SAR Test Report

Test Report No.: 14633765H-A

Customer	**Panasonic Corporation of North America**
Description of EUT	**Radio Module (Tested inside of Panasonic Personal Computer FZ-G2)**
Model Number of EUT	**WW18A**
FCC ID	**ACJ9TGWW18C**
Test Regulation	**FCC47CFR 2.1093**
Test Result	**Complied (Refer to SECTION 9)**
Highest Exposure value	**The highest reported SAR Body: 1.195 W/kg (1 g) Worst TER: 0.959 Worst SPLSR: 0.024 Simultaneous: 1.545 W/kg**
Issue Date	**March 22, 2023**
Remarks	**-**

Representative Test Engineer	**Approved By**
Takeshi Hiyaji Engineer	Takayuki Shimada Leader

CERTIFICATE 5107.02

☐ The testing in which "Non-accreditation" is displayed is outside the accreditation scopes in UL Japan, Inc.
☒ There is no testing item of "Non-accreditation".

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- The information provided from the applicant for this report is identified in Section 1.
- For test report(s) referred in this report, the latest version (including any revisions) is always referred.

Contents

1 Customer information

Company Name	Panasonic Corporation of North America
Address	Two Riverfront Plaza, 9th Floor Newark, NEW JERSEY, 07102-5940, USA
Telephone Number	+1-201-348-7760
Contact Person	Ben Botros

*Remarks:
Panasonic Connect Co., Ltd. is on behalf of the applicant: Panasonic Corporation of North America (Company incorporated abroad).

The information provided from the customer is as follows;
- Customer, Description of EUT, Model No. FCC ID on the cover and other relevant pages
- Operating/Test Mode(s) (Mode(s)) on all the relevant pages
- SECTION 1: Customer information
- SECTION 2: Equipment under test (EUT) other than the Receipt Date
- SECTION 9: Tune-up tolerance information and software information

* The laboratory is exempted from liability of any test results affected from the above information in section 2 and 9.

2 Equipment under test (EUT)

2.1 Identification of EUT

Description	Radio Module
Model Number	WW18A
Serial number	2LTSA00156 (Below 2 GHz) 2LTSA00155 (Above 2 GHz)
Rating	DC 3.0 to 3.6 V
Condition	Production prototype (Not for Sale: This sample is equivalent to mass-produced items.)
Modification	No Modification by the test lab.
Receipt Date	January 14, 2023
Test Date	February 2 to March 13, 2023

<Information of Host device>

Type	Personal Computer FZ-G2 Intel Core i7-1185G7 (1.1 GHz Max 4.9 GHz) 10.1 inch LCD (1920 x 1200)

2.2 Product description

Wireless technologies	Dup.	Band	Mode
WCDMA	FDD	2	UMTS Rel. 99 (Data) HSDPA (Rel. 5)
	FDD	4	HSUPA (Rel. 6), HSPA+ (Rel. 7), DC-HSDPA (Rel. 8)
	FDD	5	
LTE	FDD	2	QPSK, 16QAM, 64AQM
	FDD	4	
In Canada, below bands are not	FDD	5	Downlink MIMO Support: Yes(2x2, 4x4)
supported.	FDD	7	Supported band : B2, B4, B7, B41, B48, B66
B26, B41, B48	FDD	12	
	FDD	13	Uplink MIMO Support: No
	FDD	14	Uplink transmission is limited to a single output stream.
	FDD	26	
	TDD	41	
	TDD	48	
	FDD	66	

Wireless module (Tested inside of Panasonic Tablet PC FZ-G2)
Model: WL22A (FCC ID ACJ9TGWL22A / ISED certification number 216H-CFWL22A)

Wireless technologies	Dup.	Band		Mode
WLAN	TDD	2.4 GHz	2412 - 2472 for US 2412 - 2462 for Canada	802.11b 802.11g 802.11n(20, 40)
	TDD	5 GHz	5180 - 5240 5260 - 5320 5500 - 5720 5745 - 5825	802.11a 802.11n(20, 40) 802.11ac(20, 40, 80, 160) 802.11ax(20, 40, 80, 160)
	TDD	6 GHz	5955 - 6415 6435 - 6515 6535 - 6875 6875 - 7115	802.11ax(20, 40, 80, 160)
Bluetooth	TDD	2.4 GHz	2402 - 2480	BR/EDR/LE

3 General LTE SAR Test and Reporting Considerations

3.1 Frequency range, Channel Bandwidth, Numbers and Frequencies

Band		Frequency range: 1850 - 1910 MHz					
		Channel Bandwidth[MHz]					
2		20	15	10	5	3	1.4
Low	Ch	18700	18675	18650	18625	18625	18607
	Freq[MHz]	1860	1857.5	1855	1852.5	18625	1850.7
Mid	Ch	18900	18900	18900	18900	18900	18900
	Freq[MHz]	1880	1880	1880	1880	1880	1880
High	Ch	19100	19125	19150	19175	19185	19193
	Freq[MHz]	1900	1902.5	1905	1907.5	1908.5	1909.3
Band		Frequency range: 1710 - 1755 MHz					
		Channel Bandwidth[MHz]					
4		20	15	10	5	3	1.4
Low	Ch	20050	20025	20000	19975	19965	19957
	Freq[MHz]	1720	1717.5	1715	1712.5	1711.5	1710.7
Mid	Ch	20175	20175	20175	20175	20175	20175
	Freq[MHz]	1732.5	1732.5	1732.5	1732.5	1732.5	1732.5
High	Ch	20300	20325	20350	20375	20385	20393
	Freq[MHz]	1745	1747.5	1750	1752.5	1753.5	1754.3
Band		Frequency range: 824 - 849 MHz					
		Channel Bandwidth[MHz]					
5				10 *1	5	3	1.4
Low	Ch			20450	20425	20415	20407
	Freq[MHz]			829	826.5	825.5	824.7
Mid	Ch			20525	20525	20525	20525
	Freq[MHz]			836.5	836.5	836.5	836.5
High	Ch			20600	20625	20635	20643
	Freq[MHz]			844	846.5	847.5	848.3
Band		Frequency range: 2500 - 2570 MHz					
		Channel Bandwidth[MHz]					
7		20	15	10	5		
Low	Ch	20850	20825	20800	20775		
	Freq[MHz]	2510	2507.5	2505	2502.5		
Mid	Ch	21100	21100	21100	21100		
	Freq[MHz]	2535	2535	2535	2535		
High	Ch	21350	21375	21400	21425		
	Freq[MHz]	2560	2562.5	2565	2567.5		
Band		Frequency range: 699 - 716 MHz					
		Channel Bandwidth[MHz]					
12				10 *1	5	3	1.4
Low	Ch			23060	23035	23025	23017
	Freq[MHz]			704	701.5	700.5	699.7
Mid	Ch			23095	23095	23095	23095
	Freq[MHz]			707.5	707.5	707.5	707.5
High	Ch			23130	23155	23165	23173
	Freq[MHz]			711	713.5	714.5	715.3

Band		Frequency range:		777	-	787	MHz
		Channel Bandwidth[MHz]					
13				10 *1	5 *1		
Low	Ch				23205		
	Freq[MHz]				779.5		
Mid	Ch			23230	23230		
	Freq[MHz]			782	782		
High	Ch				23255		
	Freq[MHz]				784.5		

Band		Frequency range:		788	-	798	MHz
		Channel Bandwidth[MHz]					
14				10 *1	5 *1		
Low	Ch				23305		
	Freq[MHz]				790.5		
Mid	Ch			23330	23330		
	Freq[MHz]			793	793		
High	Ch				23355		
	Freq[MHz]				795.5		

Band		Frequency range:	814	-	849	MHz	
		Channel Bandwidth[MHz]					
26			15 *1	10	5	3	1.4
Low	Ch		26765	26740	26715	26705	26697
	Freq[MHz]		821.5	819	816.5	815.5	814.7
Mid	Ch		26865	26865	26865	26865	26865
	Freq[MHz]		831.5	831.5	831.5	831.5	831.5
High	Ch		26965	26990	27015	27025	27033
	Freq[MHz]		841.5	844	846.5	847.5	848.3

Band FCC		Frequency range:	2496	-	2690	MHz	
		Channel Bandwidth[MHz]					
41		20	15	10	5		
Low	Ch	39750	39725	39700	39675		
	Freq[MHz]	2506	2503.5	2501	2498.5		
Low-Mid	Ch	40185	40173	40160	40148		
	Freq[MHz]	2549.5	2548.3	2547	2545.8		
Mid	Ch	40620	40620	40620	40620		
	Freq[MHz]	2593	2593	2593	2593		
Mid-High	Ch	41055	41068	41080	41093		
	Freq[MHz]	2636.5	2637.8	2639	2640.3		
High	Ch	41490	41515	41540	41565		
	Freq[MHz]	2680	2682.5	2685	2687.5		

Band FCC		Frequency range: 3550 - 3700 MHz					
		Channel Bandwidth[MHz]					
48		20	15	10	5		
Low	Ch	55340	55315	55290	55265		
	Freq[MHz]	3560	3557.5	3555	3552.5		
Low-Mid	Ch	55773	55765	55757	55748		
	Freq[MHz]	3603.3	3602.5	3601.7	3600.8		
Mid-High	Ch	56207	56215	56223	56232		
	Freq[MHz]	3646.7	3647.5	3648.3	3649.2		
High	Ch	56640	56665	56690	56715		
	Freq[MHz]	3690	3692.5	3695	3697.5		
Band		Frequency range: 1710 - 1780 MHz					
		Channel Bandwidth[MHz]					
66		20	15	10	5	3	1.4
Low	Ch	132072	132047	132022	131997	131987	131979
	Freq[MHz]	1720	1717.5	1715	1712.5	1711.5	1710.7
Mid	Ch	132322	132322	132322	132322	132322	132322
	Freq[MHz]	1745	1745	1745	1745	1745	1745
High	Ch	132572	132597	132622	132647	132657	132665
	Freq[MHz]	1770	1772.5	1775	1777.5	1778.5	1779.3

*1 : This bandwidth does not support at least three non-overlapping channels. When a device supports overlapping channel assignment in a channel bandwidth configuration, the middle channel of the group of overlapping channels should be selected for testing per KDB 941225 D05 for LTE Devices.

Maximum power reduction (MPR)

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

MPR Built-in by design
The manufacturer MPR values are always within the 3GPP maximum MPR allowance but may not follow the default MPR values. A-MPR (additional MPR) was disabled during SAR testing

Spectrum plots for RB configurations

A properly configured base station simulator was used for the SAR and power measurements;
therefore, spectrum plots for each RB allocation and offset configuration are not included in the SAR report.

3.2 LTE (TDD) Considerations

According to KDB 941225 D05 SAR for LTE Devices, for Time-Division Duplex (TDD) systems, SAR must be tested using a fixed periodic duty factor according to the highest transmission duty factor implemented for the device and supported by the defined 3GPP LTE TDD configurations.

LTE TDD Bands support 3GPP TS 36.211 section 4.2 for Type 2 Frame Structure and Table 4.2-2 for uplink downlink configurations and Table 4.2-1 for Special subframe configurations.

Table 4.2-1: Configuration of special subframe (lengths of DwPTS/GP/UpPTS)

Special subframe configuration	Normal cyclic prefix in downlink			Extended cyclic prefix in downlink		
	DwPTS	UpPTS		DwPTS	UpPTS	
		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink		Normal cyclic prefix in uplink	Extended cyclic prefix in uplink
0	$6592 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$	$7680 \cdot T_s$	$(1+X) \cdot 2192 \cdot T_s$	$(1+X) \cdot 2560 \cdot T_s$
1	$19760 \cdot T_s$			$20480 \cdot T_s$		
2	$21952 \cdot T_s$			$23040 \cdot T_s$		
3	$24144 \cdot T_s$			$25600 \cdot T_s$		
4	$26336 \cdot T_s$			$7680 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$
5	$6592 \cdot T_s$	$(2+X) \cdot 2192 \cdot T_s$	$(2+X) \cdot 2560 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-
10	$13168 \cdot T_s$	$13152 \cdot T_s$	$12800 \cdot T_s$	-	-	-

Table 4.2-2: Uplink-downlink configurations & Calculated Duty Cycle

Uplink-Downlink Configuration	Downlink-to-Uplink Switch-point Periodicity	Subframe Number										Calculated Duty Cycle (%)
		0	1	2	3	4	5	6	7	8	9	
0	5 ms	D	S	U	U	U	D	S	U	U	U	63.3%
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.3%
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.3%
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.7%
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.7%
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.7%
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.3%

Calculated Duty Cycle = Extended cyclic prefix in uplink * (T_s) * # of S + # of U / period

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = {[(2+0) * 2560] * [1/(15000 * 2048)] * 2 + 6 ms} / 10 ms = 63.3%

Where
D = Downlink subframe
S = Special subframe
U = Uplink subframe
T_s = 1/(15000 x 2048) seconds
X = 0

Note(s):
This device supports uplink-downlink configurations 0-6. The configuration with highest duty cycle was used for SAR Testing: configuration 0 at 63.3%(Power Class 3) and Special Subframe 7 with Extended cyclic prefix in uplink.

4 Test standard information

4.1 Test Specification

	Title	
☒	FCC47CFR 2.1093	RF Exposure Procedures and Equipment Authorization Policies for Portable Devices

4.2 Published RF exposure KDB procedures

	Name of documents	Title
☒	KDB447498D01(v06)	RF Exposure Procedures and Equipment Authorization Policies for Mobile and Portable Devices
☐	KDB447498D04	Interim General RF Exposure Guidance v01
☐	KDB447498D02(v02r01)	SAR Measurement Procedures for USB Dongle Transmitters
☐	KDB648474D04(v01r04)	SAR Evaluation Considerations for Wireless Handsets
☒	KDB941225D01(v03r01)	3G SAR Measurement Procedures
☒	KDB941225D05(v02r05)	SAR Evaluation Considerations for LTE Devices
☐	KDB941225D06(v02r01)	SAR Evaluation Procedures for Portable Devices with Wireless Router Capabilities
☐	KDB941225D07(v01r02)	SAR Evaluation Procedures for UMPC Mini-Tablet Devices
☒	KDB616217D04(v01r02)	SAR Evaluation Considerations for Laptop, Notebook, Netbook and Tablet Computers
☒	KDB865664D01(v01r04)	SAR Measurement Requirements for 100MHz to 6 GHz
☒	KDB248227D01(v02r02)	SAR Guidance for IEEE 802.11 (Wi-Fi) transmitters

4.3 SAR Work Procedures Procedure

	Name of documents	Title or details
☒	C/N: Work Instructions-ULID-003598 Name:13-EM-W0429	UL Japan, Inc.'s SAR Work Procedures Procedure
☒	C/N: Work Instructions-ULID-003599 Name:13-EM-W0430	UL Japan, Inc.'s SAR Work Procedures Procedure
☒	C/N: Work Instructions-ULID-003619 Name: 13-EM-W0863	UL Japan, Inc.'s PD Work Procedures Procedure
☒	IEEE Std 1528-2013	IEEE Recommended Practice for Determining the Peak Spatial-Average Specific Absorptions Rate (SAR) in the Human Head from Wireless Communications Devices: Measurement Techniques.
☒	IEC TR 63170 Edition 1.0	Measurement procedure for the evaluation of power density related to human exposure to radio frequency fields from wireless communication devices operating between 6 GHz and 100 GHz

4.4 Additions or deviations to standard

A non-standard configuration was used for SAR testing based on guidance from the FCC.
The operational description contains additional information.
Other than above, no addition, exclusion nor deviation has been made from the standard.

4.5 References

Federal Communications Commission. (November 29, 2021). *447498 D04 Interim General RF Exposure Guidance v01.*
Federal Communications Commission. (October 23, 2015). *447498 D01 General RF Exposure Guidance v06.*
International Electrotechnical Commission. (2018). *IEC TR 63170:2018* .
SPEAG. (August 2018). *5G Module V1.2 Application Note: 5G Compliance Testing.*
SPEAG. (n.d.). *SPEAG uncertainty document (AN 15-7/AN19-17).*

4.6 Limit

4.6.1 Below 6 GHz

(A) Limits for Occupational/Controlled Exposure (W/kg)

Spatial Average (averaged over the whole body)	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.4	8.0	20.0

(B) Limits for General population/Uncontrolled Exposure (W/kg)

Spatial Average (averaged over the whole body	Spatial Peak (averaged over any 1g of tissue)	Spatial Peak (hands/wrists/feet/ankles averaged over 10g)
0.08	1.6	4.0

Occupational/Controlled Environments: are defined as locations where there is exposure that may be incurred by people who are aware of the potential for exposure, (i.e. because of employment or occupation).

General Population/Uncontrolled Environments: are defined as locations where there is the exposure of individuals who have no knowledge or control of their exposure.
Applied limit is 1.6 W/kg

4.6.2 Above 6 GHz

Frequency Range [MHz]	Power Density [mW/cm^2]	Average Time [Minutes]
(A) Limits For Occupational / Controlled Environments		
1,500 – 100,000	5	6
(B) Limits For General Population / Uncontrolled Environments		
1,500 – 100,000	1	30

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

5 Location

UL Japan, Inc. Ise EMC Lab.
Shielded room for SAR testings
A2LA Certificate Number: 5107.02 / FCC Test Firm Registration Number: 884919
ISED SAR Lab Company Number: 2973C / CAB identifier: JP0002
4383-326 Asama-cho, Ise-shi, Mie-ken 516-0021 JAPAN
Telephone: +81-596-24-8999

6 Definitions, symbols, and abbreviations

6.1 Definitions

power density (PD) or S_{av} : energy per unit time and unit area crossing a surface of area A characterized by the normal unit vector **n̂** and averaging time.

$$S_{av} = \frac{1}{AT}\int\int(\mathbf{E}\times\mathbf{H})\cdot\hat{\boldsymbol{n}}\,dA\,dT$$

Specific Absorption Rate (SAR) : The time derivative (rate) of the incremental energy (dW) absorbed by (dissipated in) an incremental mass (dm) contained in a volume element (dV) of a given density (ρ), as shown in the following equation:

$$\mathrm{SAR} = \frac{d}{dt}\left(\frac{dW}{dm}\right) = \frac{d}{dt}\left(\frac{dW}{\rho dV}\right)$$

Reported SAR : Measured SAR is scaled to the maximum tune-up tolerance limit and the maximum duty by the following formulas.

$$Reported\ SAR[w/kg] = Measured\ SAR\ [w/kg] \times scale\ factor\ for\ power \times Scaled\ factor\ for\ duty(if\ needed)$$

Where

$$Scaled\ factor\ for\ power = \frac{Maximum\ tune\ up\ tolerance\ limit\ [mW]}{Measured\ power\ [mW]}$$

And

$$Scaled\ factor\ for\ duty = \frac{1}{Duty}$$

Maximum Tune-up tolerance limit : Tolerance power specified by customer.

6.2 Symbols

Symbol	Quantity	Unit	Dimensions
E	Electric field	volt per meter	V / m
f	Frequency	hertz	Hz
H	Magnetic field	ampere per meter	A / m
λ	Wavelength	meter	m
S	Local power density	watt per square meter	W / m^2
PD or S_{av}	Spatial-average power density	watt per square meter	W / m^2 (mW / cm^2)
SAR	Specific Absorption Rate	watt per square meter	W / kg

6.3 Abbreviations

☐	NOT applicable.
☒	applicable.
A2LA	The American Association for Laboratory Accreditation
AC	Alternating Current
AFH	Adaptive Frequency Hopping
AM	Amplitude Modulation
Amp, AMP	Amplifier
ANSI	American National Standards Institute
Ant, ANT	Antenna
AP	Access Point
Atten., ATT	Attenuator
AV	Average
BPSK	Binary Phase-Shift Keying
BR	Bluetooth Basic Rate
BS	base station
BT	Bluetooth
BT LE	Bluetooth Low Energy
BW	BandWidth
Cal Int	Calibration Interval
CCK	Complementary Code Keying
Ch., CH	Channel
CISPR	Comite International Special des Perturbations Radioelectriques
CW	Continuous Wave
DBPSK	Differential BPSK
DC	Direct Current
DFS	Dynamic Frequency Selection
DQPSK	Differential QPSK
DSI	Device state index
DSSS	Direct Sequence Spread Spectrum
DUT	Device under test
EDR	Enhanced Data Rate
EIRP, e.i.r.p.	Equivalent Isotropically Radiated Power
EMC	ElectroMagnetic Compatibility
EMI	ElectroMagnetic Interference
EN	European Norm
ERP, e.r.p.	Effective Radiated Power
EU	European Union
EUT	Equipment Under Test
Fac.	Factor
FCC	Federal Communications Commission
FHSS	Frequency Hopping Spread Spectrum
FM	Frequency Modulation
Freq.	Frequency
GFSK	Gaussian Frequency-Shift Keying
GNSS	Global Navigation Satellite System
EN-DC	E-UTRAN New Radio - Dual Connectivity
GPS	Global Positioning System
Hori.	Horizontal
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IF	Intermediate Frequency
ILAC	International Laboratory Accreditation Conference
ISED	Innovation, Science and Economic Development Canada
ISO	International Organization for Standardization
KDB	Knowledge data base from Federal communication committee
LAN	Local Area Network
LIMS	Laboratory Information Management System
MCS	Modulation and Coding Scheme
MRA	Mutual Recognition Arrangement
nG	n generation (e.g. 3G,4G and 5G)
NIST	National Institute of Standards and Technology
NR	New radio
OBW	Occupied Band Width
OFDM	Orthogonal Frequency Division Multiplexing
P/M	Power meter
PCB	Printed Circuit Board
PD	Power density
PER	Packet Error Rate
PHY	Physical Layer
PK	Peak
PN	Pseudo random Noise
PRBS	Pseudo-Random Bit Sequence
PSD	Power Spectral Density
QAM	Quadrature Amplitude Modulation
QP	Quasi-Peak
QPSK	Quadri-Phase Shift Keying
RBW	Resolution Band Width
RDS	Radio Data System
RE	Radio Equipment
RF	Radio Frequency
RMS	Root Mean Square
Rx	Receiving
SA, S/A	Spectrum Analyzer
SG	Signal Generator
S_n	Surface number
SVSWR	Site-Voltage Standing Wave Ratio
TER	Total exposure ratio
TR	Test Receiver
Tx	Transmitting
VBW	Video BandWidth
Vert.	Vertical
WLAN	Wireless LAN

7 Test result

7.1 verdict

Complied
Highest values at each band are listed next section.

7.2 Stand-alone SAR result

RAT	Band	Op. Mode	Test Position	Dist. (mm)	Mod	Ch #.	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up limit	Power (dBm) Meas.	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled
WCDMA	2	Full	Rear tilt (Edge4 side)	9	Rel 99 RMC 12.2 kbps	9262	1852.4	NA	NA	24.0	23.01	0.698	0.877
WCDMA	2	Red	Edge4	0	Rel 99 RMC 12.2 kbps	9262	1852.4	NA	NA	18.7	17.93	0.896	1.070
WCDMA	4	Full	Rear tilt (Edge4 side)	9	Rel 99 RMC 12.2 kbps	1513	1752.6	NA	NA	24.0	22.87	0.890	1.154
WCDMA	4	Red	Edge4	0	Rel 99 RMC 12.2 kbps	1312	1712.4	NA	NA	17.8	17.06	0.765	0.907
WCDMA	5	Full	Rear tilt (Edge1 side)	0	Rel 99 RMC 12.2 kbps	4132	826.4	NA	NA	24.0	23.15	0.690	0.839
WCDMA	5	Red	Edge4	0	Rel 99 RMC 12.2 kbps	4233	846.6	NA	NA	18.3	17.61	0.878	1.029
LTE	2	Full	Rear tilt(Edge1 side)	0	QPSK	19100	1900	1	0	24.0	22.87	0.783	1.016
LTE	2	Red	Edge4	0	QPSK	18700	1860	50	0	18.4	17.25	0.711	0.927
LTE	4	Full	Rear tilt (Edge4 side)	9	QPSK	20050	1720	1	0	24.0	22.94	0.861	1.099
LTE	4	Red	Edge4	0	QPSK	20050	1720	1	0	18.5	17.63	0.799	0.976
LTE	5	Full	Rear tilt(Edge4 side)	9	QPSK	20600	844	1	0	24.0	22.80	0.750	0.989
LTE	5	Red	Edge4	0	QPSK	20450	829	25	0	17.8	16.83	0.755	0.944
LTE	7	Full	Rear tilt(Edge1 side)	0	QPSK	21350	2560	1	0	23.0	21.97	0.564	0.715
LTE	7	Red	Edge4	0	QPSK	20850	2510	50	0	17.0	16.22	0.639	0.765
LTE	12	Full	Rear tilt (Edge4 side)	9	QPSK	23130	711	1	49	24.0	22.79	0.338	0.447
LTE	12	Red	Edge4	0	QPSK	23060	704	50	0	19.4	18.60	0.881	1.059
LTE	13	Full	Rear tilt (Edge4 side)	9	QPSK	23230	782	1	0	24.0	22.70	0.555	0.749
LTE	13	Red	Edge4	0	QPSK	23230	782	1	0	19.1	18.37	***1.010***	***1.195***
LTE	14	Full	Rear tilt (Edge4 side)	9	QPSK	23330	793	1	0	24.0	22.70	0.614	0.828
LTE	14	Red	Edge4	0	QPSK	23330	793	25	12	18.4	17.56	0.833	1.011
LTE	26	Full	Rear tilt (Edge4 side)	9	QPSK	26865	831.5	1	37	24.0	22.97	0.622	0.788
LTE	26	Red	Edge4	0	QPSK	26965	841.5	75	0	18.1	17.17	0.735	0.911
LTE	41	Full	Rear tilt (Edge4 side)	9	QPSK	41490	2680	1	0	23.0	21.93	0.410	0.525
LTE	41	Red	Edge4	0	QPSK	41055	2636.5	1	0	19.5	18.53	0.766	0.958
LTE	48	Full	Edge4	19	QPSK	55340	3560	1	0	20.0	18.84	0.450	0.588
LTE	48	Red	Edge4	0	QPSK	56207	3646.7	50	0	12.0	11.68	0.779	0.839
LTE	66	Full	Rear tilt (Edge4 side)	9	QPSK	132072	1720	1	0	24.0	22.92	0.856	1.098
LTE	66	Red	Edge4	0	QPSK	132072	1720	1	0	17.9	17.12	0.684	0.819

The sample used for the SAR is not more than 2 dB lower than the maximum tune-up tolerance limit. Measured power is within the tune-up tolerance range.

7.3 Simultaneous transmission SAR result

Worst TER is 0.959
See section 13

7.4 Measurement uncertainty for SAR < 6 GHz

Error Description	Uncert. value	Prob. Dist.	Div.	(ci) 1g	(ci) 10g	Std. Unc. (1g)	Std.Unc. (10g)
Measurement System Errors							
Probe Calibration	± 14.0 %	N	2	1	1	±7.0%	±7.0%
Probe Calibration Drift	± 1.7 %	R	√3	1	1	±1.0%	±1.0%
Probe Linearity	± 4.7 %	R	√3	1	1	±2.7%	±2.7%
Broadband Signal	± 2.6 %	R	√3	1	1	±1.5%	±1.5%
Probe Isotropy	± 7.6 %	R	√3	1	1	±4.4%	±4.4%
Data Acquisition	± 0.3 %	N	1	1	1	±0.3%	±0.3%
RF Ambient	± 1.8 %	N	1	1	1	±1.8%	±1.8%
Probe Positioning	± 0.2 %	N	1	0.33	0.33	±0.1%	±0.1%
Data Processing	± 2.3 %	N	1	1	1	±2.3%	±2.3%
Phantom and Device Errors							
Conductivity (meas.)DAK	± 10.0 %	N	1	0.78	0.71	±7.8%	±7.1%
Conductivity (temp.)BB	± 3.4 %	R	√3	0.78	0.71	±1.5%	±1.4%
Phantom Permittivity	± 14.0 %	R	√3	0.25	0.25	±2.0%	±2.0%
Distance EUT - TSL	± 2.0 %	N	1	2	2	±4.0%	±4.0%
Device Positioning (+/- 0.5mm)	± 1.0 %	N	1	1	1	±1.0%	±1.0%
Device Holder	± 3.6 %	N	1	1	1	±3.6%	±3.6%
EUT Modulationm	± 2.4 %	R	√3	1	1	±1.4%	±1.4%
Time-average SAR	± 2.6 %	R	√3	1	1	±1.5%	±1.5%
EUT drift	± 2.5 %	N	1	1	1	±2.5%	±2.5%
Val Antenna Unc.val	± 0.0 %	N	1	1	1	±0.0%	±0.0%
Unc. Input Powerval	± 0.0 %	N	1	1	1	±0.0%	±0.0%
Correction to the SAR results							
Deviation to Target	± 1.9 %	N	1	1	0.84	±1.9%	±1.6%
SAR scalingp	± 0.0 %	R	√3	1	1	±0.0%	±0.0%
Combined Std. Uncertainty						±14.1%	±13.7%
Expanded STD Uncertainty (κ =2)						±28.2%	±27.4%

7.5 Measurement uncertainty for PD > 6GHz

Error Description	Uncert. value (dB)	Probab. Distri.	Div.	(c_i)	Std. Unc. (±dB)	(v_i) v_{eff}
Uncertainty terms dependent on the measurement system						
Calibration	± 0.49	N	1	1	0.49	∞
Probe correction	± 0.00	R	√3	1	0.00	∞
Frequency response (BW <= 1 GHz)	± 0.20	R	√3	1	0.12	∞
Sensor cross coupling	± 0.00	R	√3	1	0.00	∞
Isotropy	± 0.50	R	√3	1	0.29	∞
Linearity	± 0.20	R	√3	1	0.12	∞
Probe scattering	± 0.00	R	√3	1	0.00	∞
Probe positioning o set	± 0.30	R	√3	1	0.17	∞
Probe positioning repeatability	± 0.04	R	√3	1	0.02	∞
Sensor mechanical o set	± 0.00	R	√3	1	0.00	∞
Probe spatial resolution	± 0.00	R	√3	1	0.00	∞
Field impedance dependance	± 0.00	R	√3	1	0.00	∞
Amplitude and phase drift	± 0.00	R	√3	1	0.00	∞
Amplitude and phase noise	± 0.04	R	√3	1	0.02	∞
Measurement area truncation	± 0.00	R	√3	1	0.00	∞
Data acquisition	± 0.03	N	1	1	0.03	∞
Sampling	± 0.00	R	√3	1	0.00	∞
Field reconstruction	± 0.95	R	√3	1	0.55	∞
Forward transformation	± 0.00	R	√3	1	0.00	∞
Power density scaling	-	R	√3	1	-	∞
Spatial averaging	0.10	R	√3	1	0.06	∞
System detection limit	± 0.04	R	√3	1	0.02	∞
Uncertainty terms dependent on the EUT and environmental factors						
Probe coupling with EUT	± 0.00	R	√3	1	0.00	∞
Modulation response	± 0.40	R	√3	1	0.23	∞
Integration time	± 0.00	R	√3	1	0.00	∞
Response time	± 0.00	R	√3	1	0.00	∞
Device holder influence	± 0.10	R	√3	1	0.06	∞
EUT alignment	± 0.00	R	√3	1	0.00	∞
RF ambient conditions	± 0.04	R	√3	1	0.02	∞
Ambient reflections	± 0.04	R	√3	1	0.02	∞
Immunity / secondary reception	± 0.00	R	√3	1	0.00	∞
Drift of the EUT	± 0.21	R	√3	1	0.12	∞
Combined Std. Uncertainty					0.87	∞
Expanded STD Uncertainty (k=2)					1.74	

8 Software information, Tune up tolerance limit

8.1 Software information

*The power value of the EUT was set for testing as follows (setting value might be different from product specification value);
Software (WWAN): Same as production model
Software (WLAN): DRTU Version DRTU.01346.22.140.0

*This setting of software is the worst case.
The test was performed with condition that obtained the maximum average power (Burst).
Any conditions under the normal use do not exceed the condition of setting.
In addition, end users cannot change the settings of the output power of the product.

8.2 Tune up tolerance limit

Table 8-1 Tune up Procedure

RAT	Band	w/o Power Reduction	w/ Power Reduction
WCDMA	2	23	17.7
	4	23	16.8
	5	23	17.3
LTE	2	23	17.4
	4	23	17.5
	5	23	16.8
	7	22	16.0
	12	23	18.4
	13	23	18.1
	14	23	17.4
	26	23	17.1
	41	22	18.5
	48	19	11.0
	66	23	16.9

Note(s):

- Supported band is listed on the “Product description” for destination, FCC or ISED.
- Power tolerance (±1 dB).

9 SAR Exposure Conditions (Test Configurations)

9.1 Summary of the distance between antenna and surface of EUT

Table 9-1 summary of distance

Test position	Distance[mm] WWAN
Edge1	41.8
Edge2	268.4
Edge3	82.1
Edge4	1.7
Rear	7.6
Rear Tilt (Edge1 side)	0.0
Rear Tilt (Edge4 side)	0.0
Bottom (Laptop mode)	123.8

Notes
- Rear Tilt (Edge1/4 side), distances are applied 0.0 mm as conservative.
- Details are shown in appendix

9.2 SAR-based Exemption - FCC section 1.1307

Exception condition as per section 1.1307 (b)(3)(i)(B)
the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th}\ (mW) = \begin{cases} ERP_{20dm}\ (d/20\ cm)^{x} & d \le 20\ cm \\ ERP_{20cm} & 20\ cm < d \le 40 cm \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20dm}\sqrt{f}}\right)\ and\ f\ is\ in\ GHz;$$

And

$$ERP_{20cm}(mW) = \begin{cases} 2040\ f & 0.3\ GHz \le f < 1.5\ GHz \\ 3060 & 1.5\ GHz \le f \le 6\ GHz \end{cases}$$

d = the separation distance.

When separation distance is less than 0.5 cm, no exemption condition, so test is required.

As per section 1.1307 (b)(2)
Separation distance is the minimum distance in any direction from any part of a radiating structure and any part of the body of a nearby person.

Radiating structure is an unshielded RF current-carrying conductor that generates an RF reactive near electric or magnetic field and/or radiates an RF electromagnetic wave. It is the component of an RF source that transmits, generates, or reradiates an RF field, such as an antenna, aperture, coil, or plate.

