FCC 47 CFR § 2.1093
IEEE Std 1528-2013

SAR EVALUATION REPORT
Part 0 and Part 1

FOR

GSM/WCDMA/LTE/5G NR Phone + BT/BLE, DTS/UNII a/b/g/n/ac and NFC

MODEL NUMBER: SC-53F, SCG33

FCC ID: A3LSMA253JPN

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IAS ACCREDITED

Testing Laboratory

TL-637

Revision History

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V2	2024-12-05	Added note to Sec 6.2	Juyeon Choi
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1. Attestation of Test Results

Applicant Name		SAMSUNG ELECTRONICS CO.,LTD.				
FCC ID		A3LSMA253JPN				
Model Number		SC-53F, SCG33				
Applicable Standards		FCC 47 CFR § 2.1093 IEEE Std 1528-2013 Published RF exposure KDB procedures				
Exposure Category		SAR Limits (W/Kg)				
		Peak spatial-average (1g of tissue)		Product Specific 10g (10g of tissue)		
General population / Uncontrolled exposure		1.6		4.0		
RF Exposure Conditions		Equipment Class - The Highest *Reported* SAR (W/kg)				
		PCE	DTS	NII	DSS	DXX
Head		0.30	0.66	0.53	< 0.10	N/A
Body-worn (at 5mm)		1.23	0.90	0.92	0.15	N/A
Hotspot (at 5mm)		1.23	0.90	N/A	0.15	N/A
Near Body (at 5mm)				0.92		<0.10
Simultaneous TX	Head	0.95	0.95	0.91	0.91	N/A
	Body-worn (at 5mm)	1.54	1.54	1.46	1.46	N/A
	Hotspot (at 5mm)	1.54	1.54	N/A	1.46	N/A
	Near Body (at 5mm)			1.46		1.54
Date Tested		2024-10-22 to 2024-11-27				
Test Results		Pass				

UL Korea, Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by UL Korea, Ltd. based on interpretations and/or observations of test results. Measurement Uncertainties were not taken into account and are published for informational purposes only. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by UL Korea, Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Korea, Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by IAS, any agency of the Federal Government, or any agency of any government.

Approved & Released By:	Prepared By:
	
Justin Park Operations Leader UL Korea, Ltd. Suwon Laboratory	Juyeon Choi Laboratory Engineer UL Korea, Ltd. Suwon Laboratory

1.1. The Highest Reported SAR Results

Equipment Class	Band	Antenna	The Highest Reported SAR (W/kg) of RF exposure conditions			
			1g of tissue			
			Head Exposure	Body-worn Exposure	Hotspot Exposure	Near Body Exposure
PCE	GSM 850	Ant. A	0.237	1.231	1.231	N/A
	GSM 1900	Ant. B	0.076	1.197	1.197	N/A
	WCDMA Band V	Ant. A	0.259	1.049	1.049	N/A
	LTE Band 2	Ant. B	0.126	1.020	1.020	N/A
	LTE Band 5	Ant. A	N/A	0.747	0.747	N/A
	LTE Band 12	Ant. A	0.115	0.344	0.344	N/A
	LTE Band 26	Ant. A	0.273	0.595	0.595	N/A
	LTE Band 41	Ant. B	0.185	1.099	1.099	N/A
	LTE Band 66	Ant. B	0.132	1.024	1.024	N/A
	NR Band n5	Ant. A	0.295	0.765	0.765	N/A
DTS	2.4GHz WLAN		0.656	0.896	0.896	N/A
NII	5GHz WLAN		0.532	0.920	N/A	0.920
DSS	Bluetooth		0.083	0.146	0.146	N/A
DXX	NFC		N/A	N/A	N/A	0.047

Note(s):

1. The Highest Reported SAR Results were listed for each RF exposure conditions for each supported bands based on SAR test results of Section.10.

2. Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1093, IEEE STD 1528-2013, ANSI C63.26-2015 the following FCC Published RF exposure KDB procedures:

- 248227 D01 802.11 Wi-Fi SAR v02r02
- 447498 D04 Interim General RF Exposure Guidance v01
- 648474 D04 Handset SAR v01r03
- 690783 D01 SAR Listings on Grants v01r03
- 865664 D01 SAR measurement 100 MHz to 6 GHz v01r04
- 865664 D02 RF Exposure Reporting v01r02
- 941225 D01 3G SAR Procedures v03r01
- 941225 D05 SAR for LTE Devices v02r05
- 941225 D05A LTE Rel.10 KDB Inquiry Sheet v01r02
- 941225 D06 Hotspot Mode v02r01
- 941225 D07 UMPC Mini Tablet v01r02
- 971168 D01 Power Meas License Digital System v03r01

In addition to the above, the following information was used:

- TCB workshop October, 2014; RF Exposure Procedures Update (Overlapping LTE Bands)
- TCB workshop October, 2014; RF Exposure Procedures Update (Other LTE Considerations)
- TCB workshop October, 2016; RF Exposure Procedures (DUT Holder Perturbations)
- TCB workshop May, 2017; RF Exposure Procedures (LTE Test Conditions)
- TCB workshop November, 2017; RF Exposure Procedures (LTE UL/DL Carrier Aggregation SAR)
- TCB workshop April, 2018; RF Exposure Procedures (LTE DL CA SAR Test Exclusion Update)
- TCB workshop April, 2019; RF Exposure Procedures (Tissue Simulating Liquids (TSL))
- TCB workshop October, 2020; 5G RFX Policies (Intra-band and Inter-band NSA-EN-DC evaluation)
- TCB workshop April, 2022; RF Exposure Procedures (5G NR FR1 Measurement)
- TCB workshop April, 2022; RF Exposure Procedures (SUM-Peak Location Separation Ratio)

3. Facilities and Accreditation

The test sites and measurement facilities used to collect data are located at

Suwon
SAR 6 Room
SAR 7 Room
SAR 8 Room
SAR 9 Room

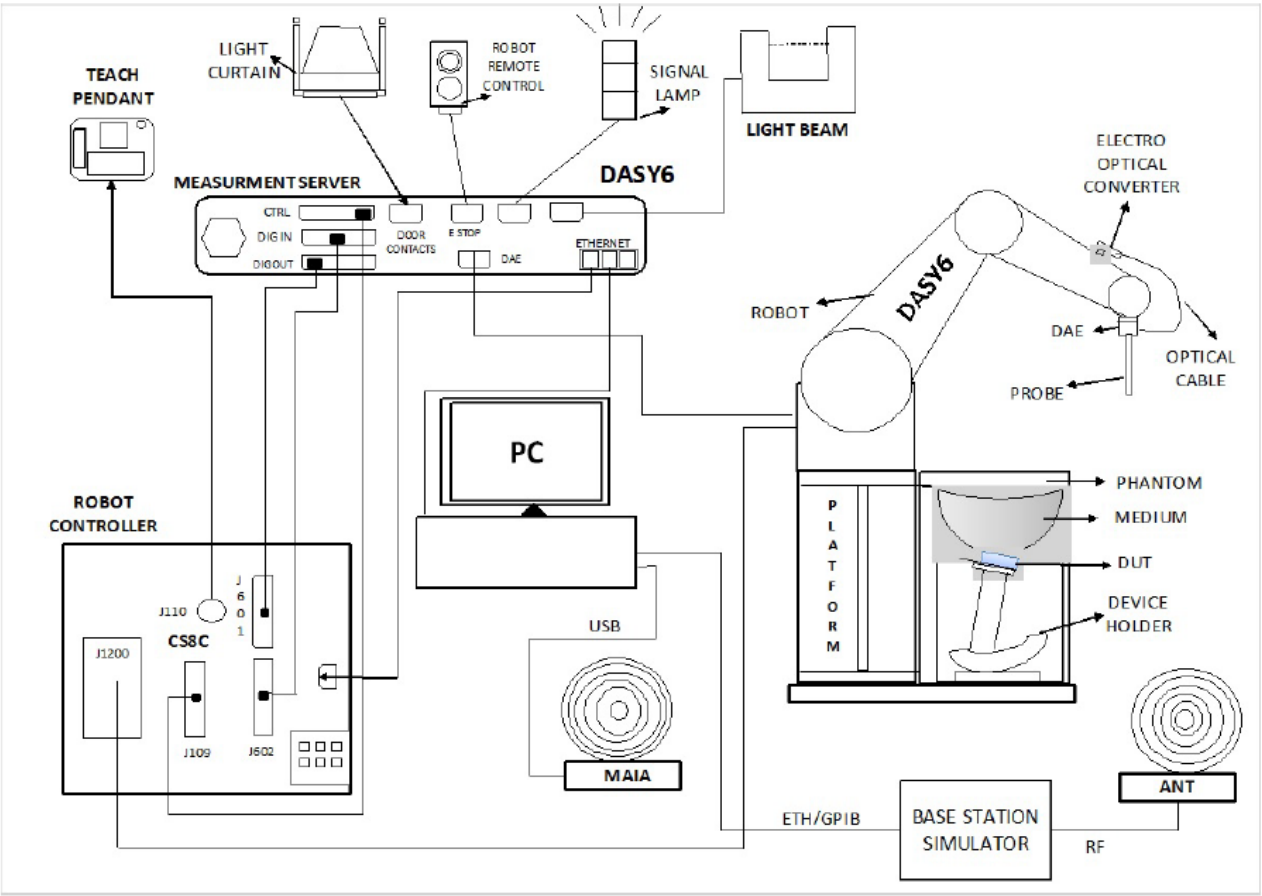
UL Korea, Ltd. is accredited by IAS, Laboratory Code TL-637.
The full scope of accreditation can be viewed at;

