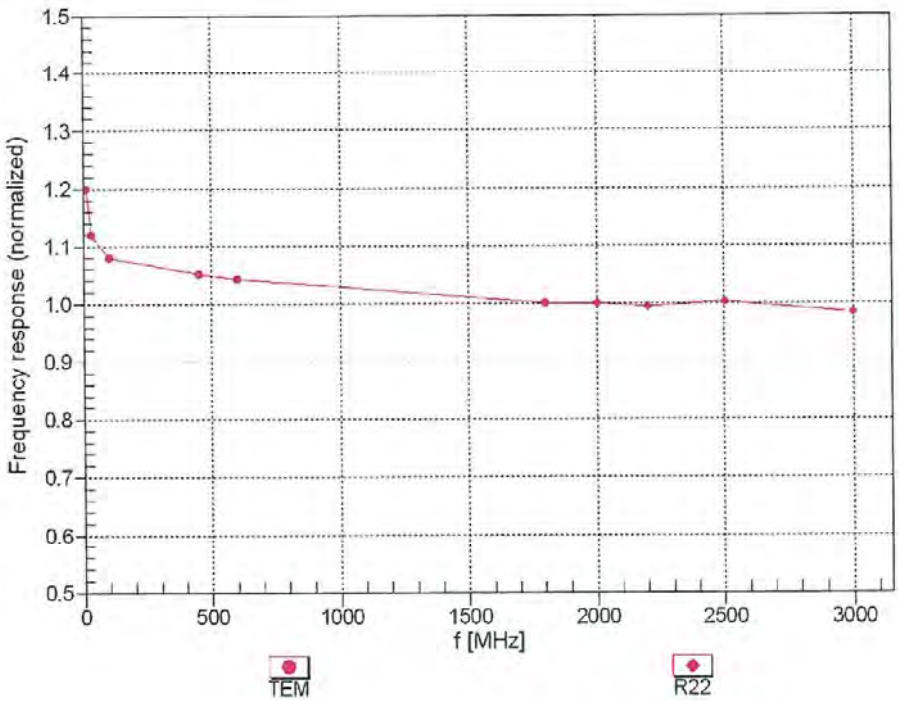
Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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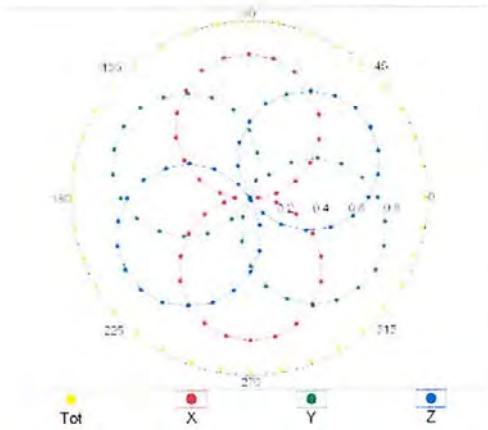
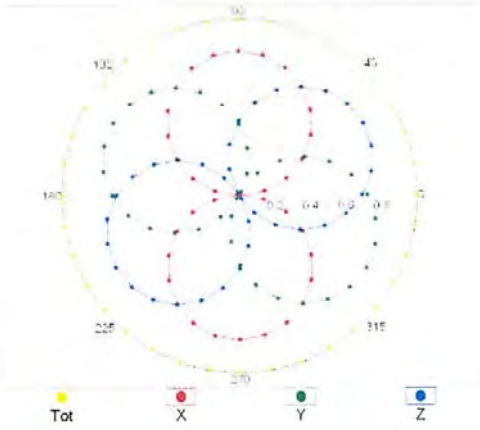
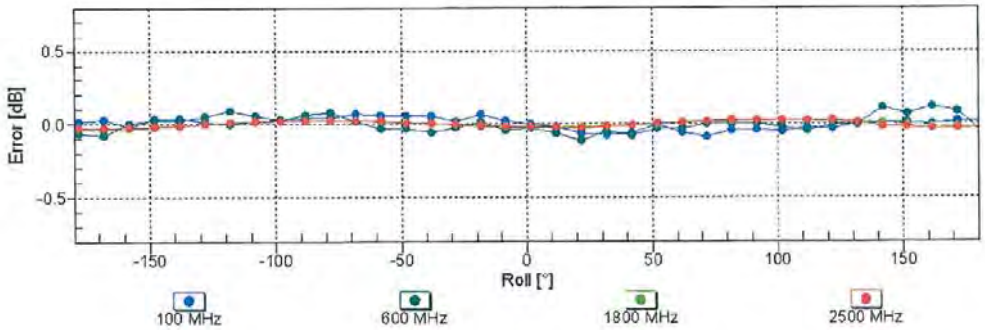
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22





Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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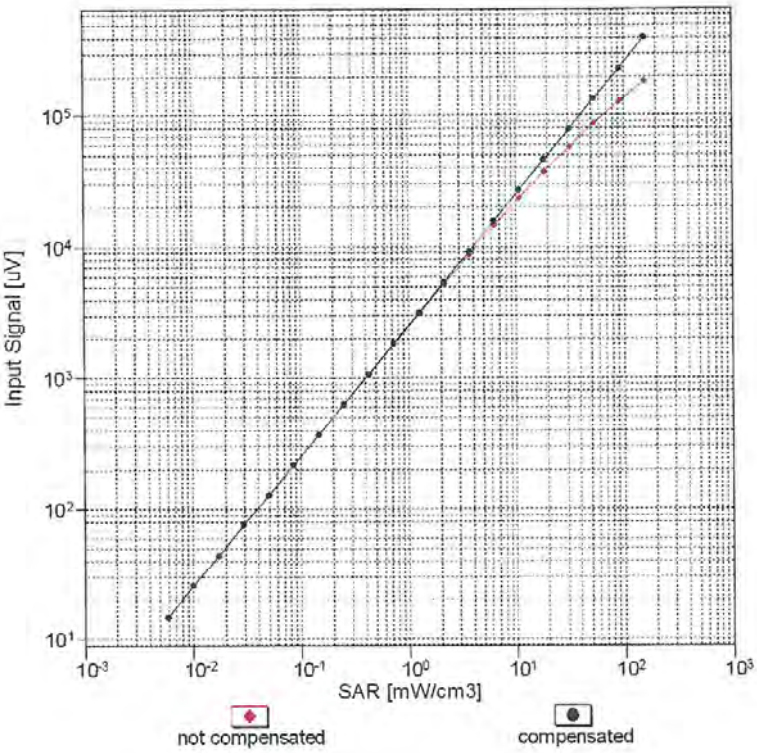
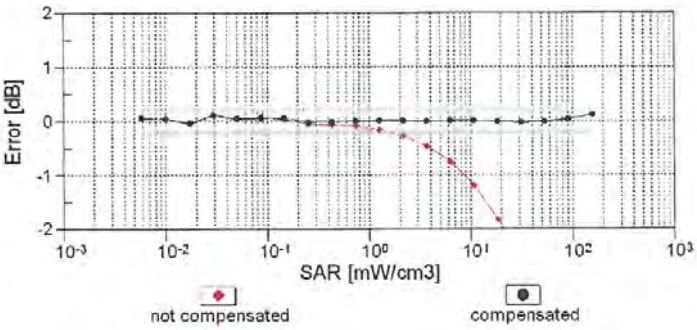
Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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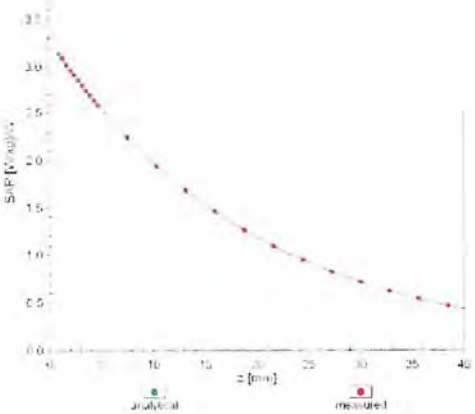
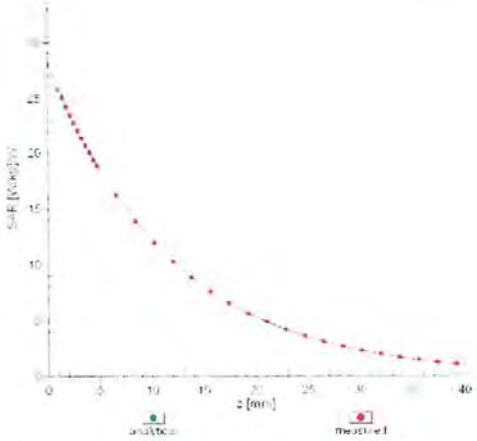
Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

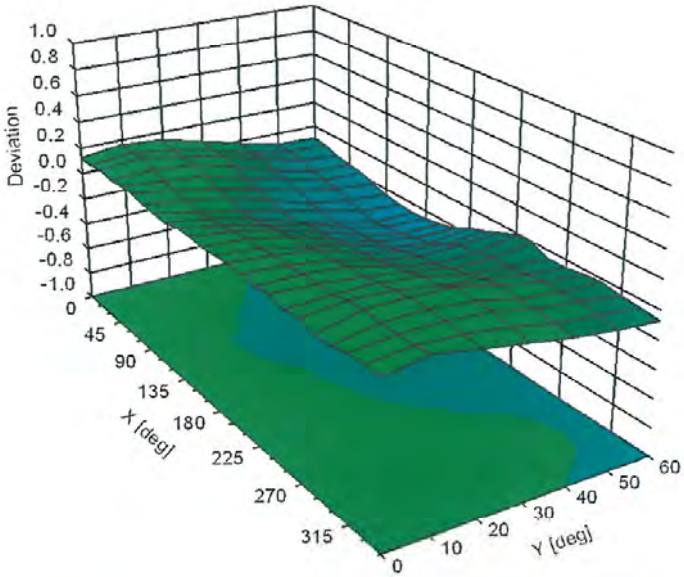


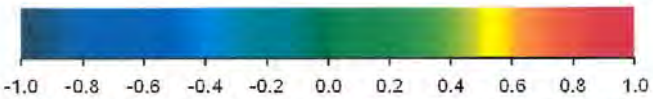
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

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Appendix: Modulation Calibration Parameters