Table 9-2 Ant gain

Maximum antenna gain	
-1.23 dBi	699 - 716 MHz (band 12)
-0.68 dBi	777 - 798 MHz (band 13,14)
0.00 dBi	814 - 849 MHz (band 5,26)
2.30 dBi	1710 - 1780 MHz (band 4,66)
2.75 dBi	1850 - 1915 MHz (band 2)
0.96 dBi	2500 - 2570 MHz (band 7)
1.55 dBi	2496 - 2690 MHz (band 41)
2.38 dBi	3550 - 3700 MHz (bnad 48)

Table 9-3 For full power exemption FCC

RAT	Band	Frequency	Output Power or ERP		Separation Distances (mm)							Calculated Threshold Value						
		[MHz]	dBm	mW	Edge1	Edge3	Edge4	Rear	Rear Tilt (Edge4 side)	Rear Tilt (Edge1 side)	Bottom	Edge1	Edge3	Edge4	Rear	Rear Tilt (Edge4 side)	Rear Tilt (Edge1 side)	Bottom
WCDMA	B2	1850	24.61	289	41.80	82.10	1.70	7.60	0.00	0.00	123.80	171 mW -MEASURE-	594 mW -EXEMPT-	<5mm - MEASURE-	7 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	1265 mW -EXEMPT-
WCDMA	B4	1710	24.16	261	41.80	82.10	1.70	7.60	0.00	0.00	123.80	176 mW -MEASURE-	603 mW -EXEMPT-	<5mm - MEASURE-	8 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	1276 mW -EXEMPT-
WCDMA	B5	824	24.00	251	41.80	82.10	1.70	7.60	0.00	0.00	123.80	186 mW -MEASURE-	481 mW -EXEMPT-	<5mm - MEASURE-	17 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	857 mW -EXEMPT-
LTE	B2	1850	24.61	289	41.80	82.10	1.70	7.60	0.00	0.00	123.80	171 mW -MEASURE-	594 mW -EXEMPT-	<5mm - MEASURE-	7 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	1265 mW -EXEMPT-
LTE	B4	1710	24.16	261	41.80	82.10	1.70	7.60	0.00	0.00	123.80	176 mW -MEASURE-	603 mW -EXEMPT-	<5mm - MEASURE-	8 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	1276 mW -EXEMPT-
LTE	B5	824	24.00	251	41.80	82.10	1.70	7.60	0.00	0.00	123.80	186 mW -MEASURE-	481 mW -EXEMPT-	<5mm - MEASURE-	17 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	857 mW -EXEMPT-
LTE	B7	2500	23.00	200	41.80	82.10	1.70	7.60	0.00	0.00	123.80	155 mW -MEASURE-	560 mW -EXEMPT-	<5mm - MEASURE-	6 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	1226 mW -EXEMPT-
LTE	B12	699	24.00	251	41.80	82.10	1.70	7.60	0.00	0.00	123.80	187 mW -MEASURE-	449 mW -EXEMPT-	<5mm - MEASURE-	20 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	765 mW -EXEMPT-
LTE	B13	777	24.00	251	41.80	82.10	1.70	7.60	0.00	0.00	123.80	186 mW -MEASURE-	469 mW -EXEMPT-	<5mm - MEASURE-	18 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	823 mW -EXEMPT-
LTE	B14	788	24.00	251	41.80	82.10	1.70	7.60	0.00	0.00	123.80	186 mW -MEASURE-	472 mW -EXEMPT-	<5mm - MEASURE-	18 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	831 mW -EXEMPT-
LTE	B26	814	24.00	251	41.80	82.10	1.70	7.60	0.00	0.00	123.80	186 mW -MEASURE-	479 mW -EXEMPT-	<5mm - MEASURE-	17 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	849 mW -EXEMPT-
LTE	B41	2496	23.00	200	41.80	82.10	1.70	7.60	0.00	0.00	123.80	155 mW -MEASURE-	561 mW -EXEMPT-	<5mm - MEASURE-	6 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	1226 mW -EXEMPT-
LTE	B48	3550	20.24	106	41.80	82.10	1.70	7.60	0.00	0.00	123.80	137 mW -EXEMPT-	524 mW -EXEMPT-	<5mm - MEASURE-	5 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	1182 mW -EXEMPT-
LTE	B66	1710	24.16	261	41.80	82.10	1.70	7.60	0.00	0.00	123.80	176 mW -MEASURE-	603 mW -EXEMPT-	<5mm - MEASURE-	8 mW -MEASURE-	<5mm - MEASURE-	<5mm - MEASURE-	1276 mW -EXEMPT-

Edge2 and rear tilt edge2 side is more than 200 mm away from the radiating structure, it is omitted from the calculation.

Table 9-4 For reduction power exemption FCC

RAT	Band	Frequency	Output Power or ERP		Separation Distances (mm)			Calculated Threshold Value		
		[MHz]	dBm	mW	Edge4	Rear	Rear Tilt (Edge4 side)	Edge4	Rear	Rear Tilt (Edge4 side)
WCDMA	B2	1850	19.31	85	1.70	7.60	0.00	<5mm - MEASURE-	7 mW -MEASURE-	<5mm - MEASURE-
WCDMA	B4	1710	17.96	63	1.70	7.60	0.00	<5mm - MEASURE-	8 mW -MEASURE-	<5mm - MEASURE-
WCDMA	B5	824	18.30	68	1.70	7.60	0.00	<5mm - MEASURE-	17 mW -MEASURE-	<5mm - MEASURE-
LTE	B2	1850	19.01	80	1.70	7.60	0.00	<5mm - MEASURE-	7 mW -MEASURE-	<5mm - MEASURE-
LTE	B4	1710	18.66	73	1.70	7.60	0.00	<5mm - MEASURE-	8 mW -MEASURE-	<5mm - MEASURE-
LTE	B5	824	17.80	60	1.70	7.60	0.00	<5mm - MEASURE-	17 mW -MEASURE-	<5mm - MEASURE-
LTE	B7	2500	17.00	50	1.70	7.60	0.00	<5mm - MEASURE-	6 mW -MEASURE-	<5mm - MEASURE-
LTE	B12	699	19.40	87	1.70	7.60	0.00	<5mm - MEASURE-	20 mW -MEASURE-	<5mm - MEASURE-
LTE	B13	777	19.10	81	1.70	7.60	0.00	<5mm - MEASURE-	18 mW -MEASURE-	<5mm - MEASURE-
LTE	B14	788	18.40	69	1.70	7.60	0.00	<5mm - MEASURE-	18 mW -MEASURE-	<5mm - MEASURE-
LTE	B26	814	18.10	65	1.70	7.60	0.00	<5mm - MEASURE-	17 mW -MEASURE-	<5mm - MEASURE-
LTE	B41	2496	19.50	89	1.70	7.60	0.00	<5mm - MEASURE-	6 mW -MEASURE-	<5mm - MEASURE-
LTE	B48	3550	12.24	17	1.70	7.60	0.00	<5mm - MEASURE-	5 mW -MEASURE-	<5mm - MEASURE-
LTE	B66	1710	18.06	64	1.70	7.60	0.00	<5mm - MEASURE-	8 mW -MEASURE-	<5mm - MEASURE-

	: measurement is NOT required
	: measurement is required

10 SAR System Check

10.1 Dielectric Property

10.1.1 Dielectric Property for SAR

The dielectric parameters were checked prior to assessment using the DAK dielectric probe kit.

According to KDB865664 D01, the dielectric constant (εr) and conductivity (σ) of typical tissue-equivalent media recipes are expected to be within 5% of the required target values for a range of approximately 50 MHz at frequencies below 300 MHz. At above 3 GHz, 5% tolerance can usually be maintained for ± 100 MHz or more.

For SAR measurement systems that have implemented the SAR error compensation algorithms documented in IEEE Std 1528-2013, to automatically compensate the measured SAR results for deviations between the measured and required tissue dielectric parameters, the tolerance for εr and σ may be relaxed to ± 10% (<= 3 GHz).

The dielectric parameters were linearly interpolated between the closest pair of target frequencies defined in KDB 865664D01 to determine the applicable dielectric parameters corresponding to the device test frequency for measurement.

Listed conductivity and relative permittivity values including the target are rounded one or two decimal places due to significant digit, so some differences might be observed, and actual SAR calculation is done four decimal places.

Table 10-1 standard parameters on the KDB 865664D01

Target Frequency	Head		Body	
(MHz)	ε_r	σ (S/m)	ε_r	σ (S/m)
150	52.3	0.76	61.9	0.80
300	45.3	0.87	58.2	0.92
450	43.5	0.87	56.7	0.94
835	41.5	0.90	55.2	0.97
900	41.5	0.97	55.0	1.05
915	41.5	0.98	55.0	1.06
1450	40.5	1.20	54.0	1.30
1610	40.3	1.29	53.8	1.40
1800 – 2000	40.0	1.40	53.3	1.52
2450	39.2	1.80	52.7	1.95
3000	38.5	2.40	52.0	2.73
5800	35.3	5.27	48.2	6.00

(ε_r = relative permittivity, σ = conductivity and ρ = 1000 kg/m^3)

10.1.2 Dielectric Property for PD

Media is air so Relative Permittivity (εr) and Conductivity (σ) are 1 and 0 respectively.

Table 10-2 Directric Property Measurements Result:

DIELECTRIC PARAMETERS MEASUREMENT RESULTS									
Conditions			Frequency	Permittivity			Conductivity		
				Measured	Target	Delta	Measured	Target	Delta
Data	Room	Liquid type	[MHz]	ε'	ε'	+/- 10 [%]	σ [S/m]	σ [S/m]	+/- 10 [%]
2023/02/02	SAR2	HBBL600-10000	650	42.06	42.46	-0.95	0.85	0.89	-4.09
2023/02/02	SAR2	HBBL600-10000	700	42.10	42.20	-0.23	0.88	0.89	-1.11
2023/02/02	SAR2	HBBL600-10000	750	41.99	41.94	0.12	0.92	0.89	2.58
2023/02/06	SAR1	HBBL600-10000	650	41.90	42.46	-1.33	0.87	0.89	-1.64
2023/02/06	SAR1	HBBL600-10000	750	41.38	41.94	-1.34	0.90	0.89	0.98
2023/02/06	SAR1	HBBL600-10000	850	40.90	41.50	-1.45	0.93	0.92	2.03
2023/02/06	SAR1	HBBL600-10000	735	41.45	42.02	-1.35	0.90	0.89	0.63
2023/02/06	SAR1	HBBL600-10000	835	40.94	41.55	-1.49	0.93	0.91	2.13
2023/02/06	SAR1	HBBL600-10000	935	40.75	41.45	-1.70	0.97	0.99	-2.15
2023/02/07	SAR2	HBBL600-10000	1650	37.82	40.24	-6.02	1.33	1.31	0.97
2023/02/07	SAR2	HBBL600-10000	1750	37.36	40.08	-6.78	1.31	1.37	-4.21
2023/02/07	SAR2	HBBL600-10000	1850	36.99	40.00	-7.52	1.35	1.40	-3.45
2023/02/07	SAR2	HBBL600-10000	1900	36.90	40.00	-7.76	1.39	1.40	-0.40
2023/02/07	SAR2	HBBL600-10000	1950	36.82	40.00	-7.94	1.44	1.40	3.08
2023/02/10	SAR1	HBBL600-10000	650	40.72	42.46	-4.10	0.86	0.89	-3.31
2023/02/10	SAR1	HBBL600-10000	750	40.32	41.94	-3.86	0.89	0.89	-0.84
2023/02/10	SAR1	HBBL600-10000	850	39.96	41.50	-3.71	0.92	0.92	0.18
2023/02/10	SAR1	HBBL600-10000	735	40.36	42.02	-3.94	0.88	0.89	-1.20
2023/02/10	SAR1	HBBL600-10000	835	39.99	41.55	-3.76	0.91	0.91	0.25
2023/02/10	SAR1	HBBL600-10000	935	39.78	41.45	-4.04	0.95	0.99	-3.88
2023/02/10	SAR1	HBBL600-10000	1650	38.70	40.24	-3.82	1.26	1.31	-4.17
2023/02/10	SAR1	HBBL600-10000	1750	38.59	40.08	-3.71	1.31	1.37	-4.63
2023/02/10	SAR1	HBBL600-10000	1850	38.44	40.00	-3.89	1.36	1.40	-2.93
2023/02/10	SAR1	HBBL600-10000	1800	38.53	40.00	-3.67	1.33	1.40	-4.75
2023/02/10	SAR1	HBBL600-10000	1900	38.39	40.00	-4.02	1.39	1.40	-0.90
2023/02/10	SAR1	HBBL600-10000	2000	38.22	40.00	-4.44	1.44	1.40	2.99
2023/02/13	SAR2	HBBL600-10000	3400	39.18	38.04	2.99	2.68	2.81	-4.57
2023/02/13	SAR2	HBBL600-10000	3500	39.00	37.93	2.82	2.77	2.91	-4.85
2023/02/13	SAR2	HBBL600-10000	3600	38.86	37.81	2.77	2.87	3.02	-4.82
2023/02/15	SAR1	HBBL600-10000	650	43.13	42.46	1.57	0.86	0.89	-2.44
2023/02/15	SAR1	HBBL600-10000	750	43.11	41.94	2.78	0.91	0.89	1.69
2023/02/15	SAR1	HBBL600-10000	850	42.92	41.50	3.42	0.96	0.92	4.61
2023/02/15	SAR1	HBBL600-10000	735	43.10	42.02	2.57	0.90	0.89	1.06
2023/02/15	SAR1	HBBL600-10000	835	42.95	41.55	3.37	0.95	0.91	4.48
2023/02/15	SAR1	HBBL600-10000	935	42.64	41.45	2.87	0.99	0.99	0.53
2023/02/15	SAR1	HBBL600-10000	1650	40.94	40.24	1.75	1.30	1.31	-0.67
2023/02/15	SAR1	HBBL600-10000	1750	40.84	40.08	1.89	1.34	1.37	-2.04
2023/02/15	SAR1	HBBL600-10000	1850	40.63	40.00	1.58	1.40	1.40	-0.35
2023/02/15	SAR1	HBBL600-10000	1800	40.76	40.00	1.90	1.37	1.40	-2.30
2023/02/15	SAR1	HBBL600-10000	1900	40.55	40.00	1.37	1.43	1.40	1.82
2023/02/15	SAR1	HBBL600-10000	1950	40.46	40.00	1.14	1.46	1.40	3.98
2023/02/15	SAR2	HBBL600-10000	650	41.69	42.46	-1.83	0.86	0.89	-2.80
2023/02/15	SAR2	HBBL600-10000	750	41.70	41.94	-0.57	0.88	0.89	-1.85
2023/02/15	SAR2	HBBL600-10000	850	41.65	41.50	0.36	0.89	0.92	-2.32
2023/02/15	SAR2	HBBL600-10000	735	41.69	42.02	-0.78	0.88	0.89	-1.88
2023/02/15	SAR2	HBBL600-10000	835	41.66	41.55	0.26	0.89	0.91	-2.15
2023/02/15	SAR2	HBBL600-10000	880	41.59	41.50	0.21	0.90	0.95	-4.76
2023/02/15	SAR2	HBBL600-10000	1650	39.67	40.24	-1.41	1.27	1.31	-3.39
2023/02/15	SAR2	HBBL600-10000	1750	39.34	40.08	-1.83	1.33	1.37	-3.17
2023/02/15	SAR2	HBBL600-10000	1850	39.11	40.00	-2.22	1.39	1.40	-0.58
2023/02/15	SAR2	HBBL600-10000	1800	39.21	40.00	-1.98	1.36	1.40	-2.85
2023/02/15	SAR2	HBBL600-10000	1900	39.11	40.00	-2.23	1.42	1.40	1.76
2023/02/15	SAR2	HBBL600-10000	1950	39.11	40.00	-2.22	1.45	1.40	3.76
2023/02/15	SAR2	HBBL600-10000	2500	38.38	39.14	-1.94	1.83	1.85	-1.28
2023/02/15	SAR2	HBBL600-10000	2600	38.18	39.01	-2.14	1.90	1.96	-3.24
2023/02/15	SAR2	HBBL600-10000	2700	38.11	38.88	-1.97	1.98	2.07	-4.48

Cont.

2023/02/20	SAR1	HBBL600-10000	650	42.79	42.46	0.76	0.84	0.89	-4.61
2023/02/20	SAR1	HBBL600-10000	750	42.50	41.94	1.33	0.88	0.89	-1.98
2023/02/20	SAR1	HBBL600-10000	850	42.24	41.50	1.79	0.91	0.92	-0.53
2023/02/20	SAR1	HBBL600-10000	735	42.53	42.02	1.21	0.87	0.89	-2.30
2023/02/20	SAR1	HBBL600-10000	835	42.28	41.55	1.75	0.91	0.91	-0.53
2023/02/20	SAR1	HBBL600-10000	935	42.08	41.45	1.50	0.94	0.99	-4.47
2023/02/20	SAR1	HBBL600-10000	1650	40.74	40.24	1.26	1.27	1.31	-3.48
2023/02/20	SAR1	HBBL600-10000	1750	40.60	40.08	1.29	1.32	1.37	-3.87
2023/02/20	SAR1	HBBL600-10000	1850	40.41	40.00	1.01	1.37	1.40	-2.10
2023/02/20	SAR1	HBBL600-10000	1800	40.51	40.00	1.27	1.34	1.40	-4.01
2023/02/20	SAR1	HBBL600-10000	1900	40.36	40.00	0.89	1.40	1.40	-0.22
2023/02/20	SAR1	HBBL600-10000	2000	40.24	40.00	0.61	1.45	1.40	3.88
2023/02/20	SAR2	HBBL600-10000	650	41.43	42.46	-2.43	0.84	0.89	-4.95
2023/02/20	SAR2	HBBL600-10000	750	41.13	41.94	-1.93	0.87	0.89	-2.34
2023/02/20	SAR2	HBBL600-10000	850	40.84	41.50	-1.59	0.91	0.92	-1.16
2023/02/20	SAR2	HBBL600-10000	735	41.17	42.02	-2.02	0.87	0.89	-2.66
2023/02/20	SAR2	HBBL600-10000	835	40.87	41.55	-1.65	0.90	0.91	-1.15
2023/02/20	SAR2	HBBL600-10000	935	40.63	41.45	-1.99	0.94	0.99	-4.94
2023/02/20	SAR2	HBBL600-10000	1650	39.32	40.24	-2.29	1.26	1.31	-4.05
2023/02/20	SAR2	HBBL600-10000	1750	39.24	40.08	-2.10	1.32	1.37	-3.75
2023/02/20	SAR2	HBBL600-10000	1850	39.02	40.00	-2.44	1.38	1.40	-1.21
2023/02/20	SAR2	HBBL600-10000	1800	39.14	40.00	-2.14	1.35	1.40	-3.35
2023/02/20	SAR2	HBBL600-10000	1900	38.98	40.00	-2.55	1.41	1.40	0.93
2023/02/20	SAR2	HBBL600-10000	1950	38.91	40.00	-2.72	1.44	1.40	2.98
2023/02/20	SAR2	HBBL600-10000	2500	38.11	39.14	-2.62	1.82	1.85	-1.94
2023/02/20	SAR2	HBBL600-10000	2600	37.96	39.01	-2.69	1.89	1.96	-3.65
2023/02/20	SAR2	HBBL600-10000	2700	37.83	38.88	-2.70	1.97	2.07	-4.92
2023/02/24	SAR1	HBBL600-10000	650	42.58	42.46	0.29	0.85	0.89	-3.57
2023/02/24	SAR1	HBBL600-10000	750	42.28	41.94	0.79	0.88	0.89	-1.28
2023/02/24	SAR1	HBBL600-10000	850	41.94	41.50	1.05	0.91	0.92	-0.23
2023/02/24	SAR1	HBBL600-10000	1650	40.58	40.24	0.85	1.26	1.31	-4.24
2023/02/24	SAR1	HBBL600-10000	1750	40.40	40.08	0.79	1.31	1.37	-4.16
2023/02/24	SAR1	HBBL600-10000	1850	40.19	40.00	0.48	1.37	1.40	-2.39
2023/02/24	SAR2	HBBL3.5 - 5.8 GHz	3400	38.47	38.04	1.12	2.89	2.81	2.76
2023/02/24	SAR2	HBBL3.5 - 5.8 GHz	3500	38.28	37.93	0.92	2.96	2.91	1.61
2023/02/24	SAR2	HBBL3.5 - 5.8 GHz	3600	38.11	37.81	0.79	3.04	3.02	0.93
2023/02/24	SAR2	HBBL3.5 - 5.8 GHz	3700	37.96	37.70	0.68	3.13	3.12	0.44
2023/02/24	SAR2	HBBL3.5 - 5.8 GHz	3800	37.87	37.59	0.74	3.23	3.22	0.32
2023/03/13	SAR2	HBBL600-10000	1700	39.07	40.16	-2.71	1.29	1.34	-3.70
2023/03/13	SAR2	HBBL600-10000	1750	39.01	40.08	-2.68	1.32	1.37	-3.60
2023/03/13	SAR2	HBBL600-10000	1800	38.81	40.00	-2.98	1.37	1.40	-1.84

10.2 System check

SAR system verification is required to confirm measurement accuracy, according to the tissue dielectric media,probe calibration points and other system operating parameters required for measuring the SAR of a test device.The system verification must be performed for each frequency band and within the valid range of each probe calibration point required for testing the device. The same SAR probe(s) and tissue-equivalent media combinations used with each specific SAR system for system verification must be used for device testing. When multiple probe calibration points are required to cover substantially large transmission bands, independent system verifications are required for each probe calibration point. A system verification must be performed before each series of SAR measurements using the same probe calibration point and tissue-equivalent medium. Additional system verification should be considered according to the conditions of the tissue-equivalent medium and measured tissue dielectric parameters, typically every three to four days when the liquid parameters are re-measured or sooner when marginal liquid parameters are used at the beginning of a series of measurements.

10.2.1 System Performance Check Measurement Conditions for SAR:

- The measurements were performed in the flat section of the TWIN SAM or ELI phantom, shell thickness: 2.0 ±0.2 mm (bottom plate) filled with Body or Head simulating liquid of the following parameters.
- The depth of tissue-equivalent liquid in a phantom must be ≥ 15.0 cm for SAR measurements ≤ 3 GHz and ≥ 10.0 cm for measurements > 3 GHz.
- The DASY system with an E-Field Probe was used for the measurements.
- The dipole was mounted on the small tripod so that the dipole feed point was positioned below the center marking of the flat phantom section and the dipole was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 10 mm (above 1 GHz) and 15 mm (below 1 GHz) from dipolecenter to the simulating liquid surface.
- The coarse grid with a grid spacing of 15 mm was aligned with the dipole.
  For 5 GHz band - The coarse grid with a grid spacing of 10 mm was aligned with the dipole.
- Special 7x7x7 (below 3 GHz) and/or 8x8x7 (above 3 GHz) fine cube was chosen for the cube.
- Distance between probe sensors and phantom surface was set to 3 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 2.5 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

The target(reference) SAR values can be obtained from the calibration certificate of system validation dipoles(Refer to Appendix). The target SAR values are SAR measured value in the calibration certificate scaled to 1 W.

10.2.2 System Performance Check Measurement Conditions for PD:

System validation is required before a system is deployed for measurement
Peak and spatially averaged power density at the peak location(s) must be compared to calibrated results according to the defined test conditions

- the same spatial resolution and measurement region used in the waveguide calibration should be applied to system validation and system check
- power density distribution should also be verified, both spatially (shape) and numerically (level) through visual inspection for noticeable differences
- the measured results should be within 10 % of the calibrated targets

Then create a measurement file with a test distance of 10 mm for 10 GHz and 5.55 mm for 30 GHz and above (the later will account for the retracted location of the horn aperture towards the top surface of a verification source). Use the scan settings defined in below table.

Grid setting

Frequency [GHz]	Grid step	Grid extent X/Y [mm]	Measurement points
10	0.25 ($\frac{\lambda}{4}$)	120/120	18 × 18
30	0.25 ($\frac{\lambda}{4}$)	60/60	26 × 26
45	0.25 ($\frac{\lambda}{4}$)	42/42	28 × 28
60	0.25 ($\frac{\lambda}{4}$)	32.5/32.5	28 × 28
90	0.25 ($\frac{\lambda}{4}$)	30/30	38 × 38

10.2.3 System Check Results for SAR and PD

For SAR

The 1-g and 10-g SAR measured with a reference dipole, using the required tissue-equivalent medium at the test frequency, must be within ±10% of the manufacturer calibrated dipole SAR target. Refer to Appendix for the SAR System Check Plots.

Conditions					Used equipment		Liquid Temp parameter check	Meas value 250mW (100mW for >=3GHz		Meas value Normalized to 1W		Daily Reference value of regulation			
Room	Date	Frequency [MHz]	Temp [deg. C]	Humid [% RH]	E-Field Probe	Liquid depth [cm]	Liquid temp. [deg. C]	1g [W/kg]	10g [W/kg]	1g [W/kg]	10g [W/kg]	(SPEAG) 1g [W/kg]	(SPEAG) 10g[W/kg]	[%]	[%]
SAR2	2023/02/02	750	23.5	35	EX3825	15	23.5	2.32	1.53	9.28	6.12	8.68	5.64	6.9	8.5
SAR1	2023/02/06	750	22.5	31	EX3917	15	22.5	2.24	1.48	8.96	5.92	8.68	5.64	3.2	5.0
SAR1	2023/02/06	835	22.5	31	EX3917	15	22.5	2.58	1.69	10.32	6.76	9.84	6.44	4.9	5.0
SAR2	2023/02/07	1750	22.0	31	EX3825	15	22.0	8.82	4.65	35.28	18.60	36.76	19.36	-4.0	-3.9
SAR2	2023/02/07	1900	22.0	31	EX3825	15	22.0	10.20	5.29	40.80	21.16	39.56	20.52	3.1	3.1
SAR1	2023/02/10	750	23.0	37	EX3917	15	22.5	2.15	1.42	8.60	5.68	8.68	5.64	-0.9	0.7
SAR1	2023/02/10	835	23.0	37	EX3917	15	22.5	2.36	1.55	9.44	6.20	9.84	6.44	-4.1	-3.7
SAR1	2023/02/10	1750	23.0	37	EX3917	15	22.5	9.45	5.04	37.80	20.16	36.76	19.36	2.8	4.1
SAR1	2023/02/10	1900	23.0	37	EX3917	15	22.5	10.40	5.41	41.60	21.64	39.56	20.52	5.2	5.5
SAR2	2023/02/13	3500	19.3	42	EX3825	15	19.0	6.91	2.67	69.10	26.70	68.00	25.50	1.6	4.7
SAR1	2023/02/15	750	22.0	36	EX3825	15	22.0	2.31	1.52	8.49	5.55	8.68	5.64	6.5	7.8
SAR1	2023/02/15	835	22.0	36	EX3825	15	22.0	2.59	1.69	9.56	6.22	9.84	6.44	5.3	5.0
SAR1	2023/02/15	1750	22.0	36	EX3825	15	22.0	8.84	4.72	36.40	19.30	36.76	19.36	-3.8	-2.5
SAR1	2023/02/15	1900	22.0	36	EX3825	15	22.0	9.95	5.18	39.70	20.50	39.56	20.52	0.6	1.0
SAR2	2023/02/15	750	22.8	39	EX3917	15	22.5	2.23	1.50	8.92	6.00	8.68	5.64	2.8	6.4
SAR2	2023/02/15	835	22.8	39	EX3917	15	22.5	2.62	1.74	10.48	6.96	9.84	6.44	6.5	8.1
SAR2	2023/02/15	1750	22.8	39	EX3917	15	22.5	9.64	5.15	38.56	20.60	36.76	19.36	4.9	6.4
SAR2	2023/02/15	1900	22.8	39	EX3917	15	22.5	10.50	5.51	42.00	22.04	39.56	20.52	6.2	7.4
SAR2	2023/02/15	2600	22.8	39	EX3917	15	22.5	14.5	6.52	58	26.08	58.00	25.52	0.0	2.2
SAR1	2023/02/20	750	22.5	36	EX3825	15	22.25	2.1	1.39	8.4	5.56	8.68	5.64	-3.2	-1.4
SAR1	2023/02/20	835	22.5	36	EX3825	15	22.25	2.57	1.69	10.28	6.76	9.84	6.44	4.5	5.0
SAR1	2023/02/20	1750	22.5	36	EX3825	15	22.25	8.73	4.67	34.92	18.68	36.76	19.36	-5.0	-3.5
SAR1	2023/02/20	1900	22.5	36	EX3825	15	22.25	10.1	5.31	40.4	21.24	39.56	20.52	2.1	3.5
SAR2	2023/02/20	750	22.3	40	EX3917	15	21.8	2.17	1.43	8.68	5.72	8.68	5.64	0.0	1.4
SAR2	2023/02/20	835	22.3	40	EX3917	15	21.8	2.61	1.71	10.44	6.84	9.84	6.44	6.1	6.2
SAR2	2023/02/20	1750	22.3	40	EX3917	15	21.8	9.20	4.87	36.80	19.48	36.76	19.36	0.1	0.6
SAR2	2023/02/20	1900	22.3	40	EX3917	15	21.8	10.70	5.57	42.80	22.28	39.56	20.52	8.2	8.6
SAR2	2023/02/20	2600	22.3	40	EX3917	15	21.8	14.3	6.39	57.2	25.56	58.00	25.52	-1.4	0.2
SAR1	2023/02/24	750	22.5	35	EX3825	15	22.3	2.32	1.53	9.28	6.12	8.68	5.64	6.9	8.5
SAR1	2023/02/24	1750	22.5	35	EX3825	15	22.3	8.96	4.82	35.84	19.28	36.76	19.36	-2.5	-0.4
SAR2	2023/02/24	3500	20.5	36	EX3917	15	20	6.75	2.54	67.50	25.40	68.00	25.50	-0.7	-0.4
SAR2	2023/02/24	3700	20.5	36	EX3917	15	20	6.83	2.48	68.3	24.8	65.90	24.00	3.6	3.3
SAR2	2023/03/13	1750	22.6	40	EX3917	15	22.1	9.33	4.93	37.32	19.72	36.76	19.36	1.5	1.9

For PD

Date	Frequency [MHz]	Temp [deg. C]	Humid [% RH]	E/H-Field Probe	Verification source	Phantom	4cm^2 (S_{tot})	(SPEAG) 4cm^2 (S_{tot})	Dev. (S_{tot}) [%]	Visual Inspection
3/2	10000	21.0	40	MPBm-01	MVSm-04	5G	54.0	50.2	7.6	OK

Date	Frequency [MHz]	Temp [deg. C]	Humid [% RH]	E/H-Field Probe	Verification Source	Phantom	4cm^2 (S_{norm})	(SPEAG) 4cm^2 (S_{norm})	Dev. (S_{norm}) [%]	Visual Inspection
3/2	10000	21.0	40	MPBm-01	MVSm-04	5G	53.7	50.0	7.4	OK

MPBm-01, MVSm-04 details are shown in instrument list.

11 Conducted Output Power / SAR Measurements

11.1 Measurement configuration for conducted output power

WWAN average output power was measured with burst power (on time).

11.1.1 WCDMA configuration

Release 99 Setup Procedures used to establish the test signals

The following tests were completed according to the test requirements outlined in section 5.2 of the 3GPP TS34.121-1 specification. The EUT supports power Class 3, which has a nominal maximum output power of 24 dBm (+1.7/-3.7).

Mode	Subtest	Rel99
WCDMA General Settings	Loopback Mode	Test Mode 2
	Rel99 RMC	12.2kbps RMC
	Power Control Algorithm	Algorithm2
	βc/βd	8/15

HSDPA Setup Procedures used to establish the test signals

The following 4 Sub-tests were completed according to Release 5 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

Table C.10.2.4: β values for transmitter characteristics tests with HS-DPCCH

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
W-CDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 1			
	Power Control Algorithm	Algorithm 2			
	βc	2/15	11/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	Bd (SF)	64			
	βc/βd	2/15	11/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	D_{ACK}	8			
	D_{NAK}	8			
	DCQI	8			
	Ack-Nack repetition factor	3			
	CQI Feedback (Table 5.2B.4)	4ms			
	CQI Repetition Factor (Table 5.2B.4)	2			
	Ahs=βhs/βc	30/15			

HSPA (HSDPA & HSUPA) Setup Procedures used to establish the test signals

The following 5 Sub-tests were completed according to Release 6 procedures in table C,11.1.3 of 3GPP TS 34.121-1
A summary of these settings are illustrated below:

Table C.11.1.3: β values for transmitter characteristics tests with HS-DPCCH and E-DCH

	Mode	HSPA				
	Subtest	1	2	3	4	5
WCDMA General Settings	Loopback Mode	Test Mode 1				
	Rel99 RMC	12.2 kbps RMC				
	HSDPA FRC	H-Set 1				
	HSUPA Test	HSPA				
	Power Control Algorithm	Algorithm 2				Algorithm 1
	βc	11/15	6/15	15/15	2/15	15/15
	βd	15/15	15/15	9/15	15/15	0
	βec	209/225	12/15	30/15	2/15	5/15
	βc/βd	11/15	6/15	15/9	2/15	-
	βhs	22/15	12/15	30/15	4/15	5/15
	βed	1309/225	94/75	47/15	56/75	47/15
	CM (dB)	1	3	2	3	1
	MPR (dB)	0	2	1	2	0
HSDPA Specific Settings	DACK	8				0
	DNAK	8				0
	DCQI	8				0
	Ack-Nack repetition factor	3				
	CQI Feedback (Table 5.2B.4)	4ms				
	CQI Repetition Factor (Table 5.2B.4)	2				
	Ahs = βhs/βc	30/15				
HSUPA Specific Settings	E-DPDCCH	6	8	8	5	0
	DHARQ	0	0	0	0	0
	AG Index	20	12	15	17	12
	ETFCI (from 34.121 Table C.11.1.3)	75	67	92	71	67
	Associated Max UL Data Rate kbps	242.1	174.9	482.8	205.8	308.9
	Reference E-TFCIs	5	5	2	5	1
	Reference E-TFCI	11	11	11	11	67
	Reference E-TFCI PO	4	4	4	4	18
	Reference E-TFCI	67	67	92	67	67
	Reference E-TFCI PO	18	18	18	18	18
	Reference E-TFCI	71	71	71	71	71
	Reference E-TFCI PO	23	23	23	23	23
	Reference E-TFCI	75	75	75	75	75
	Reference E-TFCI PO	26	26	26	26	26
	Reference E-TFCI	81	81	81	81	81
	Reference E-TFCI PO	27	27	27	27	27
	Maximum Channelization Codes	2xSF2				SF4

DC-HSDPA Setup Procedures used to establish the test signals

The following tests were completed according to procedures in section 7.3.13 of 3GPP TS34.108. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1

Table E.5.0: Levels for HSDPA connection setup

Parameter During Connection setup	Unit	Value
P-CPICH_Ec/Ior	dB	-10
P-CCPCH and SCH_Ec/Ior	dB	-12
PICH _Ec/Ior	dB	-15
HS-PDSCH	dB	off
HS-SCCH_1	dB	off
DPCH_Ec/Ior	dB	-5
OCNS_Ec/Ior	dB	-3.1

Call is set up as per 3GPP TS34.108 sub clause 7.3.13

The configurations of the fixed reference channels for HSDPA RF tests are described in 3GPP TS 34.121, annex C for FDD and 3GPP TS 34.122.

Table C.8.1.12: Fixed Reference Channel H-Set 12

Parameter	Unit	Value
Nominal Avg. Inf. Bit Rate	kbps	60
Inter-TTI Distance	TTI's	1
Number of HARQ Processes	Proces ses	6
Information Bit Payload (N_{INF})	Bits	120
Number Code Blocks	Blocks	1
Binary Channel Bits Per TTI	Bits	960
Total Available SML's in UE	SML's	19200
Number of SML's per HARQ Proc.	SML's	3200
Coding Rate		0.15
Number of Physical Channel Codes	Codes	1
Modulation		QPSK
Note 1: The RMC is intended to be used for DC-HSDPA mode and both cells shall transmit with identical parameters as listed in the table.		
Note 2: Maximum number of transmission is limited to 1, i.e., retransmission is not allowed. The redundancy and constellation version 0 shall be used.		