https://www.iasonline.org/wp-content/uploads/2017/05/TL-637-cert-New.pdf.

4. SAR Measurement System & Test Equipment

4.1. SAR Measurement System

The DASY6 & 8 system used for performing compliance tests consists of the following items:



- A standard high precision 6-axis robot with controller, teach pendant and software. An arm extension for accommodating the data acquisition electronics (DAE).
- An isotropic Field probe optimized and calibrated for the targeted measurement.
- A data acquisition electronics (DAE) which performs the signal amplification, signal multiplexing, AD-conversion, offset measurements, mechanical surface detection, collision detection, etc. The unit is battery powered with standard or rechargeable batteries. The signal is optically transmitted to the EOC.
- The Electro-optical converter (EOC) performs the conversion from optical to electrical signals for the digital communication to the DAE. To use optical surface detection, a special version of the EOC is required. The EOC signal is transmitted to the measurement server.
- The function of the measurement server is to perform the time critical tasks such as signal filtering, control of the robot operation and fast movement interrupts.
- The Light Beam used is for probe alignment. This improves the (absolute) accuracy of the probe positioning.
- A computer running Win10 and the DASY6 or 8 software.
- Remote control and teach pendant as well as additional circuitry for robot safety such as warning lamps, etc.
- The phantom, the device holder and other accessories according to the targeted measurement.

4.2. SAR Scan Procedures

Step 1: Power Reference Measurement

The Power Reference Measurement and Power Drift Measurements are for monitoring the power drift of the device under test in the batch process. The minimum distance of probe sensors to surface determines the closest measurement point to phantom surface. The minimum distance of probe sensors to surface is 2.1 mm. This distance cannot be smaller than the distance of sensor calibration points to probe tip as defined in the probe properties.

Step 2: Area Scan

The Area Scan is used as a fast scan in two dimensions to find the area of high field values, before doing a fine measurement around the hot spot. The sophisticated interpolation routines implemented in DASY software can find the maximum locations even in relatively coarse grids. When an Area Scan has measured all reachable points, it computes the field maximal found in the scanned area, within a range of the global maximum. The range (in dB) is specified in the standards for compliance testing. For example, a 2 dB range is required in IEEE Standard 1528 and IEC 62209 standards, whereby 3 dB is a requirement when compliance is assessed in accordance with the ARIB standard (Japan). If only one Zoom Scan follows the Area Scan, then only the absolute maximum will be taken as reference. For cases where multiple maximums are detected, the number of Zoom Scans has to be increased accordingly.

Area Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

	≤ 3 GHz	> 3 GHz
Maximum distance from closest measurement point (geometric center of probe sensors) to phantom surface	5 ± 1 mm	½·δ·ln(2) ± 0.5 mm
Maximum probe angle from probe axis to phantom surface normal at the measurement location	30° ± 1°	20° ± 1°
Maximum area scan spatial resolution: Δx_{Area}, Δy_{Area}	≤ 2 GHz: ≤ 15 mm 2 – 3 GHz: ≤ 12 mm	3 – 4 GHz: ≤ 12 mm 4 – 6 GHz: ≤ 10 mm
	When the x or y dimension of the test device, in the measurement plane orientation, is smaller than the above, the measurement resolution must be ≤ the corresponding x or y dimension of the test device with at least one measurement point on the test device.	

Step 3: Zoom Scan

Zoom Scans are used to assess the peak spatial SAR values within a cubic averaging volume containing 1 g and 10 g of simulated tissue. The Zoom Scan measures points (refer to table below) within a cube whose base faces are centered on the maxima found in a preceding area scan job within the same procedure. When the measurement is done, the Zoom Scan evaluates the averaged SAR for 1 g and 10 g and displays these values next to the job's label.