UID	Rev	Communication System Name	Group	PAR (dB)	Unc[E] (k=2)
0		CW	CW	0.00	± 4.7 %
10010	CAA	SAR Validation (Square, 100ms, 10ms)	Test	10.00	± 9.6 %
10011	CAB	UMTS-FDD (WCDMA)	WCDMA	2.91	± 9.6 %
10012	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps)	WLAN	1.87	± 9.6 %
10013	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps)	WLAN	9.46	± 9.6 %
10021	DAC	GSM-FDD (TDMA, GMSK)	GSM	9.39	± 9.6 %
10023	DAC	GPRS-FDD (TDMA, GMSK, TN 0)	GSM	9.57	± 9.6 %
10024	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1)	GSM	6.56	± 9.6 %
10025	DAC	EDGE-FDD (TDMA, 8PSK, TN 0)	GSM	12.62	± 9.6 %
10026	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1)	GSM	9.55	± 9.6 %
10027	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2)	GSM	4.80	± 9.6 %
10028	DAC	GPRS-FDD (TDMA, GMSK, TN 0-1-2-3)	GSM	3.55	± 9.6 %
10029	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2)	GSM	7.78	± 9.6 %
10030	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH1)	Bluetooth	5.30	± 9.6 %
10031	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH3)	Bluetooth	1.87	± 9.6 %
10032	CAA	IEEE 802.15.1 Bluetooth (GFSK, DH5)	Bluetooth	1.16	± 9.6 %
10033	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH1)	Bluetooth	7.74	± 9.6 %
10034	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH3)	Bluetooth	4.53	± 9.6 %
10035	CAA	IEEE 802.15.1 Bluetooth (PI/4-DQPSK, DH5)	Bluetooth	3.83	± 9.6 %
10036	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH1)	Bluetooth	8.01	± 9.6 %
10037	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH3)	Bluetooth	4.77	± 9.6 %
10038	CAA	IEEE 802.15.1 Bluetooth (8-DPSK, DH5)	Bluetooth	4.10	± 9.6 %
10039	CAB	CDMA2000 (1xRTT, RC1)	CDMA2000	4.57	± 9.6 %
10042	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Halfrate)	AMPS	7.78	± 9.6 %
10044	CAA	IS-91/EIA/TIA-553 FDD (FDMA, FM)	AMPS	0.00	± 9.6 %
10048	CAA	DECT (TDD, TDMA/FDM, GFSK, Full Slot, 24)	DECT	13.80	± 9.6 %
10049	CAA	DECT (TDD, TDMA/FDM, GFSK, Double Slot, 12)	DECT	10.79	± 9.6 %
10056	CAA	UMTS-TDD (TD-SCDMA, 1.28 Mcps)	TD-SCDMA	11.01	± 9.6 %
10058	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-1-2-3)	GSM	6.52	± 9.6 %
10059	CAB	IEEE 802.11b WIFI 2.4 GHz (DSSS, 2 Mbps)	WLAN	2.12	± 9.6 %
10060	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps)	WLAN	2.83	± 9.6 %
10061	CAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps)	WLAN	3.60	± 9.6 %
10062	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps)	WLAN	8.68	± 9.6 %
10063	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps)	WLAN	8.63	± 9.6 %
10064	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps)	WLAN	9.09	± 9.6 %
10065	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps)	WLAN	9.00	± 9.6 %
10066	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps)	WLAN	9.38	± 9.6 %
10067	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps)	WLAN	10.12	± 9.6 %
10068	CAC	IEEE 802.11a/h WIFI 5 GHz (OFDM, 48 Mbps)	WLAN	10.24	± 9.6 %
10069	CAC	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps)	WLAN	10.56	± 9.6 %
10071	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 9 Mbps)	WLAN	9.83	± 9.6 %
10072	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 12 Mbps)	WLAN	9.62	± 9.6 %
10073	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 18 Mbps)	WLAN	9.94	± 9.6 %
10074	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 24 Mbps)	WLAN	10.30	± 9.6 %
10075	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 36 Mbps)	WLAN	10.77	± 9.6 %
10076	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 48 Mbps)	WLAN	10.94	± 9.6 %
10077	CAB	IEEE 802.11g WiFi 2.4 GHz (DSSS/OFDM, 54 Mbps)	WLAN	11.00	± 9.6 %
10081	CAB	CDMA2000 (1xRTT, RC3)	CDMA2000	3.97	± 9.6 %
10082	CAB	IS-54 / IS-136 FDD (TDMA/FDM, PI/4-DQPSK, Fullrate)	AMPS	4.77	± 9.6 %
10090	DAC	GPRS-FDD (TDMA, GMSK, TN 0-4)	GSM	6.56	± 9.6 %
10097	CAB	UMTS-FDD (HSDPA)	WCDMA	3.98	± 9.6 %
10098	CAB	UMTS-FDD (HSUPA, Subtest 2)	WCDMA	3.98	± 9.6 %
10099	DAC	EDGE-FDD (TDMA, 8PSK, TN 0-4)	GSM	9.55	± 9.6 %
10100	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-FDD	5.67	± 9.6 %
10101	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10102	CAE	LTE-FDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10103	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10104	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM)	LTE-TDD	9.97	± 9.6 %
10105	CAG	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM)	LTE-TDD	10.01	± 9.6 %
10108	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-FDD	5.80	± 9.6 %

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10109	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10110	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-FDD	5.75	± 9.6 %
10111	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-FDD	6.44	± 9.6 %
10112	CAG	LTE-FDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-FDD	6.59	± 9.6 %
10113	CAG	LTE-FDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-FDD	6.62	± 9.6 %
10114	CAC	IEEE 802.11n (HT Greenfield, 13.5 Mbps, BPSK)	WLAN	8.10	± 9.6 %
10115	CAC	IEEE 802.11n (HT Greenfield, 81 Mbps, 16-QAM)	WLAN	8.46	± 9.6 %
10116	CAC	IEEE 802.11n (HT Greenfield, 135 Mbps, 64-QAM)	WLAN	8.15	± 9.6 %
10117	CAC	IEEE 802.11n (HT Mixed, 13.5 Mbps, BPSK)	WLAN	8.07	± 9.6 %
10118	CAC	IEEE 802.11n (HT Mixed, 81 Mbps, 16-QAM)	WLAN	8.59	± 9.6 %
10119	CAC	IEEE 802.11n (HT Mixed, 135 Mbps, 64-QAM)	WLAN	8.13	± 9.6 %
10140	CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-FDD	6.49	± 9.6 %
10141	CAE	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-FDD	6.53	± 9.6 %
10142	CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10143	CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-FDD	6.35	± 9.6 %
10144	CAE	LTE-FDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-FDD	6.65	± 9.6 %
10145	CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-FDD	5.76	± 9.6 %
10146	CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.41	± 9.6 %
10147	CAF	LTE-FDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.72	± 9.6 %
10149	CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-FDD	6.42	± 9.6 %
10150	CAE	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10151	CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-TDD	9.28	± 9.6 %
10152	CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM)	LTE-TDD	9.92	± 9.6 %
10153	CAG	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM)	LTE-TDD	10.05	± 9.6 %
10154	CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-FDD	5.75	± 9.6 %
10155	CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10156	CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-FDD	5.79	± 9.6 %
10157	CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-FDD	6.49	± 9.6 %
10158	CAG	LTE-FDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-FDD	6.62	± 9.6 %
10159	CAG	LTE-FDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-FDD	6.56	± 9.6 %
10160	CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-FDD	5.82	± 9.6 %
10161	CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-FDD	6.43	± 9.6 %
10162	CAE	LTE-FDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-FDD	6.58	± 9.6 %
10166	CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-FDD	5.46	± 9.6 %
10167	CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.21	± 9.6 %
10168	CAF	LTE-FDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.79	± 9.6 %
10169	CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10170	CAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10171	AAE	LTE-FDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-FDD	6.49	± 9.6 %
10172	CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10173	CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10174	CAG	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10175	CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10176	CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10177	CAI	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10178	CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10179	CAG	LTE-FDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10180	CAG	LTE-FDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10181	CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10182	CAE	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10183	AAD	LTE-FDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10184	CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10185	CAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-FDD	6.51	± 9.6 %
10186	AAE	LTE-FDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10187	CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-FDD	5.73	± 9.6 %
10188	CAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-FDD	6.52	± 9.6 %
10189	AAF	LTE-FDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-FDD	6.50	± 9.6 %
10193	CAC	IEEE 802.11n (HT Greenfield, 6.5 Mbps, BPSK)	WLAN	8.09	± 9.6 %
10194	CAC	IEEE 802.11n (HT Greenfield, 39 Mbps, 16-QAM)	WLAN	8.12	± 9.6 %
10195	CAC	IEEE 802.11n (HT Greenfield, 65 Mbps, 64-QAM)	WLAN	8.21	± 9.6 %
10196	CAC	IEEE 802.11n (HT Mixed, 6.5 Mbps, BPSK)	WLAN	8.10	± 9.6 %
10197	CAC	IEEE 802.11n (HT Mixed, 39 Mbps, 16-QAM)	WLAN	8.13	± 9.6 %
10198	CAC	IEEE 802.11n (HT Mixed, 65 Mbps, 64-QAM)	WLAN	8.27	± 9.6 %
10219	CAC	IEEE 802.11n (HT Mixed, 7.2 Mbps, BPSK)	WLAN	8.03	± 9.6 %

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10220	CAC	IEEE 802.11n (HT Mixed, 43.3 Mbps, 16-QAM)	WLAN	8.13	± 9.6 %
10221	CAC	IEEE 802.11n (HT Mixed, 72.2 Mbps, 64-QAM)	WLAN	8.27	± 9.6 %
10222	CAC	IEEE 802.11n (HT Mixed, 15 Mbps, BPSK)	WLAN	8.06	± 9.6 %
10223	CAC	IEEE 802.11n (HT Mixed, 90 Mbps, 16-QAM)	WLAN	8.48	± 9.6 %
10224	CAC	IEEE 802.11n (HT Mixed, 150 Mbps, 64-QAM)	WLAN	8.08	± 9.6 %
10225	CAB	UMTS-FDD (HSPA+)	WCDMA	5.97	± 9.6 %
10226	CAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.49	± 9.6 %
10227	CAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.26	± 9.6 %
10228	CAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK)	LTE-TDD	9.22	± 9.6 %
10229	CAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10230	CAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10231	CAD	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK)	LTE-TDD	9.19	± 9.6 %
10232	CAG	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10233	CAG	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10234	CAG	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10235	CAG	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10236	CAG	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10237	CAG	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10238	CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM)	LTE-TDD	9.48	± 9.6 %
10239	CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM)	LTE-TDD	10.25	± 9.6 %
10240	CAF	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK)	LTE-TDD	9.21	± 9.6 %
10241	CAB	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.82	± 9.6 %
10242	CAB	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM)	LTE-TDD	9.86	± 9.6 %
10243	CAB	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK)	LTE-TDD	9.46	± 9.6 %
10244	CAD	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-TDD	10.06	± 9.6 %
10245	CAD	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	LTE-TDD	10.06	± 9.6 %
10246	CAD	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-TDD	9.30	± 9.6 %
10247	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM)	LTE-TDD	9.91	± 9.6 %
10248	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM)	LTE-TDD	10.09	± 9.6 %
10249	CAG	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK)	LTE-TDD	9.29	± 9.6 %
10250	CAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM)	LTE-TDD	9.81	± 9.6 %
10251	CAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM)	LTE-TDD	10.17	± 9.6 %
10252	CAG	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK)	LTE-TDD	9.24	± 9.6 %
10253	CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM)	LTE-TDD	9.90	± 9.6 %
10254	CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM)	LTE-TDD	10.14	± 9.6 %
10255	CAF	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK)	LTE-TDD	9.20	± 9.6 %
10256	CAB	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM)	LTE-TDD	9.96	± 9.6 %
10257	CAB	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM)	LTE-TDD	10.08	± 9.6 %
10258	CAB	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK)	LTE-TDD	9.34	± 9.6 %
10259	CAD	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM)	LTE-TDD	9.98	± 9.6 %
10260	CAD	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM)	LTE-TDD	9.97	± 9.6 %
10261	CAD	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK)	LTE-TDD	9.24	± 9.6 %
10262	CAG	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM)	LTE-TDD	9.83	± 9.6 %
10263	CAG	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM)	LTE-TDD	10.16	± 9.6 %
10264	CAG	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK)	LTE-TDD	9.23	± 9.6 %
10265	CAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM)	LTE-TDD	9.92	± 9.6 %
10266	CAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM)	LTE-TDD	10.07	± 9.6 %
10267	CAG	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK)	LTE-TDD	9.30	± 9.6 %
10268	CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM)	LTE-TDD	10.06	± 9.6 %
10269	CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM)	LTE-TDD	10.13	± 9.6 %
10270	CAF	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	LTE-TDD	9.58	± 9.6 %
10274	CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.10)	WCDMA	4.87	± 9.6 %
10275	CAB	UMTS-FDD (HSUPA, Subtest 5, 3GPP Rel8.4)	WCDMA	3.96	± 9.6 %
10277	CAA	PHS (QPSK)	PHS	11.81	± 9.6 %
10278	CAA	PHS (QPSK, BW 884MHz, Rolloff 0.5)	PHS	11.81	± 9.6 %
10279	CAA	PHS (QPSK, BW 884MHz, Rolloff 0.38)	PHS	12.18	± 9.6 %
10290	AAB	CDMA2000, RC1, SO55, Full Rate	CDMA2000	3.91	± 9.6 %
10291	AAB	CDMA2000, RC3, SO55, Full Rate	CDMA2000	3.46	± 9.6 %
10292	AAB	CDMA2000, RC3, SO32, Full Rate	CDMA2000	3.39	± 9.6 %
10293	AAB	CDMA2000, RC3, SO3, Full Rate	CDMA2000	3.50	± 9.6 %
10295	AAB	CDMA2000, RC1, SO3, 1/8th Rate 25 fr.	CDMA2000	12.49	± 9.6 %
10297	AAD	LTE-FDD (SC-FDMA, 50% RB, 20 MHz, QPSK)	LTE-FDD	5.81	± 9.6 %
10298	AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, QPSK)	LTE-FDD	5.72	± 9.6 %
10299	AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM)	LTE-FDD	6.39	± 9.6 %