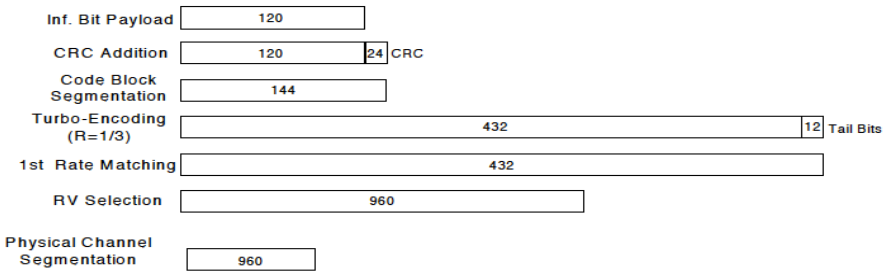


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

The following 4 Sub-tests for HSDPA were completed according to Release 8 procedures in section 5.2 of 3GPP TS34.121.

A summary of subtest settings are illustrated below:

	Mode	HSDPA	HSDPA	HSDPA	HSDPA
	Subtest	1	2	3	4
WCDMA General Settings	Loopback Mode	Test Mode 1			
	Rel99 RMC	12.2kbps RMC			
	HSDPA FRC	H-Set 1			
	Power Control Algorithm	Algorithm2			
	βc	2/15	11/15	15/15	15/15
	βd	15/15	15/15	8/15	4/15
	βd (SF)	64			
	βc/βd	2/15	12/15	15/8	15/4
	βhs	4/15	24/15	30/15	30/15
	MPR (dB)	0	0	0.5	0.5
HSDPA Specific Settings	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = βhs/ βc	30/15			

HSPA+

The following 1 Sub-test was completed according to Release 7 procedures in section 5.2 of 3GPP TS34.121. A summary of these settings are illustrated below:

Table C.11.1.4: **β values for transmitter characteristics tests with HS-DPCCH and E-DCH with 16QAM**

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed}1: 30/15 β_{ed}2: 30/15	β_{ed}3: 24/15 β_{ed}4: 24/15	3.5	2.5	14	105	105

Note 1: Δ_{ACK}, Δ_{NACK} and Δ_{CQI} = 30/15 with β_{hs} = 30/15 * β_c.
Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).
Note 3: DPDCH is not configured, therefore the β_c is set to 1 and β_d = 0 by default.
Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.
Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

11.1.2 LTE single configuration

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

UE Power Class: 3 (23 +/- 2dBm). The allowed Maximum Power Reduction (MPR) for the maximum output power due to higher order modulation and transmit bandwidth configuration (resource blocks) is specified in Table 6.2.3-1 of the 3GPP TS36.101.

Table 6.2.3-1: Maximum Power Reduction (MPR) for Power Class 1, 2 and 3

Modulation	Channel bandwidth / Transmission bandwidth (N_{RB})						MPR (dB)
	1.4 MHz	3.0 MHz	5 MHz	10 MHz	15 MHz	20 MHz	
QPSK	> 5	> 4	> 8	> 12	> 16	> 18	≤ 1
16 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 2
64 QAM	≤ 5	≤ 4	≤ 8	≤ 12	≤ 16	≤ 18	≤ 2
64 QAM	> 5	> 4	> 8	> 12	> 16	> 18	≤ 3
256 QAM	≥ 1						≤ 5

The allowed A-MPR values specified below in Table 6.2.4.-1 of 3GPP TS36.101 are in addition to the allowed MPR requirements. All the measurements below were performed with A-MPR disabled, by using Network Signaling Value of "NS_01".

Network Signalling value	Requirements (subclause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	N/A

11.1.3 LTE CA configuration

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS36.101 specification.

For intra-band contiguous carrier aggregation the allowed Maximum Power Reduction (MPR) for the maximum output power applicable to the EUT in table below. In case the modulation format is different on different component carriers then the MPR is determined by the rules applied to higher order of those modulations.

Modulation	CA bandwidth Class B and C / Smallest Component Carrier Transmission Bandwidth Configuration				MPR (dB)
	25 RB	50 RB	75 RB	100 RB	
QPSK	> 8 and ≤ 25	> 12 and ≤ 50	> 16 and ≤ 75	> 18 and ≤ 100	≤ 1
QPSK	> 25	> 50	> 75	> 100	≤ 2
16 QAM	≤ 8	≤ 12	≤ 16	≤ 18	≤ 1
16 QAM	> 8 and ≤ 25	> 12 and ≤ 50	> 16 and ≤ 75	> 18 and ≤ 100	≤ 2
16 QAM	> 25	> 50	> 75	> 100	≤ 3
64 QAM	≤ 8 and allocation wholly contained within a single CC	≤ 12 and allocation wholly contained within a single CC	≤ 16 and allocation wholly contained within a single CC	≤ 18 and allocation wholly contained within a single CC	≤ 2
64 QAM	> 8 or allocation extends across two CC's	> 12 or allocation extends across two CC's	> 16 or allocation extends across two CC's	> 18 or allocation extends across two CC's	≤ 3

For PUCCH and SRS transmissions, the allowed MPR is according to that specified for PUSCH WPDK modulation for the corresponding transmission bandwidth.

11.1.4 LTE CA power measurement combination

SAR test exclusion for LTE downlink Carrier Aggregation is determined by power measurements according to the number of component carriers (CCs) supported by the product implementation. Per April 2018 TCBC Workshop Notes, the following test reduction methodology was applied to determine the combinations required for conducted power measurements.

LTE DLCA Test Reduction Methodology:
- The supported combinations were arranged by the number of component carriers in columns.
- Any limitations on the PCC or SCC for each combination were identified alongside the combination.
- Power measurements were performed for "supersets" (LTE CA combinations with multiple components carriers) and any "subsets" (LTE CA combinations with fewer component carriers) that were not completely covered by the supersets.
- Only subsets that have the exact same components as a superset were excluded for measurement.
- When there were certain restrictions on component carriers that existed in the superset that were not applied for the subset, the subset configuration was additionally evaluated.
- Both inter-band and intra-band downlink carrier aggregation scenarios were considered.
- Downlink CA combinations for SISO and 4x4 Downlink MIMO operations were measured independently, per May 2017 TCBC Workshop notes.
- All bands required for SAR testing per FCC KDB procedures were considered.

General PCC and SCC configuration selection procedure:
- PCC uplink channel, channel bandwidth, modulation and RB configurations were selected based on section C)3)b)ii) of KDB 941225 D05 V01r02. The downlink PCC channel was paired with the selected PCC uplink channel according to normal configurations without carrier aggregation.
- To maximize aggregated bandwidth, highest channel bandwidth available for that CA combination was selected for SCC. For inter-band CA, the SCC downlink channels were selected near the middle of their transmission bands. For contiguous intra-band CA, the downlink channel spacing between the component carriers was set to multiple of 300 kHz less than the nominal channel spacing defined in section 5.4.1A of 3GPP TS 36.521. For non-contiguous intra-band CA, the downlink channel spacing between the component carriers was set to be larger than the nominal channel spacing and provided maximum separation between the component carriers.
- All selected PCC and SCC(s) remained fully within the uplink/downlink transmission band of the respective component carrier.

Downlink CA with Downlink 4x4 MIMO RF Conducted Powers:
This device supports downlink 4x4 MIMO operations for some LTE bands. Uplink transmission is limited to a single output stream. When carrier aggregation was applicable, the general test selection and setup procedures described above were applied.

Uplink CA Conducted Powers:
This device supports uplink carrier aggregation for some LTE bands with a maximum of two component carriers. For intra-band contiguous carrier aggregation scenarios, 3GPP 36.101 Table 6.2.2A-1 specifies that the aggregate maximum allowed output power is equivalent to the single carrier scenario. 3GPP 36.101 6.2.3A allows for several dB of MPR to be applied when noncontiguous RB allocation is implemented. The conducted powers and MPR settings in this device are permanently implemented per the above 3GPP requirements.

Per FCC Guidance, the output power with uplink CA active was measured for the configuration with the highest reported SAR with single carrier for each exposure condition. The power was measured with wideband signal integration over both component carriers.

Downlink CA with Uplink CA Enabled:
This device supports uplink carrier aggregation (ULCA) with additional Carrier Aggregation configurations active in the downlink. 4x4 DL MIMO is only operating in the downlink. Uplink transmission is limited to a single output stream for each component carrier of ULCA.
Power measurements were performed with ULCA active and additional CA configurations active in the downlink for the configuration per Fall 2017 TCB Workshop Notes.

11.2 WCDMA

11.2.1 WCMDA Band 2

R99

Band	Mode	UL Ch	Freq.	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
W-CDMA (UMTS) Band 2	Rel 99 (RMC, 12.2 kbps)	9262	1852.4	24.00	18.70	23.01	17.93
		9400	1880.0	24.00	18.70	23.02	18.00
		9538	1907.6	24.00	18.70	23.04	17.97

HSDPA

Band	Mode	UL Ch	Freq.	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
W-CDMA (UMTS) Band 2	Subtest 1	9262	1852.4	23.00	17.70	21.92	16.94
		9400	1880.0	23.00	17.70	21.94	17.05
		9538	1907.6	23.00	17.70	21.97	17.00
	Subtest 2	9262	1852.4	23.00	17.70	21.95	16.92
		9400	1880.0	23.00	17.70	21.93	17.01
		9538	1907.6	23.00	17.70	21.98	16.99
	Subtest 3	9262	1852.4	23.00	17.70	21.43	16.55
		9400	1880.0	23.00	17.70	21.48	16.62
		9538	1907.6	23.00	17.70	21.50	16.58
	Subtest 4	9262	1852.4	23.00	17.70	21.43	16.58
		9400	1880.0	23.00	17.70	21.47	16.63
		9538	1907.6	23.00	17.70	21.51	16.60

DC-HSDPA

Band	Mode	UL Ch	Freq.	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
W-CDMA (UMTS) Band 2	Subtest 1	9262	1852.4	23.00	17.70	21.92	16.95
		9400	1880.0	23.00	17.70	21.95	17.06
		9538	1907.6	23.00	17.70	21.98	17.03
	Subtest 2	9262	1852.4	23.00	17.70	21.95	16.95
		9400	1880.0	23.00	17.70	21.97	17.04
		9538	1907.6	23.00	17.70	22.01	17.02
	Subtest 3	9262	1852.4	23.00	17.70	21.41	16.98
		9400	1880.0	23.00	17.70	21.49	17.06
		9538	1907.6	23.00	17.70	21.51	17.02
	Subtest 4	9262	1852.4	23.00	17.70	21.42	16.98
		9400	1880.0	23.00	17.70	21.48	17.09
		9538	1907.6	23.00	17.70	21.53	17.05

HSUPA

Band	Mode	UL Ch	Freq.	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	Avg Pwr (dBm)
				Full Power	Reduced Power	Full Power	Reduced Power
WCDMA (UMTS) Band 2	Subtest 1	9262	1852.4	23.00	17.70	21.71	16.92
		9400	1880.0	23.00	17.70	21.83	17.05
		9538	1907.6	23.00	17.70	21.90	16.98
	Subtest 2	9262	1852.4	23.00	17.70	19.71	15.04
		9400	1880.0	23.00	17.70	19.99	15.12
		9538	1907.6	23.00	17.70	19.93	15.06
	Subtest 3	9262	1852.4	23.00	17.70	20.74	15.94
		9400	1880.0	23.00	17.70	20.86	16.03
		9538	1907.6	23.00	17.70	20.85	15.95
	Subtest 4	9262	1852.4	23.00	17.70	19.74	15.05
		9400	1880.0	23.00	17.70	19.84	15.11
		9538	1907.6	23.00	17.70	19.92	15.08
	Subtest 5	9262	1852.4	23.00	17.70	21.40	17.01
		9400	1880.0	23.00	17.70	21.70	17.02
		9538	1907.6	23.00	17.70	21.90	17.01

HSPA+

Band	Mode	UL Ch	Freq. (MHz)	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
W-CDMA (UMTS) Band 2	Subtest 1	9262	1852.4	23.00	17.70	21.46	17.01
		9400	1880.0	23.00	17.70	21.48	17.07
		9538	1907.6	23.00	17.70	21.52	17.03

11.2.2 WCMDA Band 4

R99

Band	Mode	UL Ch No.	Freq.	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
W-CDMA (UMTS) Band 4	Rel 99 (RMC, 12.2 kbps)	1312	1712.4	24.00	17.80	22.85	17.06
		1413	1732.6	24.00	17.80	22.84	17.09
		1513	1752.6	24.00	17.80	22.87	17.06

HSDPA

Band	Mode	UL Ch No.	Freq.	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
W-CDMA (UMTS) Band 4	Subtest 1	1312	1712.4	23.00	16.80	21.79	16.09
		1413	1732.6	23.00	16.80	21.84	16.15
		1513	1752.6	23.00	16.80	21.77	16.01
	Subtest 2	1312	1712.4	23.00	16.80	21.82	16.07
		1413	1732.6	23.00	16.80	21.80	16.11
		1513	1752.6	23.00	16.80	21.72	16.02
	Subtest 3	1312	1712.4	23.00	16.80	21.28	15.86
		1413	1732.6	23.00	16.80	21.35	15.92
		1513	1752.6	23.00	16.80	21.24	15.82
	Subtest 4	1312	1712.4	23.00	16.80	21.31	15.88
		1413	1732.6	23.00	16.80	21.33	15.94
		1513	1752.6	23.00	16.80	21.26	15.84

DC-HSDPA

Band	Mode	UL Ch No.	Freq.	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
W-CDMA (UMTS) Band 4	Subtest 1	1312	1712.4	23.00	16.80	22.00	16.14
		1413	1732.6	23.00	16.80	22.04	16.17
		1513	1752.6	23.00	16.80	21.99	16.06
	Subtest 2	1312	1712.4	23.00	16.80	21.99	16.11
		1413	1732.6	23.00	16.80	22.05	16.16
		1513	1752.6	23.00	16.80	22.01	16.02
	Subtest 3	1312	1712.4	23.00	16.80	21.51	16.13
		1413	1732.6	23.00	16.80	21.56	16.16
		1513	1752.6	23.00	16.80	21.51	16.03
	Subtest 4	1312	1712.4	23.00	16.80	21.51	16.15
		1413	1732.6	23.00	16.80	21.55	16.17
		1513	1752.6	23.00	16.80	21.51	16.01

HSUPA

Band	Mode	UL Ch No.	Freq.	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
WCDMA (UMTS) Band 4	Subtest 1	1312	1712.4	23.00	16.80	21.83	16.12
		1413	1732.6	23.00	16.80	21.74	16.17
		1513	1752.6	23.00	16.80	21.64	16.01
	Subtest 2	1312	1712.4	23.00	16.80	19.74	14.08
		1413	1732.6	23.00	16.80	19.72	14.14
		1513	1752.6	23.00	16.80	19.63	14.07
	Subtest 3	1312	1712.4	23.00	16.80	20.59	15.13
		1413	1732.6	23.00	16.80	20.75	15.21
		1513	1752.6	23.00	16.80	20.64	15.16
	Subtest 4	1312	1712.4	23.00	16.80	19.72	14.09
		1413	1732.6	23.00	16.80	19.76	14.14
		1513	1752.6	23.00	16.80	19.70	14.07
	Subtest 5	1312	1712.4	23.00	16.80	21.50	16.15
		1413	1732.6	23.00	16.80	21.70	16.16
		1513	1752.6	23.00	16.80	21.60	16.16

HSPA+

Band	Mode	UL Ch No.	Freq. (MHz)	Tune-up Upper Power(dBm)		Avg Pwr (dBm)	
				Full Power	Reduced Power	Full Power	Reduced Power
W-CDMA (UMTS) Band 4	Subtest 1	1312	1712.4	23.00	16.80	21.46	16.12
		1413	1732.6	23.00	16.80	21.51	16.16
		1513	1752.6	23.00	16.80	21.59	16.04

Note: Full power and Band5 result and tested mode and channels are based on original test report (FCCID: ACJ9TGWW18C / report num: 13489136H-A-R1 published by UL Japan

11.3 LTE single

11.3.1 LTE Band 2 Measured Results (Reduction)

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
20	18700	1860	QPSK	1	0			18.4	17.40
				1	49			18.4	17.19
				1	99			18.4	17.20
				50	0			18.4	17.25
				50	24			18.4	17.22
				50	49			18.4	17.16
				100	0			18.4	17.18
			16QAM	1	0			18.4	17.66
				1	49			18.4	17.50
				1	99			18.4	17.49
				50	0			18.4	17.28
				50	24			18.4	17.27
				50	49			18.4	17.23
				100	0			18.4	17.26
			64QAM	1	0			18.4	17.51
				1	49			18.4	17.38
				1	99			18.4	17.34
				50	0			18.4	17.33
				50	24			18.4	17.24
				50	49			18.4	17.21
				100	0			18.4	17.29
	18900	1880	QPSK	1	0			18.4	17.39
				1	49			18.4	17.36
				1	99			18.4	17.26
				50	0			18.4	17.23
				50	24			18.4	17.32
				50	49			18.4	17.24
				100	0			18.4	17.21
			16QAM	1	0			18.4	17.65
				1	49			18.4	17.62
				1	99	**MPR is disabled when power reduction is enabled**		18.4	17.56
				50	0			18.4	17.28
				50	24			18.4	17.34
				50	49			18.4	17.27
				100	0			18.4	17.38
			64QAM	1	0			18.4	17.37
				1	49			18.4	17.33
				1	99			18.4	17.29
				50	0			18.4	17.25
				50	24			18.4	17.30
				50	49			18.4	17.22
				100	0			18.4	17.35
	19100	1900	QPSK	1	0			18.4	17.75
				1	49			18.4	17.51
				1	99			18.4	17.62
				50	0			18.4	17.65
				50	24			18.4	17.53
				50	49			18.4	17.50
				100	0			18.4	17.59
			16QAM	1	0			18.4	18.03
				1	49			18.4	17.85
				1	99			18.4	17.86
				50	0			18.4	17.61
				50	24			18.4	17.57
				50	49			18.4	17.55
				100	0			18.4	17.58
			64QAM	1	0			18.4	17.77
				1	49			18.4	17.52
				1	99			18.4	17.60
				50	0			18.4	17.64
				50	24			18.4	17.56
				50	49			18.4	17.49
				100	0			18.4	17.63

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
15	18675	1857.5	QPSK	1	0			18.4	17.16
				1	37			18.4	16.98
				1	74			18.4	17.09
				36	0			18.4	17.11
				36	19			18.4	17.08
				36	39			18.4	17.03
				75	0			18.4	17.08
			16QAM	1	0			18.4	17.11
				1	37			18.4	17.04
				1	74			18.4	17.09
				36	0			18.4	17.12
				36	19			18.4	17.06
				36	39			18.4	17.00
				75	0			18.4	17.07
			64QAM	1	0			18.4	17.44
				1	37			18.4	17.26
				1	74			18.4	17.41
				36	0			18.4	17.15
				36	19			18.4	17.13
				36	39			18.4	17.09
				75	0			18.4	17.11
	18900	1880	QPSK	1	0			18.4	17.34
				1	37			18.4	17.13
				1	74			18.4	17.17
				36	0			18.4	17.20
				36	19			18.4	17.18
				36	39			18.4	17.14
				75	0			18.4	17.15
			16QAM	1	0			18.4	17.62
				1	37			18.4	17.44
				1	74	**MPR is disabled when power reduction is enabled**		18.4	17.42
				36	0			18.4	17.20
				36	19			18.4	17.15
				36	39			18.4	17.14
				75	0			18.4	17.15
			64QAM	1	0			18.4	17.60
				1	37			18.4	17.52
				1	74			18.4	17.51
				36	0			18.4	17.19
				36	19			18.4	17.13
				36	39			18.4	17.09
				75	0			18.4	17.19
	19125	1902.5	QPSK	1	0			18.4	17.50
				1	37			18.4	17.36
				1	74			18.4	17.26
				36	0			18.4	17.49
				36	19			18.4	17.45
				36	39			18.4	17.32
				75	0			18.4	17.43
			16QAM	1	0			18.4	17.81
				1	37			18.4	17.63
				1	74			18.4	17.51
				36	0			18.4	17.48
				36	19			18.4	17.43
				36	39			18.4	17.28
				75	0			18.4	17.39
			64QAM	1	0			18.4	17.82
				1	37			18.4	17.67
				1	74			18.4	17.56
				36	0			18.4	17.48
				36	19			18.4	17.45
				36	39			18.4	17.28
				75	0			18.4	17.44

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
10	18650	1855	QPSK	1	0			18.4	17.17
				1	24			18.4	17.10
				1	49			18.4	17.07
				25	0			18.4	17.09
				25	12			18.4	17.08
				25	24			18.4	17.07
				50	0			18.4	17.11
			16QAM	1	0			18.4	17.40
				1	24			18.4	17.34
				1	49			18.4	17.30
				25	0			18.4	17.13
				25	12			18.4	17.07
				25	24			18.4	17.06
				50	0			18.4	17.08
			64QAM	1	0			18.4	17.50
				1	24			18.4	17.43
				1	49			18.4	17.40
				25	0			18.4	17.12
				25	12			18.4	17.10
				25	24			18.4	17.05
				50	0			18.4	17.10
	18900	1880	QPSK	1	0			18.4	17.27
				1	24			18.4	17.20
				1	49			18.4	17.14
				25	0			18.4	17.15
				25	12			18.4	17.17
				25	24			18.4	17.11
				50	0			18.4	17.15
			16QAM	1	0			18.4	17.47
				1	24			18.4	17.40
				1	49	**MPR is disabled when power reduction is enabled**		18.4	17.35
				25	0			18.4	17.17
				25	12			18.4	17.17
				25	24			18.4	17.11
				50	0			18.4	17.13
			64QAM	1	0			18.4	17.57
				1	24			18.4	17.51
				1	49			18.4	17.49
				25	0			18.4	17.20
				25	12			18.4	17.19
				25	24			18.4	17.15
				50	0			18.4	17.17
	19150	1905	QPSK	1	0			18.4	17.51
				1	24			18.4	17.30
				1	49			18.4	17.27
				25	0			18.4	17.49
				25	12			18.4	17.36
				25	24			18.4	17.38
				50	0			18.4	17.38
			16QAM	1	0			18.4	17.82
				1	24			18.4	17.66
				1	49			18.4	17.61
				25	0			18.4	17.50
				25	12			18.4	17.37
				25	24			18.4	17.32
				50	0			18.4	17.29
			64QAM	1	0			18.4	17.78
				1	24			18.4	17.63
				1	49			18.4	17.59
				25	0			18.4	17.40
				25	12			18.4	17.26
				25	24			18.4	17.23
				50	0			18.4	17.30

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
5	18625	1852.5	QPSK	1	0			18.4	17.16
				1	12			18.4	17.14
				1	24			18.4	17.12
				12	0			18.4	17.12
				12	6			18.4	17.13
				12	11			18.4	17.05
				25	0			18.4	17.06
			16QAM	1	0			18.4	17.44
				1	12			18.4	17.41
				1	24			18.4	17.38
				12	0			18.4	17.14
				12	6			18.4	17.15
				12	11			18.4	17.12
				25	0			18.4	17.07
			64QAM	1	0			18.4	17.56
				1	12			18.4	17.52
				1	24			18.4	17.52
				12	0			18.4	17.02
				12	6			18.4	17.00
				12	11			18.4	16.99
				25	0			18.4	17.08
	18900	1880	QPSK	1	0			18.4	17.26
				1	12			18.4	17.24
				1	24			18.4	17.19
				12	0			18.4	17.20
				12	6			18.4	17.17
				12	11			18.4	17.13
				25	0			18.4	17.14
			16QAM	1	0			18.4	17.50
				1	12			18.4	17.47
				1	24	**MPR is disabled when power reduction is enabled**		18.4	17.45
				12	0			18.4	17.17
				12	6			18.4	17.21
				12	11			18.4	17.18
				25	0			18.4	17.15
			64QAM	1	0			18.4	17.59
				1	12			18.4	17.63
				1	24			18.4	17.60
				12	0			18.4	17.07
				12	6			18.4	17.11
				12	11			18.4	17.05
				25	0			18.4	17.16
	19175	1907.5	QPSK	1	0			18.4	17.33
				1	12			18.4	17.32
				1	24			18.4	17.31
				12	0			18.4	17.25
				12	6			18.4	17.27
				12	11			18.4	17.23
				25	0			18.4	17.22
			16QAM	1	0			18.4	17.63
				1	12			18.4	17.53
				1	24			18.4	17.56
				12	0			18.4	17.28
				12	6			18.4	17.28
				12	11			18.4	17.26
				25	0			18.4	17.24
			64QAM	1	0			18.4	17.76
				1	12			18.4	17.71
				1	24			18.4	17.69
				12	0			18.4	17.16
				12	6			18.4	17.16
				12	11			18.4	17.13
				25	0			18.4	17.27

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
3	18615	1851.5	QPSK	1	0			18.4	17.10
				1	7			18.4	17.20
				1	14			18.4	17.08
				8	0			18.4	17.04
				8	4			18.4	17.10
				8	7			18.4	17.03
				15	0			18.4	17.07
			16QAM	1	0			18.4	17.29
				1	7			18.4	17.43
				1	14			18.4	17.29
				8	0			18.4	17.10
				8	4			18.4	17.12
				8	7			18.4	17.11
				15	0			18.4	17.09
			64QAM	1	0			18.4	17.40
				1	7			18.4	17.53
				1	14			18.4	17.41
				8	0			18.4	17.07
				8	4			18.4	17.08
				8	7			18.4	17.05
				15	0			18.4	17.09
	18900	1880	QPSK	1	0			18.4	17.20
				1	7			18.4	17.29
				1	14			18.4	17.17
				8	0			18.4	17.15
				8	4			18.4	17.18
				8	7			18.4	17.15
				15	0			18.4	17.14
			16QAM	1	0			18.4	17.39
				1	7			18.4	17.52
				1	14	**MPR is disabled when power reduction is enabled**		18.4	17.33
				8	0			18.4	17.19
				8	4			18.4	17.21
				8	7			18.4	17.17
				15	0			18.4	17.16
			64QAM	1	0			18.4	17.46
				1	7			18.4	17.63
				1	14			18.4	17.48
				8	0			18.4	17.16
				8	4			18.4	17.16
				8	7			18.4	17.14
				15	0			18.4	17.15
	19185	1908.5	QPSK	1	0			18.4	17.29
				1	7			18.4	17.42
				1	14			18.4	17.27
				8	0			18.4	17.38
				8	4			18.4	17.45
				8	7			18.4	17.28
				15	0			18.4	17.28
			16QAM	1	0			18.4	17.53
				1	7			18.4	17.62
				1	14			18.4	17.49
				8	0			18.4	17.35
				8	4			18.4	17.33
				8	7			18.4	17.32
				15	0			18.4	17.30
			64QAM	1	0			18.4	17.61
				1	7			18.4	17.71
				1	14			18.4	17.55
				8	0			18.4	17.26
				8	4			18.4	17.28
				8	7			18.4	17.24
				15	0			18.4	17.28

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
1.4	18607	1850.7	QPSK	1	0			18.4	17.01
				1	2			18.4	17.05
				1	5			18.4	16.99
				3	0			18.4	17.05
				3	1			18.4	17.07
				3	3			18.4	17.03
				6	0			18.4	16.98
			16QAM	1	0			18.4	17.01
				1	2			18.4	17.09
				1	5			18.4	17.01
				3	0			18.4	16.96
				3	1			18.4	17.00
				3	3			18.4	16.92
				6	0			18.4	17.03
			64QAM	1	0			18.4	17.35
				1	2			18.4	17.45
				1	5			18.4	17.34
				3	0			18.4	17.12
				3	1			18.4	17.20
				3	3			18.4	17.14
				6	0			18.4	17.03
	18900	1880	QPSK	1	0			18.4	17.07
				1	2			18.4	17.12
				1	5			18.4	17.06
				3	0			18.4	17.10
				3	1			18.4	17.14
				3	3			18.4	17.09
				6	0			18.4	17.04
			16QAM	1	0			18.4	17.11
				1	2			18.4	17.19
				1	5	**MPR is disabled when power reduction is enabled**		18.4	17.10
				3	0			18.4	17.01
				3	1			18.4	17.03
				3	3			18.4	16.96
				6	0			18.4	17.10
			64QAM	1	0			18.4	17.42
				1	2			18.4	17.50
				1	5			18.4	17.41
				3	0			18.4	17.21
				3	1			18.4	17.27
				3	3			18.4	17.20
				6	0			18.4	17.11
	19193	1909.3	QPSK	1	0			18.4	17.17
				1	2			18.4	17.26
				1	5			18.4	17.18
				3	0			18.4	17.22
				3	1			18.4	17.26
				3	3			18.4	17.21
				6	0			18.4	17.19
			16QAM	1	0			18.4	17.19
				1	2			18.4	17.32
				1	5			18.4	17.20
				3	0			18.4	17.13
				3	1			18.4	17.17
				3	3			18.4	17.09
				6	0			18.4	17.22
			64QAM	1	0			18.4	17.54
				1	2			18.4	17.64
				1	5			18.4	17.49
				3	0			18.4	17.33
				3	1			18.4	17.36
				3	3			18.4	17.34
				6	0			18.4	17.18

11.3.2 LTE Band 5 Measured Results (Reduction)

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
10	20450	829	QPSK	1	0			17.8	16.91
				1	24			17.8	16.84
				1	49			17.8	16.85
				25	0			17.8	16.83
				25	12			17.8	16.82
				25	24			17.8	16.74
				50	0			17.8	16.81
			16QAM	1	0			17.8	17.14
				1	24			17.8	17.07
				1	49			17.8	17.15
				25	0			17.8	16.87
				25	12			17.8	16.86
				25	24			17.8	16.80
				50	0			17.8	16.79
			64QAM	1	0			17.8	17.25
				1	24			17.8	17.21
				1	49			17.8	17.19
				25	0			17.8	16.90
				25	12			17.8	16.89
				25	24			17.8	16.78
				50	0			17.8	16.88
	20525	836.5	QPSK	1	0			17.8	16.66
				1	24			17.8	16.76
				1	49			17.8	16.86
				25	0			17.8	17.00
				25	12			17.8	16.96
				25	24			17.8	16.89
				50	0			17.8	16.85
			16QAM	1	0			17.8	16.99
				1	24			17.8	17.14
				1	49	**MPR is disabled when power reduction is enabled**		17.8	17.12
				25	0			17.8	16.98
				25	12			17.8	16.95
				25	24			17.8	16.93
				50	0			17.8	16.91
			64QAM	1	0			17.8	17.13
				1	24			17.8	17.21
				1	49			17.8	17.19
				25	0			17.8	17.02
				25	12			17.8	16.97
				25	24			17.8	16.92
				50	0			17.8	17.01
	20600	844	QPSK	1	0			17.8	16.92
				1	24			17.8	16.83
				1	49			17.8	16.76
				25	0			17.8	17.01
				25	12			17.8	17.00
				25	24			17.8	16.94
				50	0			17.8	16.90
			16QAM	1	0			17.8	17.20
				1	24			17.8	17.11
				1	49			17.8	17.06
				25	0			17.8	16.97
				25	12			17.8	16.99
				25	24			17.8	16.91
				50	0			17.8	16.93
			64QAM	1	0			17.8	17.19
				1	24			17.8	17.18
				1	49			17.8	17.14
				25	0			17.8	17.05
				25	12			17.8	17.04
				25	24			17.8	16.95
				50	0			17.8	17.03

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
5	20425	826.5	QPSK	1	0			17.8	16.87
				1	12			17.8	16.89
				1	24			17.8	16.92
				12	0			17.8	16.85
				12	6			17.8	16.84
				12	11			17.8	16.80
				25	0			17.8	16.79
			16QAM	1	0			17.8	17.17
				1	12			17.8	17.14
				1	24			17.8	17.19
				12	0			17.8	16.88
				12	6			17.8	16.88
				12	11			17.8	16.86
				25	0			17.8	16.84
			64QAM	1	0			17.8	17.31
				1	12			17.8	17.26
				1	24			17.8	17.32
				12	0			17.8	16.74
				12	6			17.8	16.74
				12	11			17.8	16.69
				25	0			17.8	16.83
	20525	836.5	QPSK	1	0			17.8	17.02
				1	12			17.8	16.96
				1	24			17.8	16.95
				12	0			17.8	16.94
				12	6			17.8	16.96
				12	11			17.8	16.94
				25	0			17.8	16.92
			16QAM	1	0			17.8	17.25
				1	12			17.8	17.20
				1	24	**MPR is disabled when power reduction is enabled**		17.8	17.20
				12	0			17.8	17.00
				12	6			17.8	16.95
				12	11			17.8	16.95
				25	0			17.8	16.93
			64QAM	1	0			17.8	17.43
				1	12			17.8	17.36
				1	24			17.8	17.36
				12	0			17.8	16.88
				12	6			17.8	16.84
				12	11			17.8	16.83
				25	0			17.8	16.95
	20625	846.5	QPSK	1	0			17.8	16.79
				1	12			17.8	16.83
				1	24			17.8	16.82
				12	0			17.8	16.85
				12	6			17.8	16.86
				12	11			17.8	16.81
				25	0			17.8	16.80
			16QAM	1	0			17.8	17.07
				1	12			17.8	17.14
				1	24			17.8	17.11
				12	0			17.8	16.89
				12	6			17.8	16.89
				12	11			17.8	16.86
				25	0			17.8	16.84
			64QAM	1	0			17.8	17.18
				1	12			17.8	17.26
				1	24			17.8	17.26
				12	0			17.8	16.75
				12	6			17.8	16.75
				12	11			17.8	16.72
				25	0			17.8	16.83

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
3	20415	825.5	QPSK	1	0			17.8	16.82
				1	7			17.8	16.91
				1	14			17.8	16.80
				8	0			17.8	16.80
				8	4			17.8	16.85
				8	7			17.8	16.79
				15	0			17.8	16.79
			16QAM	1	0			17.8	17.05
				1	7			17.8	17.17
				1	14			17.8	17.01
				8	0			17.8	16.87
				8	4			17.8	16.89
				8	7			17.8	16.86
				15	0			17.8	16.82
			64QAM	1	0			17.8	17.19
				1	7			17.8	17.28
				1	14			17.8	17.15
				8	0			17.8	16.84
				8	4			17.8	16.85
				8	7			17.8	16.86
				15	0			17.8	16.85
	20525	836.5	QPSK	1	0			17.8	16.97
				1	7			17.8	17.01
				1	14			17.8	16.89
				8	0			17.8	16.95
				8	4			17.8	16.96
				8	7			17.8	16.91
				15	0			17.8	16.92
			16QAM	1	0			17.8	17.19
				1	7			17.8	17.29
				1	14	**MPR is disabled when power reduction is enabled**		17.8	17.12
				8	0			17.8	16.99
				8	4			17.8	17.02
				8	7			17.8	16.98
				15	0			17.8	16.95
			64QAM	1	0			17.8	17.26
				1	7			17.8	17.37
				1	14			17.8	17.25
				8	0			17.8	16.92
				8	4			17.8	16.94
				8	7			17.8	16.92
				15	0			17.8	16.94
	20635	847.5	QPSK	1	0			17.8	16.81
				1	7			17.8	16.90
				1	14			17.8	16.79
				8	0			17.8	16.80
				8	4			17.8	16.85
				8	7			17.8	16.76
				15	0			17.8	16.78
			16QAM	1	0			17.8	17.05
				1	7			17.8	17.15
				1	14			17.8	17.00
				8	0			17.8	16.85
				8	4			17.8	16.88
				8	7			17.8	16.85
				15	0			17.8	16.81
			64QAM	1	0			17.8	17.17
				1	7			17.8	17.24
				1	14			17.8	17.12
				8	0			17.8	16.82
				8	4			17.8	16.83
				8	7			17.8	16.81
				15	0			17.8	16.79

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
1.4	20407	824.7	QPSK	1	0			17.8	16.72
				1	2			17.8	16.79
				1	5			17.8	16.73
				3	0			17.8	16.75
				3	1			17.8	16.78
				3	3			17.8	16.74
				6	0			17.8	16.74
			16QAM	1	0			17.8	16.72
				1	2			17.8	16.83
				1	5			17.8	16.73
				3	0			17.8	16.69
				3	1			17.8	16.72
				3	3			17.8	16.66
				6	0			17.8	16.79
			64QAM	1	0			17.8	17.11
				1	2			17.8	17.20
				1	5			17.8	17.09
				3	0			17.8	16.89
				3	1			17.8	16.93
				3	3			17.8	16.90
				6	0			17.8	16.75
	20525	836.5	QPSK	1	0			17.8	16.83
				1	2			17.8	16.92
				1	5			17.8	16.80
				3	0			17.8	16.89
				3	1			17.8	16.88
				3	3			17.8	16.86
				6	0			17.8	16.80
			16QAM	1	0			17.8	16.84
				1	2			17.8	16.98
				1	5	**MPR is disabled when power reduction is enabled**		17.8	16.85
				3	0			17.8	16.77
				3	1			17.8	16.82
				3	3			17.8	16.75
				6	0			17.8	16.87
			64QAM	1	0			17.8	17.17
				1	2			17.8	17.28
				1	5			17.8	17.18
				3	0			17.8	16.97
				3	1			17.8	17.00
				3	3			17.8	16.97
				6	0			17.8	16.86
	20643	848.3	QPSK	1	0			17.8	16.69
				1	2			17.8	16.77
				1	5			17.8	16.68
				3	0			17.8	16.73
				3	1			17.8	16.76
				3	3			17.8	16.72
				6	0			17.8	16.69
			16QAM	1	0			17.8	16.73
				1	2			17.8	16.79
				1	5			17.8	16.69
				3	0			17.8	16.66
				3	1			17.8	16.69
				3	3			17.8	16.63
				6	0			17.8	16.74
			64QAM	1	0			17.8	17.08
				1	2			17.8	17.15
				1	5			17.8	17.05
				3	0			17.8	16.84
				3	1			17.8	16.88
				3	3			17.8	16.85
				6	0			17.8	16.75

11.3.3 LTE Band 7 Measured Results (Reduction)

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
20	20850	2510	QPSK	1	0			17.0	16.36
				1	49			17.0	16.07
				1	99			17.0	16.06
				50	0			17.0	16.22
				50	24			17.0	16.05
				50	49			17.0	16.03
				100	0			17.0	16.10
			16QAM	1	0			17.0	16.68
				1	49			17.0	16.40
				1	99			17.0	16.39
				50	0			17.0	16.27
				50	24			17.0	16.15
				50	49			17.0	16.14
				100	0			17.0	16.11
			64QAM	1	0			17.0	16.57
				1	49			17.0	16.29
				1	99			17.0	16.24
				50	0			17.0	16.31
				50	24			17.0	16.17
				50	49			17.0	16.08
				100	0			17.0	16.13
	21100	2535	QPSK	1	0			17.0	16.33
				1	49			17.0	16.11
				1	99			17.0	16.03
				50	0			17.0	16.18
				50	24			17.0	16.09
				50	49			17.0	16.02
				100	0			17.0	16.05
			16QAM	1	0			17.0	16.64
				1	49			17.0	16.39
				1	99	**MPR is disabled when power reduction is enabled**		17.0	16.38
				50	0			17.0	16.27
				50	24			17.0	16.15
				50	49			17.0	16.08
				100	0			17.0	16.10
			64QAM	1	0			17.0	16.54
				1	49			17.0	16.29
				1	99			17.0	16.25
				50	0			17.0	16.28
				50	24			17.0	16.14
				50	49			17.0	16.12
				100	0			17.0	16.06
	21350	2560	QPSK	1	0			17.0	16.24
				1	49			17.0	16.11
				1	99			17.0	16.05
				50	0			17.0	16.18
				50	24			17.0	16.15
				50	49			17.0	16.12
				100	0			17.0	16.09
			16QAM	1	0			17.0	16.61
				1	49			17.0	16.45
				1	99			17.0	16.43
				50	0			17.0	16.23
				50	24			17.0	16.19
				50	49			17.0	16.13
				100	0			17.0	16.16
			16QAM	1	0			17.0	16.46
				1	49			17.0	16.28
				1	99			17.0	16.33
				50	0			17.0	16.22
				50	24			17.0	16.20
				50	49			17.0	16.14
				100	0			17.0	16.17

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
15	20825	2507.5	QPSK	1	0			17.0	16.12
				1	37			17.0	15.97
				1	74			17.0	15.95
				36	0			17.0	16.01
				36	19			17.0	16.03
				36	39			17.0	15.94
				75	0			17.0	15.97
			16QAM	1	0			17.0	16.39
				1	37			17.0	16.26
				1	74			17.0	16.19
				36	0			17.0	16.03
				36	19			17.0	16.04
				36	39			17.0	16.00
				75	0			17.0	16.01
			64QAM	1	0			17.0	16.43
				1	37			17.0	16.33
				1	74			17.0	16.36
				36	0			17.0	15.99
				36	19			17.0	15.99
				36	39			17.0	15.94
				75	0			17.0	16.01
	21100	2535	QPSK	1	0			17.0	16.06
				1	37			17.0	15.94
				1	74			17.0	16.02
				36	0			17.0	16.04
				36	19			17.0	16.03
				36	39			17.0	15.92
				75	0			17.0	15.94
			16QAM	1	0			17.0	16.33
				1	37			17.0	16.25
				1	74	**MPR is disabled when power reduction is enabled**		17.0	16.28
				36	0			17.0	16.00
				36	19			17.0	16.01
				36	39			17.0	15.99
				75	0			17.0	15.98
			64QAM	1	0			17.0	16.41
				1	37			17.0	16.32
				1	74			17.0	16.38
				36	0			17.0	15.97
				36	19			17.0	15.99
				36	39			17.0	15.94
				75	0			17.0	15.96
	21375	2562.5	QPSK	1	0			17.0	16.14
				1	37			17.0	15.87
				1	74			17.0	15.88
				36	0			17.0	15.97
				36	19			17.0	15.92
				36	39			17.0	15.87
				75	0			17.0	15.91
			16QAM	1	0			17.0	16.33
				1	37			17.0	16.16
				1	74			17.0	16.17
				36	0			17.0	16.01
				36	19			17.0	15.96
				36	39			17.0	15.93
				75	0			17.0	15.93
			16QAM	1	0			17.0	16.49
				1	37			17.0	16.31
				1	74			17.0	16.26
				36	0			17.0	16.00
				36	19			17.0	15.95
				36	39			17.0	15.86
				75	0			17.0	15.98

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
10	20800	2505	QPSK	1	0			17.0	16.04
				1	24			17.0	15.96
				1	49			17.0	15.93
				25	0			17.0	16.00
				25	12			17.0	15.97
				25	24			17.0	15.95
				50	0			17.0	15.93
			16QAM	1	0			17.0	16.27
				1	24			17.0	16.23
				1	49			17.0	16.19
				25	0			17.0	15.98
				25	12			17.0	15.96
				25	24			17.0	15.92
				50	0			17.0	15.95
			64QAM	1	0			17.0	16.36
				1	24			17.0	16.32
				1	49			17.0	16.30
				25	0			17.0	16.00
				25	12			17.0	15.99
				25	24			17.0	15.92
				50	0			17.0	15.98
	21100	2535	QPSK	1	0			17.0	16.03
				1	24			17.0	15.95
				1	49			17.0	15.93
				25	0			17.0	15.98
				25	12			17.0	15.96
				25	24			17.0	15.95
				50	0			17.0	15.95
			16QAM	1	0			17.0	16.30
				1	24			17.0	16.24
				1	49	**MPR is disabled when power reduction is enabled**		17.0	16.20
				25	0			17.0	15.98
				25	12			17.0	15.98
				25	24			17.0	15.97
				50	0			17.0	15.97
			64QAM	1	0			17.0	16.38
				1	24			17.0	16.34
				1	49			17.0	16.31
				25	0			17.0	16.00
				25	12			17.0	15.98
				25	24			17.0	15.96
				50	0			17.0	15.99
	21400	2565	QPSK	1	0			17.0	16.00
				1	24			17.0	15.92
				1	49			17.0	15.89
				25	0			17.0	15.91
				25	12			17.0	15.95
				25	24			17.0	15.89
				50	0			17.0	15.96
			16QAM	1	0			17.0	16.21
				1	24			17.0	16.16
				1	49			17.0	16.15
				25	0			17.0	15.92
				25	12			17.0	15.91
				25	24			17.0	15.88
				50	0			17.0	15.90
			16QAM	1	0			17.0	16.37
				1	24			17.0	16.31
				1	49			17.0	16.31
				25	0			17.0	15.99
				25	12			17.0	15.98
				25	24			17.0	15.92
				50	0			17.0	15.99

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
5	20775	2502.5	QPSK	1	0			17.0	16.00
				1	12			17.0	15.98
				1	24			17.0	15.95
				12	0			17.0	15.97
				12	6			17.0	15.96
				12	11			17.0	15.93
				25	0			17.0	15.93
			16QAM	1	0			17.0	16.32
				1	12			17.0	16.29
				1	24			17.0	16.26
				12	0			17.0	16.02
				12	6			17.0	16.00
				12	11			17.0	15.97
				25	0			17.0	15.96
			64QAM	1	0			17.0	16.43
				1	12			17.0	16.42
				1	24			17.0	16.38
				12	0			17.0	15.90
				12	6			17.0	15.87
				12	11			17.0	15.84
				25	0			17.0	15.97
	21100	2535	QPSK	1	0			17.0	15.99
				1	12			17.0	16.00
				1	24			17.0	15.95
				12	0			17.0	15.93
				12	6			17.0	15.99
				12	11			17.0	15.94
				25	0			17.0	15.92
			16QAM	1	0			17.0	16.28
				1	12			17.0	16.31
				1	24	**MPR is disabled when power reduction is enabled**		17.0	16.25
				12	0			17.0	16.03
				12	6			17.0	16.02
				12	11			17.0	16.02
				25	0			17.0	15.96
			64QAM	1	0			17.0	16.41
				1	12			17.0	16.42
				1	24			17.0	16.40
				12	0			17.0	15.89
				12	6			17.0	15.89
				12	11			17.0	15.87
				25	0			17.0	15.97
	21425	2567.5	QPSK	1	0			17.0	15.97
				1	12			17.0	16.00
				1	24			17.0	15.94
				12	0			17.0	15.96
				12	6			17.0	15.98
				12	11			17.0	15.95
				25	0			17.0	15.89
			16QAM	1	0			17.0	16.30
				1	12			17.0	16.25
				1	24			17.0	16.25
				12	0			17.0	16.00
				12	6			17.0	16.03
				12	11			17.0	16.00
				25	0			17.0	15.95
			16QAM	1	0			17.0	16.43
				1	12			17.0	16.46
				1	24			17.0	16.40
				12	0			17.0	15.88
				12	6			17.0	15.90
				12	11			17.0	15.89
				25	0			17.0	15.95

11.3.4 LTE Band 12 Measured Results (Reduction)

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
10	23060	704	QPSK	1	0			19.4	18.55
				1	24			19.4	18.61
				1	49			19.4	18.46
				25	0			19.4	18.52
				25	12			19.4	18.64
				25	24			19.4	18.56
				50	0			19.4	18.60
			16QAM	1	0			19.4	18.87
				1	24			19.4	18.83
				1	49			19.4	18.74
				25	0			19.4	18.50
				25	12			19.4	18.62
				25	24			19.4	18.53
				50	0			19.4	18.57
			64QAM	1	0			19.4	18.89
				1	24			19.4	18.90
				1	49			19.4	18.82
				25	0			19.4	18.54
				25	12			19.4	18.58
				25	24			19.4	18.51
				50	0			19.4	18.59
	23095	707.5	QPSK	1	0			19.4	18.63
				1	24			19.4	18.51
				1	49			19.4	18.43
				25	0			19.4	18.62
				25	12			19.4	18.58
				25	24			19.4	18.50
				50	0			19.4	18.57
			16QAM	1	0			19.4	18.87
				1	24			19.4	18.81
				1	49	**MPR is disabled when power reduction is enabled**		19.4	18.69
				25	0			19.4	18.59
				25	12			19.4	18.53
				25	24			19.4	18.49
				50	0			19.4	18.55
			64QAM	1	0			19.4	18.96
				1	24			19.4	18.88
				1	49			19.4	18.78
				25	0			19.4	18.56
				25	12			19.4	18.54
				25	24			19.4	18.47
				50	0			19.4	18.52
	23130	711	QPSK	1	0			19.4	18.49
				1	24			19.4	18.37
				1	49			19.4	18.35
				25	0			19.4	18.41
				25	12			19.4	18.39
				25	24			19.4	18.32
				50	0			19.4	18.36
			16QAM	1	0			19.4	18.76
				1	24			19.4	18.65
				1	49			19.4	18.66
				25	0			19.4	18.48
				25	12			19.4	18.42
				25	24			19.4	18.33
				50	0			19.4	18.38
			64QAM	1	0			19.4	18.85
				1	24			19.4	18.72
				1	49			19.4	18.75
				25	0			19.4	18.46
				25	12			19.4	18.43
				25	24			19.4	18.34
				50	0			19.4	18.40

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
5	23035	701.5	QPSK	1	0			19.4	18.37
				1	12			19.4	18.34
				1	24			19.4	18.32
				12	0			19.4	18.36
				12	6			19.4	18.35
				12	11			19.4	18.34
				25	0			19.4	18.31
			16QAM	1	0			19.4	18.67
				1	12			19.4	18.65
				1	24			19.4	18.67
				12	0			19.4	18.39
				12	6			19.4	18.39
				12	11			19.4	18.42
				25	0			19.4	18.35
			64QAM	1	0			19.4	18.77
				1	12			19.4	18.70
				1	24			19.4	18.82
				12	0			19.4	18.24
				12	6			19.4	18.20
				12	11			19.4	18.31
				25	0			19.4	18.31
	23095	707.5	QPSK	1	0			19.4	18.35
				1	12			19.4	18.45
				1	24			19.4	18.29
				12	0			19.4	18.39
				12	6			19.4	18.41
				12	11			19.4	18.37
				25	0			19.4	18.34
			16QAM	1	0			19.4	18.73
				1	12			19.4	18.77
				1	24	**MPR is disabled when power reduction is enabled**		19.4	18.59
				12	0			19.4	18.48
				12	6			19.4	18.48
				12	11			19.4	18.43
				25	0			19.4	18.44
			64QAM	1	0			19.4	18.84
				1	12			19.4	18.86
				1	24			19.4	18.76
				12	0			19.4	18.32
				12	6			19.4	18.32
				12	11			19.4	18.30
				25	0			19.4	18.41
	23155	713.5	QPSK	1	0			19.4	18.31
				1	12			19.4	18.26
				1	24			19.4	18.32
				12	0			19.4	18.30
				12	6			19.4	18.28
				12	11			19.4	18.29
				25	0			19.4	18.25
			16QAM	1	0			19.4	18.61
				1	12			19.4	18.58
				1	24			19.4	18.61
				12	0			19.4	18.33
				12	6			19.4	18.34
				12	11			19.4	18.40
				25	0			19.4	18.27
			64QAM	1	0			19.4	18.76
				1	12			19.4	18.69
				1	24			19.4	18.77
				12	0			19.4	18.22
				12	6			19.4	18.18
				12	11			19.4	18.22
				25	0			19.4	18.27

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
3	23025	700.5	QPSK	1	0			19.4	18.35
				1	7			19.4	18.42
				1	14			19.4	18.31
				8	0			19.4	18.40
				8	4			19.4	18.43
				8	7			19.4	18.30
				15	0			19.4	18.39
			16QAM	1	0			19.4	18.61
				1	7			19.4	18.70
				1	14			19.4	18.54
				8	0			19.4	18.45
				8	4			19.4	18.45
				8	7			19.4	18.42
				15	0			19.4	18.43
			64QAM	1	0			19.4	18.68
				1	7			19.4	18.76
				1	14			19.4	18.62
				8	0			19.4	18.38
				8	4			19.4	18.35
				8	7			19.4	18.32
				15	0			19.4	18.26
	23095	707.5	QPSK	1	0			19.4	18.32
				1	7			19.4	18.50
				1	14			19.4	18.37
				8	0			19.4	18.38
				8	4			19.4	18.45
				8	7			19.4	18.40
				15	0			19.4	18.38
			16QAM	1	0			19.4	18.58
				1	7			19.4	18.77
				1	14	**MPR is disabled when power reduction is enabled**		19.4	18.67
				8	0			19.4	18.49
				8	4			19.4	18.49
				8	7			19.4	18.46
				15	0			19.4	18.43
			64QAM	1	0			19.4	18.71
				1	7			19.4	18.87
				1	14			19.4	18.73
				8	0			19.4	18.41
				8	4			19.4	18.45
				8	7			19.4	18.41
				15	0			19.4	18.42
	23165	714.5	QPSK	1	0			19.4	18.26
				1	7			19.4	18.44
				1	14			19.4	18.30
				8	0			19.4	18.36
				8	4			19.4	18.34
				8	7			19.4	18.26
				15	0			19.4	18.28
			16QAM	1	0			19.4	18.49
				1	7			19.4	18.65
				1	14			19.4	18.52
				8	0			19.4	18.41
				8	4			19.4	18.40
				8	7			19.4	18.35
				15	0			19.4	18.33
			64QAM	1	0			19.4	18.59
				1	7			19.4	18.80
				1	14			19.4	18.67
				8	0			19.4	18.35
				8	4			19.4	18.36
				8	7			19.4	18.32
				15	0			19.4	18.34

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
1.4	23017	699.7	QPSK	1	0			19.4	18.23
				1	2			19.4	18.30
				1	5			19.4	18.17
				3	0			19.4	18.30
				3	1			19.4	18.29
				3	3			19.4	18.24
				6	0			19.4	18.16
			16QAM	1	0			19.4	18.25
				1	2			19.4	18.35
				1	5			19.4	18.25
				3	0			19.4	18.21
				3	1			19.4	18.25
				3	3			19.4	18.16
				6	0			19.4	18.34
			64QAM	1	0			19.4	18.61
				1	2			19.4	18.70
				1	5			19.4	18.59
				3	0			19.4	18.35
				3	1			19.4	18.38
				3	3			19.4	18.32
				6	0			19.4	18.24
	23095	707.5	QPSK	1	0			19.4	18.31
				1	2			19.4	18.38
				1	5			19.4	18.30
				3	0			19.4	18.36
				3	1			19.4	18.39
				3	3			19.4	18.34
				6	0			19.4	18.31
			16QAM	1	0			19.4	18.37
				1	2			19.4	18.47
				1	5	**MPR is disabled when power reduction is enabled**		19.4	18.36
				3	0			19.4	18.30
				3	1			19.4	18.33
				3	3			19.4	18.25
				6	0			19.4	18.36
			64QAM	1	0			19.4	18.69
				1	2			19.4	18.80
				1	5			19.4	18.67
				3	0			19.4	18.47
				3	1			19.4	18.53
				3	3			19.4	18.49
				6	0			19.4	18.40
	23173	715.3	QPSK	1	0			19.4	18.22
				1	2			19.4	18.25
				1	5			19.4	18.16
				3	0			19.4	18.23
				3	1			19.4	18.27
				3	3			19.4	18.22
				6	0			19.4	18.27
			16QAM	1	0			19.4	18.27
				1	2			19.4	18.36
				1	5			19.4	18.26
				3	0			19.4	18.19
				3	1			19.4	18.21
				3	3			19.4	18.14
				6	0			19.4	18.25
			64QAM	1	0			19.4	18.58
				1	2			19.4	18.66
				1	5			19.4	18.55
				3	0			19.4	18.38
				3	1			19.4	18.43
				3	3			19.4	18.42
				6	0			19.4	18.27

11.3.5 LTE Band 14 Measured Results (Reduction)

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
10	23330	793	QPSK	1	0	MPR is disabled when power reduction is enabled		18.4	17.58
				1	24			18.4	17.53
				1	49			18.4	17.47
				25	0			18.4	17.50
				25	12			18.4	17.56
				25	24			18.4	17.54
				50	0			18.4	17.55
			16QAM	1	0			18.4	17.80
				1	24			18.4	17.79
				1	49			18.4	17.73
				25	0			18.4	17.48
				25	12			18.4	17.60
				25	24			18.4	17.51
				50	0			18.4	17.57
			64QAM	1	0			18.4	17.90
				1	24			18.4	17.93
				1	49			18.4	17.87
				25	0			18.4	17.49
				25	12			18.4	17.61
				25	24			18.4	17.52
				50	0			18.4	17.59

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
5	23305	790.5	QPSK	1	0			18.4	17.54
				1	12			18.4	17.50
				1	24			18.4	17.41
				12	0			18.4	17.48
				12	6			18.4	17.50
				12	11			18.4	17.42
				25	0			18.4	17.46
			16QAM	1	0			18.4	17.84
				1	12			18.4	17.79
				1	24			18.4	17.76
				12	0			18.4	17.52
				12	6			18.4	17.52
				12	11			18.4	17.52
				25	0			18.4	17.49
			64QAM	1	0			18.4	17.98
				1	12			18.4	17.93
				1	24			18.4	17.88
				12	0			18.4	17.42
				12	6			18.4	17.43
				12	11			18.4	17.39
				25	0			18.4	17.48
	23330	793	QPSK	1	0			18.4	17.47
				1	12			18.4	17.44
				1	24			18.4	17.42
				12	0			18.4	17.41
				12	6			18.4	17.42
				12	11			18.4	17.40
				25	0			18.4	17.42
			16QAM	1	0			18.4	17.81
				1	12			18.4	17.75
				1	24	**MPR is disabled when power reduction is enabled**		18.4	17.71
				12	0			18.4	17.47
				12	6			18.4	17.51
				12	11			18.4	17.45
				25	0			18.4	17.47
			64QAM	1	0			18.4	17.93
				1	12			18.4	17.86
				1	24			18.4	17.82
				12	0			18.4	17.39
				12	6			18.4	17.39
				12	11			18.4	17.35
				25	0			18.4	17.45
	23355	795.5	QPSK	1	0			18.4	17.47
				1	12			18.4	17.44
				1	24			18.4	17.39
				12	0			18.4	17.38
				12	6			18.4	17.43
				12	11			18.4	17.37
				25	0			18.4	17.38
			16QAM	1	0			18.4	17.77
				1	12			18.4	17.75
				1	24			18.4	17.71
				12	0			18.4	17.46
				12	6			18.4	17.51
				12	11			18.4	17.43
				25	0			18.4	17.44
			64QAM	1	0			18.4	17.89
				1	12			18.4	17.86
				1	24			18.4	17.80
				12	0			18.4	17.35
				12	6			18.4	17.35
				12	11			18.4	17.32
				25	0			18.4	17.45

11.3.6 LTE Band 26 Measured Results (Reduction)

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
15	26765	821.5	QPSK	1	0			18.1	17.26
				1	37			18.1	17.15
				1	74			18.1	17.18
				36	0			18.1	17.16
				36	19			18.1	17.24
				36	39			18.1	17.22
				75	0			18.1	17.12
			16QAM	1	0			18.1	17.55
				1	37			18.1	17.48
				1	74			18.1	17.46
				36	0			18.1	17.13
				36	19			18.1	17.21
				36	39			18.1	17.23
				75	0			18.1	17.19
			64QAM	1	0			18.1	17.50
				1	37			18.1	17.51
				1	74			18.1	17.56
				36	0			18.1	17.09
				36	19			18.1	17.17
				36	39			18.1	17.20
				75	0			18.1	17.14
	26865	831.5	QPSK	1	0			18.1	17.31
				1	37			18.1	17.27
				1	74			18.1	17.19
				36	0			18.1	17.22
				36	19			18.1	17.29
				36	39			18.1	17.23
				75	0			18.1	17.16
			16QAM	1	0			18.1	17.58
				1	37			18.1	17.54
				1	74	**MPR is disabled when power reduction is enabled**		18.1	17.51
				36	0			18.1	17.28
				36	19			18.1	17.26
				36	39			18.1	17.24
				75	0			18.1	17.18
			64QAM	1	0			18.1	17.66
				1	37			18.1	17.57
				1	74			18.1	17.50
				36	0			18.1	17.25
				36	19			18.1	17.20
				36	39			18.1	17.17
				75	0			18.1	17.21
	26965	841.5	QPSK	1	0			18.1	17.20
				1	37			18.1	17.16
				1	74			18.1	17.09
				36	0			18.1	17.18
				36	19			18.1	17.24
				36	39			18.1	17.13
				75	0			18.1	17.17
			16QAM	1	0			18.1	17.52
				1	37			18.1	17.54
				1	74			18.1	17.38
				36	0			18.1	17.15
				36	19			18.1	17.25
				36	39			18.1	17.23
				75	0			18.1	17.21
			64QAM	1	0			18.1	17.51
				1	37			18.1	17.56
				1	74			18.1	17.41
				36	0			18.1	17.12
				36	19			18.1	17.19
				36	39			18.1	17.14
				75	0			18.1	17.22

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
10	26740	819	QPSK	1	0			18.1	17.14
				1	24			18.1	17.19
				1	49			18.1	17.09
				25	0			18.1	17.04
				25	12			18.1	17.16
				25	24			18.1	17.11
				50	0			18.1	17.10
			16QAM	1	0			18.1	17.43
				1	24			18.1	17.43
				1	49			18.1	17.32
				25	0			18.1	17.09
				25	12			18.1	17.19
				25	24			18.1	17.13
				50	0			18.1	17.14
			64QAM	1	0			18.1	17.45
				1	24			18.1	17.46
				1	49			18.1	17.43
				25	0			18.1	17.07
				25	12			18.1	17.16
				25	24			18.1	17.08
				50	0			18.1	17.15
	26865	831.5	QPSK	1	0			18.1	17.12
				1	24			18.1	17.11
				1	49			18.1	17.17
				25	0			18.1	17.16
				25	12			18.1	17.13
				25	24			18.1	17.06
				50	0			18.1	17.13
			16QAM	1	0			18.1	17.35
				1	24			18.1	17.41
				1	49	**MPR is disabled when power reduction is enabled**		18.1	17.45
				25	0			18.1	17.16
				25	12			18.1	17.15
				25	24			18.1	17.10
				50	0			18.1	17.13
			64QAM	1	0			18.1	17.44
				1	24			18.1	17.45
				1	49			18.1	17.50
				25	0			18.1	17.12
				25	12			18.1	17.12
				25	24			18.1	17.05
				50	0			18.1	17.12
	26990	844	QPSK	1	0			18.1	17.28
				1	24			18.1	17.20
				1	49			18.1	17.14
				25	0			18.1	17.24
				25	12			18.1	17.22
				25	24			18.1	17.16
				50	0			18.1	17.20
			16QAM	1	0			18.1	17.56
				1	24			18.1	17.49
				1	49			18.1	17.40
				25	0			18.1	17.24
				25	12			18.1	17.22
				25	24			18.1	17.17
				50	0			18.1	17.20
			64QAM	1	0			18.1	17.57
				1	24			18.1	17.55
				1	49			18.1	17.46
				25	0			18.1	17.23
				25	12			18.1	17.20
				25	24			18.1	17.11
				50	0			18.1	17.19

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
5	26715	816.5	QPSK	1	0			18.1	17.16
				1	12			18.1	17.11
				1	24			18.1	17.18
				12	0			18.1	17.09
				12	6			18.1	17.11
				12	11			18.1	17.08
				25	0			18.1	17.04
			16QAM	1	0			18.1	17.44
				1	12			18.1	17.40
				1	24			18.1	17.48
				12	0			18.1	17.18
				12	6			18.1	17.19
				12	11			18.1	17.15
				25	0			18.1	17.11
			64QAM	1	0			18.1	17.60
				1	12			18.1	17.50
				1	24			18.1	17.62
				12	0			18.1	17.00
				12	6			18.1	16.99
				12	11			18.1	16.96
				25	0			18.1	17.08
	26865	831.5	QPSK	1	0			18.1	17.20
				1	12			18.1	17.14
				1	24			18.1	17.12
				12	0			18.1	17.15
				12	6			18.1	17.13
				12	11			18.1	17.08
				25	0			18.1	17.10
			16QAM	1	0			18.1	17.55
				1	12			18.1	17.47
				1	24	**MPR is disabled when power reduction is enabled**		18.1	17.43
				12	0			18.1	17.21
				12	6			18.1	17.22
				12	11			18.1	17.19
				25	0			18.1	17.14
			64QAM	1	0			18.1	17.58
				1	12			18.1	17.52
				1	24			18.1	17.53
				12	0			18.1	17.03
				12	6			18.1	17.07
				12	11			18.1	17.01
				25	0			18.1	17.13
	27015	846.5	QPSK	1	0			18.1	17.24
				1	12			18.1	17.21
				1	24			18.1	17.18
				12	0			18.1	17.21
				12	6			18.1	17.22
				12	11			18.1	17.19
				25	0			18.1	17.17
			16QAM	1	0			18.1	17.54
				1	12			18.1	17.49
				1	24			18.1	17.48
				12	0			18.1	17.26
				12	6			18.1	17.26
				12	11			18.1	17.23
				25	0			18.1	17.21
			64QAM	1	0			18.1	17.65
				1	12			18.1	17.59
				1	24			18.1	17.60
				12	0			18.1	17.09
				12	6			18.1	17.08
				12	11			18.1	17.05
				25	0			18.1	17.17

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
3	26705	815.5	QPSK	1	0			18.1	17.09
				1	7			18.1	17.19
				1	14			18.1	17.06
				8	0			18.1	17.07
				8	4			18.1	17.10
				8	7			18.1	17.06
				15	0			18.1	17.06
			16QAM	1	0			18.1	17.36
				1	7			18.1	17.46
				1	14			18.1	17.33
				8	0			18.1	17.19
				8	4			18.1	17.17
				8	7			18.1	17.14
				15	0			18.1	17.12
			64QAM	1	0			18.1	17.44
				1	7			18.1	17.51
				1	14			18.1	17.37
				8	0			18.1	17.07
				8	4			18.1	17.08
				8	7			18.1	17.07
				15	0			18.1	17.06
	26865	831.5	QPSK	1	0			18.1	17.14
				1	7			18.1	17.26
				1	14			18.1	17.13
				8	0			18.1	17.14
				8	4			18.1	17.15
				8	7			18.1	17.09
				15	0			18.1	17.10
			16QAM	1	0			18.1	17.40
				1	7			18.1	17.51
				1	14	**MPR is disabled when power reduction is enabled**		18.1	17.36
				8	0			18.1	17.20
				8	4			18.1	17.20
				8	7			18.1	17.18
				15	0			18.1	17.17
			64QAM	1	0			18.1	17.48
				1	7			18.1	17.58
				1	14			18.1	17.43
				8	0			18.1	17.12
				8	4			18.1	17.13
				8	7			18.1	17.11
				15	0			18.1	17.13
	27025	847.5	QPSK	1	0			18.1	17.20
				1	7			18.1	17.27
				1	14			18.1	17.13
				8	0			18.1	17.12
				8	4			18.1	17.20
				8	7			18.1	17.13
				15	0			18.1	17.12
			16QAM	1	0			18.1	17.40
				1	7			18.1	17.54
				1	14			18.1	17.37
				8	0			18.1	17.20
				8	4			18.1	17.22
				8	7			18.1	17.20
				15	0			18.1	17.17
			64QAM	1	0			18.1	17.49
				1	7			18.1	17.59
				1	14			18.1	17.43
				8	0			18.1	17.14
				8	4			18.1	17.14
				8	7			18.1	17.12
				15	0			18.1	17.14

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
1.4	26697	814.7	QPSK	1	0			18.1	16.99
				1	2			18.1	17.08
				1	5			18.1	16.97
				3	0			18.1	17.03
				3	1			18.1	17.04
				3	3			18.1	16.99
				6	0			18.1	16.96
			16QAM	1	0			18.1	17.07
				1	2			18.1	17.16
				1	5			18.1	17.04
				3	0			18.1	16.97
				3	1			18.1	17.01
				3	3			18.1	16.91
				6	0			18.1	17.07
			64QAM	1	0			18.1	17.32
				1	2			18.1	17.44
				1	5			18.1	17.33
				3	0			18.1	17.11
				3	1			18.1	17.15
				3	3			18.1	17.13
				6	0			18.1	17.03
	26865	831.5	QPSK	1	0			18.1	17.04
				1	2			18.1	17.10
				1	5			18.1	17.02
				3	0			18.1	17.06
				3	1			18.1	17.08
				3	3			18.1	17.03
				6	0			18.1	17.00
			16QAM	1	0			18.1	17.07
				1	2			18.1	17.18
				1	5	**MPR is disabled when power reduction is enabled**		18.1	17.05
				3	0			18.1	17.00
				3	1			18.1	17.03
				3	3			18.1	16.96
				6	0			18.1	17.09
			64QAM	1	0			18.1	17.38
				1	2			18.1	17.47
				1	5			18.1	17.36
				3	0			18.1	17.17
				3	1			18.1	17.20
				3	3			18.1	17.16
				6	0			18.1	17.05
	27033	848.3	QPSK	1	0			18.1	17.05
				1	2			18.1	17.12
				1	5			18.1	17.00
				3	0			18.1	17.08
				3	1			18.1	17.11
				3	3			18.1	17.05
				6	0			18.1	17.01
			16QAM	1	0			18.1	17.11
				1	2			18.1	17.19
				1	5			18.1	17.06
				3	0			18.1	17.01
				3	1			18.1	17.06
				3	3			18.1	16.97
				6	0			18.1	17.09
			64QAM	1	0			18.1	17.38
				1	2			18.1	17.47
				1	5			18.1	17.35
				3	0			18.1	17.14
				3	1			18.1	17.20
				3	3			18.1	17.16
				6	0			18.1	17.07