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10300	AAD	LTE-FDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM)	LTE-FDD	6.60	± 9.6 %
10301	AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC)	WiMAX	12.03	± 9.6 %
10302	AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, QPSK, PUSC, 3CTRL)	WiMAX	12.57	± 9.6 %
10303	AAA	IEEE 802.16e WiMAX (31:15, 5ms, 10MHz, 64QAM, PUSC)	WiMAX	12.52	± 9.6 %
10304	AAA	IEEE 802.16e WiMAX (29:18, 5ms, 10MHz, 64QAM, PUSC)	WiMAX	11.86	± 9.6 %
10305	AAA	IEEE 802.16e WiMAX (31:15, 10ms, 10MHz, 64QAM, PUSC)	WiMAX	15.24	± 9.6 %
10306	AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 64QAM, PUSC)	WiMAX	14.67	± 9.6 %
10307	AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, PUSC)	WiMAX	14.49	± 9.6 %
10308	AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM, PUSC)	WiMAX	14.46	± 9.6 %
10309	AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, 16QAM,AMC 2x3)	WiMAX	14.58	± 9.6 %
10310	AAA	IEEE 802.16e WiMAX (29:18, 10ms, 10MHz, QPSK, AMC 2x3	WiMAX	14.57	± 9.6 %
10311	AAD	LTE-FDD (SC-FDMA, 100% RB, 15 MHz, QPSK)	LTE-FDD	6.06	± 9.6 %
10313	AAA	iDEN 1:3	iDEN	10.51	± 9.6 %
10314	AAA	iDEN 1:6	iDEN	13.48	± 9.6 %
10315	AAB	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 96pc dc)	WLAN	1.71	± 9.6 %
10316	AAB	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 96pc dc)	WLAN	8.36	± 9.6 %
10317	AAC	IEEE 802.11a WiFi 5 GHz (OFDM, 6 Mbps, 96pc dc)	WLAN	8.36	± 9.6 %
10352	AAA	Pulse Waveform (200Hz, 10%)	Generic	10.00	± 9.6 %
10353	AAA	Pulse Waveform (200Hz, 20%)	Generic	6.99	± 9.6 %
10354	AAA	Pulse Waveform (200Hz, 40%)	Generic	3.98	± 9.6 %
10355	AAA	Pulse Waveform (200Hz, 60%)	Generic	2.22	± 9.6 %
10356	AAA	Pulse Waveform (200Hz, 80%)	Generic	0.97	± 9.6 %
10387	AAA	QPSK Waveform, 1 MHz	Generic	5.10	± 9.6 %
10388	AAA	QPSK Waveform, 10 MHz	Generic	5.22	± 9.6 %
10396	AAA	64-QAM Waveform, 100 kHz	Generic	6.27	± 9.6 %
10399	AAA	64-QAM Waveform, 40 MHz	Generic	6.27	± 9.6 %
10400	AAD	IEEE 802.11ac WiFi (20MHz, 64-QAM, 99pc dc)	WLAN	8.37	± 9.6 %
10401	AAD	IEEE 802.11ac WiFi (40MHz, 64-QAM, 99pc dc)	WLAN	8.60	± 9.6 %
10402	AAD	IEEE 802.11ac WiFi (80MHz, 64-QAM, 99pc dc)	WLAN	8.53	± 9.6 %
10403	AAB	CDMA2000 (1xEV-DO, Rev. 0)	CDMA2000	3.76	± 9.6 %
10404	AAB	CDMA2000 (1xEV-DO, Rev. A)	CDMA2000	3.77	± 9.6 %
10406	AAB	CDMA2000, RC3, SO32, SCH0, Full Rate	CDMA2000	5.22	± 9.6 %
10410	AAG	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Sub=2,3,4,7,8,9)	LTE-TDD	7.82	± 9.6 %
10414	AAA	WLAN CCDF, 64-QAM, 40MHz	Generic	8.54	± 9.6 %
10415	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 99pc dc)	WLAN	1.54	± 9.6 %
10416	AAA	IEEE 802.11g WiFi 2.4 GHz (ERP-OFDM, 6 Mbps, 99pc dc)	WLAN	8.23	± 9.6 %
10417	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 99pc dc)	WLAN	8.23	± 9.6 %
10418	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc, Long)	WLAN	8.14	± 9.6 %
10419	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 99pc, Short)	WLAN	8.19	± 9.6 %
10422	AAB	IEEE 802.11n (HT Greenfield, 7.2 Mbps, BPSK)	WLAN	8.32	± 9.6 %
10423	AAB	IEEE 802.11n (HT Greenfield, 43.3 Mbps, 16-QAM)	WLAN	8.47	± 9.6 %
10424	AAB	IEEE 802.11n (HT Greenfield, 72.2 Mbps, 64-QAM)	WLAN	8.40	± 9.6 %
10425	AAB	IEEE 802.11n (HT Greenfield, 15 Mbps, BPSK)	WLAN	8.41	± 9.6 %
10426	AAB	IEEE 802.11n (HT Greenfield, 90 Mbps, 16-QAM)	WLAN	8.45	± 9.6 %
10427	AAB	IEEE 802.11n (HT Greenfield, 150 Mbps, 64-QAM)	WLAN	8.41	± 9.6 %
10430	AAD	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1)	LTE-FDD	8.28	± 9.6 %
10431	AAD	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1)	LTE-FDD	8.38	± 9.6 %
10432	AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1)	LTE-FDD	8.34	± 9.6 %
10433	AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1)	LTE-FDD	8.34	± 9.6 %
10434	AAA	W-CDMA (BS Test Model 1, 64 DPCH)	WCDMA	8.60	± 9.6 %
10435	AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10447	AAD	LTE-FDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.56	± 9.6 %
10448	AAD	LTE-FDD (OFDMA, 10 MHz, E-TM 3.1, Clippin 44%)	LTE-FDD	7.53	± 9.6 %
10449	AAC	LTE-FDD (OFDMA, 15 MHz, E-TM 3.1, Cliping 44%)	LTE-FDD	7.51	± 9.6 %
10450	AAC	LTE-FDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-FDD	7.48	± 9.6 %
10451	AAA	W-CDMA (BS Test Model 1, 64 DPCH, Clipping 44%)	WCDMA	7.59	± 9.6 %
10453	AAD	Validation (Square, 10ms, 1ms)	Test	10.00	± 9.6 %
10456	AAB	IEEE 802.11ac WiFi (160MHz, 64-QAM, 99pc dc)	WLAN	8.63	± 9.6 %
10457	AAA	UMTS-FDD (DC-HSDPA)	WCDMA	6.62	± 9.6 %
10458	AAA	CDMA2000 (1xEV-DO, Rev. B, 2 carriers)	CDMA2000	6.55	± 9.6 %
10459	AAA	CDMA2000 (1xEV-DO, Rev. B, 3 carriers)	CDMA2000	8.25	± 9.6 %
10460	AAA	UMTS-FDD (WCDMA, AMR)	WCDMA	2.39	± 9.6 %
10461	AAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10462	AAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD	8.30	± 9.6 %

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10463	AAB	LTE-TDD (SC-FDMA, 1 RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.56	± 9.6 %
10464	AAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10465	AAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10466	AAC	LTE-TDD (SC-FDMA, 1 RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10467	AAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10468	AAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10469	AAF	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, 64-QAM, UL Sub)	LTE-TDD	8.56	± 9.6 %
10470	AAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10471	AAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10472	AAF	LTE-TDD (SC-FDMA, 1 RB, 10 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10473	AAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, QPSK, UL Sub)	LTE-TDD	7.82	± 9.6 %
10474	AAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10475	AAE	LTE-TDD (SC-FDMA, 1 RB, 15 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10477	AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 16-QAM, UL Sub)	LTE-TDD	8.32	± 9.6 %
10478	AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, 64-QAM, UL Sub)	LTE-TDD	8.57	± 9.6 %
10479	AAB	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10480	AAB	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD	8.18	± 9.6 %
10481	AAB	LTE-TDD (SC-FDMA, 50% RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.45	± 9.6 %
10482	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, QPSK, UL Sub)	LTE-TDD	7.71	± 9.6 %
10483	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 16-QAM, Sub)	LTE-TDD	8.39	± 9.6 %
10484	AAC	LTE-TDD (SC-FDMA, 50% RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.47	± 9.6 %
10485	AAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, QPSK, UL Sub)	LTE-TDD	7.59	± 9.6 %
10486	AAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 16-QAM, UL Sub)	LTE-TDD	8.38	± 9.6 %
10487	AAF	LTE-TDD (SC-FDMA, 50% RB, 5 MHz, 64-QAM, UL Sub)	LTE-TDD	8.60	± 9.6 %
10488	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, QPSK, UL Sub)	LTE-TDD	7.70	± 9.6 %
10489	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 16-QAM, UL Sub)	LTE-TDD	8.31	± 9.6 %
10490	AAF	LTE-TDD (SC-FDMA, 50% RB, 10 MHz, 64-QAM, UL Sub)	LTE-TDD	8.54	± 9.6 %
10491	AAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10492	AAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 16-QAM, UL Sub)	LTE-TDD	8.41	± 9.6 %
10493	AAE	LTE-TDD (SC-FDMA, 50% RB, 15 MHz, 64-QAM, UL Sub)	LTE-TDD	8.55	± 9.6 %
10494	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10495	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 16-QAM, UL Sub)	LTE-TDD	8.37	± 9.6 %
10496	AAF	LTE-TDD (SC-FDMA, 50% RB, 20 MHz, 64-QAM, UL Sub)	LTE-TDD	8.54	± 9.6 %
10497	AAB	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, QPSK, UL Sub)	LTE-TDD	7.67	± 9.6 %
10498	AAB	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 16-QAM, UL Sub)	LTE-TDD	8.40	± 9.6 %
10499	AAB	LTE-TDD (SC-FDMA, 100% RB, 1.4 MHz, 64-QAM, UL Sub)	LTE-TDD	8.68	± 9.6 %
10500	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, QPSK, UL Sub)	LTE-TDD	7.67	± 9.6 %
10501	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 16-QAM, UL Sub)	LTE-TDD	8.44	± 9.6 %
10502	AAC	LTE-TDD (SC-FDMA, 100% RB, 3 MHz, 64-QAM, UL Sub)	LTE-TDD	8.52	± 9.6 %
10503	AAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, QPSK, UL Sub)	LTE-TDD	7.72	± 9.6 %
10504	AAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 16-QAM, UL Sub)	LTE-TDD	8.31	± 9.6 %
10505	AAF	LTE-TDD (SC-FDMA, 100% RB, 5 MHz, 64-QAM, UL Sub)	LTE-TDD	8.54	± 9.6 %
10506	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10507	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 16-QAM, UL Sub)	LTE-TDD	8.36	± 9.6 %
10508	AAF	LTE-TDD (SC-FDMA, 100% RB, 10 MHz, 64-QAM, UL Sub)	LTE-TDD	8.55	± 9.6 %
10509	AAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, QPSK, UL Sub)	LTE-TDD	7.99	± 9.6 %
10510	AAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 16-QAM, UL Sub)	LTE-TDD	8.49	± 9.6 %
10511	AAE	LTE-TDD (SC-FDMA, 100% RB, 15 MHz, 64-QAM, UL Sub)	LTE-TDD	8.51	± 9.6 %
10512	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, QPSK, UL Sub)	LTE-TDD	7.74	± 9.6 %
10513	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 16-QAM, UL Sub)	LTE-TDD	8.42	± 9.6 %
10514	AAF	LTE-TDD (SC-FDMA, 100% RB, 20 MHz, 64-QAM, UL Sub)	LTE-TDD	8.45	± 9.6 %
10515	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 99pc dc)	WLAN	1.58	± 9.6 %
10516	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 99pc dc)	WLAN	1.57	± 9.6 %
10517	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 99pc dc)	WLAN	1.58	± 9.6 %
10518	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 99pc dc)	WLAN	8.23	± 9.6 %
10519	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 99pc dc)	WLAN	8.39	± 9.6 %
10520	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 99pc dc)	WLAN	8.12	± 9.6 %
10521	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 99pc dc)	WLAN	7.97	± 9.6 %
10522	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 99pc dc)	WLAN	8.45	± 9.6 %
10523	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 99pc dc)	WLAN	8.08	± 9.6 %
10524	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 99pc dc)	WLAN	8.27	± 9.6 %
10525	AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 99pc dc)	WLAN	8.36	± 9.6 %
10526	AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 99pc dc)	WLAN	8.42	± 9.6 %
10527	AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 99pc dc)	WLAN	8.21	± 9.6 %