11.3.7 LTE Band 66 Measured Results (Reduction)

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
20	132072	1720	QPSK	1	0			17.9	17.12
				1	49			17.9	16.91
				1	99			17.9	17.00
				50	0			17.9	17.05
				50	24			17.9	16.93
				50	49			17.9	16.98
				100	0			17.9	16.97
			16QAM	1	0			17.9	17.30
				1	49			17.9	17.10
				1	99			17.9	17.25
				50	0			17.9	17.02
				50	24			17.9	16.95
				50	49			17.9	17.04
				100	0			17.9	16.96
			64QAM	1	0			17.9	17.38
				1	49			17.9	17.13
				1	99			17.9	17.21
				50	0			17.9	17.06
				50	24			17.9	17.01
				50	49			17.9	17.03
				100	0			17.9	16.99
	132322	1745	QPSK	1	0			17.9	17.23
				1	49			17.9	17.04
				1	99			17.9	16.97
				50	0			17.9	17.06
				50	24			17.9	17.01
				50	49			17.9	16.94
				100	0			17.9	16.99
			16QAM	1	0			17.9	17.52
				1	49			17.9	17.31
				1	99	**MPR is disabled when power reduction is enabled**		17.9	17.30
				50	0			17.9	17.10
				50	24			17.9	17.08
				50	49			17.9	16.98
				100	0			17.9	17.03
			64QAM	1	0			17.9	17.39
				1	49			17.9	17.20
				1	99			17.9	17.14
				50	0			17.9	17.15
				50	24			17.9	17.07
				50	49			17.9	17.02
				100	0			17.9	17.00
	132572	1770	QPSK	1	0			17.9	17.16
				1	49			17.9	17.06
				1	99			17.9	16.91
				50	0			17.9	17.00
				50	24			17.9	17.01
				50	49			17.9	16.98
				100	0			17.9	16.95
			16QAM	1	0			17.9	17.45
				1	49			17.9	17.35
				1	99			17.9	17.24
				50	0			17.9	17.02
				50	24			17.9	17.05
				50	49			17.9	17.03
				100	0			17.9	16.97
			64QAM	1	0			17.9	17.32
				1	49			17.9	17.23
				1	99			17.9	17.09
				50	0			17.9	17.10
				50	24			17.9	17.14
				50	49			17.9	17.04
				100	0			17.9	16.99

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
15	132047	1717.5	QPSK	1	0			17.9	17.08
				1	37			17.9	16.83
				1	74			17.9	16.89
				36	0			17.9	16.92
				36	19			17.9	16.90
				36	39			17.9	16.84
				75	0			17.9	16.82
			16QAM	1	0			17.9	17.34
				1	37			17.9	17.18
				1	74			17.9	17.11
				36	0			17.9	16.92
				36	19			17.9	16.87
				36	39			17.9	16.83
				75	0			17.9	16.89
			64QAM	1	0			17.9	17.35
				1	37			17.9	17.18
				1	74			17.9	17.19
				36	0			17.9	16.90
				36	19			17.9	16.82
				36	39			17.9	16.82
				75	0			17.9	16.85
	132322	1745	QPSK	1	0			17.9	17.10
				1	37			17.9	16.85
				1	74			17.9	16.90
				36	0			17.9	16.98
				36	19			17.9	16.94
				36	39			17.9	16.88
				75	0			17.9	16.86
			16QAM	1	0			17.9	17.32
				1	37			17.9	17.19
				1	74	**MPR is disabled when power reduction is enabled**		17.9	17.13
				36	0			17.9	16.97
				36	19			17.9	16.93
				36	39			17.9	16.88
				75	0			17.9	16.89
			64QAM	1	0			17.9	17.36
				1	37			17.9	17.24
				1	74			17.9	17.23
				36	0			17.9	16.94
				36	19			17.9	16.90
				36	39			17.9	16.85
				75	0			17.9	16.90
	132597	1772.5	QPSK	1	0			17.9	17.04
				1	37			17.9	16.81
				1	74			17.9	16.84
				36	0			17.9	16.89
				36	19			17.9	16.85
				36	39			17.9	16.78
				75	0			17.9	16.83
			16QAM	1	0			17.9	17.27
				1	37			17.9	17.12
				1	74			17.9	17.14
				36	0			17.9	16.91
				36	19			17.9	16.86
				36	39			17.9	16.79
				75	0			17.9	16.87
			64QAM	1	0			17.9	17.31
				1	37			17.9	17.15
				1	74			17.9	17.16
				36	0			17.9	16.86
				36	19			17.9	16.83
				36	39			17.9	16.75
				75	0			17.9	16.87

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
10	132022	1715	QPSK	1	0			17.9	16.96
				1	24			17.9	16.87
				1	49			17.9	16.83
				25	0			17.9	16.86
				25	12			17.9	16.85
				25	24			17.9	16.77
				50	0			17.9	16.80
			16QAM	1	0			17.9	17.18
				1	24			17.9	17.12
				1	49			17.9	17.05
				25	0			17.9	16.87
				25	12			17.9	16.84
				25	24			17.9	16.82
				50	0			17.9	16.84
			64QAM	1	0			17.9	17.25
				1	24			17.9	17.17
				1	49			17.9	17.16
				25	0			17.9	16.86
				25	12			17.9	16.83
				25	24			17.9	16.82
				50	0			17.9	16.85
	132322	1745	QPSK	1	0			17.9	16.99
				1	24			17.9	16.87
				1	49			17.9	16.84
				25	0			17.9	16.86
				25	12			17.9	16.84
				25	24			17.9	16.80
				50	0			17.9	16.82
			16QAM	1	0			17.9	17.19
				1	24			17.9	17.15
				1	49	**MPR is disabled when power reduction is enabled**		17.9	17.07
				25	0			17.9	16.88
				25	12			17.9	16.85
				25	24			17.9	16.79
				50	0			17.9	16.85
			64QAM	1	0			17.9	17.27
				1	24			17.9	17.17
				1	49			17.9	17.13
				25	0			17.9	16.88
				25	12			17.9	16.83
				25	24			17.9	16.82
				50	0			17.9	16.85
	132622	1775	QPSK	1	0			17.9	16.91
				1	24			17.9	16.86
				1	49			17.9	16.82
				25	0			17.9	16.84
				25	12			17.9	16.81
				25	24			17.9	16.75
				50	0			17.9	16.81
			16QAM	1	0			17.9	17.20
				1	24			17.9	17.09
				1	49			17.9	17.08
				25	0			17.9	16.86
				25	12			17.9	16.80
				25	24			17.9	16.78
				50	0			17.9	16.81
			64QAM	1	0			17.9	17.23
				1	24			17.9	17.13
				1	49			17.9	17.15
				25	0			17.9	16.86
				25	12			17.9	16.81
				25	24			17.9	16.76
				50	0			17.9	16.82

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
5	131997	1712.5	QPSK	1	0			17.9	16.95
				1	12			17.9	16.88
				1	24			17.9	16.89
				12	0			17.9	16.88
				12	6			17.9	16.86
				12	11			17.9	16.85
				25	0			17.9	16.86
			16QAM	1	0			17.9	17.19
				1	12			17.9	17.16
				1	24			17.9	17.16
				12	0			17.9	16.92
				12	6			17.9	16.90
				12	11			17.9	16.88
				25	0			17.9	16.87
			64QAM	1	0			17.9	17.35
				1	12			17.9	17.29
				1	24			17.9	17.30
				12	0			17.9	16.76
				12	6			17.9	16.76
				12	11			17.9	16.75
				25	0			17.9	16.86
	132322	1745	QPSK	1	0			17.9	16.98
				1	12			17.9	16.94
				1	24			17.9	16.92
				12	0			17.9	16.87
				12	6			17.9	16.88
				12	11			17.9	16.83
				25	0			17.9	16.85
			16QAM	1	0			17.9	17.22
				1	12			17.9	17.14
				1	24	**MPR is disabled when power reduction is enabled**		17.9	17.16
				12	0			17.9	16.93
				12	6			17.9	16.93
				12	11			17.9	16.90
				25	0			17.9	16.88
			64QAM	1	0			17.9	17.36
				1	12			17.9	17.27
				1	24			17.9	17.31
				12	0			17.9	16.80
				12	6			17.9	16.80
				12	11			17.9	16.76
				25	0			17.9	16.88
	132647	1777.5	QPSK	1	0			17.9	16.89
				1	12			17.9	16.86
				1	24			17.9	16.85
				12	0			17.9	16.81
				12	6			17.9	16.83
				12	11			17.9	16.77
				25	0			17.9	16.79
			16QAM	1	0			17.9	17.16
				1	12			17.9	17.10
				1	24			17.9	17.10
				12	0			17.9	16.86
				12	6			17.9	16.86
				12	11			17.9	16.84
				25	0			17.9	16.81
			64QAM	1	0			17.9	17.31
				1	12			17.9	17.23
				1	24			17.9	17.24
				12	0			17.9	16.73
				12	6			17.9	16.75
				12	11			17.9	16.69
				25	0			17.9	16.81

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
3	131987	1711.5	QPSK	1	0			17.9	16.92
				1	7			17.9	16.98
				1	14			17.9	16.88
				8	0			17.9	16.85
				8	4			17.9	16.89
				8	7			17.9	16.84
				15	0			17.9	16.85
			16QAM	1	0			17.9	17.08
				1	7			17.9	17.22
				1	14			17.9	17.06
				8	0			17.9	16.90
				8	4			17.9	16.92
				8	7			17.9	16.87
				15	0			17.9	16.86
			64QAM	1	0			17.9	17.17
				1	7			17.9	17.32
				1	14			17.9	17.16
				8	0			17.9	16.83
				8	4			17.9	16.85
				8	7			17.9	16.83
				15	0			17.9	16.86
	132322	1745	QPSK	1	0			17.9	16.88
				1	7			17.9	16.95
				1	14			17.9	16.89
				8	0			17.9	16.84
				8	4			17.9	16.90
				8	7			17.9	16.83
				15	0			17.9	16.81
			16QAM	1	0			17.9	17.09
				1	7			17.9	17.24
				1	14	**MPR is disabled when power reduction is enabled**		17.9	17.07
				8	0			17.9	16.90
				8	4			17.9	16.93
				8	7			17.9	16.90
				15	0			17.9	16.87
			64QAM	1	0			17.9	17.18
				1	7			17.9	17.28
				1	14			17.9	17.16
				8	0			17.9	16.82
				8	4			17.9	16.84
				8	7			17.9	16.82
				15	0			17.9	16.84
	132657	1778.5	QPSK	1	0			17.9	16.83
				1	7			17.9	16.92
				1	14			17.9	16.82
				8	0			17.9	16.78
				8	4			17.9	16.84
				8	7			17.9	16.75
				15	0			17.9	16.77
			16QAM	1	0			17.9	17.03
				1	7			17.9	17.16
				1	14			17.9	17.02
				8	0			17.9	16.86
				8	4			17.9	16.82
				8	7			17.9	16.81
				15	0			17.9	16.82
			64QAM	1	0			17.9	17.12
				1	7			17.9	17.22
				1	14			17.9	17.11
				8	0			17.9	16.78
				8	4			17.9	16.79
				8	7			17.9	16.78
				15	0			17.9	16.77

BW (MHz)	UL Ch #	Freq. (MHz)	Modu-lation	UL RB Allocation	UL RB Start	Target MPR	Meas. MPR	Tune-up Limit (dBm)	Meas. Pwr Avg (dBm)
1.4	131979	1710.7	QPSK	1	0			17.9	16.77
				1	2			17.9	16.80
				1	5			17.9	16.72
				3	0			17.9	16.80
				3	1			17.9	16.81
				3	3			17.9	16.76
				6	0			17.9	16.74
			16QAM	1	0			17.9	16.81
				1	2			17.9	16.93
				1	5			17.9	16.77
				3	0			17.9	16.71
				3	1			17.9	16.73
				3	3			17.9	16.72
				6	0			17.9	16.83
			64QAM	1	0			17.9	17.11
				1	2			17.9	17.23
				1	5			17.9	17.11
				3	0			17.9	16.91
				3	1			17.9	16.95
				3	3			17.9	16.91
				6	0			17.9	16.80
	132322	1745	QPSK	1	0			17.9	16.76
				1	2			17.9	16.81
				1	5			17.9	16.74
				3	0			17.9	16.79
				3	1			17.9	16.82
				3	3			17.9	16.78
				6	0			17.9	16.73
			16QAM	1	0			17.9	16.81
				1	2			17.9	16.92
				1	5	**MPR is disabled when power reduction is enabled**		17.9	16.81
				3	0			17.9	16.71
				3	1			17.9	16.77
				3	3			17.9	16.67
				6	0			17.9	16.82
			64QAM	1	0			17.9	17.12
				1	2			17.9	17.19
				1	5			17.9	17.09
				3	0			17.9	16.86
				3	1			17.9	16.93
				3	3			17.9	16.88
				6	0			17.9	16.78
	132665	1779.3	QPSK	1	0			17.9	16.67
				1	2			17.9	16.76
				1	5			17.9	16.70
				3	0			17.9	16.75
				3	1			17.9	16.76
				3	3			17.9	16.74
				6	0			17.9	16.66
			16QAM	1	0			17.9	16.73
				1	2			17.9	16.84
				1	5			17.9	16.77
				3	0			17.9	16.66
				3	1			17.9	16.71
				3	3			17.9	16.62
				6	0			17.9	16.75
			64QAM	1	0			17.9	17.04
				1	2			17.9	17.10
				1	5			17.9	17.02
				3	0			17.9	16.85
				3	1			17.9	16.87
				3	3			17.9	16.83
				6	0			17.9	16.75

Note: LTE Full and Reduction (Band4 , 13 , 41 and 48) result and tested mode and channels are based on original test report (FCCID: ACJ9TGWW18C / report num: 13489136H-A-R1 published by UL Japan

11.4 LTE CA

11.4.1 SAR test exclusion for DL CA

The configurations that require power measurements as described in Section 11.1.4"LTE DLCA Test Reduction Methodology" are highlighted in yellow in the table below. Only yellow highlighted cells need power DL CA power measurement

Conducted power measurements with LTE Carrier Aggregation (CA) (downlink only) active are made in accordance to KDB Publication 941225 D05Av01r02. The RRC connection is only handled by one cell, the primary component carrier (PCC) for downlink and uplink communications. After making a data connection to the PCC, the UE device adds secondary component carrier(s) (SCC) on the downlink only.

All uplink communications and acknowledgements remain identical to specifications when downlink carrier aggregation is inactive on the PCC. Additional conducted output powers are measured with the downlink carrier aggregation active for the configuration with highest measured maximum conducted power with downlink carrier aggregation inactive measured among the channel bandwidth, modulation, and RB combinations in each frequency band.

This device supports LAA with downlink carrier aggregation only. It uses carrier aggregation in the downlink to combine LTE in the unlicensed spectrum (i.e. LTE Band 46) with LTE in the licensed band (served as PCC). All uplink communications and acknowledgements on the PCC remain identical to specifications when downlink carrier aggregation is inactive.

Conducted power was evaluated as described in Sections 11.1.4 “General PCC and SCC configuration selection procedure:” and “Downlink CA with Downlink 4x4 MIMO RF Conducted Powers:”.

Note:DLCA result, and tested mode and channels are based on original test report (FCCID: ACJ9TGWW18C / report num: 13489136H-A-R1 published by UL Japan

11.5 Measurement configuration for SAR

11.5.1 SAR evaluation procedure

The evaluation was performed with the following procedure:

Step 1: Measurement of the E-field at a fixed location above the ear point or central position of flat phantom was used as a reference value for assessing the power drop.

Step 2: The SAR distribution at the exposed side of head or body position was measured at a distance of each device from the inner surface of the shell. The area covered the entire dimension of the antenna of EUT and the horizontal grid spacing was 15 mm x 15 mm, 12 mm x 12 mm or 10mm x 10mm. Based on these data, the area of the maximum absorption was determined by spline interpolation.

Step 3: Around this point found in the Step 2 (area scan), a volume of 30mm x 30mm x 30mm or more was assessed by measuring 7 x 7 x 7 points at least for below 3GHz and a volume of 28 mm x 28mm x 22.5mm or more was assessed by measuring 8 x 8 x 6(ratio step method (*1)) points at least for 5GHz band.

And for any secondary peaks found in the Step2 which are within 2dB of maximum peak and not with this Step3 (Zoom scan) is repeated. On the basis of this data set, the spatial peak SAR value was evaluated under the following procedure:

(1). The data at the surface were extrapolated, since the center of the dipoles is 1mm(EX3DV4) away from the tip of the probe and the distance between the surface and the lowest measuring point is 1.3 mm. The extrapolation was based on a least square algorithm [4]. A polynomial of the fourth order was calculated through the points in z-axes.
This polynomial was then used to evaluate the points between the surface and the probe tip.

(2). The maximum interpolated value was searched with a straightforward algorithm. Around this maximum the SAR values averaged over the spatial volumes (1 g or 10 g) were computed by the 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) [4], [5]. The volume was integrated with the trapezoidal-algorithm. One thousand points (10 x 10 x 10) were interpolated to calculate the average.

(3). All neighboring volumes were evaluated until no neighboring volume with a higher average value was found.

***1. Ratio step method parameters used;**
The first measurement point: 2mm from the phantom surface, the initial grid separation: 2mm, subsequent graded grid ratio: 1.5
These parameters comply with the requirement of the KDB 865664D01.

Step 4: Re-measurement of the E-field at the same location as in Step 1.
Confirmation after SAR testing
It was checked that the power drift [W] is within +/-5%.The verification of power drift during the SAR test is that DASY5 system calculates the power drift by measuring the e-filed at the same location at beginning and the end of the scan measurement for each test position.

DASY5/6 system calculation Power drift value[dB] =20log(Ea)/(Eb)
Before SAR testing : Eb[V/m]
After SAR testing : Ea[V/m]

Limit of power drift[W] =+/-5%
X[dB]=10log[P]=10log(1.05/1)=10log(1.05)-10log(1)=0.212dB

from E-filed relations with power.
p=E^2/η=E^2/
Therefore, The correlation of power and the E-filed
XdB=10log(P)=10log(E)^2=20log(E)

Therefore,
The calculated power drift of DASY5 System must be the less than +/-0.212dB.

Step size.

			≤ 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 phantomsurface 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 withat 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 tophantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3– 4 GHz: ≤ 4 mm 4– 5 GHz: ≤ 3 mm 5– 6 GHz: ≤ 2 mm
	gradedgrid	$\Delta z_{Zoom}(1)$: between 1st two points closestto 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 subsequentpoints	≤ 1.5·$\Delta z_{Zoom}(n-1)$ mm	
Minimum zoomscan 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 Std1528-2013 for details.
* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures ofKDB 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.

11.5.2 KDB 447498 D01 (General RF Exposure Guidance):

Testing of other required channels within the operating mode of a frequency band is not required when the reported 1-g or 10-g SAR for the mid-band or highest output power channel is:

- ✧ ≤ 0.8 W/kg or 2.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≤ 100 MHz
- ✧ ≤ 0.6 W/kg or 1.5 W/kg, for 1-g or 10-g respectively, when the transmission band is between 100 MHz and 200 MHz
- ✧ ≤ 0.4 W/kg or 1.0 W/kg, for 1-g or 10-g respectively, when the transmission band is ≥ 200 MHz

When reported SAR value is exceed 1.2W/kg(if any), device holder perturbation verification is required; however, since distance between device holder and antenna of EUT is enough, it was not conducted.

11.5.3 KDB 941225 D01 (SAR test for 3G device):

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≦1/4 dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ration 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.

11.5.4 KDB 941225 D01 (SAR for LTE Devices):

SAR test reduction is applied using the following criteria:

- Beginning with QPSK modulation at the largest channel bandwidth, testing for 1 RB allocation configurations is initially performed for the channel/RB offset combination with the highest output power among 1 RB allocation configurations.
  - o When the reported SAR for the initial measurement is < 0.8 W/kg, no further assessment is required for 1 RB allocation configurations.
  - o When the reported SAR for the initial measurement is > 0.8 W/kg, the remaining channels are evaluated using the RB offset with the highest output power within the respective channels.
  - o For all reported SAR that is > 1.45 W/kg, SAR, SAR is required for the remaining RB offset configurations of the same channel.
- The same procedures apply to QPSK 50% RB allocation configurations at the largest channel bandwidth.
- Testing for 100% RB allocation configurations at the largest channel bandwidth is performed for the channel, across low, mid and high, with the highest output power, when the highest reported SAR for either 1 RB or 50% RB is ≥ 0.8 W/kg, or when the maximum output power among 100% RB allocation configurations is greater than the maximum output power among either 1 RB or 50% RB allocation configurations.
  - o Testing for the remaining channels in 100% RB allocation configurations is required only when reported SAR for the initial 100% RB allocation configuration is > 1.45 W/kg.
- Testing for higher order modulations (16-QAM or 64-QAM) is required only when the highest reported SAR for QPSK is > 1.45 W/Kg or if its output power is more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is required only when the highest reported SAR for the highest channel bandwidth is > 1.45 W/Kg or if its output power is more than 0.5 dB higher than that of the highest channel bandwidth.

11.6 SAR result

11.6.1 WCDMA band 2 full power

Test Position	Dist. (mm)	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	
Edge1	0	Rel 99 RMC 12.2 kbps	9262	1852.4	24.0	23.01			
			9400	1880.0	24.0	23.02	0.250	0.313	
			9538	1907.6	24.0	23.04			
Edge3	0	Rel 99 RMC 12.2 kbps	9262	1852.4	24.0	23.01			
			9400	1880.0	24.0	23.02	0.126	0.158	
			9538	1907.6	24.0	23.04			
Edge4	19	Rel 99 RMC 12.2 kbps	9262	1852.4	24.0	23.01			
			9400	1880.0	24.0	23.02	0.522	0.654	
			9538	1907.6	24.0	23.04			
Rear	9	Rel 99 RMC 12.2 kbps	9262	1852.4	24.0	23.01			
			9400	1880.0	24.0	23.02	0.487	0.610	
			9538	1907.6	24.0	23.04			
Rear tilt (Edge1 side)	0	Rel 99 RMC 12.2 kbps	9262	1852.4	24.0	23.01			
			9400	1880.0	24.0	23.02	0.636	0.797	
			9538	1907.6	24.0	23.04			
Rear tilt (Edge4 side)	9	Rel 99 RMC 12.2 kbps	9262	1852.4	24.0	23.01	***0.698***	**0.877**	W2.1
			9400	1880.0	24.0	23.02	0.697	0.873	
			9538	1907.6	24.0	23.04	0.673	0.839	

11.6.2 WCDMA band 2 reduction power

Test Position	Dist. (mm)	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	
Edge4	0	Rel 99 RMC 12.2 kbps	9262	1852.4	18.7	17.93	***0.896***	**1.070**	W2.2
			9400	1880.0	18.7	18.00	0.832	0.978	
			9538	1907.6	18.7	17.97	0.716	0.847	
Rear	0	Rel 99 RMC 12.2 kbps	9262	1852.4	18.7	17.93			
			9400	1880.0	18.7	18.00	0.417	0.490	
			9538	1907.6	18.7	17.97			
Rear tilt (Edge4 side)	0	Rel 99 RMC 12.2 kbps	9262	1852.4	18.7	17.93	0.854	1.020	
			9400	1880.0	18.7	18.00	0.775	0.911	
			9538	1907.6	18.7	17.97	0.732	0.866	

11.6.3 WCDMA band 4 full power

Test Position	Dist. (mm)	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	
Edge1	0	Rel 99 RMC 12.2 kbps	1312	1712.4	24.0	22.85			
			1413	1732.6	24.0	22.84	0.236	0.308	
			1513	1752.6	24.0	22.87			
Edge3	0	Rel 99 RMC 12.2 kbps	1312	1712.4	24.0	22.85			
			1413	1732.6	24.0	22.84	0.255	0.333	
			1513	1752.6	24.0	22.87			
Edge4	19	Rel 99 RMC 12.2 kbps	1312	1712.4	24.0	22.85	0.843	1.099	
			1413	1732.6	24.0	22.84	0.850	1.110	
			1513	1752.6	24.0	22.87	0.863	1.119	
Rear	9	Rel 99 RMC 12.2 kbps	1312	1712.4	24.0	22.85			
			1413	1732.6	24.0	22.84	0.563	0.735	
			1513	1752.6	24.0	22.87			
Rear tilt (Edge1 side)	0	Rel 99 RMC 12.2 kbps	1312	1712.4	24.0	22.85	0.655	0.854	
			1413	1732.6	24.0	22.84	0.667	0.871	
			1513	1752.6	24.0	22.87	0.632	0.820	
Rear tilt (Edge4 side)	9	Rel 99 RMC 12.2 kbps	1312	1712.4	24.0	22.85	0.867	1.130	
			1413	1732.6	24.0	22.84	0.861	1.125	
			1513	1752.6	24.0	22.87	***0.890***	**1.154**	W4.1

11.6.4 WCDMA band 4 reduction power

Test Position	Dist. (mm)	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	
Edge4	0	Rel 99 RMC 12.2 kbps	1312	1712.4	17.8	17.06	***0.765***	**0.907**	W4.2
			1413	1732.6	17.8	17.09	0.760	0.895	
			1513	1752.6	17.8	17.06	0.747	0.886	
Rear	0	Rel 99 RMC 12.2 kbps	1312	1712.4	17.8	17.06			
			1413	1732.6	17.8	17.09	0.376	0.443	
			1513	1752.6	17.8	17.06			
Rear tilt (Edge4 side)	0	Rel 99 RMC 12.2 kbps	1312	1712.4	17.8	17.06			
			1413	1732.6	17.8	17.09	0.631	0.743	
			1513	1752.6	17.8	17.06			

11.6.5 WCDMA band 5 full power

Test Position	Dist. (mm)	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	
Edge1	0	Rel 99 RMC 12.2 kbps	4132	826.4	24.0	23.15			
			4183	836.6	24.0	23.22	0.164	0.196	
			4233	846.6	24.0	23.13			
Edge3	0	Rel 99 RMC 12.2 kbps	4132	826.4	24.0	23.15			
			4183	836.6	24.0	23.22	0.041	0.049	
			4233	846.6	24.0	23.13			
Edge4	19	Rel 99 RMC 12.2 kbps	4132	826.4	24.0	23.15			
			4183	836.6	24.0	23.22	0.465	0.556	
			4233	846.6	24.0	23.13			
Rear	9	Rel 99 RMC 12.2 kbps	4132	826.4	24.0	23.15			
			4183	836.6	24.0	23.22	0.526	0.629	
			4233	846.6	24.0	23.13			
Rear tilt (Edge1 side)	0	Rel 99 RMC 12.2 kbps	4132	826.4	24.0	23.15	***0.690***	**0.839**	W5.1
			4183	836.6	24.0	23.22	0.661	0.791	
			4233	846.6	24.0	23.13	0.648	0.792	
Rear tilt (Edge4 side)	9	Rel 99 RMC 12.2 kbps	4132	826.4	24.0	23.15	0.621	0.755	
			4183	836.6	24.0	23.22	0.666	0.797	
			4233	846.6	24.0	23.13	0.669	0.817	

11.6.6 WCDMA band 5 reduction power

Test Position	Dist. (mm)	Mode	Ch #.	Freq. (MHz)	Power (dBm)		1-g SAR (W/kg)		Plot No.
					Tune-up limit	Meas.	Meas.	Scaled	
Edge4	0	Rel 99 RMC 12.2 kbps	4132	826.4	18.3	17.62	0.806	0.943	
			4183	836.6	18.3	17.75	0.856	0.972	
			4233	846.6	18.3	17.61	***0.878***	**1.029**	W5.2
Rear	0	Rel 99 RMC 12.2 kbps	4132	826.4	18.3	17.93			
			4183	836.6	18.3	18.00	0.366	0.392	
			4233	846.6	18.3	17.97			
Rear tilt (Edge4 side)	0	Rel 99 RMC 12.2 kbps	4132	826.4	18.3	17.93			
			4183	836.6	18.3	18.00	0.486	0.521	
			4233	846.6	18.3	17.97			

11.6.7 LTE band 2 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	18700	1860	1	0	24.0	22.68			
			18900	1880	1	0	24.0	22.56			
			19100	1900	1	0	24.0	22.87	0.197	0.256	
			18700	1860	50	0	23.0	21.66			
			18900	1880	50	49	23.0	21.58			
			19100	1900	50	0	23.0	21.77	0.189	0.251	
			19100	1900	100	0	23.0	21.71			
Edge 3	0	QPSK	18700	1860	1	0	24.0	22.68			
			18900	1880	1	0	24.0	22.56			
			19100	1900	1	0	24.0	22.87	0.135	0.175	
			18700	1860	50	0	23.0	21.66			
			18900	1880	50	49	23.0	21.58			
			19100	1900	50	0	23.0	21.77	0.117	0.155	
			19100	1900	100	0	23.0	21.71			
Edge 4	19	QPSK	18700	1860	1	0	24.0	22.68			
			18900	1880	1	0	24.0	22.56			
			19100	1900	1	0	24.0	22.87	0.543	0.704	
			18700	1860	50	0	23.0	21.66			
			18900	1880	50	49	23.0	21.58			
			19100	1900	50	0	23.0	21.77	0.416	0.552	
			19100	1900	100	0	23.0	21.71			
Rear	9	QPSK	18700	1860	1	0	24.0	22.68			
			18900	1880	1	0	24.0	22.56			
			19100	1900	1	0	24.0	22.87	0.465	0.603	
			18700	1860	50	0	23.0	21.66			
			18900	1880	50	49	23.0	21.58			
			19100	1900	50	0	23.0	21.77	0.355	0.471	
			19100	1900	100	0	23.0	21.71			
Rear tilt(Edge 1 side)	0	QPSK	18700	1860	1	0	24.0	22.68	0.687	0.931	
			18900	1880	1	0	24.0	22.56	0.695	0.968	
			19100	1900	1	0	24.0	22.87	***0.783***	***1.016***	L2.1
			18700	1860	50	0	23.0	21.66	0.562	0.765	
			18900	1880	50	49	23.0	21.58	0.563	0.781	
			19100	1900	50	0	23.0	21.77	0.612	0.812	
			19100	1900	100	0	23.0	21.71	0.602	0.810	
Rear tilt(Edge 4 side)	9	QPSK	18700	1860	1	0	24.0	22.68	0.634	0.859	
			18900	1880	1	0	24.0	22.56	0.636	0.886	
			19100	1900	1	0	24.0	22.87	0.679	0.881	
			18700	1860	50	0	23.0	21.66			
			18900	1880	50	49	23.0	21.58			
			19100	1900	50	0	23.0	21.77	0.528	0.701	
			19100	1900	100	0	23.0	21.71	0.518	0.697	

11.6.8 LTE band 2 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	18700	1860	1	0	18.4	17.40			
			18900	1880	1	0	18.4	17.39			
			19100	1900	1	0	18.4	17.75	0.663	0.770	
			18700	1860	50	0	18.4	17.25	***0.711***	***0.927***	L2.2
			18900	1880	50	24	18.4	17.32	0.684	0.877	
			19100	1900	50	0	18.4	17.65	0.677	0.805	
			19100	1900	100	0	18.4	17.59	0.669	0.806	
Rear	0	QPSK	18700	1860	1	0	18.4	17.40			
			18900	1880	1	0	18.4	17.39			
			19100	1900	1	0	18.4	17.75	0.387	0.449	
			18700	1860	50	0	18.4	17.25			
			18900	1880	50	24	18.4	17.32			
			19100	1900	50	0	18.4	17.65	0.376	0.447	
			19100	1900	100	0	18.4	17.59			
Rear tilt (Edge4 side)	0	QPSK	18700	1860	1	0	18.4	17.40			
			18900	1880	1	0	18.4	17.39			
			19100	1900	1	0	18.4	17.75	0.677	0.786	
			18700	1860	50	0	18.4	17.25			
			18900	1880	50	24	18.4	17.32			
			19100	1900	50	0	18.4	17.65	0.642	0.763	
			19100	1900	100	0	18.4	17.59			

11.6.9 LTE band 4 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	20050	1720	1	0	24.0	22.94			
			20175	1732.5	1	0	24.0	23.03	0.337	0.421	
			20300	1745	1	0	24.0	22.81			
			20050	1720	50	24	23.0	21.92			
			20175	1732.5	50	0	23.0	21.94	0.257	0.328	
			20300	1745	50	0	23.0	21.77			
			20050	1720	100	0	23.0	21.93			
Edge 3	0	QPSK	20050	1720	1	0	24.0	22.94			
			20175	1732.5	1	0	24.0	23.03	0.221	0.276	
			20300	1745	1	0	24.0	22.81			
			20050	1720	50	24	23.0	21.92			
			20175	1732.5	50	0	23.0	21.94	0.179	0.228	
			20300	1745	50	0	23.0	21.77			
			20050	1720	100	0	23.0	21.93			
Edge 4	19	QPSK	20050	1720	1	0	24.0	22.94	0.762	0.973	
			20175	1732.5	1	0	24.0	23.03	0.777	0.971	
			20300	1745	1	0	24.0	22.81	0.759	0.998	
			20050	1720	50	24	23.0	21.92			
			20175	1732.5	50	0	23.0	21.94	0.622	0.794	
			20300	1745	50	0	23.0	21.77			
			20050	1720	100	0	23.0	21.93	0.611	0.782	
Rear	9	QPSK	20050	1720	1	0	24.0	22.94			
			20175	1732.5	1	0	24.0	23.03	0.536	0.670	
			20300	1745	1	0	24.0	22.81			
			20050	1720	50	24	23.0	21.92			
			20175	1732.5	50	0	23.0	21.94	0.406	0.518	
			20300	1745	50	0	23.0	21.77			
			20050	1720	100	0	23.0	21.93			
Rear tilt(Edge 1 side)	0	QPSK	20050	1720	1	0	24.0	22.94	0.790	1.008	
			20175	1732.5	1	0	24.0	23.03	0.773	0.966	
			20300	1745	1	0	24.0	22.81	0.781	1.027	
			20050	1720	50	24	23.0	21.92			
			20175	1732.5	50	0	23.0	21.94	0.611	0.780	
			20300	1745	50	0	23.0	21.77			
			20050	1720	100	0	23.0	21.93	0.609	0.779	
Rear tilt(Edge 4 side)	9	QPSK	20050	1720	1	0	24.0	22.94	***0.861***	***1.099***	L4.1
			20175	1732.5	1	0	24.0	23.03	0.842	1.053	
			20300	1745	1	0	24.0	22.81	0.815	1.072	
			20050	1720	50	24	23.0	21.92	0.662	0.849	
			20175	1732.5	50	0	23.0	21.94	0.656	0.837	
			20300	1745	50	0	23.0	21.77	0.622	0.826	
			20050	1720	100	0	23.0	21.93	0.659	0.843	

11.6.10 LTE band 4 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	20050	1720	1	0	18.5	17.63	***0.799***	***0.976***	L4.2
			20175	1732.5	1	0	18.5	17.73	0.772	0.922	
			20300	1745	1	0	18.5	17.60	0.756	0.930	
			20050	1720	50	24	18.5	17.58	0.767	0.948	
			20175	1732.5	50	0	18.5	17.66	0.761	0.923	
			20300	1745	50	0	18.5	17.49	0.735	0.927	
			20175	1732.5	100	0	18.5	17.61	0.764	0.938	
Rear	0	QPSK	20050	1720	1	0	18.5	17.63			
			20175	1732.5	1	0	18.5	17.73	0.443	0.529	
			20300	1745	1	0	18.5	17.60			
			20050	1720	50	24	18.5	17.58			
			20175	1732.5	50	0	18.5	17.66	0.437	0.530	
			20300	1745	50	0	18.5	17.49			
			20175	1732.5	100	0	18.5	17.61			
Rear tilt (Edge4 side)	0	QPSK	20050	1720	1	0	18.5	17.63	0.664	0.811	
			20175	1732.5	1	0	18.5	17.73	0.676	0.807	
			20300	1745	1	0	18.5	17.60	0.690	0.849	
			20050	1720	50	24	18.5	17.58	0.660	0.816	
			20175	1732.5	50	0	18.5	17.66	0.681	0.826	
			20300	1745	50	0	18.5	17.49	0.694	0.876	
			20175	1732.5	100	0	18.5	17.61	0.696	0.854	

11.6.11 LTE band 5 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	20450	829	1	49	24.0	22.91	0.134	0.172	
			20525	836.5	1	0	24.0	22.89			
			20600	844	1	0	24.0	22.80			
			20450	829	25	24	23.0	22.01	0.110	0.138	
			20525	836.5	25	0	23.0	21.97			
			20600	844	25	12	23.0	21.90			
			20450	829	50	0	23.0	22.00			
Edge 3	0	QPSK	20450	829	1	49	24.0	22.91	0.026	0.033	
			20525	836.5	1	0	24.0	22.89			
			20600	844	1	0	24.0	22.80			
			20450	829	25	24	23.0	22.01	0.034	0.043	
			20525	836.5	25	0	23.0	21.97			
			20600	844	25	12	23.0	21.90			
			20450	829	50	0	23.0	22.00			
Edge 4	19	QPSK	20450	829	1	49	24.0	22.91	0.381	0.490	
			20525	836.5	1	0	24.0	22.89			
			20600	844	1	0	24.0	22.80			
			20450	829	25	24	23.0	22.01	0.327	0.411	
			20525	836.5	25	0	23.0	21.97			
			20600	844	25	12	23.0	21.90			
			20450	829	50	0	23.0	22.00			
Rear	9	QPSK	20450	829	1	49	24.0	22.91	0.374	0.481	
			20525	836.5	1	0	24.0	22.89			
			20600	844	1	0	24.0	22.80			
			20450	829	25	24	23.0	22.01	0.304	0.382	
			20525	836.5	25	0	23.0	21.97			
			20600	844	25	12	23.0	21.90			
			20450	829	50	0	23.0	22.00			
Rear tilt(Edge 1 side)	0	QPSK	20450	829	1	49	24.0	22.91	0.690	0.887	
			20525	836.5	1	0	24.0	22.89	0.708	0.914	
			20600	844	1	0	24.0	22.80	0.728	0.960	
			20450	829	25	24	23.0	22.01	0.566	0.711	
			20525	836.5	25	0	23.0	21.97			
			20600	844	25	12	23.0	21.90			
			20450	829	50	0	23.0	22.00	0.579	0.729	
Rear tilt(Edge 4 side)	9	QPSK	20450	829	1	49	24.0	22.91	0.632	0.812	
			20525	836.5	1	0	24.0	22.89	***0.764***	0.986	
			20600	844	1	0	24.0	22.80	0.750	***0.989***	L5.1
			20450	829	25	24	23.0	22.01	0.497	0.624	
			20525	836.5	25	0	23.0	21.97			
			20600	844	25	12	23.0	21.90			
			20450	829	50	0	23.0	22.00	0.498	0.627	

11.6.12 LTE band 5 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	20450	829	1	0	17.8	16.91	0.690	0.847	
			20525	836.5	1	49	17.8	16.86	0.747	0.928	
			20600	844	1	0	17.8	16.92	0.755	0.925	
			20450	829	25	0	17.8	16.83	0.755	***0.944***	L5.2
			20525	836.5	25	0	17.8	17.00	0.757	0.910	
			20600	844	25	0	17.8	17.01	***0.767***	0.920	
			20600	844	50	0	17.8	16.90	0.654	0.805	
Rear	0	QPSK	20450	829	1	0	17.8	16.91			
			20525	836.5	1	49	17.8	16.86			
			20600	844	1	0	17.8	16.92	0.297	0.364	
			20450	829	25	0	17.8	16.83			
			20525	836.5	25	0	17.8	17.00			
			20600	844	25	0	17.8	17.01	0.301	0.361	
			20600	844	50	0	17.8	16.90			
Rear tilt (Edge4 side)	0	QPSK	20450	829	1	0	17.8	16.91			
			20525	836.5	1	49	17.8	16.86			
			20600	844	1	0	17.8	16.92	0.428	0.524	
			20450	829	25	0	17.8	16.83			
			20525	836.5	25	0	17.8	17.00			
			20600	844	25	0	17.8	17.01	0.426	0.511	
			20600	844	50	0	17.8	16.90			

11.6.13 LTE band 7 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	20850	2510	1	0	23.0	21.94			
			21100	2535	1	0	23.0	21.93			
			21350	2560	1	0	23.0	21.97	0.153	0.194	
			20850	2510	50	0	22.0	20.83			
			21100	2535	50	0	22.0	20.85	0.139	0.181	
			21350	2560	50	0	22.0	20.82			
			21100	2535	100	0	22.0	20.80			
Edge 3	0	QPSK	20850	2510	1	0	23.0	21.94			
			21100	2535	1	0	23.0	21.93			
			21350	2560	1	0	23.0	21.97	0.069	0.087	
			20850	2510	50	0	22.0	20.83			
			21100	2535	50	0	22.0	20.85	0.040	0.052	
			21350	2560	50	0	22.0	20.82			
			21100	2535	100	0	22.0	20.80			
Edge 4	19	QPSK	20850	2510	1	0	23.0	21.94			
			21100	2535	1	0	23.0	21.93			
			21350	2560	1	0	23.0	21.97	0.516	0.654	
			20850	2510	50	0	22.0	20.83			
			21100	2535	50	0	22.0	20.85	0.362	0.472	
			21350	2560	50	0	22.0	20.82			
			21100	2535	100	0	22.0	20.80			
Rear	9	QPSK	20850	2510	1	0	23.0	21.94			
			21100	2535	1	0	23.0	21.93			
			21350	2560	1	0	23.0	21.97	0.478	0.606	
			20850	2510	50	0	22.0	20.83			
			21100	2535	50	0	22.0	20.85	0.341	0.444	
			21350	2560	50	0	22.0	20.82			
			21100	2535	100	0	22.0	20.80			
Rear tilt(Edge 1 side)	0	QPSK	20850	2510	1	0	23.0	21.94			
			21100	2535	1	0	23.0	21.93			
			21350	2560	1	0	23.0	21.97	***0.564***	***0.715***	L7.1
			20850	2510	50	0	22.0	20.83			
			21100	2535	50	0	22.0	20.85	0.410	0.534	
			21350	2560	50	0	22.0	20.82			
			21100	2535	100	0	22.0	20.80			
Rear tilt(Edge 4 side)	9	QPSK	20850	2510	1	0	23.0	21.94			
			21100	2535	1	0	23.0	21.93			
			21350	2560	1	0	23.0	21.97	0.543	0.688	
			20850	2510	50	0	22.0	20.83			
			21100	2535	50	0	22.0	20.85	0.378	0.493	
			21350	2560	50	0	22.0	20.82			
			21100	2535	100	0	22.0	20.80			

11.6.14 LTE band 7 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	20850	2510	1	0	17.0	16.36	***0.641***	0.743	
			21100	2535	1	0	17.0	16.33			
			21350	2560	1	0	17.0	16.24			
			20850	2510	50	0	17.0	16.22	0.639	***0.765***	L7.2
			21100	2535	50	0	17.0	16.18			
			21350	2560	50	0	17.0	16.18			
			20850	2510	100	0	17.0	16.10			
Rear	0	QPSK	20850	2510	1	0	17.0	16.36	0.295	0.342	
			21100	2535	1	0	17.0	16.33			
			21350	2560	1	0	17.0	16.24			
			20850	2510	50	0	17.0	16.22	0.293	0.351	
			21100	2535	50	0	17.0	16.18			
			21350	2560	50	0	17.0	16.18			
			20850	2510	100	0	17.0	16.10			
Rear tilt (Edge4 side)	0	QPSK	20850	2510	1	0	17.0	16.36	0.385	0.446	
			21100	2535	1	0	17.0	16.33			
			21350	2560	1	0	17.0	16.24			
			20850	2510	50	0	17.0	16.22	0.383	0.458	
			21100	2535	50	0	17.0	16.18			
			21350	2560	50	0	17.0	16.18			
			20850	2510	100	0	17.0	16.10			

11.6.15 LTE band 12 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	23060	704	1	24	24.0	22.78			
			23095	707.5	1	24	24.0	22.75			
			23130	711	1	49	24.0	22.79	0.141	0.186	
			23060	704	25	12	23.0	21.89	0.106	0.137	
			23095	707.5	25	0	23.0	21.86			
			23130	711	25	0	23.0	21.79			
			23060	704	50	0	23.0	21.87			
Edge 3	0	QPSK	23060	704	1	24	24.0	22.78			
			23095	707.5	1	24	24.0	22.75			
			23130	711	1	49	24.0	22.79	0.012	0.015	
			23060	704	25	12	23.0	21.89	0.005	0.007	
			23095	707.5	25	0	23.0	21.86			
			23130	711	25	0	23.0	21.79			
			23060	704	50	0	23.0	21.87			
Edge 4	19	QPSK	23060	704	1	24	24.0	22.78			
			23095	707.5	1	24	24.0	22.75			
			23130	711	1	49	24.0	22.79	0.134	0.177	
			23060	704	25	12	23.0	21.89	0.108	0.139	
			23095	707.5	25	0	23.0	21.86			
			23130	711	25	0	23.0	21.79			
			23060	704	50	0	23.0	21.87			
Rear	9	QPSK	23060	704	1	24	24.0	22.78			
			23095	707.5	1	24	24.0	22.75			
			23130	711	1	49	24.0	22.79	0.229	0.303	
			23060	704	25	12	23.0	21.89	0.173	0.223	
			23095	707.5	25	0	23.0	21.86			
			23130	711	25	0	23.0	21.79			
			23060	704	50	0	23.0	21.87			
Rear tilt(Edge 1 side)	0	QPSK	23060	704	1	24	24.0	22.78			
			23095	707.5	1	24	24.0	22.75			
			23130	711	1	49	24.0	22.79	0.321	0.424	
			23060	704	25	12	23.0	21.89	0.247	0.319	
			23095	707.5	25	0	23.0	21.86			
			23130	711	25	0	23.0	21.79			
			23060	704	50	0	23.0	21.87			
Rear tilt(Edge 4 side)	9	QPSK	23060	704	1	24	24.0	22.78			
			23095	707.5	1	24	24.0	22.75			
			23130	711	1	49	24.0	22.79	***0.338***	***0.447***	L12.1
			23060	704	25	12	23.0	21.89	0.260	0.336	
			23095	707.5	25	0	23.0	21.86			
			23130	711	25	0	23.0	21.79			
			23060	704	50	0	23.0	21.87			

11.6.16 LTE band 12 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	23060	704	1	24	19.4	18.61	0.832	0.998	
			23095	707.5	1	0	19.4	18.63	0.824	0.984	
			23130	711	1	0	19.4	18.49	0.822	1.014	
			23060	704	25	12	19.4	18.64	0.858	1.022	
			23095	707.5	25	0	19.4	18.62	0.864	1.034	
			23130	711	25	0	19.4	18.41	0.824	1.035	
			23060	704	50	0	19.4	18.60	***0.881***	***1.059***	L12.2
Rear	0	QPSK	23060	704	1	24	19.4	18.61			
			23095	707.5	1	0	19.4	18.63	0.199	0.238	
			23130	711	1	0	19.4	18.49			
			23060	704	25	12	19.4	18.64	0.201	0.239	
			23095	707.5	25	0	19.4	18.62			
			23130	711	25	0	19.4	18.41			
			23060	704	50	0	19.4	18.60			
Rear tilt (Edge4 side)	0	QPSK	23060	704	1	24	19.4	18.61			
			23095	707.5	1	0	19.4	18.63	0.369	0.441	
			23130	711	1	0	19.4	18.49			
			23060	704	25	12	19.4	18.64	0.379	0.451	
			23095	707.5	25	0	19.4	18.62			
			23130	711	25	0	19.4	18.41			
			23060	704	50	0	19.4	18.60			

11.6.17 LTE band 13 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	23230	782	1	0	24.0	22.70	0.190	0.256	
			23230	782	25	24	23.0	21.81	0.154	0.203	
			23230	782	50	0	23.0	21.80			
Edge 3	0	QPSK	23230	782	1	0	24.0	22.70	0.040	0.054	
			23230	782	25	24	23.0	21.81	0.041	0.054	
			23230	782	50	0	23.0	21.80			
Edge 4	19	QPSK	23230	782	1	0	24.0	22.70	0.298	0.402	
			23230	782	25	24	23.0	21.81	0.245	0.322	
			23230	782	50	0	23.0	21.80			
Rear	9	QPSK	23230	782	1	0	24.0	22.70	0.352	0.475	
			23230	782	25	24	23.0	21.81	0.301	0.396	
			23230	782	50	0	23.0	21.80			
Rear tilt(Edge 1 side)	0	QPSK	23230	782	1	0	24.0	22.70	0.478	0.645	
			23230	782	25	24	23.0	21.81	0.403	0.530	
			23230	782	50	0	23.0	21.80			
Rear tilt(Edge 4 side)	9	QPSK	23230	782	1	0	24.0	22.70	***0.555***	***0.749***	L13.1
			23230	782	25	24	23.0	21.81	0.477	0.627	
			23230	782	50	0	23.0	21.80			

11.6.18 LTE band 13 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	23230	782	1	0	19.1	18.37	1.010	***1.195***	L13.2
			23230	782	25	0	19.1	18.54	***1.040***	1.183	
			23230	782	50	0	19.1	18.51	1.010	1.157	
Rear	0	QPSK	23230	782	1	0	19.1	18.37	0.315	0.373	
			23230	782	25	0	19.1	18.54	0.327	0.372	
			23230	782	50	0	19.1	18.51			
Rear tilt (Edge4 side)	0	QPSK	23230	782	1	0	19.1	18.37	0.534	0.632	
			23230	782	25	0	19.1	18.54	0.551	0.627	
			23230	782	50	0	19.1	18.51			

11.6.19 LTE band 14 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	23330	793	1	0	24.0	22.70	0.216	0.291	
			23330	793	25	24	23.0	21.81	0.156	0.205	
			23330	793	50	0	23.0	21.80			
Edge 3	0	QPSK	23330	793	1	0	24.0	22.70	0.042	0.056	
			23330	793	25	24	23.0	21.81	0.042	0.055	
			23330	793	50	0	23.0	21.80			
Edge 4	19	QPSK	23330	793	1	0	24.0	22.70	0.332	0.448	
			23330	793	25	24	23.0	21.81	0.280	0.368	
			23330	793	50	0	23.0	21.80			
Rear	9	QPSK	23330	793	1	0	24.0	22.70	0.398	0.537	
			23330	793	25	24	23.0	21.81	0.322	0.424	
			23330	793	50	0	23.0	21.80			
Rear tilt(Edge 1 side)	0	QPSK	23330	793	1	0	24.0	22.70	0.540	0.728	
			23330	793	25	24	23.0	21.81	0.454	0.597	
			23330	793	50	0	23.0	21.80			
Rear tilt(Edge 4 side)	9	QPSK	23330	793	1	0	24.0	22.70	***0.614***	***0.828***	L14.1
			23330	793	25	24	23.0	21.81	0.520	0.684	
			23330	793	50	0	23.0	21.80	0.513	0.676	

11.6.20 LTE band 14 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	23330	793	1	0	18.4	17.58	0.822	0.993	
			23330	793	25	12	18.4	17.56	***0.833***	***1.011***	L14.2
			23330	793	50	0	18.4	17.55	0.824	1.002	
Rear	0	QPSK	23330	793	1	0	18.4	17.58	0.280	0.338	
			23330	793	25	12	18.4	17.56	0.290	0.352	
			23330	793	50	0	18.4	17.55			
Rear tilt (Edge4 side)	0	QPSK	23330	793	1	0	18.4	17.58	0.446	0.539	
			23330	793	25	12	18.4	17.56	0.475	0.576	
			23330	793	50	0	18.4	17.55			

11.6.21 LTE band 26 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	26765	821.5	1	37	24.0	22.90			
			26865	831.5	1	37	24.0	22.97	0.136	0.172	
			26965	841.5	1	0	24.0	22.92			
			26765	821.5	36	19	23.0	21.82			
			26865	831.5	36	19	23.0	21.98	0.114	0.144	
			26965	841.5	36	0	23.0	21.91			
			26865	831.5	75	0	23.0	21.97			
Edge 3	0	QPSK	26765	821.5	1	37	24.0	22.90			
			26865	831.5	1	37	24.0	22.97	0.008	0.010	
			26965	841.5	1	0	24.0	22.92			
			26765	821.5	36	19	23.0	21.82			
			26865	831.5	36	19	23.0	21.98	0.007	0.009	
			26965	841.5	36	0	23.0	21.91			
			26865	831.5	75	0	23.0	21.97			
Edge 4	19	QPSK	26765	821.5	1	37	24.0	22.90			
			26865	831.5	1	37	24.0	22.97	0.405	0.513	
			26965	841.5	1	0	24.0	22.92			
			26765	821.5	36	19	23.0	21.82			
			26865	831.5	36	19	23.0	21.98	0.337	0.426	
			26965	841.5	36	0	23.0	21.91			
			26865	831.5	75	0	23.0	21.97			
Rear	9	QPSK	26765	821.5	1	37	24.0	22.90			
			26865	831.5	1	37	24.0	22.97	0.389	0.493	
			26965	841.5	1	0	24.0	22.92			
			26765	821.5	36	19	23.0	21.82			
			26865	831.5	36	19	23.0	21.98	0.317	0.401	
			26965	841.5	36	0	23.0	21.91			
			26865	831.5	75	0	23.0	21.97			
Rear tilt(Edge 1 side)	0	QPSK	26765	821.5	1	37	24.0	22.90			
			26865	831.5	1	37	24.0	22.97	0.606	0.768	
			26965	841.5	1	0	24.0	22.92			
			26765	821.5	36	19	23.0	21.82			
			26865	831.5	36	19	23.0	21.98	0.491	0.621	
			26965	841.5	36	0	23.0	21.91			
			26865	831.5	75	0	23.0	21.97			
Rear tilt(Edge 4 side)	9	QPSK	26765	821.5	1	37	24.0	22.90			
			26865	831.5	1	37	24.0	22.97	***0.622***	***0.788***	L26.1
			26965	841.5	1	0	24.0	22.92			
			26765	821.5	36	19	23.0	21.82			
			26865	831.5	36	19	23.0	21.98	0.493	0.624	
			26965	841.5	36	0	23.0	21.91			
			26865	831.5	75	0	23.0	21.97			

11.6.22 LTE band 26 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	26765	821.5	1	0	18.1	17.26	0.691	0.838	
			26865	831.5	1	0	18.1	17.31	0.721	0.865	
			26965	841.5	1	0	18.1	17.20	0.732	0.901	
			26765	821.5	36	19	18.1	17.24	0.712	0.868	
			26865	831.5	36	19	18.1	17.29	***0.739***	0.891	
			26965	841.5	36	19	18.1	17.24	0.734	0.895	
			26965	841.5	75	0	18.1	17.17	0.735	***0.911***	L26.2
Rear	0	QPSK	26765	821.5	1	0	18.1	17.26			
			26865	831.5	1	0	18.1	17.31	0.312	0.374	
			26965	841.5	1	0	18.1	17.20			
			26765	821.5	36	19	18.1	17.24			
			26865	831.5	36	19	18.1	17.29	0.312	0.376	
			26965	841.5	36	19	18.1	17.24			
			26965	841.5	75	0	18.1	17.17			
Rear tilt (Edge4 side)	0	QPSK	26765	821.5	1	0	18.1	17.26			
			26865	831.5	1	0	18.1	17.31	0.444	0.533	
			26965	841.5	1	0	18.1	17.20			
			26765	821.5	36	19	18.1	17.24			
			26865	831.5	36	19	18.1	17.29	0.448	0.540	
			26965	841.5	36	19	18.1	17.24			
			26965	841.5	75	0	18.1	17.17			

11.6.23 LTE band 41 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up limit	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	39750	2506	1	0	23.0	21.69			
			40185	2549.5	1	0	23.0	21.78			
			40620	2593	1	0	23.0	21.71			
			41055	2636.5	1	0	23.0	21.73			
			41490	2680	1	0	23.0	21.93	0.035	0.045	
			39750	2506	50	0	22.0	20.78			
			40185	2549.5	50	0	22.0	20.78			
			40620	2593	50	24	22.0	20.74			
			41055	2636.5	50	0	22.0	20.89	0.029	0.037	
			41490	2680	50	0	22.0	20.84			
			41055	2636.5	100	0	22.0	20.88			
Edge 3	0	QPSK	39750	2506	1	0	23.0	21.69			
			40185	2549.5	1	0	23.0	21.78			
			40620	2593	1	0	23.0	21.71			
			41055	2636.5	1	0	23.0	21.73			
			41490	2680	1	0	23.0	21.93	0.023	0.029	
			39750	2506	50	0	22.0	20.78			
			40185	2549.5	50	0	22.0	20.78			
			40620	2593	50	24	22.0	20.74			
			41055	2636.5	50	0	22.0	20.89	0.028	0.036	
			41490	2680	50	0	22.0	20.84			
			41055	2636.5	100	0	22.0	20.88			
Edge 4	19	QPSK	39750	2506	1	0	23.0	21.69			
			40185	2549.5	1	0	23.0	21.78			
			40620	2593	1	0	23.0	21.71			
			41055	2636.5	1	0	23.0	21.73			
			41490	2680	1	0	23.0	21.93	0.347	0.444	
			39750	2506	50	0	22.0	20.78			
			40185	2549.5	50	0	22.0	20.78			
			40620	2593	50	24	22.0	20.74			
			41055	2636.5	50	0	22.0	20.89	0.325	0.420	
			41490	2680	50	0	22.0	20.84			
			41055	2636.5	100	0	22.0	20.88			
Rear	9	QPSK	39750	2506	1	0	23.0	21.69			
			40185	2549.5	1	0	23.0	21.78			
			40620	2593	1	0	23.0	21.71			
			41055	2636.5	1	0	23.0	21.73			
			41490	2680	1	0	23.0	21.93	0.265	0.339	
			39750	2506	50	0	22.0	20.78			
			40185	2549.5	50	0	22.0	20.78			
			40620	2593	50	24	22.0	20.74			
			41055	2636.5	50	0	22.0	20.89	0.242	0.312	
			41490	2680	50	0	22.0	20.84			
			41055	2636.5	100	0	22.0	20.88			
Rear tilt(Edge1 side)	0	QPSK	39750	2506	1	0	23.0	21.69			
			40185	2549.5	1	0	23.0	21.78			
			40620	2593	1	0	23.0	21.71			
			41055	2636.5	1	0	23.0	21.73			
			41490	2680	1	0	23.0	21.93	0.319	0.408	
			39750	2506	50	0	22.0	20.78			
			40185	2549.5	50	0	22.0	20.78			
			40620	2593	50	24	22.0	20.74			
			41055	2636.5	50	0	22.0	20.89	0.279	0.360	
			41490	2680	50	0	22.0	20.84			
			41055	2636.5	100	0	22.0	20.88			
Rear tilt(Edge4 side)	9	QPSK	39750	2506	1	0	23.0	21.69			
			40185	2549.5	1	0	23.0	21.78			
			40620	2593	1	0	23.0	21.71			
			41055	2636.5	1	0	23.0	21.73			
			41490	2680	1	0	23.0	21.93	***0.410***	***0.525***	L41.1
			39750	2506	50	0	22.0	20.78			
			40185	2549.5	50	0	22.0	20.78			
			40620	2593	50	24	22.0	20.74			
			41055	2636.5	50	0	22.0	20.89	0.349	0.451	
			41490	2680	50	0	22.0	20.84			
			41055	2636.5	100	0	22.0	20.88			

11.6.24 LTE band 41 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up limit	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	39750	2506	1	0	19.5	18.49	0.641	0.809	
			40185	2549.5	1	0	19.5	18.54	0.707	0.882	
			40620	2593	1	0	19.5	18.49	0.731	0.922	
			41055	2636.5	1	0	19.5	18.53	***0.766***	***0.958***	L41.2
			41490	2680	1	0	19.5	18.79	0.718	0.846	
			39750	2506	50	0	19.5	18.64	0.642	0.783	
			40185	2549.5	50	0	19.5	18.61	0.711	0.873	
			40620	2593	50	0	19.5	18.57	0.708	0.877	
			41055	2636.5	50	0	19.5	18.69	0.758	0.913	
			41490	2680	50	0	19.5	18.71	0.702	0.842	
			41055	2636.5	100	0	19.5	18.67	0.742	0.898	
Rear	0	QPSK	39750	2506	1	0	19.5	18.49			
			40185	2549.5	1	0	19.5	18.54			
			40620	2593	1	0	19.5	18.49			
			41055	2636.5	1	0	19.5	18.53			
			41490	2680	1	0	19.5	18.79	0.329	0.387	
			39750	2506	50	0	19.5	18.64			
			40185	2549.5	50	0	19.5	18.61			
			40620	2593	50	0	19.5	18.57			
			41055	2636.5	50	0	19.5	18.69			
			41490	2680	50	0	19.5	18.71	0.318	0.381	
			41055	2636.5	100	0	19.5	18.67			
Rear tilt(Edge4 side)	0	QPSK	39750	2506	1	0	19.5	18.49			
			40185	2549.5	1	0	19.5	18.54			
			40620	2593	1	0	19.5	18.49			
			41055	2636.5	1	0	19.5	18.53			
			41490	2680	1	0	19.5	18.79	0.436	0.513	
			39750	2506	50	0	19.5	18.64			
			40185	2549.5	50	0	19.5	18.61			
			40620	2593	50	0	19.5	18.57			
			41055	2636.5	50	0	19.5	18.69			
			41490	2680	50	0	19.5	18.71	0.430	0.516	
			41055	2636.5	100	0	19.5	18.67			

11.6.25 LTE band 48 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up limit	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	55340	3560	1	0	20.0	18.84	0.044	0.057	
			55773	3603.3	1	0	20.0	18.59			
			56207	3646.7	1	0	20.0	18.61			
			56640	3690	1	0	20.0	18.65			
			55340	3560	50	0	17.0	15.81	0.019	0.025	
			55773	3603.3	50	0	17.0	15.70			
			56207	3646.7	50	0	17.0	15.63			
			56640	3690	50	0	17.0	15.45			
			55340	3560	100	0	17.0	15.66			
Edge 3	0	QPSK	55340	3560	1	0	20.0	18.84	0.042	0.055	
			55773	3603.3	1	0	20.0	18.59			
			56207	3646.7	1	0	20.0	18.61			
			56640	3690	1	0	20.0	18.65			
			55340	3560	50	0	17.0	15.81	0.017	0.022	
			55773	3603.3	50	0	17.0	15.70			
			56207	3646.7	50	0	17.0	15.63			
			56640	3690	50	0	17.0	15.45			
			55340	3560	100	0	17.0	15.66			
Edge 4	19	QPSK	55340	3560	1	0	20.0	18.84	***0.450***	***0.588***	L48.1
			55773	3603.3	1	0	20.0	18.59			
			56207	3646.7	1	0	20.0	18.61			
			56640	3690	1	0	20.0	18.65			
			55340	3560	50	0	17.0	15.81	0.217	0.285	
			55773	3603.3	50	0	17.0	15.70			
			56207	3646.7	50	0	17.0	15.63			
			56640	3690	50	0	17.0	15.45			
			55340	3560	100	0	17.0	15.66			
Rear	9	QPSK	55340	3560	1	0	20.0	18.84	0.213	0.278	
			55773	3603.3	1	0	20.0	18.59			
			56207	3646.7	1	0	20.0	18.61			
			56640	3690	1	0	20.0	18.65			
			55340	3560	50	0	17.0	15.81	0.103	0.135	
			55773	3603.3	50	0	17.0	15.70			
			56207	3646.7	50	0	17.0	15.63			
			56640	3690	50	0	17.0	15.45			
			55340	3560	100	0	17.0	15.66			
Rear tilt(Edge 1 side)	0	QPSK	55340	3560	1	0	20.0	18.84	0.257	0.336	
			55773	3603.3	1	0	20.0	18.59			
			56207	3646.7	1	0	20.0	18.61			
			56640	3690	1	0	20.0	18.65			
			55340	3560	50	0	17.0	15.81	0.124	0.163	
			55773	3603.3	50	0	17.0	15.70			
			56207	3646.7	50	0	17.0	15.63			
			56640	3690	50	0	17.0	15.45			
			55340	3560	100	0	17.0	15.66			
Rear tilt(Edge 4 side)	9	QPSK	55340	3560	1	0	20.0	18.84	0.294	0.384	
			55773	3603.3	1	0	20.0	18.59			
			56207	3646.7	1	0	20.0	18.61			
			56640	3690	1	0	20.0	18.65			
			55340	3560	50	0	17.0	15.81	0.137	0.180	
			55773	3603.3	50	0	17.0	15.70			
			56207	3646.7	50	0	17.0	15.63			
			56640	3690	50	0	17.0	15.45			
			55340	3560	100	0	17.0	15.66			

11.6.26 LTE band 48 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up limit	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	55340	3560	1	0	12.0	11.50			
			55773	3603.3	1	0	12.0	11.62			
			56207	3646.7	1	0	12.0	11.60			
			56640	3690	1	0	12.0	11.69	0.712	0.765	
			55340	3560	50	0	12.0	11.48	0.670	0.755	
			55773	3603.3	50	0	12.0	11.48	0.704	0.794	
			56207	3646.7	50	0	12.0	11.68	***0.779***	***0.839***	L48.2
			56640	3690	50	0	12.0	11.54	0.721	0.802	
			56207	3646.7	100	0	12.0	11.63	0.737	0.803	
Rear	0	QPSK	55340	3560	1	0	12.0	11.50			
			55773	3603.3	1	0	12.0	11.62			
			56207	3646.7	1	0	12.0	11.60			
			56640	3690	1	0	12.0	11.69	0.067	0.072	
			55340	3560	50	0	12.0	11.48			
			55773	3603.3	50	0	12.0	11.48			
			56207	3646.7	50	0	12.0	11.68	0.073	0.079	
			56640	3690	50	0	12.0	11.54			
			56207	3646.7	100	0	12.0	11.63			
Rear tilt(Edge4 side)	0	QPSK	55340	3560	1	0	12.0	11.50			
			55773	3603.3	1	0	12.0	11.62			
			56207	3646.7	1	0	12.0	11.60			
			56640	3690	1	0	12.0	11.69	0.142	0.153	
			55340	3560	50	0	12.0	11.48			
			55773	3603.3	50	0	12.0	11.48			
			56207	3646.7	50	0	12.0	11.68	0.162	0.174	
			56640	3690	50	0	12.0	11.54			
			56207	3646.7	100	0	12.0	11.63			

11.6.27 LTE band 66 full power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 1	0	QPSK	132072	1720	1	0	24.0	22.92			
			132322	1745	1	0	24.0	23.02	0.302	0.378	
			132572	1770	1	0	24.0	22.87			
			132072	1720	50	49	23.0	21.89	0.264	0.341	
			132322	1745	50	0	23.0	21.86			
			132572	1770	50	0	23.0	21.83			
			132322	1745	100	0	23.0	21.86			
Edge 3	0	QPSK	132072	1720	1	0	24.0	22.92			
			132322	1745	1	0	24.0	23.02	0.249	0.312	
			132572	1770	1	0	24.0	22.87			
			132072	1720	50	49	23.0	21.89	0.178	0.230	
			132322	1745	50	0	23.0	21.86			
			132572	1770	50	0	23.0	21.83			
			132322	1745	100	0	23.0	21.86			
Edge 4	19	QPSK	132072	1720	1	0	24.0	22.92	0.773	0.991	
			132322	1745	1	0	24.0	23.02	0.796	0.998	
			132572	1770	1	0	24.0	22.87	0.696	0.903	
			132072	1720	50	49	23.0	21.89	0.618	0.798	
			132322	1745	50	0	23.0	21.86			
			132572	1770	50	0	23.0	21.83			
			132322	1745	100	0	23.0	21.86	0.591	0.768	
Rear	9	QPSK	132072	1720	1	0	24.0	22.92			
			132322	1745	1	0	24.0	23.02	0.524	0.657	
			132572	1770	1	0	24.0	22.87			
			132072	1720	50	49	23.0	21.89	0.405	0.523	
			132322	1745	50	0	23.0	21.86			
			132572	1770	50	0	23.0	21.83			
			132322	1745	100	0	23.0	21.86			
Rear tilt(Edge 1 side)	0	QPSK	132072	1720	1	0	24.0	22.92	0.797	1.022	
			132322	1745	1	0	24.0	23.02	0.795	0.996	
			132572	1770	1	0	24.0	22.87	0.750	0.973	
			132072	1720	50	49	23.0	21.89	0.596	0.770	
			132322	1745	50	0	23.0	21.86			
			132572	1770	50	0	23.0	21.83			
			132322	1745	100	0	23.0	21.86	0.600	0.780	
Rear tilt(Edge 4 side)	9	QPSK	132072	1720	1	0	24.0	22.92	0.856	***1.098***	L66.1
			132322	1745	1	0	24.0	23.02	***0.859***	1.076	
			132572	1770	1	0	24.0	22.87	0.771	1.000	
			132072	1720	50	49	23.0	21.89	0.664	0.857	
			132322	1745	50	0	23.0	21.86	0.645	0.839	
			132572	1770	50	0	23.0	21.83	0.592	0.775	
			132322	1745	100	0	23.0	21.86	0.641	0.833	

11.6.28 LTE band 66 reduction power

Test Position	Dist. (mm)	Modu-lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Scaled	Plot No.
Edge 4	0	QPSK	132072	1720	1	0	17.9	17.12	***0.684***	***0.819***	L66.2
			132322	1745	1	0	17.9	17.23	0.653	0.762	
			132572	1770	1	0	17.9	17.16	0.623	0.739	
			132072	1720	50	0	17.9	17.05	0.667	0.811	
			132322	1745	50	0	17.9	17.06	0.651	0.790	
			132572	1770	50	24	17.9	17.01	0.626	0.768	
			132322	1745	100	0	17.9	16.99	0.636	0.784	
Rear	0	QPSK	132072	1720	1	0	17.9	17.12			
			132322	1745	1	0	17.9	17.23	0.392	0.457	
			132572	1770	1	0	17.9	17.16			
			132072	1720	50	0	17.9	17.05			
			132322	1745	50	0	17.9	17.06	0.385	0.467	
			132572	1770	50	24	17.9	17.01			
			132322	1745	100	0	17.9	16.99			
Rear tilt (Edge4 side)	0	QPSK	132072	1720	1	0	17.9	17.12			
			132322	1745	1	0	17.9	17.23	0.598	0.698	
			132572	1770	1	0	17.9	17.16			
			132072	1720	50	0	17.9	17.05			
			132322	1745	50	0	17.9	17.06	0.613	0.744	
			132572	1770	50	24	17.9	17.01			
			132322	1745	100	0	17.9	16.99			

11.7 Repeated measurement

According to KDB 865664 D1.
1) Repeated measurement is not required when the original highest measured SAR is < 0.80 W/kg; steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.80 W/kg, repeat that measurement once.
3) Perform a second repeated measurement only if the ratio of largest to smallest SAR for the original and first repeated measurements is > 1.20 or when the original or repeated measurement is ≥ 1.45 W/kg (~ 10 % from the 1-g SAR limit).
4) Perform a third repeated measurement only if the original, first or second repeated measurement is ≥ 1.5 W/kg and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Mode	RAT	Band	Test Position	Dist (mm)	Modu lation	UL CH #	Freq. (MHz)	UL RB Allocation	UL RB Start	Power (dBm) Tune-up limit	Power (dBm) Meas. Avg	1-g SAR (W/kg) Meas.	1-g SAR (W/kg) Repeat Meas.	Ratio	Plot
Red	WCDMA	2	Edge4	0	RMC	9262	1852.4	NA	NA	18.7	17.93	0.896	0.875	0.977	RP 1
Full	WCDMA	4	Rear tilt(Edge 4 side)	9	RMC	1513	1752.6	NA	NA	24.0	22.87	0.890	0.866	0.973	RP 2
Red	WCDMA	5	Edge4	0	RMC	4233	846.6	NA	NA	18.3	17.97	0.878	0.843	0.960	RP 3
Full	LTE	4	Rear tilt(Edge 4 side)	9	QPSK	20050	1720.0	1	0	24.0	22.94	0.861	0.853	0.991	RP 4
Red	LTE	12	Edge 4	0	QPSK	23060	704.0	50	0	19.4	18.60	0.881	0.872	0.990	RP 5
Red	LTE	13	Edge 4	0	QPSK	23230	782.0	25	0	19.1	18.37	1.040	1.020	0.981	RP 6
Red	LTE	14	Edge 4	0	QPSK	23330	793.0	25	12	18.4	17.56	0.833	0.793	0.952	RP 7
Full	LTE	66	Rear tilt(Edge 4 side)	9	QPSK	132322	1745.0	1	0	24.0	23.02	0.859	0.842	0.980	RP 8

Note(s):
N/A: Other repeated measurement is not required since the original highest measured SAR for all band is < 0.80 W/kg.