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10528	AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 99pc dc)	WLAN	8.36	± 9.6 %
10529	AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 99pc dc)	WLAN	8.36	± 9.6 %
10531	AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 99pc dc)	WLAN	8.43	± 9.6 %
10532	AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 99pc dc)	WLAN	8.29	± 9.6 %
10533	AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 99pc dc)	WLAN	8.38	± 9.6 %
10534	AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 99pc dc)	WLAN	8.45	± 9.6 %
10535	AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 99pc dc)	WLAN	8.45	± 9.6 %
10536	AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 99pc dc)	WLAN	8.32	± 9.6 %
10537	AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 99pc dc)	WLAN	8.44	± 9.6 %
10538	AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 99pc dc)	WLAN	8.54	± 9.6 %
10540	AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 99pc dc)	WLAN	8.39	± 9.6 %
10541	AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 99pc dc)	WLAN	8.46	± 9.6 %
10542	AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 99pc dc)	WLAN	8.65	± 9.6 %
10543	AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 99pc dc)	WLAN	8.65	± 9.6 %
10544	AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 99pc dc)	WLAN	8.47	± 9.6 %
10545	AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 99pc dc)	WLAN	8.55	± 9.6 %
10546	AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 99pc dc)	WLAN	8.35	± 9.6 %
10547	AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 99pc dc)	WLAN	8.49	± 9.6 %
10548	AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 99pc dc)	WLAN	8.37	± 9.6 %
10550	AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 99pc dc)	WLAN	8.38	± 9.6 %
10551	AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 99pc dc)	WLAN	8.50	± 9.6 %
10552	AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 99pc dc)	WLAN	8.42	± 9.6 %
10553	AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 99pc dc)	WLAN	8.45	± 9.6 %
10554	AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 99pc dc)	WLAN	8.48	± 9.6 %
10555	AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 99pc dc)	WLAN	8.47	± 9.6 %
10556	AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 99pc dc)	WLAN	8.50	± 9.6 %
10557	AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 99pc dc)	WLAN	8.52	± 9.6 %
10558	AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 99pc dc)	WLAN	8.61	± 9.6 %
10560	AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 99pc dc)	WLAN	8.73	± 9.6 %
10561	AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 99pc dc)	WLAN	8.56	± 9.6 %
10562	AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 99pc dc)	WLAN	8.69	± 9.6 %
10563	AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 99pc dc)	WLAN	8.77	± 9.6 %
10564	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 99pc dc)	WLAN	8.25	± 9.6 %
10565	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 99pc dc)	WLAN	8.45	± 9.6 %
10566	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 99pc dc)	WLAN	8.13	± 9.6 %
10567	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 99pc dc)	WLAN	8.00	± 9.6 %
10568	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 99pc dc)	WLAN	8.37	± 9.6 %
10569	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 99pc dc)	WLAN	8.10	± 9.6 %
10570	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 99pc dc)	WLAN	8.30	± 9.6 %
10571	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 1 Mbps, 90pc dc)	WLAN	1.99	± 9.6 %
10572	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 2 Mbps, 90pc dc)	WLAN	1.99	± 9.6 %
10573	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 5.5 Mbps, 90pc dc)	WLAN	1.98	± 9.6 %
10574	AAA	IEEE 802.11b WiFi 2.4 GHz (DSSS, 11 Mbps, 90pc dc)	WLAN	1.98	± 9.6 %
10575	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 6 Mbps, 90pc dc)	WLAN	8.59	± 9.6 %
10576	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 9 Mbps, 90pc dc)	WLAN	8.60	± 9.6 %
10577	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 12 Mbps, 90pc dc)	WLAN	8.70	± 9.6 %
10578	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 18 Mbps, 90pc dc)	WLAN	8.49	± 9.6 %
10579	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 24 Mbps, 90pc dc)	WLAN	8.36	± 9.6 %
10580	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 36 Mbps, 90pc dc)	WLAN	8.76	± 9.6 %
10581	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 48 Mbps, 90pc dc)	WLAN	8.35	± 9.6 %
10582	AAA	IEEE 802.11g WiFi 2.4 GHz (DSSS-OFDM, 54 Mbps, 90pc dc)	WLAN	8.67	± 9.6 %
10583	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 6 Mbps, 90pc dc)	WLAN	8.59	± 9.6 %
10584	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 9 Mbps, 90pc dc)	WLAN	8.60	± 9.6 %
10585	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 12 Mbps, 90pc dc)	WLAN	8.70	± 9.6 %
10586	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 18 Mbps, 90pc dc)	WLAN	8.49	± 9.6 %
10587	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 24 Mbps, 90pc dc)	WLAN	8.36	± 9.6 %
10588	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 36 Mbps, 90pc dc)	WLAN	8.76	± 9.6 %
10589	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 48 Mbps, 90pc dc)	WLAN	8.35	± 9.6 %
10590	AAB	IEEE 802.11a/h WiFi 5 GHz (OFDM, 54 Mbps, 90pc dc)	WLAN	8.67	± 9.6 %
10591	AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS0, 90pc dc)	WLAN	8.63	± 9.6 %
10592	AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS1, 90pc dc)	WLAN	8.79	± 9.6 %
10593	AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS2, 90pc dc)	WLAN	8.64	± 9.6 %
10594	AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS3, 90pc dc)	WLAN	8.74	± 9.6 %
10595	AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS4, 90pc dc)	WLAN	8.74	± 9.6 %

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10596	AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS5, 90pc dc)	WLAN	8.71	± 9.6 %
10597	AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS6, 90pc dc)	WLAN	8.72	± 9.6 %
10598	AAB	IEEE 802.11n (HT Mixed, 20MHz, MCS7, 90pc dc)	WLAN	8.50	± 9.6 %
10599	AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS0, 90pc dc)	WLAN	8.79	± 9.6 %
10600	AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS1, 90pc dc)	WLAN	8.88	± 9.6 %
10601	AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS2, 90pc dc)	WLAN	8.82	± 9.6 %
10602	AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS3, 90pc dc)	WLAN	8.94	± 9.6 %
10603	AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS4, 90pc dc)	WLAN	9.03	± 9.6 %
10604	AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS5, 90pc dc)	WLAN	8.76	± 9.6 %
10605	AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS6, 90pc dc)	WLAN	8.97	± 9.6 %
10606	AAB	IEEE 802.11n (HT Mixed, 40MHz, MCS7, 90pc dc)	WLAN	8.82	± 9.6 %
10607	AAB	IEEE 802.11ac WiFi (20MHz, MCS0, 90pc dc)	WLAN	8.64	± 9.6 %
10608	AAB	IEEE 802.11ac WiFi (20MHz, MCS1, 90pc dc)	WLAN	8.77	± 9.6 %
10609	AAB	IEEE 802.11ac WiFi (20MHz, MCS2, 90pc dc)	WLAN	8.57	± 9.6 %
10610	AAB	IEEE 802.11ac WiFi (20MHz, MCS3, 90pc dc)	WLAN	8.78	± 9.6 %
10611	AAB	IEEE 802.11ac WiFi (20MHz, MCS4, 90pc dc)	WLAN	8.70	± 9.6 %
10612	AAB	IEEE 802.11ac WiFi (20MHz, MCS5, 90pc dc)	WLAN	8.77	± 9.6 %
10613	AAB	IEEE 802.11ac WiFi (20MHz, MCS6, 90pc dc)	WLAN	8.94	± 9.6 %
10614	AAB	IEEE 802.11ac WiFi (20MHz, MCS7, 90pc dc)	WLAN	8.59	± 9.6 %
10615	AAB	IEEE 802.11ac WiFi (20MHz, MCS8, 90pc dc)	WLAN	8.82	± 9.6 %
10616	AAB	IEEE 802.11ac WiFi (40MHz, MCS0, 90pc dc)	WLAN	8.82	± 9.6 %
10617	AAB	IEEE 802.11ac WiFi (40MHz, MCS1, 90pc dc)	WLAN	8.81	± 9.6 %
10618	AAB	IEEE 802.11ac WiFi (40MHz, MCS2, 90pc dc)	WLAN	8.58	± 9.6 %
10619	AAB	IEEE 802.11ac WiFi (40MHz, MCS3, 90pc dc)	WLAN	8.86	± 9.6 %
10620	AAB	IEEE 802.11ac WiFi (40MHz, MCS4, 90pc dc)	WLAN	8.87	± 9.6 %
10621	AAB	IEEE 802.11ac WiFi (40MHz, MCS5, 90pc dc)	WLAN	8.77	± 9.6 %
10622	AAB	IEEE 802.11ac WiFi (40MHz, MCS6, 90pc dc)	WLAN	8.68	± 9.6 %
10623	AAB	IEEE 802.11ac WiFi (40MHz, MCS7, 90pc dc)	WLAN	8.82	± 9.6 %
10624	AAB	IEEE 802.11ac WiFi (40MHz, MCS8, 90pc dc)	WLAN	8.96	± 9.6 %
10625	AAB	IEEE 802.11ac WiFi (40MHz, MCS9, 90pc dc)	WLAN	8.96	± 9.6 %
10626	AAB	IEEE 802.11ac WiFi (80MHz, MCS0, 90pc dc)	WLAN	8.83	± 9.6 %
10627	AAB	IEEE 802.11ac WiFi (80MHz, MCS1, 90pc dc)	WLAN	8.88	± 9.6 %
10628	AAB	IEEE 802.11ac WiFi (80MHz, MCS2, 90pc dc)	WLAN	8.71	± 9.6 %
10629	AAB	IEEE 802.11ac WiFi (80MHz, MCS3, 90pc dc)	WLAN	8.85	± 9.6 %
10630	AAB	IEEE 802.11ac WiFi (80MHz, MCS4, 90pc dc)	WLAN	8.72	± 9.6 %
10631	AAB	IEEE 802.11ac WiFi (80MHz, MCS5, 90pc dc)	WLAN	8.81	± 9.6 %
10632	AAB	IEEE 802.11ac WiFi (80MHz, MCS6, 90pc dc)	WLAN	8.74	± 9.6 %
10633	AAB	IEEE 802.11ac WiFi (80MHz, MCS7, 90pc dc)	WLAN	8.83	± 9.6 %
10634	AAB	IEEE 802.11ac WiFi (80MHz, MCS8, 90pc dc)	WLAN	8.80	± 9.6 %
10635	AAB	IEEE 802.11ac WiFi (80MHz, MCS9, 90pc dc)	WLAN	8.81	± 9.6 %
10636	AAC	IEEE 802.11ac WiFi (160MHz, MCS0, 90pc dc)	WLAN	8.83	± 9.6 %
10637	AAC	IEEE 802.11ac WiFi (160MHz, MCS1, 90pc dc)	WLAN	8.79	± 9.6 %
10638	AAC	IEEE 802.11ac WiFi (160MHz, MCS2, 90pc dc)	WLAN	8.86	± 9.6 %
10639	AAC	IEEE 802.11ac WiFi (160MHz, MCS3, 90pc dc)	WLAN	8.85	± 9.6 %
10640	AAC	IEEE 802.11ac WiFi (160MHz, MCS4, 90pc dc)	WLAN	8.98	± 9.6 %
10641	AAC	IEEE 802.11ac WiFi (160MHz, MCS5, 90pc dc)	WLAN	9.06	± 9.6 %
10642	AAC	IEEE 802.11ac WiFi (160MHz, MCS6, 90pc dc)	WLAN	9.06	± 9.6 %
10643	AAC	IEEE 802.11ac WiFi (160MHz, MCS7, 90pc dc)	WLAN	8.89	± 9.6 %
10644	AAC	IEEE 802.11ac WiFi (160MHz, MCS8, 90pc dc)	WLAN	9.05	± 9.6 %
10645	AAC	IEEE 802.11ac WiFi (160MHz, MCS9, 90pc dc)	WLAN	9.11	± 9.6 %
10646	AAG	LTE-TDD (SC-FDMA, 1 RB, 5 MHz, QPSK, UL Sub=2,7)	LTE-TDD	11.96	± 9.6 %
10647	AAF	LTE-TDD (SC-FDMA, 1 RB, 20 MHz, QPSK, UL Sub=2,7)	LTE-TDD	11.96	± 9.6 %
10648	AAA	CDMA2000 (1x Advanced)	CDMA2000	3.45	± 9.6 %
10652	AAE	LTE-TDD (OFDMA, 5 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	6.91	± 9.6 %
10653	AAE	LTE-TDD (OFDMA, 10 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	7.42	± 9.6 %
10654	AAD	LTE-TDD (OFDMA, 15 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	6.96	± 9.6 %
10655	AAE	LTE-TDD (OFDMA, 20 MHz, E-TM 3.1, Clipping 44%)	LTE-TDD	7.21	± 9.6 %
10658	AAA	Pulse Waveform (200Hz, 10%)	Test	10.00	± 9.6 %
10659	AAA	Pulse Waveform (200Hz, 20%)	Test	6.99	± 9.6 %
10660	AAA	Pulse Waveform (200Hz, 40%)	Test	3.98	± 9.6 %
10661	AAA	Pulse Waveform (200Hz, 60%)	Test	2.22	± 9.6 %
10662	AAA	Pulse Waveform (200Hz, 80%)	Test	0.97	± 9.6 %
10670	AAA	Bluetooth Low Energy	Bluetooth	2.19	± 9.6 %
10671	AAA	IEEE 802.11ax (20MHz, MCS0, 90pc dc)	WLAN	9.09	± 9.6 %