12 WLAN additional testing for simultaneous measurement

12.1.1 Additional testing (WLAN 6E) for simultaneous transmission

Test Position	Dist. (mm)	Mode	Ant	Ch #.	Freq. (MHz)	Power (dBm)		PD total			PD normal			Plot No.
						Tune-up limit	Meas.	Meas. (W/m^2)	Meas. (mW/cm^2)	Scaled (mW/cm^2)	Meas. (W/m^2)	Meas. (mW/cm^2)	Scaled (mW/cm^2)	
Rear tilt edge1 side	2	802.11 ax HE0 160 MHz	main	207	6985.0	11.75	11.69	0.953	0.095	***0.097***	0.506	0.051	***0.051***	PD.6EM

Note: Edge1, Rear, Rear tilt edge1 result and tested mode and channels are based on original test report (FCCID: ACJ9TGWL22A / report num: R14206457-S1V3 published by UL LLC

Power data is from APD test report (ISED ID 216H-CFWL22A / report num 14633755H-B published by UL Japan)

13 Simultaneous transmission SAR / TER test exclusion considerations

13.1 Quotation from other report(s)

FCC	ID	Report No by UL LLC	Report No by UL Japan	Note
BT	ACJ9TGWL22A	R14206457-S1V3 Edge1 Rear tilt edge1 Rear		Not measured surface is applied highest SAR value
WLAN (other than 6E)	ACJ9TGWL22A	R14206457-S1V3 Edge1 Edge4 Rear tilt edge1 Rear tilt edge4 Rear	14367173H-B-R1 Edge2 Edge3	
WLAN (6E)	ACJ9TGWL22A	R14206457-S5V3 Edge1(main ant) Rear tilt edge1(aux)	14367173H-B-R1 Edge2 Edge3 Edge4 Rear tilt(Edge4)	Not measured surface is applied highest PD value Rear tilt edge1(main) is measured in this report.

13.2 Sum and SPLSR

KDB 447498 D01 General RF Exposure Guidance provides two procedures for determining simultaneous transmission SAR test exclusion: Sum of SAR and SAR to Peak Location Ratio (SPLSR)

Sum of SAR

To qualify for simultaneous transmission SAR test exclusion based on sum of SAR, the sum of the reported standalone SARs for all simultaneously transmitting antennas shall be below the applicable standalone SAR limit. If the sum of the SARs is above the applicable limit, then simultaneous transmission SAR test exclusion may still apply if the requirements of the SAR to Peak Location Ratio (SPLSR) evaluation are met. When a pair of the summation is above 1.58 W/kg for 1g SAR, then SAR to Peak Location Ratio (SPLSR) is performed, as conservative even though applicable limit is 1.6 W/kg.

SAR to Peak Location Ratio (SPLSR)

KDB 447498 D01 General RF Exposure Guidance explains how to calculate the SAR to Peak Location Ratio (SPLSR) between pairs of simultaneously transmitting antennas:

$$SPLSR = (SAR_1 + SAR_2)^{1.5} / Ri$$

Where:

SAR_1 is the highest reported or estimated SAR for the first of a pair of simultaneous transmitting antennas, in a specific test operating mode and exposure condition

SAR_2 is the highest reported or estimated SAR for the second of a pair of simultaneous transmitting antennas, in the same test operating mode and exposure condition as the first

Ri is the separation distance between the pair of simultaneous transmitting antennas. When the SAR is measured, for both antennas in the pair, it is determined by the actual x, y and z coordinates in the 1-g SAR for each SAR peak location, based on the extrapolated and interpolated result in the zoom scan measurement, using the formula of

$$[(x_1-x_2)^2 + (y_1-y_2)^2 + (z_1-z_2)^2]$$

In order for a pair of simultaneous transmitting antennas with the sum of 1-g SAR > 1.6 W/kg to qualify for exemption from Simultaneous Transmission SAR measurements, it has to satisfy the condition of:

$$(SAR_1 + SAR_2)^{1.5} / Ri \leq 0.04$$

When an individual antenna transmits at on two bands simultaneously, the sum of the highest *reported* SAR for the frequency bands should be used to determine SAR_1.or SAR_2. When SPLSR is necessary, the smallest distance between the peak SAR locations for the antenna pair with respect to the peaks from each antenna should be used.

The antennas in all antenna pairs that do not qualify for simultaneous transmission SAR test exclusion must be tested for SAR compliance, according to the enlarged zoom scan and volume scan post-processing procedures in KDB Publication 865664 D01

13.2.1 Sum of the SAR

WCDMA

Sum of the SAR for WCDMA B2 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	WCDMA B2	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.313	0.422	0.268	0.553	0.201	0.020	1.003	0.755	1.067	0.886
Edge3	0.158	0.000	0.000	0.000	0.000	0.138	0.158	0.296	0.158	0.296
Edge4	0.654	0.035	0.010	0.034	0.010	0.138	0.699	0.827	0.698	0.826
Edge4 Reduction	1.070	0.035	0.010	0.034	0.010	0.138	1.115	1.243	1.114	1.242
Rear	0.610	0.075	0.681	0.211	0.562	0.086	1.366	0.771	1.383	0.907
Rear Reduction	0.490	0.075	0.681	0.211	0.562	0.086	1.246	0.651	1.263	0.787
Rear tilt (Edge 1 side)	0.797	0.151	0.925	0.355	0.854	0.138	1.873	1.086	2.006	1.290
Rear tilt (Edge 4 side)	0.877	0.029	0.011	0.155	0.041	0.138	0.917	1.044	1.073	1.170
Rear tilt (Edge 4 side) Reduction	1.020	0.029	0.011	0.155	0.041	0.138	1.060	1.187	1.216	1.313

Sum of the SAR for WCDMA B4 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	WCDMA B4	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.308	0.422	0.268	0.553	0.201	0.020	0.998	0.750	1.062	0.881
Edge3	0.333	0.000	0.000	0.000	0.000	0.138	0.333	0.471	0.333	0.471
Edge4	1.119	0.035	0.010	0.034	0.010	0.138	1.164	1.292	1.163	1.291
Edge4 Reduction	0.907	0.035	0.010	0.034	0.010	0.138	0.952	1.080	0.951	1.079
Rear	0.735	0.075	0.681	0.211	0.562	0.086	1.491	0.896	1.508	1.032
Rear Reduction	0.443	0.075	0.681	0.211	0.562	0.086	1.199	0.604	1.216	0.740
Rear tilt (Edge 1 side)	0.871	0.151	0.925	0.355	0.854	0.138	1.947	1.160	2.080	1.364
Rear tilt (Edge 4 side)	1.154	0.029	0.011	0.155	0.041	0.138	1.194	1.321	1.350	1.447
Rear tilt (Edge 4 side) Reduction	0.743	0.029	0.011	0.155	0.041	0.138	0.783	0.910	0.939	1.036

Sum of the SAR for WCDMA B5 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	WCDMA B5	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.196	0.422	0.268	0.553	0.201	0.020	0.886	0.638	0.950	0.769
Edge3	0.049	0.000	0.000	0.000	0.000	0.138	0.049	0.187	0.049	0.187
Edge4	0.556	0.035	0.010	0.034	0.010	0.138	0.601	0.729	0.600	0.728
Edge4 Reduction	1.029	0.035	0.010	0.034	0.010	0.138	1.074	1.202	1.073	1.201
Rear	0.629	0.075	0.681	0.211	0.562	0.086	1.385	0.790	1.402	0.926
Rear Reduction	0.392	0.075	0.681	0.211	0.562	0.086	1.148	0.553	1.165	0.689
Rear tilt (Edge 1 side)	0.839	0.151	0.925	0.355	0.854	0.138	1.915	1.128	2.048	1.332
Rear tilt (Edge 4 side)	0.817	0.029	0.011	0.155	0.041	0.138	0.857	0.984	1.013	1.110
Rear tilt (Edge 4 side) Reduction	0.521	0.029	0.011	0.155	0.041	0.138	0.561	0.688	0.717	0.814

LTE

Sum of the SAR for LTE B2 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B2	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.256	0.422	0.268	0.553	0.201	0.020	0.946	0.698	1.010	0.829
Edge3	0.175	0.000	0.000	0.000	0.000	0.138	0.175	0.313	0.175	0.313
Edge4	0.704	0.035	0.010	0.034	0.010	0.138	0.749	0.877	0.748	0.876
Edge4 Reduction	0.927	0.035	0.010	0.034	0.010	0.138	0.972	1.100	0.971	1.099
Rear	0.603	0.075	0.681	0.211	0.562	0.086	1.359	0.764	1.376	0.900
Rear Reduction	0.449	0.075	0.681	0.211	0.562	0.086	1.205	0.610	1.222	0.746
Rear tilt (Edge 1 side)	1.016	0.151	0.925	0.355	0.854	0.138	2.092	1.305	2.225	1.509
Rear tilt (Edge 4 side)	0.886	0.029	0.011	0.155	0.041	0.138	0.926	1.053	1.082	1.179
Rear tilt (Edge 4 side) Reduction	0.786	0.029	0.011	0.155	0.041	0.138	0.826	0.953	0.982	1.079

Sum of the SAR for LTE B4 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B4	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.421	0.422	0.268	0.553	0.201	0.020	1.111	0.863	1.175	0.994
Edge3	0.276	0.000	0.000	0.000	0.000	0.138	0.276	0.414	0.276	0.414
Edge4	0.998	0.035	0.010	0.034	0.010	0.138	1.043	1.171	1.042	1.170
Edge4 Reduction	0.976	0.035	0.010	0.034	0.010	0.138	1.021	1.149	1.020	1.148
Rear	0.670	0.075	0.681	0.211	0.562	0.086	1.426	0.831	1.443	0.967
Rear Reduction	0.530	0.075	0.681	0.211	0.562	0.086	1.286	0.691	1.303	0.827
Rear tilt (Edge 1 side)	1.027	0.151	0.925	0.355	0.854	0.138	2.103	1.316	2.236	1.520
Rear tilt (Edge 4 side)	1.099	0.029	0.011	0.155	0.041	0.138	1.139	1.266	1.295	1.392
Rear tilt (Edge 4 side) Reduction	0.876	0.029	0.011	0.155	0.041	0.138	0.916	1.043	1.072	1.169

Sum of the SAR for LTE B5 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B5	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.172	0.422	0.268	0.553	0.201	0.020	0.862	0.614	0.926	0.745
Edge3	0.043	0.000	0.000	0.000	0.000	0.138	0.043	0.181	0.043	0.181
Edge4	0.490	0.035	0.010	0.034	0.010	0.138	0.535	0.663	0.534	0.662
Edge4 Reduction	0.944	0.035	0.010	0.034	0.010	0.138	0.989	1.117	0.988	1.116
Rear	0.481	0.075	0.681	0.211	0.562	0.086	1.237	0.642	1.254	0.778
Rear Reduction	0.364	0.075	0.681	0.211	0.562	0.086	1.120	0.525	1.137	0.661
Rear tilt (Edge 1 side)	0.960	0.151	0.925	0.355	0.854	0.138	2.036	1.249	2.169	1.453
Rear tilt (Edge 4 side)	0.989	0.029	0.011	0.155	0.041	0.138	1.029	1.156	1.185	1.282
Rear tilt (Edge 4 side) Reduction	0.524	0.029	0.011	0.155	0.041	0.138	0.564	0.691	0.720	0.817

Sum of the SAR for LTE B7 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B7	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.194	0.422	0.268	0.553	0.201	0.020	0.884	0.636	0.948	0.767
Edge3	0.087	0.000	0.000	0.000	0.000	0.138	0.087	0.225	0.087	0.225
Edge4	0.654	0.035	0.010	0.034	0.010	0.138	0.699	0.827	0.698	0.826
Edge4 Reduction	0.765	0.035	0.010	0.034	0.010	0.138	0.810	0.938	0.809	0.937
Rear	0.606	0.075	0.681	0.211	0.562	0.086	1.362	0.767	1.379	0.903
Rear Reduction	0.351	0.075	0.681	0.211	0.562	0.086	1.107	0.512	1.124	0.648
Rear tilt (Edge 1 side)	0.715	0.151	0.925	0.355	0.854	0.138	1.791	1.004	1.924	1.208
Rear tilt (Edge 4 side)	0.688	0.029	0.011	0.155	0.041	0.138	0.728	0.855	0.884	0.981
Rear tilt (Edge 4 side) Reduction	0.458	0.029	0.011	0.155	0.041	0.138	0.498	0.625	0.654	0.751

Sum of the SAR for LTE B12 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B12	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.186	0.422	0.268	0.553	0.201	0.020	0.876	0.628	0.940	0.759
Edge3	0.015	0.000	0.000	0.000	0.000	0.138	0.015	0.153	0.015	0.153
Edge4	0.177	0.035	0.010	0.034	0.010	0.138	0.222	0.350	0.221	0.349
Edge4 Reduction	1.059	0.035	0.010	0.034	0.010	0.138	1.104	1.232	1.103	1.231
Rear	0.303	0.075	0.681	0.211	0.562	0.086	1.059	0.464	1.076	0.600
Rear Reduction	0.239	0.075	0.681	0.211	0.562	0.086	0.995	0.400	1.012	0.536
Rear tilt (Edge 1 side)	0.424	0.151	0.925	0.355	0.854	0.138	1.500	0.713	1.633	0.917
Rear tilt (Edge 4 side)	0.447	0.029	0.011	0.155	0.041	0.138	0.487	0.614	0.643	0.740
Rear tilt (Edge 4 side) Reduction	0.451	0.029	0.011	0.155	0.041	0.138	0.491	0.618	0.647	0.744

Sum of the SAR for LTE B13 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B13	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.256	0.422	0.268	0.553	0.201	0.020	0.946	0.698	1.010	0.829
Edge3	0.054	0.000	0.000	0.000	0.000	0.138	0.054	0.192	0.054	0.192
Edge4	0.402	0.035	0.010	0.034	0.010	0.138	0.447	0.575	0.446	0.574
Edge4 Reduction	1.195	0.035	0.010	0.034	0.010	0.138	1.240	1.368	1.239	1.367
Rear	0.475	0.075	0.681	0.211	0.562	0.086	1.231	0.636	1.248	0.772
Rear Reduction	0.373	0.075	0.681	0.211	0.562	0.086	1.129	0.534	1.146	0.670
Rear tilt (Edge 1 side)	0.645	0.151	0.925	0.355	0.854	0.138	1.721	0.934	1.854	1.138
Rear tilt (Edge 4 side)	0.749	0.029	0.011	0.155	0.041	0.138	0.789	0.916	0.945	1.042
Rear tilt (Edge 4 side) Reduction	0.632	0.029	0.011	0.155	0.041	0.138	0.672	0.799	0.828	0.925

Sum of the SAR for LTE B14 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B14	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.291	0.422	0.268	0.553	0.201	0.020	0.981	0.733	1.045	0.864
Edge3	0.056	0.000	0.000	0.000	0.000	0.138	0.056	0.194	0.056	0.194
Edge4	0.448	0.035	0.010	0.034	0.010	0.138	0.493	0.621	0.492	0.620
Edge4 Reduction	1.011	0.035	0.010	0.034	0.010	0.138	1.056	1.184	1.055	1.183
Rear	0.537	0.075	0.681	0.211	0.562	0.086	1.293	0.698	1.310	0.834
Rear Reduction	0.352	0.075	0.681	0.211	0.562	0.086	1.108	0.513	1.125	0.649
Rear tilt (Edge 1 side)	0.728	0.151	0.925	0.355	0.854	0.138	1.804	1.017	1.937	1.221
Rear tilt (Edge 4 side)	0.828	0.029	0.011	0.155	0.041	0.138	0.868	0.995	1.024	1.121
Rear tilt (Edge 4 side) Reduction	0.576	0.029	0.011	0.155	0.041	0.138	0.616	0.743	0.772	0.869

Sum of the SAR for LTE B26 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B26	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.172	0.422	0.268	0.553	0.201	0.020	0.862	0.614	0.926	0.745
Edge3	0.010	0.000	0.000	0.000	0.000	0.138	0.010	0.148	0.010	0.148
Edge4	0.513	0.035	0.010	0.034	0.010	0.138	0.558	0.686	0.557	0.685
Edge4 Reduction	0.911	0.035	0.010	0.034	0.010	0.138	0.956	1.084	0.955	1.083
Rear	0.493	0.075	0.681	0.211	0.562	0.086	1.249	0.654	1.266	0.790
Rear Reduction	0.376	0.075	0.681	0.211	0.562	0.086	1.132	0.537	1.149	0.673
Rear tilt (Edge 1 side)	0.768	0.151	0.925	0.355	0.854	0.138	1.844	1.057	1.977	1.261
Rear tilt (Edge 4 side)	0.788	0.029	0.011	0.155	0.041	0.138	0.828	0.955	0.984	1.081
Rear tilt (Edge 4 side) Reduction	0.540	0.029	0.011	0.155	0.041	0.138	0.580	0.707	0.736	0.833

Sum of the SAR for LTE B41 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B41	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.045	0.422	0.268	0.553	0.201	0.020	0.735	0.487	0.799	0.618
Edge3	0.036	0.000	0.000	0.000	0.000	0.138	0.036	0.174	0.036	0.174
Edge4	0.444	0.035	0.010	0.034	0.010	0.138	0.489	0.617	0.488	0.616
Edge4 Reduction	0.958	0.035	0.010	0.034	0.010	0.138	1.003	1.131	1.002	1.130
Rear	0.339	0.075	0.681	0.211	0.562	0.086	1.095	0.500	1.112	0.636
Rear Reduction	0.387	0.075	0.681	0.211	0.562	0.086	1.143	0.548	1.160	0.684
Rear tilt (Edge 1 side)	0.408	0.151	0.925	0.355	0.854	0.138	1.484	0.697	1.617	0.901
Rear tilt (Edge 4 side)	0.525	0.029	0.011	0.155	0.041	0.138	0.565	0.692	0.721	0.818
Rear tilt (Edge 4 side) Reduction	0.516	0.029	0.011	0.155	0.041	0.138	0.556	0.683	0.712	0.809

Sum of the SAR for LTE B48 & WLAN Main / WLAN Aux / BT

	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B48	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.057	0.422	0.268	0.553	0.201	0.020	0.747	0.499	0.811	0.630
Edge3	0.055	0.000	0.000	0.000	0.000	0.138	0.055	0.193	0.055	0.193
Edge4	0.588	0.035	0.010	0.034	0.010	0.138	0.633	0.761	0.632	0.760
Edge4 Reduction	0.839	0.035	0.010	0.034	0.010	0.138	0.884	1.012	0.883	1.011
Rear	0.278	0.075	0.681	0.211	0.562	0.086	1.034	0.439	1.051	0.575
Rear Reduction	0.079	0.075	0.681	0.211	0.562	0.086	0.835	0.240	0.852	0.376
Rear tilt (Edge 1 side)	0.336	0.151	0.925	0.355	0.854	0.138	1.412	0.625	1.545	0.829
Rear tilt (Edge 4 side)	0.384	0.029	0.011	0.155	0.041	0.138	0.424	0.551	0.580	0.677
Rear tilt (Edge 4 side) Reduction	0.174	0.029	0.011	0.155	0.041	0.138	0.214	0.341	0.370	0.467

Sum of the SAR for LTE B66 & WLAN Main / WLAN Aux / BT

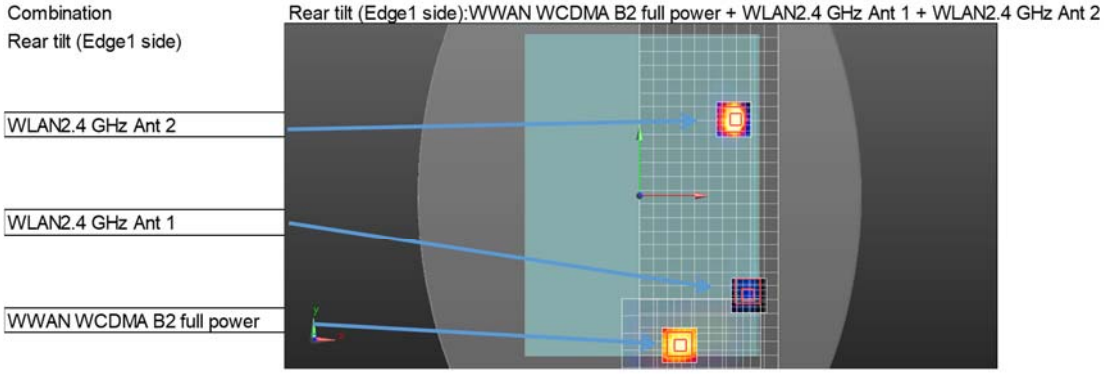
	Mode						Sum of SAR [W/kg](1g)			
	1	2	3	4	5	6	1+2+3	1+2+6	1+4+5	1+4+6
	LTE B66	WLAN Main 2.4GHz	WLAN Aux 2.4GHz	WLAN Main 5 GHz	WLAN Aux 5 GHz	BT	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)	Sum of SAR [W/kg](1g)
Edge1	0.378	0.422	0.268	0.553	0.201	0.020	1.068	0.820	1.132	0.951
Edge3	0.312	0.000	0.000	0.000	0.000	0.138	0.312	0.450	0.312	0.450
Edge4	0.998	0.035	0.010	0.034	0.010	0.138	1.043	1.171	1.042	1.170
Edge4 Reduction	0.819	0.035	0.010	0.034	0.010	0.138	0.864	0.992	0.863	0.991
Rear	0.657	0.075	0.681	0.211	0.562	0.086	1.413	0.818	1.430	0.954
Rear Reduction	0.467	0.075	0.681	0.211	0.562	0.086	1.223	0.628	1.240	0.764
Rear tilt (Edge 1 side)	1.022	0.151	0.925	0.355	0.854	0.138	2.098	1.311	2.231	1.515
Rear tilt (Edge 4 side)	1.098	0.029	0.011	0.155	0.041	0.138	1.138	1.265	1.294	1.391
Rear tilt (Edge 4 side) Reduction	0.744	0.029	0.011	0.155	0.041	0.138	0.784	0.911	0.940	1.037

The red text in the table proceeds to the next step, section 13.2.2.

13.2.2 SPLSR
WCDMA

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN WCDMA B2 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2



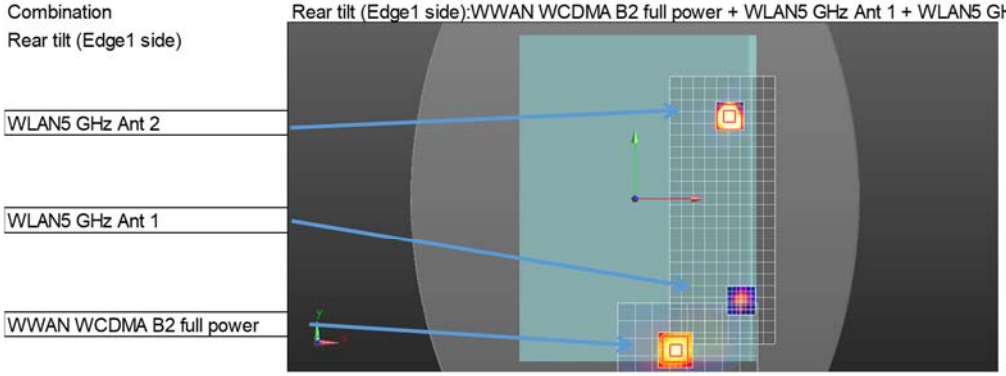
Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN WCDMA B2 full power	#1	1	37.50	-130.50	-4.43		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	71.54
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	201.06

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.797	0.151		No.1 + No.2	0.948	71.54	0.013	No
Rear tilt(Edge 1 side)	0.797		0.925	No.1 + No.3	1.722	201.06	0.011	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN WCDMA B2 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN WCDMA B2 full power	#1	1	37.50	-130.50	-4.43		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	67.83
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	203.55

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.797	0.355		No.1 + No.2	1.152	67.83	0.018	No
Rear tilt(Edge 1 side)	0.797		0.854	No.1 + No.3	1.651	203.55	0.010	No

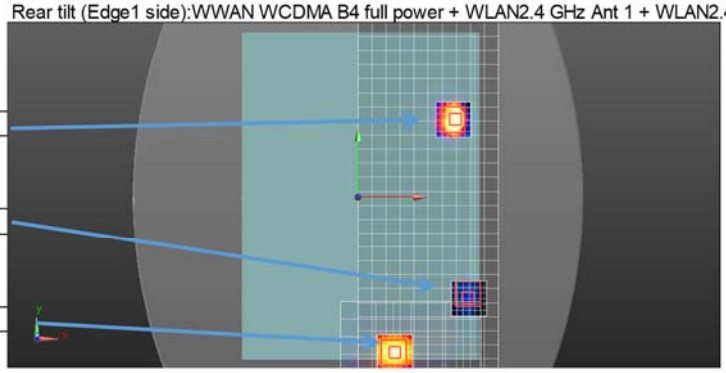
Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN WCDMA B4 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 1

WWAN WCDMA B4 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN WCDMA B4 full power	#1	1	32.50	-132.50	-4.49		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	76.72
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	204.20

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.871	0.151		No.1 + No.2	1.022	76.72	0.013	No
Rear tilt(Edge 1 side)	0.871		0.925	No.1 + No.3	1.796	204.20	0.012	No

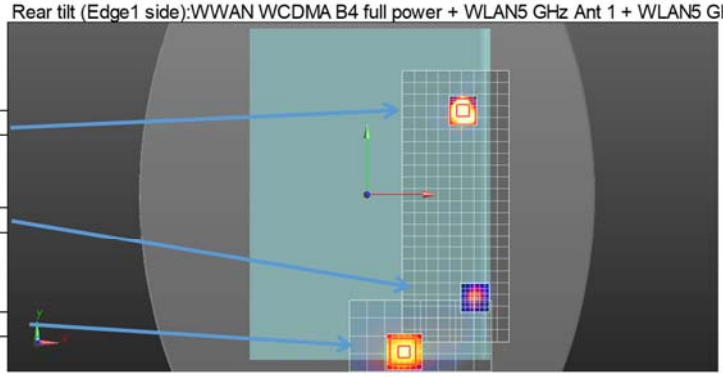
Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN WCDMA B4 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2

WLAN5 GHz Ant 1

WWAN WCDMA B4 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN WCDMA B4 full power	#1	1	32.50	-132.50	-4.49		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	73.02
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	206.67

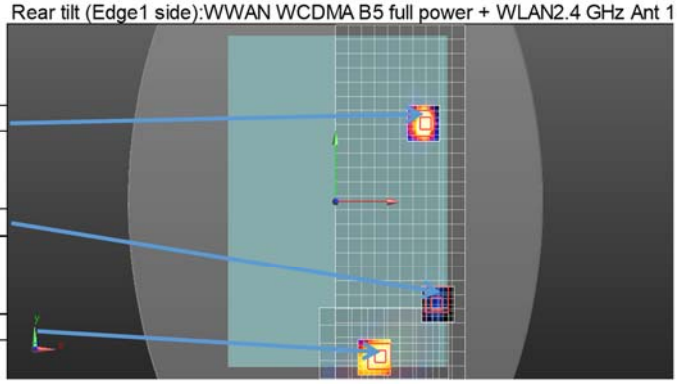
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.871	0.355		No.1 + No.2	1.226	73.02	0.019	No
Rear tilt(Edge 1 side)	0.871		0.854	No.1 + No.3	1.725	206.67	0.011	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN WCDMA B5 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 2
WLAN2.4 GHz Ant 1
WWAN WCDMA B5 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN WCDMA B5 full power	#1	1	32.50	-132.50	-4.49		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	76.72
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	204.20

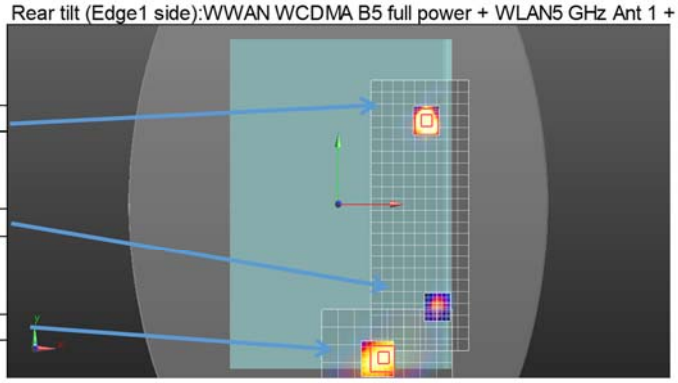
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.839	0.151		No.1 + No.2	0.990	76.72	0.013	No
Rear tilt(Edge 1 side)	0.839		0.925	No.1 + No.3	1.764	204.20	0.011	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN WCDMA B5 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2
WLAN5 GHz Ant 1
WWAN WCDMA B5 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN WCDMA B5 full power	#1	1	32.50	-132.50	-4.49		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	73.02
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	206.67

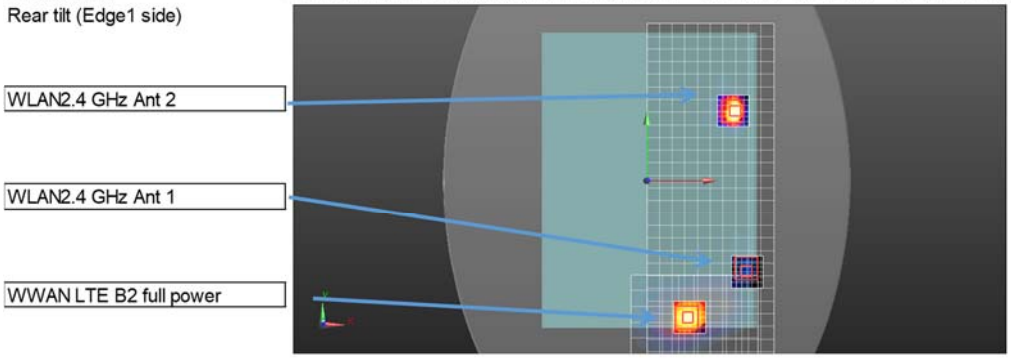
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.839	0.355		No.1 + No.2	1.194	73.02	0.018	No
Rear tilt(Edge 1 side)	0.839		0.854	No.1 + No.3	1.693	206.67	0.011	No

LTE

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B2 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2



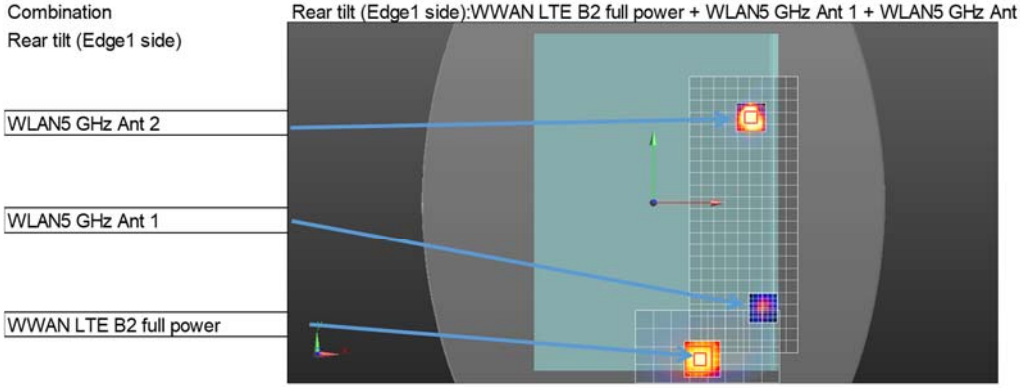
Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B2 full power	#1	1	39.50	-130.50	-4.34		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	69.97
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	200.61

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	1.016	0.151		No.1 + No.2	1.167	69.97	0.018	No
Rear tilt(Edge 1 side)	1.016		0.925	No.1 + No.3	1.941	200.61	0.013	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B2 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B2 full power	#1	1	39.50	-130.50	-4.34		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	66.27
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	203.10

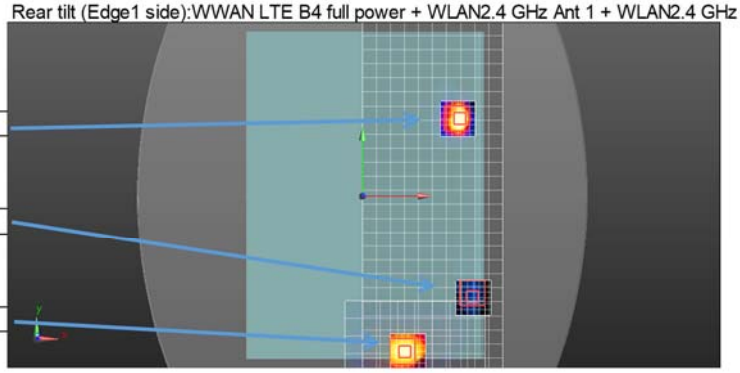
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	1.016	0.355		No.1 + No.2	1.371	66.27	0.024	No
Rear tilt(Edge 1 side)	1.016		0.854	No.1 + No.3	1.870	203.10	0.013	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B4 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 2
WLAN2.4 GHz Ant 1
WWAN LTE B4 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B4 full power	#1	1	38.00	-132.50	-4.39		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	72.40
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	202.89