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10672	AAA	IEEE 802.11ax (20MHz, MCS1, 90pc dc)	WLAN	8.57	± 9.6 %
10673	AAA	IEEE 802.11ax (20MHz, MCS2, 90pc dc)	WLAN	8.78	± 9.6 %
10674	AAA	IEEE 802.11ax (20MHz, MCS3, 90pc dc)	WLAN	8.74	± 9.6 %
10675	AAA	IEEE 802.11ax (20MHz, MCS4, 90pc dc)	WLAN	8.90	± 9.6 %
10676	AAA	IEEE 802.11ax (20MHz, MCS5, 90pc dc)	WLAN	8.77	± 9.6 %
10677	AAA	IEEE 802.11ax (20MHz, MCS6, 90pc dc)	WLAN	8.73	± 9.6 %
10678	AAA	IEEE 802.11ax (20MHz, MCS7, 90pc dc)	WLAN	8.78	± 9.6 %
10679	AAA	IEEE 802.11ax (20MHz, MCS8, 90pc dc)	WLAN	8.89	± 9.6 %
10680	AAA	IEEE 802.11ax (20MHz, MCS9, 90pc dc)	WLAN	8.80	± 9.6 %
10681	AAA	IEEE 802.11ax (20MHz, MCS10, 90pc dc)	WLAN	8.62	± 9.6 %
10682	AAA	IEEE 802.11ax (20MHz, MCS11, 90pc dc)	WLAN	8.83	± 9.6 %
10683	AAA	IEEE 802.11ax (20MHz, MCS0, 99pc dc)	WLAN	8.42	± 9.6 %
10684	AAA	IEEE 802.11ax (20MHz, MCS1, 99pc dc)	WLAN	8.26	± 9.6 %
10685	AAA	IEEE 802.11ax (20MHz, MCS2, 99pc dc)	WLAN	8.33	± 9.6 %
10686	AAA	IEEE 802.11ax (20MHz, MCS3, 99pc dc)	WLAN	8.28	± 9.6 %
10687	AAA	IEEE 802.11ax (20MHz, MCS4, 99pc dc)	WLAN	8.45	± 9.6 %
10688	AAA	IEEE 802.11ax (20MHz, MCS5, 99pc dc)	WLAN	8.29	± 9.6 %
10689	AAA	IEEE 802.11ax (20MHz, MCS6, 99pc dc)	WLAN	8.55	± 9.6 %
10690	AAA	IEEE 802.11ax (20MHz, MCS7, 99pc dc)	WLAN	8.29	± 9.6 %
10691	AAA	IEEE 802.11ax (20MHz, MCS8, 99pc dc)	WLAN	8.25	± 9.6 %
10692	AAA	IEEE 802.11ax (20MHz, MCS9, 99pc dc)	WLAN	8.29	± 9.6 %
10693	AAA	IEEE 802.11ax (20MHz, MCS10, 99pc dc)	WLAN	8.25	± 9.6 %
10694	AAA	IEEE 802.11ax (20MHz, MCS11, 99pc dc)	WLAN	8.57	± 9.6 %
10695	AAA	IEEE 802.11ax (40MHz, MCS0, 90pc dc)	WLAN	8.78	± 9.6 %
10696	AAA	IEEE 802.11ax (40MHz, MCS1, 90pc dc)	WLAN	8.91	± 9.6 %
10697	AAA	IEEE 802.11ax (40MHz, MCS2, 90pc dc)	WLAN	8.61	± 9.6 %
10698	AAA	IEEE 802.11ax (40MHz, MCS3, 90pc dc)	WLAN	8.89	± 9.6 %
10699	AAA	IEEE 802.11ax (40MHz, MCS4, 90pc dc)	WLAN	8.82	± 9.6 %
10700	AAA	IEEE 802.11ax (40MHz, MCS5, 90pc dc)	WLAN	8.73	± 9.6 %
10701	AAA	IEEE 802.11ax (40MHz, MCS6, 90pc dc)	WLAN	8.86	± 9.6 %
10702	AAA	IEEE 802.11ax (40MHz, MCS7, 90pc dc)	WLAN	8.70	± 9.6 %
10703	AAA	IEEE 802.11ax (40MHz, MCS8, 90pc dc)	WLAN	8.82	± 9.6 %
10704	AAA	IEEE 802.11ax (40MHz, MCS9, 90pc dc)	WLAN	8.56	± 9.6 %
10705	AAA	IEEE 802.11ax (40MHz, MCS10, 90pc dc)	WLAN	8.69	± 9.6 %
10706	AAA	IEEE 802.11ax (40MHz, MCS11, 90pc dc)	WLAN	8.66	± 9.6 %
10707	AAA	IEEE 802.11ax (40MHz, MCS0, 99pc dc)	WLAN	8.32	± 9.6 %
10708	AAA	IEEE 802.11ax (40MHz, MCS1, 99pc dc)	WLAN	8.55	± 9.6 %
10709	AAA	IEEE 802.11ax (40MHz, MCS2, 99pc dc)	WLAN	8.33	± 9.6 %
10710	AAA	IEEE 802.11ax (40MHz, MCS3, 99pc dc)	WLAN	8.29	± 9.6 %
10711	AAA	IEEE 802.11ax (40MHz, MCS4, 99pc dc)	WLAN	8.39	± 9.6 %
10712	AAA	IEEE 802.11ax (40MHz, MCS5, 99pc dc)	WLAN	8.67	± 9.6 %
10713	AAA	IEEE 802.11ax (40MHz, MCS6, 99pc dc)	WLAN	8.33	± 9.6 %
10714	AAA	IEEE 802.11ax (40MHz, MCS7, 99pc dc)	WLAN	8.26	± 9.6 %
10715	AAA	IEEE 802.11ax (40MHz, MCS8, 99pc dc)	WLAN	8.45	± 9.6 %
10716	AAA	IEEE 802.11ax (40MHz, MCS9, 99pc dc)	WLAN	8.30	± 9.6 %
10717	AAA	IEEE 802.11ax (40MHz, MCS10, 99pc dc)	WLAN	8.48	± 9.6 %
10718	AAA	IEEE 802.11ax (40MHz, MCS11, 99pc dc)	WLAN	8.24	± 9.6 %
10719	AAA	IEEE 802.11ax (80MHz, MCS0, 90pc dc)	WLAN	8.81	± 9.6 %
10720	AAA	IEEE 802.11ax (80MHz, MCS1, 90pc dc)	WLAN	8.87	± 9.6 %
10721	AAA	IEEE 802.11ax (80MHz, MCS2, 90pc dc)	WLAN	8.76	± 9.6 %
10722	AAA	IEEE 802.11ax (80MHz, MCS3, 90pc dc)	WLAN	8.55	± 9.6 %
10723	AAA	IEEE 802.11ax (80MHz, MCS4, 90pc dc)	WLAN	8.70	± 9.6 %
10724	AAA	IEEE 802.11ax (80MHz, MCS5, 90pc dc)	WLAN	8.90	± 9.6 %
10725	AAA	IEEE 802.11ax (80MHz, MCS6, 90pc dc)	WLAN	8.74	± 9.6 %
10726	AAA	IEEE 802.11ax (80MHz, MCS7, 90pc dc)	WLAN	8.72	± 9.6 %
10727	AAA	IEEE 802.11ax (80MHz, MCS8, 90pc dc)	WLAN	8.66	± 9.6 %
10728	AAA	IEEE 802.11ax (80MHz, MCS9, 90pc dc)	WLAN	8.65	± 9.6 %
10729	AAA	IEEE 802.11ax (80MHz, MCS10, 90pc dc)	WLAN	8.64	± 9.6 %
10730	AAA	IEEE 802.11ax (80MHz, MCS11, 90pc dc)	WLAN	8.67	± 9.6 %
10731	AAA	IEEE 802.11ax (80MHz, MCS0, 99pc dc)	WLAN	8.42	± 9.6 %
10732	AAA	IEEE 802.11ax (80MHz, MCS1, 99pc dc)	WLAN	8.46	± 9.6 %
10733	AAA	IEEE 802.11ax (80MHz, MCS2, 99pc dc)	WLAN	8.40	± 9.6 %
10734	AAA	IEEE 802.11ax (80MHz, MCS3, 99pc dc)	WLAN	8.25	± 9.6 %
10735	AAA	IEEE 802.11ax (80MHz, MCS4, 99pc dc)	WLAN	8.33	± 9.6 %

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10736	AAA	IEEE 802.11ax (80MHz, MCS5, 99pc dc)	WLAN	8.27	± 9.6 %
10737	AAA	IEEE 802.11ax (80MHz, MCS6, 99pc dc)	WLAN	8.36	± 9.6 %
10738	AAA	IEEE 802.11ax (80MHz, MCS7, 99pc dc)	WLAN	8.42	± 9.6 %
10739	AAA	IEEE 802.11ax (80MHz, MCS8, 99pc dc)	WLAN	8.29	± 9.6 %
10740	AAA	IEEE 802.11ax (80MHz, MCS9, 99pc dc)	WLAN	8.48	± 9.6 %
10741	AAA	IEEE 802.11ax (80MHz, MCS10, 99pc dc)	WLAN	8.40	± 9.6 %
10742	AAA	IEEE 802.11ax (80MHz, MCS11, 99pc dc)	WLAN	8.43	± 9.6 %
10743	AAA	IEEE 802.11ax (160MHz, MCS0, 90pc dc)	WLAN	8.94	± 9.6 %
10744	AAA	IEEE 802.11ax (160MHz, MCS1, 90pc dc)	WLAN	9.16	± 9.6 %
10745	AAA	IEEE 802.11ax (160MHz, MCS2, 90pc dc)	WLAN	8.93	± 9.6 %
10746	AAA	IEEE 802.11ax (160MHz, MCS3, 90pc dc)	WLAN	9.11	± 9.6 %
10747	AAA	IEEE 802.11ax (160MHz, MCS4, 90pc dc)	WLAN	9.04	± 9.6 %
10748	AAA	IEEE 802.11ax (160MHz, MCS5, 90pc dc)	WLAN	8.93	± 9.6 %
10749	AAA	IEEE 802.11ax (160MHz, MCS6, 90pc dc)	WLAN	8.90	± 9.6 %
10750	AAA	IEEE 802.11ax (160MHz, MCS7, 90pc dc)	WLAN	8.79	± 9.6 %
10751	AAA	IEEE 802.11ax (160MHz, MCS8, 90pc dc)	WLAN	8.82	± 9.6 %
10752	AAA	IEEE 802.11ax (160MHz, MCS9, 90pc dc)	WLAN	8.81	± 9.6 %
10753	AAA	IEEE 802.11ax (160MHz, MCS10, 90pc dc)	WLAN	9.00	± 9.6 %
10754	AAA	IEEE 802.11ax (160MHz, MCS11, 90pc dc)	WLAN	8.94	± 9.6 %
10755	AAA	IEEE 802.11ax (160MHz, MCS0, 99pc dc)	WLAN	8.64	± 9.6 %
10756	AAA	IEEE 802.11ax (160MHz, MCS1, 99pc dc)	WLAN	8.77	± 9.6 %
10757	AAA	IEEE 802.11ax (160MHz, MCS2, 99pc dc)	WLAN	8.77	± 9.6 %
10758	AAA	IEEE 802.11ax (160MHz, MCS3, 99pc dc)	WLAN	8.69	± 9.6 %
10759	AAA	IEEE 802.11ax (160MHz, MCS4, 99pc dc)	WLAN	8.58	± 9.6 %
10760	AAA	IEEE 802.11ax (160MHz, MCS5, 99pc dc)	WLAN	8.49	± 9.6 %
10761	AAA	IEEE 802.11ax (160MHz, MCS6, 99pc dc)	WLAN	8.58	± 9.6 %
10762	AAA	IEEE 802.11ax (160MHz, MCS7, 99pc dc)	WLAN	8.49	± 9.6 %
10763	AAA	IEEE 802.11ax (160MHz, MCS8, 99pc dc)	WLAN	8.53	± 9.6 %
10764	AAA	IEEE 802.11ax (160MHz, MCS9, 99pc dc)	WLAN	8.54	± 9.6 %
10765	AAA	IEEE 802.11ax (160MHz, MCS10, 99pc dc)	WLAN	8.54	± 9.6 %
10766	AAA	IEEE 802.11ax (160MHz, MCS11, 99pc dc)	WLAN	8.51	± 9.6 %
10767	AAC	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	7.99	± 9.6 %
10768	AAC	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.01	± 9.6 %
10769	AAC	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.01	± 9.6 %
10770	AAC	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	± 9.6 %
10771	AAC	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	± 9.6 %
10772	AAC	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.23	± 9.6 %
10773	AAC	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.03	± 9.6 %
10774	AAC	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.02	± 9.6 %
10775	AAB	5G NR (CP-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.31	± 9.6 %
10776	AAC	5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.30	± 9.6 %
10777	AAB	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.30	± 9.6 %
10778	AAC	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10779	AAB	5G NR (CP-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.42	± 9.6 %
10780	AAC	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.38	± 9.6 %
10781	AAC	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.38	± 9.6 %
10782	AAC	5G NR (CP-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.43	± 9.6 %
10783	AAC	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.31	± 9.6 %
10784	AAC	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.29	± 9.6 %
10785	AAC	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.40	± 9.6 %
10786	AAC	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.35	± 9.6 %
10787	AAC	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.44	± 9.6 %
10788	AAC	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.39	± 9.6 %
10789	AAC	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.37	± 9.6 %
10790	AAC	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 TDD	8.39	± 9.6 %
10791	AAC	5G NR (CP-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.83	± 9.6 %
10792	AAC	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.92	± 9.6 %
10793	AAC	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.95	± 9.6 %
10794	AAC	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	± 9.6 %
10795	AAC	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.84	± 9.6 %
10796	AAC	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.82	± 9.6 %
10797	AAC	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.01	± 9.6 %
10798	AAC	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	± 9.6 %
10799	AAC	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	± 9.6 %

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10801	AAC	5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.89	± 9.6 %
10802	AAC	5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.87	± 9.6 %
10803	AAC	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	7.93	± 9.6 %
10805	AAC	5G NR (CP-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10806	AAC	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.37	± 9.6 %
10809	AAC	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10810	AAC	5G NR (CP-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10812	AAC	5G NR (CP-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.35	± 9.6 %
10817	AAC	5G NR (CP-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.35	± 9.6 %
10818	AAC	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10819	AAC	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.33	± 9.6 %
10820	AAC	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.30	± 9.6 %
10821	AAC	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10822	AAC	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10823	AAC	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.36	± 9.6 %
10824	AAC	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.39	± 9.6 %
10825	AAC	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10827	AAC	5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.42	± 9.6 %
10828	AAC	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.43	± 9.6 %
10829	AAC	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	8.40	± 9.6 %
10830	AAC	5G NR (CP-OFDM, 1 RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.63	± 9.6 %
10831	AAC	5G NR (CP-OFDM, 1 RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.73	± 9.6 %
10832	AAC	5G NR (CP-OFDM, 1 RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.74	± 9.6 %
10833	AAC	5G NR (CP-OFDM, 1 RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	± 9.6 %
10834	AAC	5G NR (CP-OFDM, 1 RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.75	± 9.6 %
10835	AAC	5G NR (CP-OFDM, 1 RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	± 9.6 %
10836	AAC	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.66	± 9.6 %
10837	AAC	5G NR (CP-OFDM, 1 RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.68	± 9.6 %
10839	AAC	5G NR (CP-OFDM, 1 RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.70	± 9.6 %
10840	AAC	5G NR (CP-OFDM, 1 RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.67	± 9.6 %
10841	AAC	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	7.71	± 9.6 %
10843	AAC	5G NR (CP-OFDM, 50% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.49	± 9.6 %
10844	AAC	5G NR (CP-OFDM, 50% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10846	AAC	5G NR (CP-OFDM, 50% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10854	AAC	5G NR (CP-OFDM, 100% RB, 10 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10855	AAC	5G NR (CP-OFDM, 100% RB, 15 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	± 9.6 %
10856	AAC	5G NR (CP-OFDM, 100% RB, 20 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	± 9.6 %
10857	AAC	5G NR (CP-OFDM, 100% RB, 25 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.35	± 9.6 %
10858	AAC	5G NR (CP-OFDM, 100% RB, 30 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.36	± 9.6 %
10859	AAC	5G NR (CP-OFDM, 100% RB, 40 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.34	± 9.6 %
10860	AAC	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10861	AAC	5G NR (CP-OFDM, 100% RB, 60 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.40	± 9.6 %
10863	AAC	5G NR (CP-OFDM, 100% RB, 80 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10864	AAC	5G NR (CP-OFDM, 100% RB, 90 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.37	± 9.6 %
10865	AAC	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 60 kHz)	5G NR FR1 TDD	8.41	± 9.6 %
10866	AAC	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10868	AAC	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.89	± 9.6 %
10869	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.75	± 9.6 %
10870	AAD	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.86	± 9.6 %
10871	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	5.75	± 9.6 %
10872	AAD	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.52	± 9.6 %
10873	AAD	5G NR (DFT-s-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.61	± 9.6 %
10874	AAD	5G NR (DFT-s-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.65	± 9.6 %
10875	AAD	5G NR (CP-OFDM, 1 RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.78	± 9.6 %
10876	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.39	± 9.6 %
10877	AAD	5G NR (CP-OFDM, 1 RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	7.95	± 9.6 %
10878	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.41	± 9.6 %
10879	AAD	5G NR (CP-OFDM, 1 RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.12	± 9.6 %
10880	AAD	5G NR (CP-OFDM, 100% RB, 100 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.38	± 9.6 %
10881	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.75	± 9.6 %
10882	AAD	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	5.96	± 9.6 %
10883	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.57	± 9.6 %
10884	AAD	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	6.53	± 9.6 %
10885	AAD	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.61	± 9.6 %

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10886	AAD	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	6.65	± 9.6 %
10887	AAD	5G NR (CP-OFDM, 1 RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	7.78	± 9.6 %
10888	AAD	5G NR (CP-OFDM, 100% RB, 50 MHz, QPSK, 120 kHz)	5G NR FR2 TDD	8.35	± 9.6 %
10889	AAD	5G NR (CP-OFDM, 1 RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.02	± 9.6 %
10890	AAD	5G NR (CP-OFDM, 100% RB, 50 MHz, 16QAM, 120 kHz)	5G NR FR2 TDD	8.40	± 9.6 %
10891	AAD	5G NR (CP-OFDM, 1 RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.13	± 9.6 %
10892	AAD	5G NR (CP-OFDM, 100% RB, 50 MHz, 64QAM, 120 kHz)	5G NR FR2 TDD	8.41	± 9.6 %
10897	AAA	5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.66	± 9.6 %
10898	AAA	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	± 9.6 %
10899	AAA	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.67	± 9.6 %
10900	AAA	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10901	AAA	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10902	AAA	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10903	AAA	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10904	AAA	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10905	AAA	5G NR (DFT-s-OFDM, 1 RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10906	AAA	5G NR (DFT-s-OFDM, 1 RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.68	± 9.6 %
10907	AAA	5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.78	± 9.6 %
10908	AAA	5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.93	± 9.6 %
10909	AAA	5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.96	± 9.6 %
10910	AAA	5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	± 9.6 %
10911	AAA	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.93	± 9.6 %
10912	AAA	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10913	AAA	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10914	AAA	5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.85	± 9.6 %
10915	AAA	5G NR (DFT-s-OFDM, 50% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.83	± 9.6 %
10916	AAA	5G NR (DFT-s-OFDM, 50% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.87	± 9.6 %
10917	AAA	5G NR (DFT-s-OFDM, 50% RB, 100 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	± 9.6 %
10918	AAA	5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.86	± 9.6 %
10919	AAA	5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.86	± 9.6 %
10920	AAA	5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.87	± 9.6 %
10921	AAA	5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10922	AAA	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.82	± 9.6 %
10923	AAA	5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10924	AAA	5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10925	AAA	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.95	± 9.6 %
10926	AAA	5G NR (DFT-s-OFDM, 100% RB, 60 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.84	± 9.6 %
10927	AAA	5G NR (DFT-s-OFDM, 100% RB, 80 MHz, QPSK, 30 kHz)	5G NR FR1 TDD	5.94	± 9.6 %
10928	AAA	5G NR (DFT-s-OFDM, 1 RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	± 9.6 %
10929	AAA	5G NR (DFT-s-OFDM, 1 RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	± 9.6 %
10930	AAA	5G NR (DFT-s-OFDM, 1 RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.52	± 9.6 %
10931	AAA	5G NR (DFT-s-OFDM, 1 RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10932	AAA	5G NR (DFT-s-OFDM, 1 RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10933	AAA	5G NR (DFT-s-OFDM, 1 RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10934	AAA	5G NR (DFT-s-OFDM, 1 RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10935	AAA	5G NR (DFT-s-OFDM, 1 RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.51	± 9.6 %
10936	AAA	5G NR (DFT-s-OFDM, 50% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.90	± 9.6 %
10937	AAA	5G NR (DFT-s-OFDM, 50% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.77	± 9.6 %
10938	AAA	5G NR (DFT-s-OFDM, 50% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.90	± 9.6 %
10939	AAA	5G NR (DFT-s-OFDM, 50% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.82	± 9.6 %
10940	AAA	5G NR (DFT-s-OFDM, 50% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.89	± 9.6 %
10941	AAA	5G NR (DFT-s-OFDM, 50% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.83	± 9.6 %
10942	AAA	5G NR (DFT-s-OFDM, 50% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	± 9.6 %
10943	AAA	5G NR (DFT-s-OFDM, 50% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.95	± 9.6 %
10944	AAA	5G NR (DFT-s-OFDM, 100% RB, 5 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.81	± 9.6 %
10945	AAA	5G NR (DFT-s-OFDM, 100% RB, 10 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.85	± 9.6 %
10946	AAA	5G NR (DFT-s-OFDM, 100% RB, 15 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.83	± 9.6 %
10947	AAA	5G NR (DFT-s-OFDM, 100% RB, 20 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	± 9.6 %
10948	AAA	5G NR (DFT-s-OFDM, 100% RB, 25 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	± 9.6 %
10949	AAA	5G NR (DFT-s-OFDM, 100% RB, 30 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.87	± 9.6 %
10950	AAA	5G NR (DFT-s-OFDM, 100% RB, 40 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.94	± 9.6 %
10951	AAA	5G NR (DFT-s-OFDM, 100% RB, 50 MHz, QPSK, 15 kHz)	5G NR FR1 FDD	5.92	± 9.6 %
10952	AAA	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.25	± 9.6 %
10953	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.15	± 9.6 %