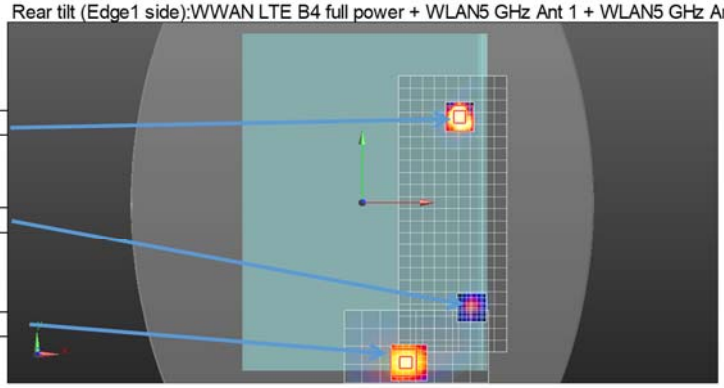
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	1.027	0.151		No.1 + No.2	1.178	72.40	0.018	No
Rear tilt(Edge 1 side)	1.027		0.925	No.1 + No.3	1.952	202.89	0.013	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B4 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2
WLAN5 GHz Ant 1
WWAN LTE B4 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B4 full power	#1	1	38.00	-132.50	-4.39		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	68.69
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	205.38

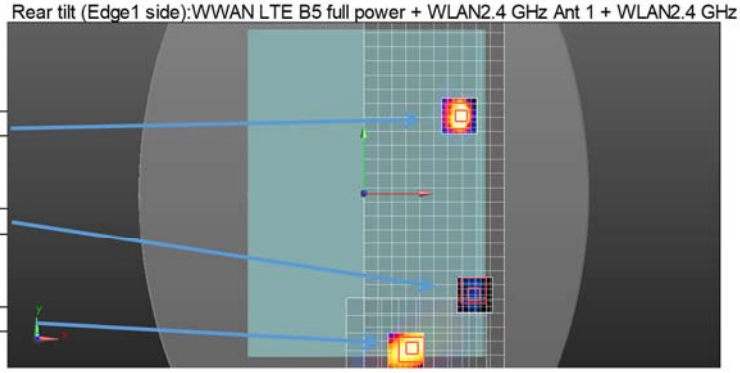
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	1.027	0.355		No.1 + No.2	1.382	68.69	0.024	No
Rear tilt(Edge 1 side)	1.027		0.854	No.1 + No.3	1.881	205.38	0.013	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B5 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 2
WLAN2.4 GHz Ant 1
WWAN LTE B5 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B5 full power	#1	1	39.00	-134.00	-4.42		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	72.61
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	204.14

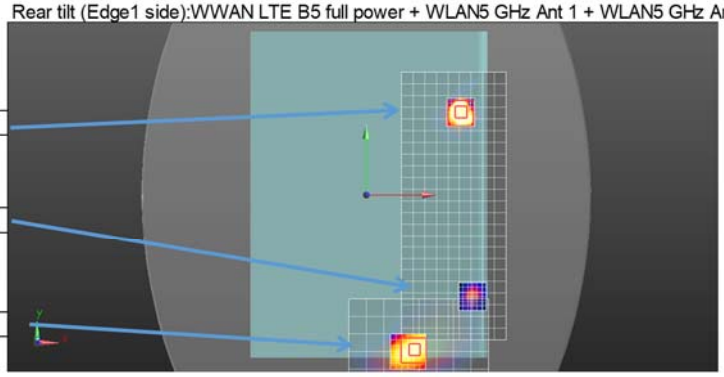
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.960	0.151		No.1 + No.2	1.111	72.61	0.016	No
Rear tilt(Edge 1 side)	0.960		0.925	No.1 + No.3	1.885	204.14	0.013	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B5 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2
WLAN5 GHz Ant 1
WWAN LTE B5 full power



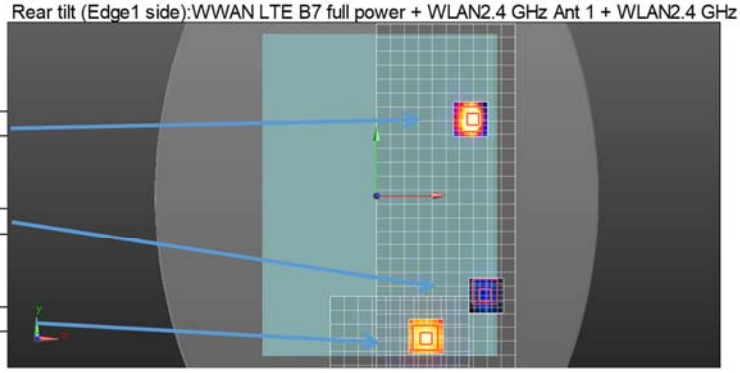
Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B5 full power	#1	1	39.00	-134.00	-4.42		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	68.90
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	206.63

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.960	0.355		No.1 + No.2	1.315	68.90	0.022	No
Rear tilt(Edge 1 side)	0.960		0.854	No.1 + No.3	1.814	206.63	0.012	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B7 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2



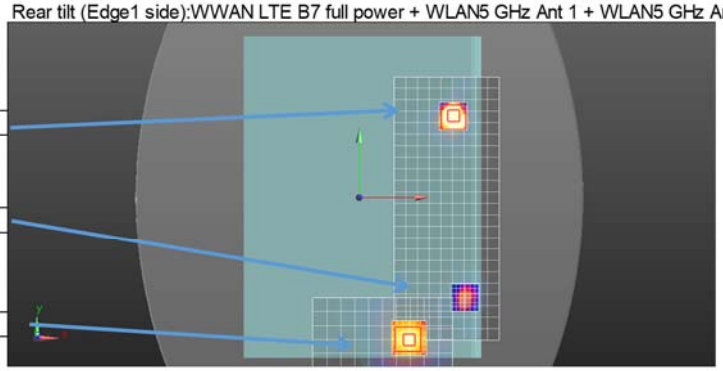
Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B7 full power	#1	1	42.80	-123.80	-3.41		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	63.25
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	193.35

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.715	0.151		No.1 + No.2	0.866	63.25	0.013	No
Rear tilt(Edge 1 side)	0.715		0.925	No.1 + No.3	1.640	193.35	0.011	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B7 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B7 full power	#1	1	42.80	-123.80	-3.41		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	59.58
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	195.87

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.715	0.355		No.1 + No.2	1.070	59.58	0.019	No
Rear tilt(Edge 1 side)	0.715		0.854	No.1 + No.3	1.569	195.87	0.010	No

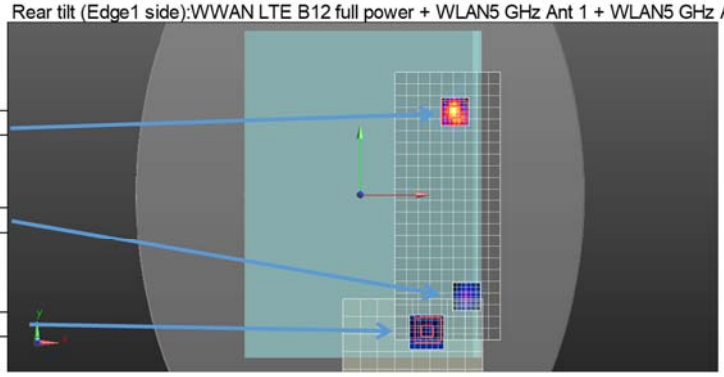
Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B12 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2

WLAN5 GHz Ant 1

WWAN LTE B12 full power



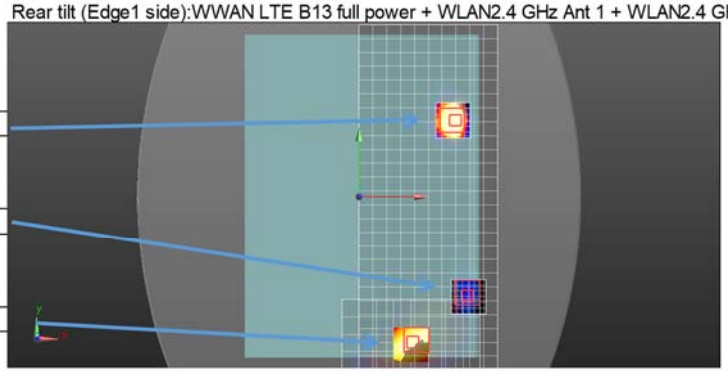
Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B12 full power	#1	1	57.00	-118.50	-3.56		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	45.16
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	188.17

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.424	0.355		No.1 + No.2	0.779	45.16	0.015	No
Rear tilt(Edge 1 side)	0.424		0.854	No.1 + No.3	1.278	188.17	0.008	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B13 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2



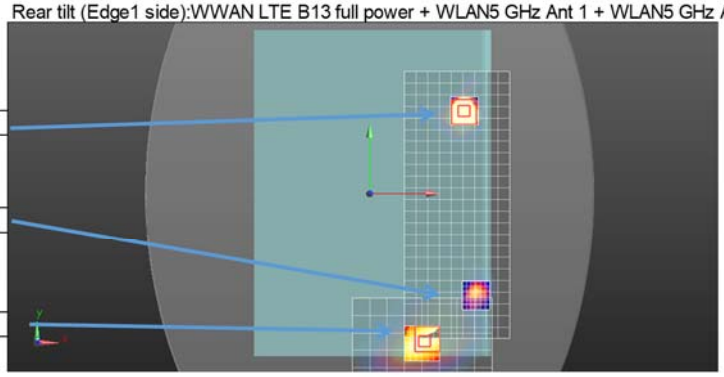
Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B13 full power	#1	1	42.00	-130.00	-3.80		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	67.72
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	199.58

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.645	0.151		No.1 + No.2	0.796	67.72	0.010	No
Rear tilt(Edge 1 side)	0.645		0.925	No.1 + No.3	1.570	199.58	0.010	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B13 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B13 full power	#1	1	42.00	-130.00	-3.80		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	64.03
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	202.09

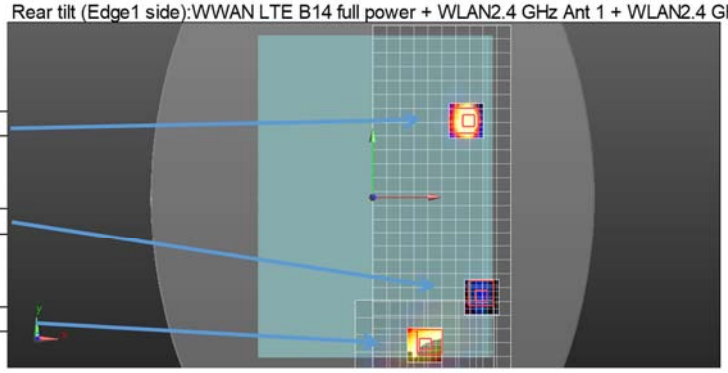
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.645	0.355		No.1 + No.2	1.000	64.03	0.016	No
Rear tilt(Edge 1 side)	0.645		0.854	No.1 + No.3	1.499	202.09	0.009	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B14 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 2
WLAN2.4 GHz Ant 1
WWAN LTE B14 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B14 full power	#1	1	42.00	-130.00	-3.83		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	67.72
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	199.58

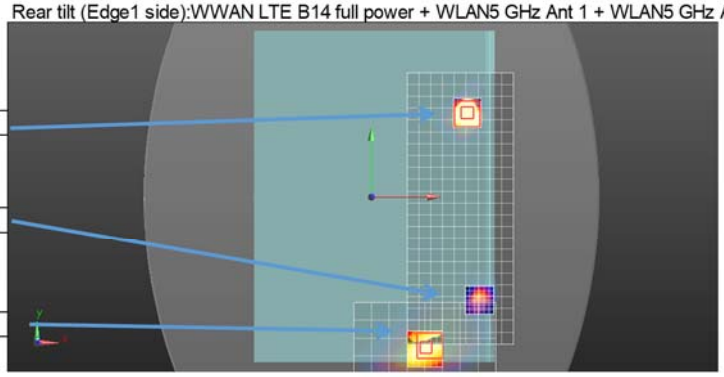
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.728	0.151		No.1 + No.2	0.879	67.72	0.012	No
Rear tilt(Edge 1 side)	0.728		0.925	No.1 + No.3	1.653	199.58	0.011	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B14 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2
WLAN5 GHz Ant 1
WWAN LTE B14 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B14 full power	#1	1	42.00	-130.00	-3.83		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	64.03
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	202.09

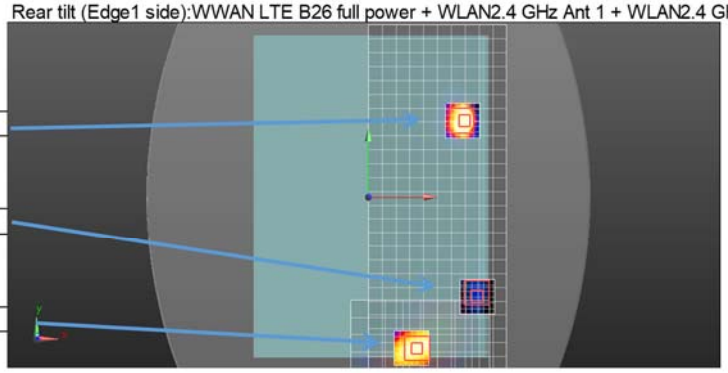
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.728	0.355		No.1 + No.2	1.083	64.03	0.018	No
Rear tilt(Edge 1 side)	0.728		0.854	No.1 + No.3	1.582	202.09	0.010	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B26 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 2
WLAN2.4 GHz Ant 1
WWAN LTE B26 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B26 full power	#1	1	39.50	-132.00	-3.86		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	70.92
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	202.07

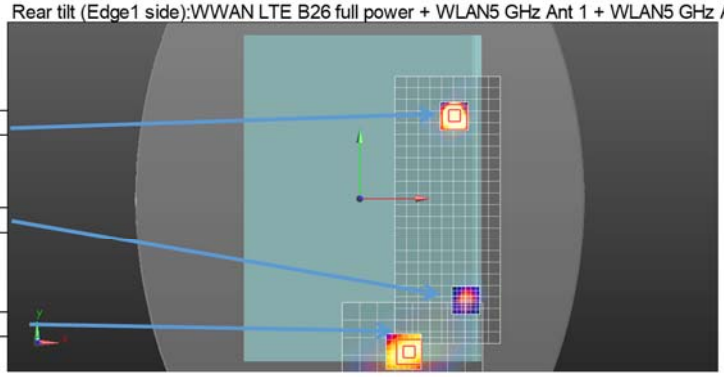
The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.768	0.151		No.1 + No.2	0.919	70.92	0.012	No
Rear tilt(Edge 1 side)	0.768		0.925	No.1 + No.3	1.693	202.07	0.011	No

Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B26 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2
WLAN5 GHz Ant 1
WWAN LTE B26 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B26 full power	#1	1	39.50	-132.00	-3.86		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	67.23
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	204.57

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.768	0.355		No.1 + No.2	1.123	67.23	0.018	No
Rear tilt(Edge 1 side)	0.768		0.854	No.1 + No.3	1.622	204.57	0.010	No

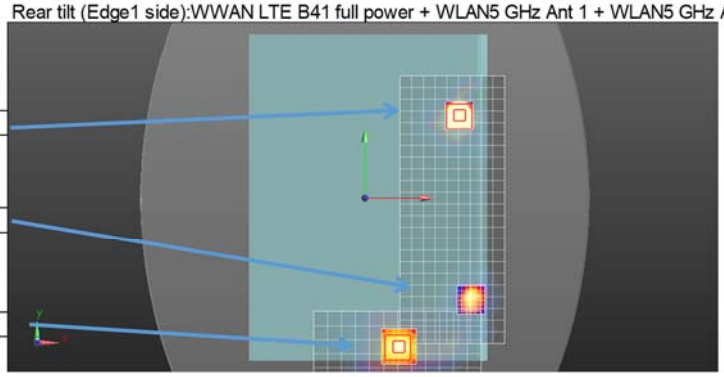
Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B41 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2

WLAN5 GHz Ant 1

WWAN LTE B41 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B41 full power	#1	1	29.20	-128.00	-3.23		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	73.20
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	203.18

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	0.408	0.355		No.1 + No.2	0.763	73.20	0.009	No
Rear tilt(Edge 1 side)	0.408		0.854	No.1 + No.3	1.262	203.18	0.007	No

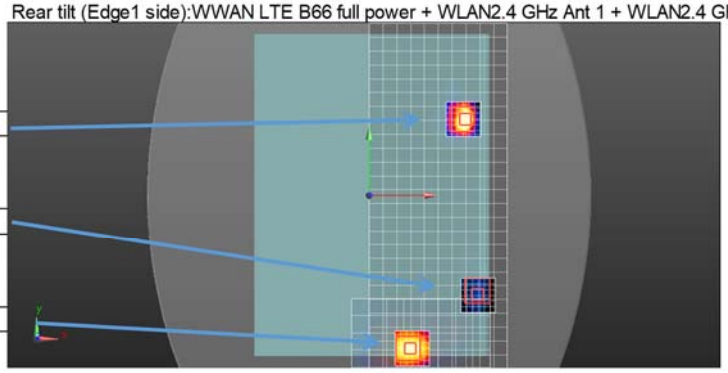
Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B66 full power + WLAN2.4 GHz Ant 1 + WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 2

WLAN2.4 GHz Ant 1

WWAN LTE B66 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B66 full power	#1	1	36.50	-133.50	-4.42		
WLAN2.4 GHz	Ant 1	2	93.80	-86.40	-2.72	No1+No2	74.19
WLAN2.4 GHz	Ant 2	3	83.60	65.20	-3.19	No1+No3	204.21

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	1.022	0.151		No.1 + No.2	1.173	74.19	0.017	No
Rear tilt(Edge 1 side)	1.022		0.925	No.1 + No.3	1.947	204.21	0.013	No

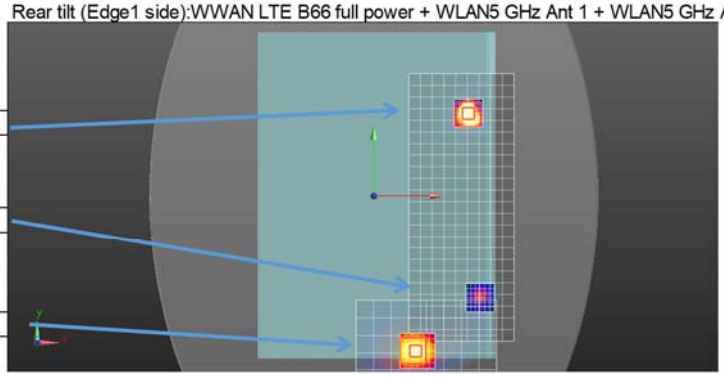
Combination
Rear tilt (Edge1 side)

Rear tilt (Edge1 side):WWAN LTE B66 full power + WLAN5 GHz Ant 1 + WLAN5 GHz Ant 2

WLAN5 GHz Ant 2

WLAN5 GHz Ant 1

WWAN LTE B66 full power



Mode	Ant	No	X	Y	Z	Combination	d: Calculated distance (mm)
			mm	mm	mm		
WWAN LTE B66 full power	#1	1	36.50	-133.50	-4.42		
WLAN5 GHz	Ant 1	2	91.00	-88.80	-4.72	No1+No2	70.49
WLAN5 GHz	Ant 2	3	83.40	67.80	-5.48	No1+No3	206.69

The Peak Location Separation Distance is computed by using the formula below:
SQRT((X1-X2)^2+(Y1-Y2)^2+(Z1-Z2)^2)

Test Position	No.1 WWAN #1	No.2 WLAN Ant 1	No.3 WLAN Ant 2	Combination	Σ 1-g SAR (W/kg)	Calculated distance (mm)	SPLSR (≤ 0.04)	Volume Scan (Yes/ No)
Rear tilt(Edge 1 side)	1.022	0.355		No.1 + No.2	1.377	70.49	0.023	No
Rear tilt(Edge 1 side)	1.022		0.854	No.1 + No.3	1.876	206.69	0.012	No

13.3 Total exposure ratio (TER)

Either SAR-based or MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (Evaluated$_k$ term) shall be used to determine exemption for simultaneous transmission according to Formula [repeated from § 1.1307(b)(3)(ii)(B)].

$$\sum_{i=1}^{a} \frac{Pi}{Pth,i} + \sum_{j=1}^{b} \frac{ERPj}{ERPth,j} + \sum_{k=1}^{c} \frac{Ealuatedk}{Exposure\ Limitk} \leq 1$$

Where:

a: number of fixed, mobile, or portable RF sources claiming exemption using the § 1.1307(b)(3)(i)(B) formula for Pth, including existing exempt transmitters and those being added.

b: number of fixed, mobile, or portable RF sources claiming exemption using the applicable § 1.1307(b)(3)(i)(C) Table 1 formula for Threshold ERP, including existing exempt transmitters and those being added.

c: number of existing fixed, mobile, or portable RF sources with known evaluation for the specified minimum distance.

P_i: the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm (inclusive).

$P_{th,i}$: the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i. Also, The Pth is described at section “SAR Exposure Conditions”

ERP_j: the available maximum time-averaged power or the ERP, whichever is greater, of fixed, mobile, or portable RF source j.

$ERP_{th,j}$: exemption threshold ERP for fixed, mobile, or portable RF source j, at a distance of at least λ/2π, according to the applicable § 1.1307(b)(3)(i)(C) Table 1 formula at the location in question.

$Evaluated_k$: the maximum reported SAR or MPE of fixed, mobile, or portable RF source k either in the device or at the transmitter site from an existing evaluation.

Exposure Limit$_K$: either the general population/uncontrolled maximum permissible exposure (MPE) or specific absorption rate (SAR) limit for each fixed, mobile, or portable sources, as applicable

13.3.1 TER calculation with 6E + WWAN

Ratio calculation:

- Sum of ratio $_{(WLAN\ main\ +\ WLAN\ aux)}$ = (PD main ant result + PD aux ant result) / (1mW / cm^2)
- Sum of ratio $_{(WLAN\ main\ +\ BT)}$ = PD main ant result / (1mW/cm^2) + SAR BT result / (1.6W / kg)
- WWAN ratio to limit = SAR result / (1.6W / kg)

TER calculation 6E + WWAN (sub6)

WLAN + WLAN

	6E PD				
	Ant1	ratio	Ant2	ratio	sum of ratio
Edge1	0.240	0.240	0.159	0.159	0.399
Edge3	0.046	0.046	0.078	0.078	0.124
Edge4	0.124	0.124	0.015	0.015	0.139
Edge4 Reduction	0.124	0.124	0.015	0.015	0.139
Rear	0.240	0.240	0.159	0.159	0.399
Rear Reduction	0.240	0.240	0.159	0.159	0.399
Rear tilt (Edge 1 side)	0.097	0.097	0.159	0.159	0.256
Rear tilt (Edge 4 side)	0.032	0.032	0.027	0.027	0.059
Rear tilt (Edge 4 side) Reduction	0.032	0.032	0.027	0.027	0.059

WLAN + BT

	6E PD		BT		
	Ant1	ratio	Ant2	ratio	sum of ratio
Edge1	0.240	0.240	0.020	0.013	0.253
Edge3	0.046	0.046	0.138	0.086	0.132
Edge4	0.124	0.124	0.138	0.086	0.210
Edge4 Reduction	0.124	0.124	0.138	0.086	0.210
Rear	0.240	0.240	0.086	0.054	0.294
Rear Reduction	0.240	0.240	0.086	0.054	0.294
Rear tilt (Edge 1 side)	0.097	0.097	0.138	0.086	0.183
Rear tilt (Edge 4 side)	0.032	0.032	0.138	0.086	0.118
Rear tilt (Edge 4 side) Reduction	0.032	0.032	0.138	0.086	0.118

Select higher combination between "WLAN + WLAN" and "WLAN + BT"

A: Maximum ER: max {WLAN + WLAN, WLAN + BT}

Edge1	0.399
Edge3	0.132
Edge4	0.210
Edge4 Reduction	0.210
Rear	0.399
Rear Reduction	0.399
Rear tilt (Edge 1 side)	0.256
Rear tilt (Edge 4 side)	0.118
Rear tilt (Edge 4 side) Reduction	0.118

B: Maximum ER: WWAN (Sub6)

Edge1	0.263
Edge3	0.208
Edge4	0.700
Edge4 Reduction	0.749
Rear	0.460
Rear Reduction	0.331
Rear tilt (Edge 1 side)	0.642
Rear tilt (Edge 4 side)	0.722
Rear tilt (Edge 4 side) Reduction	0.638

sum of A and B

Total ER: A + B

	A	B	TER
Edge1	0.399	0.263	0.662
Edge3	0.132	0.208	0.340
Edge4	0.210	0.700	0.910
Edge4 Reduction	0.210	0.749	***0.959***
Rear	0.399	0.460	0.859
Rear Reduction	0.399	0.331	0.730
Rear tilt (Edge 1 side)	0.256	0.642	0.898
Rear tilt (Edge 4 side)	0.118	0.722	0.840
Rear tilt (Edge 4 side) Reduction	0.118	0.638	0.756

13.4 Conclusion

TER is less than 1, compliance.

14 Test instrument

Local Id	Description	Manufacturer	Model	Serial	Last Cal Date	Interval
Measurement system						
MDAE-01	Data Acquisition Electronics	Schmid & Partner Engineering AG	DAE4	509	2022/07/13	12
MDAE-02	Data Acquisition Electronics	Schmid&Partner Engineering AG	DAE4	1369	2022/05/09	12
MPB-07	Dosimetric E-Field Probe	Schmid&Partner Engineering AG	EX3DV4	3825	2022/07/20	12
MPB-08	Dosimetric E-Field Probe	Schmid&Partner Engineering AG	EX3DV4	3917	2022/05/17	12
MOS-35	Digital thermometer	HANNA INSTRUMENTS	Checktemp 4	-	2022/07/03	12
MRBT-03	SAR robot	Schmid & Partner Engineering AG	TX60 Lspeag	F13/5PP1D1/ A/01	2022/04/26	12
MPF-03	2mm Oval Flat Phantom	Schmid&Partner Engineering AG	QDOVA001BB	1203	2022/05/24	12
MOS-31	Thermo-Hygrometer	CUSTOM. Inc	CTH-201	3101	2022/07/03	12
MRBT-04	SAR robot	Schmid & Partner Engineering AG	TX60 Lspeag	F13/5PP1A1/ A/01	2022/04/26	12
MPF-04	2mm Oval Flat Phantom	Schmid&Partner Engineering AG	QDOVA001BB	1207	2022/05/24	12
MHBBL3.5-5.8	Tissue simulation liquid (Head)	Schmid&Partner Engineering AG	HBBL3500-5800V5	SL AAH 502 AC	-	-
MHBBL600-10000	Head Simulating Liquid	Schmid & Partner Engineering AG	HBBL600-10000V6	SL AAH U16 BC	-	-
MPBm-01	mmWave probe	Schmid & Partner Engineering AG	EUmmWV4	9450	2022/11/17	12
System check set						
MDA-20	Dipole Antenna	Schmid&Partner Engineering AG	D750V3	1058	2021/05/11	24
SSDA-04	Dipole Antenna	Schmid&Partner Engineering AG	D835V2	4d149	2022/03/14	12
SSDA-06	Dipole Antenna	Schmid&Partner Engineering AG	D1750V2	1089	2022/03/15	36
SSDA-08	Dipole Antenna	Schmid&Partner Engineering AG	D1900V2	5d169	2022/03/15	36
MDA-19	Dipole Antenna	Schmid&Partner Engineering AG	D2600V2	1030	2022/03/18	36
MDA-23	Dipole Antenna	Schmid & Partner Engineering AG	D3500V2	1052	2022/12/14	12
MDA-24	Dipole Antenna	Schmid & Partner Engineering AG	D3700V2	1078	2022/07/14	12
MVSm-04	Verification Source	Schmid & Partner Engineering AG	5G Verification Source 10 GHz	1051	2022/08/15	12
COTS-MPSE-02	Software for MA24106A	Anritsu Corporation	Anritsu PowerXpert	-	-	-
MAT-78	Attenuator	Telegrartner	J01156A0011	42294119	-	-
MPM-11	Dual Power Meter	Keysight Technologies Inc	E4419B	MY45102060	2022/08/05	12
MPSE-31	Power sensor	Keysight Technologies Inc	E9300H	MY62080002	2022/08/02	12
MPSE-24	Power sensor	Anritsu Corporation	MA24106A	1026164	2022/03/17	12
MPSE-25	Power sensor	Anritsu Corporation	MA24106A	1031504	2022/03/17	12
MHDC-21	Dual Directional Coupler	Keysight Technologies Inc	778D	MY52180243	-	-
MPSE-32	Power Sensor	Anritsu Corporation	MA24118A	2123074	2022/08/02	12
MPSE-33	Power Sensor	Anritsu Corporation	MA24118A	2123095	2022/08/02	12
MHDC-12	Dual Directional Coupler	Hewlett Packard	772D	2839A0016	-	-
MRFA-24	Pre Amplifier	R&K	R&K CGA020M602-2633R	B30550	2022/06/27	12
MSG-10	Signal Generator	Keysight Technologies Inc	N5181A	MY47421098	2022/11/04	12

Liquid check

COTS-MSAR-04	Dielectric assessment software	Schmid&Partner Engineering AG	DAK	-	-	-
MDPK-03	Dielectric assessment kit	Schmid & Partner Engineering AG	DAKS-3.5	0008	2022/04/19	12
MNA-03	Vector Reflectometer	Copper Mountain Technologies	PLANAR R140	0030913	2022/04/18	12
MOS-37	Digital thermometer	LKM electronic	DTM3000	-	2022/07/03	12
MWTR-01	Water, distilled	KISHIDA CHEMICAL Co.,Ltd.	020-85566	K70244M	-	-

Call box

MURC-09	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	140481	-	-
MURC-10	Wideband Radio Communication Tester	Rohde & Schwarz	CMW500	165750	2022/06/17	12
MURC-08	Radio Communication Analyzer	Anritsu Corporation	MT8821C	6201547850	-	-
MURC-11	Radio Communication Analyzer	Anritsu Corporation	MT8821C	6261879781	-	-

MURC-10 is used for power measurement.

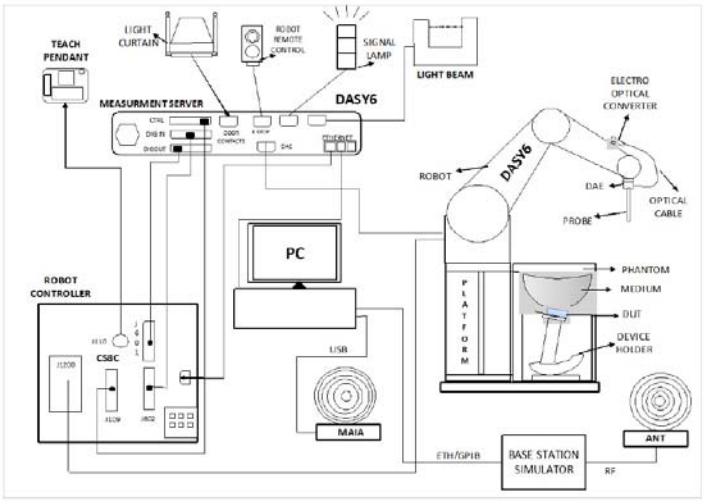
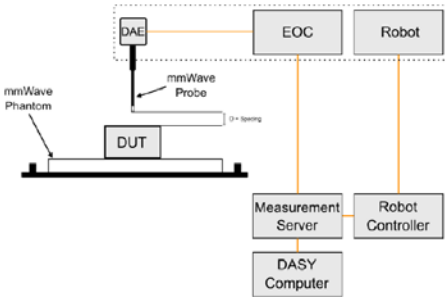
*Hyphens for Last Calibration Date and Cal Int (month) are instruments that Calibration is not required (e.g. software), or instruments checked in advance before use.

The expiration date of the calibration is the end of the expired month.
As for some calibrations performed after the tested dates, those test equipment have been controlled by means of an unbroken chains of calibrations.

All equipment is calibrated with valid calibrations. Each measurement data is traceable to the national or international standards.

14.1 Test system

14.1.1 System components

SAR	mmW power density
	

14.1.2 Data Acquisition Electronics (DAE)

The data acquisition electronics (DAE4 or DAE3) consist of a highly sensitive electrometer-grade preamplifier with auto-zeroing, a channel and gain-switching multiplexer, a fast 16-bit AD-converter, and a command decoder with a control logic unit. Transmission to the measurement server is accomplished through an optical downlink for data and status information, as well as an optical uplink for commands and the clock.

14.1.3 Probes (SAR)

Dosimetric Probes: These probes are specially designed and calibrated for use in liquids with high permittivities. They should not be used in air, since the spherical isotropy in air is poor (+/- 2 dB). The dosimetric probes are specially calibrated in various liquids at different frequencies.

14.1.4 EOC

The electrooptical converter (EOC), which is mounted on the robot arm. An internal data link is used from the EOC to the robot back panel. From there, a 10-meter cable connects to the measurement server DAE input.

14.1.5 Robot

The DASY6 system uses the high precision industrial robots TX60L from Stuaubli SA (France).

14.1.6 Simulated Tissues (Liquid)

series of tissue simulating liquids are available for various testing applications. The dielectric parameters of these liquids are matched to the target tissue parameters over a certain frequency range. A summary of available liquids is as follows:

HEAD TISSUE LIQUIDS	Dielectric parameters for simulating head-tissue parameters as defined in the SAR compliance standards (IEEE 1528, IEC 62209-1/2, etc.) Frequency range: 4 MHz – 10 GHz Tolerance to target: ±5% / ± 10% Detailed specifications: HSL
BODY TISSUE LIQUIDS	Dielectric parameters for simulating body-tissue parameters as defined in the SAR measurement guidance (FCC KDB 865664) Frequency range: 150 MHz – 6 GHz Tolerance to target: ±5% / ±10% Detailed specifications: MSL
SPECIAL LIQUIDS	CTIA Applications: brain tissue simulating liquid for radiation measurements according to CTIA 2.2 Appx C.3 MRI Solutions: tissue simulating Media for RF safety evaluation at MR Frequencies

14.1.7 Others

The SAR phantom, mmW phantom, the device holder and other accessories according to the targeted measurement.

15 Appendixes

Refer to separated files for the following appendixes.

Appendix A: EUT and SAR Setup Photos

Appendix B: SAR Measurement data

Appendix C: System Check

Appendix D: Calibration data

Appendix E: Antenna location

Appendix F: Proximity Sensor Verification

16 Revision History

Original Test Report No.: 14633765H-A

Revision	Test Report No.	Date	Page Revised Contents
- (Original)	14633765H-A	March 22, 2023	-

End of Report