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10954	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.23	± 9.6 %
10955	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 FDD	8.42	± 9.6 %
10956	AAA	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.14	± 9.6 %
10957	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.31	± 9.6 %
10958	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.61	± 9.6 %
10959	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 FDD	8.33	± 9.6 %
10960	AAA	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.32	± 9.6 %
10961	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.36	± 9.6 %
10962	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.40	± 9.6 %
10963	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 15 kHz)	5G NR FR1 TDD	9.55	± 9.6 %
10964	AAA	5G NR DL (CP-OFDM, TM 3.1, 5 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.29	± 9.6 %
10965	AAA	5G NR DL (CP-OFDM, TM 3.1, 10 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.37	± 9.6 %
10966	AAA	5G NR DL (CP-OFDM, TM 3.1, 15 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.55	± 9.6 %
10967	AAA	5G NR DL (CP-OFDM, TM 3.1, 20 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.42	± 9.6 %
10968	AAA	5G NR DL (CP-OFDM, TM 3.1, 100 MHz, 64-QAM, 30 kHz)	5G NR FR1 TDD	9.49	± 9.6 %

[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

Calibration Laboratory of
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Client DT&C (Dymstec)

Certificate No: EX3-7368_Jan20

CALIBRATION CERTIFICATE

Object	EX3DV4 - SN:7368
Calibration procedure(s)	QA CAL-01.v9, QA CAL-14.v5, QA CAL-23.v5, QA CAL-25.v7 Calibration procedure for dosimetric E-field probes
Calibration date:	January 30, 2020

This calibration certificate documents the traceability to national standards, which realize the physical units of measurements (SI).
The measurements and the uncertainties with confidence probability are given on the following pages and are part of the certificate.

All calibrations have been conducted in the closed laboratory facility: environment temperature (22 ± 3)°C and humidity < 70%.

Calibration Equipment used (M&TE critical for calibration)

Primary Standards	ID	Cal Date (Certificate No.)	Scheduled Calibration
Power meter NRP	SN: 104778	03-Apr-19 (No. 217-02892/02893)	Apr-20
Power sensor NRP-Z91	SN: 103244	03-Apr-19 (No. 217-02892)	Apr-20
Power sensor NRP-Z91	SN: 103245	03-Apr-19 (No. 217-02893)	Apr-20
Reference 20 dB Attenuator	SN: S5277 (20x)	04-Apr-19 (No. 217-02894)	Apr-20
DAE4	SN: 660	27-Dec-19 (No. DAE4-660_Dec19)	Dec-20
Reference Probe ES3DV2	SN: 3013	31-Dec-19 (No. ES3-3013_Dec19)	Dec-20
Secondary Standards	ID	Check Date (in house)	Scheduled Check
Power meter E4419B	SN: GB41293874	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: MY41498087	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
Power sensor E4412A	SN: 000110210	06-Apr-16 (in house check Jun-18)	In house check: Jun-20
RF generator HP 8648C	SN: US3642U01700	04-Aug-99 (in house check Jun-18)	In house check: Jun-20
Network Analyzer E8358A	SN: US41080477	31-Mar-14 (in house check Oct-19)	In house check: Oct-20

	Name	Function	Signature
Calibrated by:	Jeton Kastrati	Laboratory Technician	
Approved by:	Katja Pokovic	Technical Manager	

Issued: January 30, 2020

This calibration certificate shall not be reproduced except in full without written approval of the laboratory.

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Accreditation No.: SCS 0108

Glossary:

TSL	tissue simulating liquid
NORMx,y,z	sensitivity in free space
ConvF	sensitivity in TSL / NORMx,y,z
DCP	diode compression point
CF	crest factor (1/duty_cycle) of the RF signal
A, B, C, D	modulation dependent linearization parameters
Polarization φ	φ rotation around probe axis
Polarization ϑ	ϑ rotation around an axis that is in the plane normal to probe axis (at measurement center), i.e., ϑ = 0 is normal to probe axis
Connector Angle	information used in DASY system to align probe sensor X to the robot coordinate system

Calibration is Performed According to the Following Standards:

a) IEEE Std 1528-2013, "IEEE Recommended Practice for Determining the Peak Spatial-Averaged Specific Absorption Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques", June 2013
b) IEC 62209-1, ", "Measurement procedure for the assessment of Specific Absorption Rate (SAR) from hand-held and body-mounted devices used next to the ear (frequency range of 300 MHz to 6 GHz)", July 2016
c) IEC 62209-2, "Procedure to determine the Specific Absorption Rate (SAR) for wireless communication devices used in close proximity to the human body (frequency range of 30 MHz to 6 GHz)", March 2010
d) KDB 865664, "SAR Measurement Requirements for 100 MHz to 6 GHz"

Methods Applied and Interpretation of Parameters:

- *NORMx,y,z:* Assessed for E-field polarization ϑ = 0 (f ≤ 900 MHz in TEM-cell; f > 1800 MHz: R22 waveguide). NORMx,y,z are only intermediate values, i.e., the uncertainties of NORMx,y,z does not affect the E^2-field uncertainty inside TSL (see below *ConvF*).
- *NORM(f)x,y,z = NORMx,y,z * frequency_response* (see Frequency Response Chart). This linearization is implemented in DASY4 software versions later than 4.2. The uncertainty of the frequency response is included in the stated uncertainty of *ConvF*.
- *DCPx,y,z:* DCP are numerical linearization parameters assessed based on the data of power sweep with CW signal (no uncertainty required). DCP does not depend on frequency nor media.
- *PAR:* PAR is the Peak to Average Ratio that is not calibrated but determined based on the signal characteristics
- *Ax,y,z; Bx,y,z; Cx,y,z; Dx,y,z; VRx,y,z: A, B, C, D* are numerical linearization parameters assessed based on the data of power sweep for specific modulation signal. The parameters do not depend on frequency nor media. *VR* is the maximum calibration range expressed in RMS voltage across the diode.
- *ConvF and Boundary Effect Parameters:* Assessed in flat phantom using E-field (or Temperature Transfer Standard for f ≤ 800 MHz) and inside waveguide using analytical field distributions based on power measurements for f > 800 MHz. The same setups are used for assessment of the parameters applied for boundary compensation (alpha, depth) of which typical uncertainty values are given. These parameters are used in DASY4 software to improve probe accuracy close to the boundary. The sensitivity in TSL corresponds to *NORMx,y,z * ConvF* whereby the uncertainty corresponds to that given for *ConvF*. A frequency dependent *ConvF* is used in DASY version 4.4 and higher which allows extending the validity from ± 50 MHz to ± 100 MHz.
- *Spherical isotropy (3D deviation from isotropy)*: in a field of low gradients realized using a flat phantom exposed by a patch antenna.
- *Sensor Offset*: The sensor offset corresponds to the offset of virtual measurement center from the probe tip (on probe axis). No tolerance required.
- *Connector Angle*: The angle is assessed using the information gained by determining the *NORMx* (no uncertainty required).

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7368

Basic Calibration Parameters

	Sensor X	Sensor Y	Sensor Z	Unc (k=2)
Norm ($\mu V/(V/m)^2$)[A]	0.48	0.56	0.41	± 10.1 %
DCP (mV)[B]	103.2	100.2	100.3	

Calibration Results for Modulation Response

UID	Communication System Name		A dB	B dB√µV	C	D dB	VR mV	Max dev.	Unc[E] (k=2)
0	CW	X	0.0	0.0	1.0	0.00	185.3	± 3.5 %	± 4.7 %
		Y	0.0	0.0	1.0		173.0		
		Z	0.0	0.0	1.0		174.3		

The reported uncertainty of measurement is stated as the standard uncertainty of measurement multiplied by the coverage factor k=2, which for a normal distribution corresponds to a coverage probability of approximately 95%.

[A] The uncertainties of Norm X,Y,Z do not affect the E^2-field uncertainty inside TSL (see Page 5).
[B] Numerical linearization parameter: uncertainty not required.
[E] Uncertainty is determined using the max. deviation from linear response applying rectangular distribution and is expressed for the square of the field value.

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7368

Other Probe Parameters

Sensor Arrangement	Triangular
Connector Angle (°)	-23.8
Mechanical Surface Detection Mode	enabled
Optical Surface Detection Mode	disabled
Probe Overall Length	337 mm
Probe Body Diameter	10 mm
Tip Length	9 mm
Tip Diameter	2.5 mm
Probe Tip to Sensor X Calibration Point	1 mm
Probe Tip to Sensor Y Calibration Point	1 mm
Probe Tip to Sensor Z Calibration Point	1 mm
Recommended Measurement Distance from Surface	1.4 mm

DASY/EASY - Parameters of Probe: EX3DV4 - SN:7368

Calibration Parameter Determined in Head Tissue Simulating Media

f (MHz) [C]	Relative Permittivity [F]	Conductivity (S/m) [F]	ConvF X	ConvF Y	ConvF Z	Alpha [G]	Depth [G] (mm)	Unc (k=2)
750	41.9	0.89	9.89	9.89	9.89	0.64	0.82	± 12.0 %
835	41.5	0.90	9.67	9.67	9.67	0.56	0.84	± 12.0 %
900	41.5	0.97	9.46	9.46	9.46	0.38	1.05	± 12.0 %
1750	40.1	1.37	8.78	8.78	8.78	0.38	0.85	± 12.0 %
1900	40.0	1.40	8.43	8.43	8.43	0.29	0.85	± 12.0 %
2450	39.2	1.80	7.81	7.81	7.81	0.33	0.90	± 12.0 %
2600	39.0	1.96	7.44	7.44	7.44	0.35	0.90	± 12.0 %
3500	37.9	2.91	7.05	7.05	7.05	0.35	1.30	± 13.1 %
3700	37.7	3.12	6.98	6.98	6.98	0.35	1.30	± 13.1 %
5200	36.0	4.66	5.66	5.66	5.66	0.40	1.80	± 13.1 %
5300	35.9	4.76	5.45	5.45	5.45	0.40	1.80	± 13.1 %
5500	35.6	4.96	5.04	5.04	5.04	0.40	1.80	± 13.1 %
5600	35.5	5.07	4.85	4.85	4.85	0.40	1.80	± 13.1 %
5800	35.3	5.27	5.02	5.02	5.02	0.40	1.80	± 13.1 %

[C] Frequency validity above 300 MHz of ± 100 MHz only applies for DASY v4.4 and higher (see Page 2), else it is restricted to ± 50 MHz. The uncertainty is the RSS of the ConvF uncertainty at calibration frequency and the uncertainty for the indicated frequency band. Frequency validity below 300 MHz is ± 10, 25, 40, 50 and 70 MHz for ConvF assessments at 30, 64, 128, 150 and 220 MHz respectively. Validity of ConvF assessed at 6 MHz is 4-9 MHz, and ConvF assessed at 13 MHz is 9-19 MHz. Above 5 GHz frequency validity can be extended to ± 110 MHz.

[F] At frequencies below 3 GHz, the validity of tissue parameters (ε and σ) can be relaxed to ± 10% if liquid compensation formula is applied to measured SAR values. At frequencies above 3 GHz, the validity of tissue parameters (ε and σ) is restricted to ± 5%. The uncertainty is the RSS of the ConvF uncertainty for indicated target tissue parameters.

[G] Alpha/Depth are determined during calibration. SPEAG warrants that the remaining deviation due to the boundary effect after compensation is always less than ± 1% for frequencies below 3 GHz and below ± 2% for frequencies between 3-6 GHz at any distance larger than half the probe tip diameter from the boundary.

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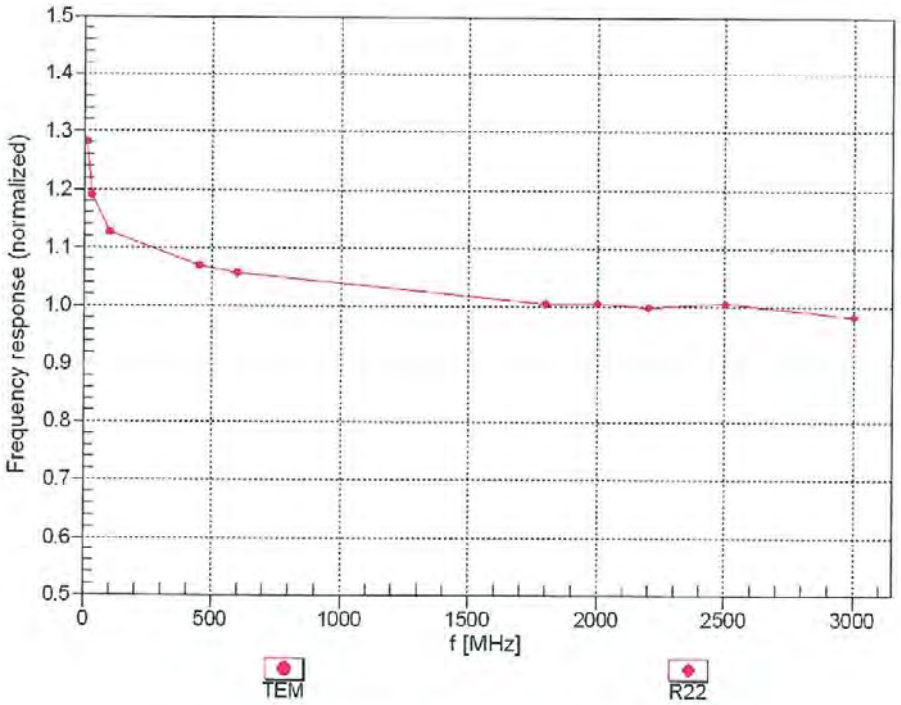
Frequency Response of E-Field

(TEM-Cell:ifi110 EXX, Waveguide: R22)



Uncertainty of Frequency Response of E-field: ± 6.3% (k=2)

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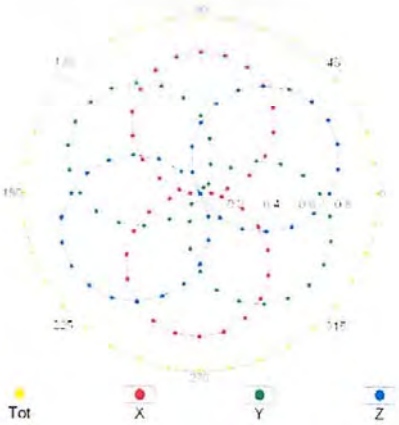
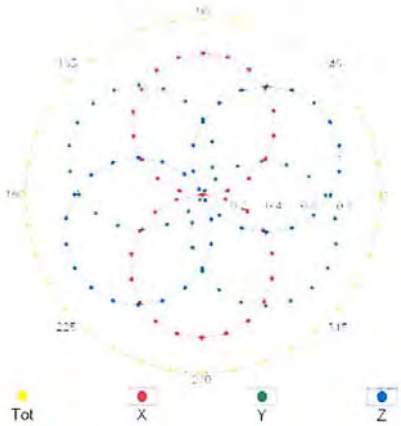
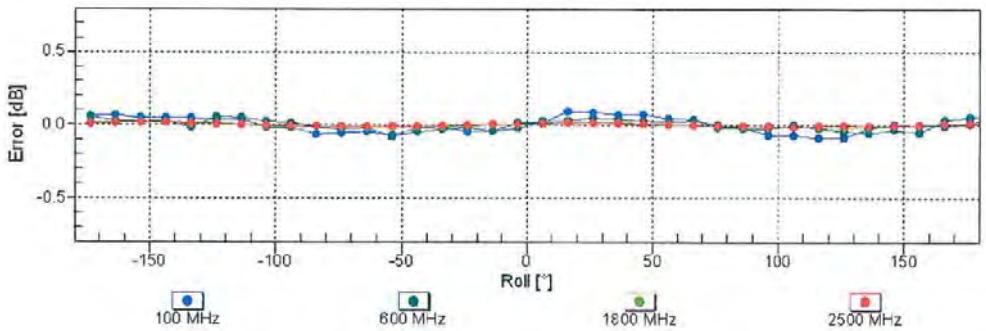
Receiving Pattern (ϕ), ϑ = 0°

f=600 MHz,TEM



f=1800 MHz,R22





Uncertainty of Axial Isotropy Assessment: ± 0.5% (k=2)

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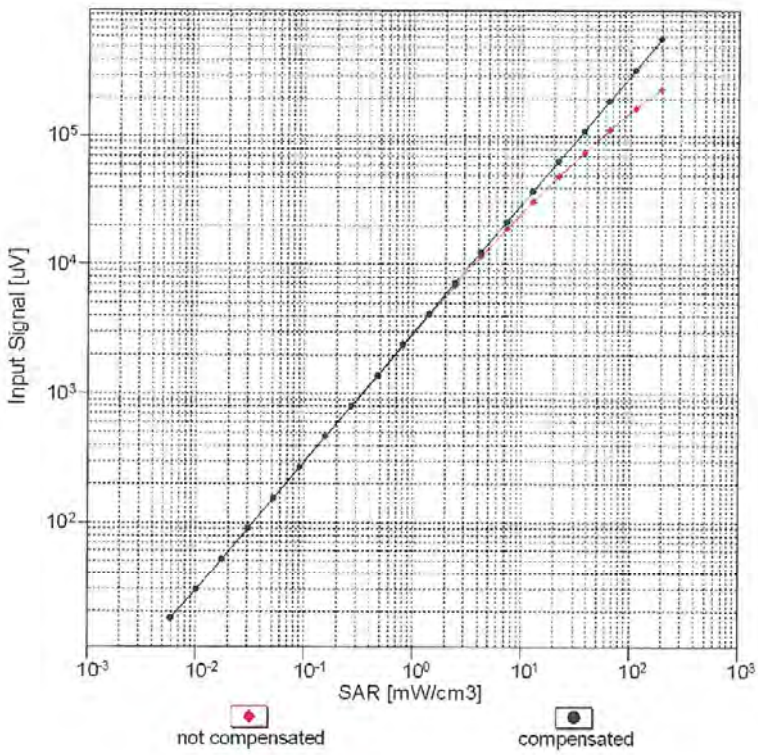
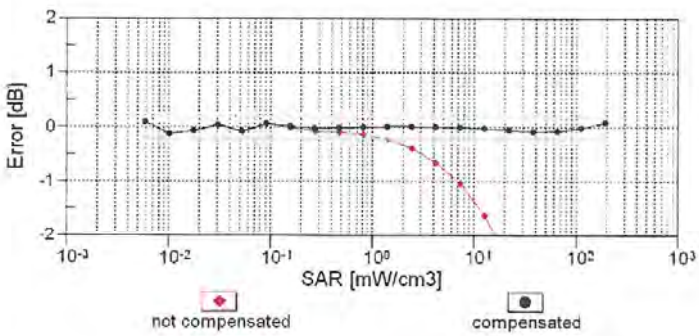
Dynamic Range f(SAR$_{head}$)
(TEM cell , f_{eval}= 1900 MHz)





Uncertainty of Linearity Assessment: ± 0.6% (k=2)

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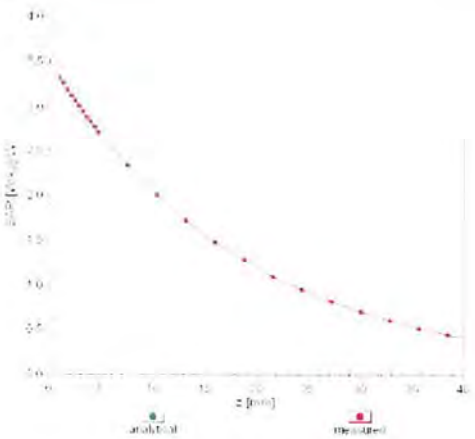
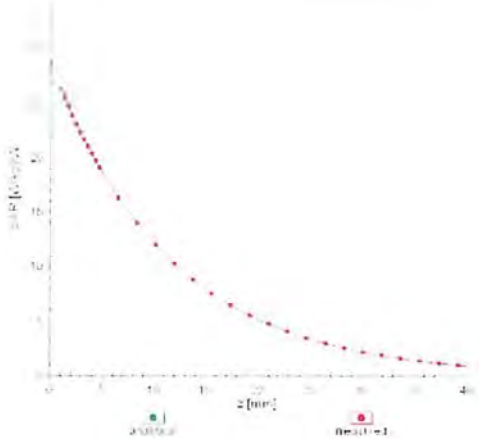
Conversion Factor Assessment

f = 835 MHz,WGLS R9 (H_convF)

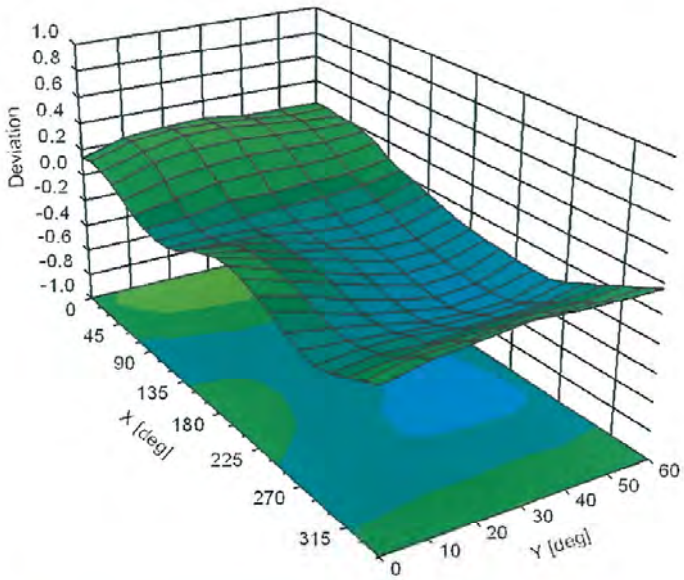


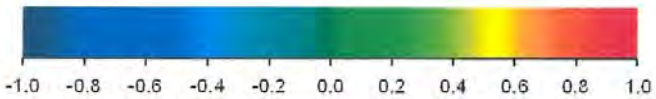
f = 1900 MHz,WGLS R22 (H_convF)



Deviation from Isotropy in Liquid

Error (ϕ, ϑ), f = 900 MHz





Uncertainty of Spherical Isotropy Assessment: ± 2.6% (k=2)

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