Zoom Scan Parameters extracted from KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

			≤ 3 GHz	> 3 GHz
Maximum zoom scan spatial resolution: Δx_{Zoom}, Δy_{Zoom}			≤ 2 GHz: ≤ 8 mm 2 – 3 GHz: ≤ 5 mm*	3 – 4 GHz: ≤ 5 mm* 4 – 6 GHz: ≤ 4 mm*
Maximum zoom scan spatial resolution, normal to phantom surface	uniform grid: $\Delta z_{Zoom}(n)$		≤ 5 mm	3 – 4 GHz: ≤ 4 mm 4 – 5 GHz: ≤ 3 mm 5 – 6 GHz: ≤ 2 mm
	graded grid	$\Delta z_{Zoom}(1)$: between 1st two points closest to phantom surface	≤ 4 mm	3 – 4 GHz: ≤ 3 mm 4 – 5 GHz: ≤ 2.5 mm 5 – 6 GHz: ≤ 2 mm
		$\Delta z_{Zoom}(n>1)$: between subsequent points	≤ 1.5·$\Delta z_{Zoom}(n-1)$	
Minimum zoom scan volume	x, y, z		≥ 30 mm	3 – 4 GHz: ≥ 28 mm 4 – 5 GHz: ≥ 25 mm 5 – 6 GHz: ≥ 22 mm

Note: δ is the penetration depth of a plane-wave at normal incidence to the tissue medium; see draft standard IEEE P1528-2011 for details.

* When zoom scan is required and the *reported* SAR from the *area scan based 1-g SAR estimation* procedures of KDB 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.

Step 4: Power drift measurement

The Power Drift Measurement measures the field at the same location as the most recent power reference measurement within the same procedure, and with the same settings. The Power Drift Measurement gives the field difference in dB from the reading conducted within the last Power Reference Measurement. This allows a user to monitor the power drift of the device under test within a batch process. The measurement procedure is the same as Step 1.

4.3. Test Equipment

The measuring equipment used to perform the tests documented in this report has been calibrated in accordance with the manufacturers' recommendations, and is traceable to recognized national standards.

Dielectric Property Measurements

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Network Analyzer	Agilent	E5071C	MY46522054	2025-07-24
Network Analyzer	ROHDE & SCHWARZ	ZNB 20	102256	2025-07-22
Dielectric Assessment Kit	SPEAG	DAK-12	1158	2025-10-21
Dielectric Assessment Kit	SPEAG	DAK-3.5	1133	2025-03-12
Dielectric Assessment Kit	SPEAG	DAK-3.5	1196	2025-06-10
Vector Network Analyzer	SPEAG	DAKS_VNA R140	SN0050221	2025-04-15
Shorting block	SPEAG	DAK-3.5 Short	SM DAK 200 BA	N/A
Shorting block	SPEAG	DAK-12 Short	SM DAK 220 AD	N/A
Thermometer	LKM	DTM3000	3851	2025-07-23
Thermometer	LKM	DTM3000	3862	2025-07-23

System Check

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
MXG Analog Signal Generator	Keysight	N5173B	MY59101083	2025-07-23
Power Sensor	KEYSIGHT	U2004A USB Sensor	MY61200006	2025-01-03
Power Sensor	KEYSIGHT	U2004A USB Sensor	MY61280010	2025-01-03
Power Amplifier	EXODUS	AMP2027	1410025-AMP2027-10003	2025-02-14
Power Amplifier	MINI-CIRCUITS	TVA-R5-13A+	2111006	2025-01-03
Directional Coupler	MINI-CIRCUITS	ZMDC-30-1+	SF569102123	2025-07-24
Directional Coupler	KRYTAR	100318010	215541	2025-01-04
Low Pass Filter	MINI-CIRCUITS	VLF-6000+	S0142	2025-07-23
Low Pass Filter	MINI-CIRCUITS	VLF-3000+	S0143	2025-07-24
Low Pass Filter	MINI-CIRCUITS	NLP-1200+	VUU19301915	2025-01-04
Low Pass Filter	KRYTAR	WLKX10-11000-13640-21000-60TS	1	2025-07-23
Attenuator	KEYSIGHT	BW-S3W10+	N/A	2025-01-04
Attenuator	KEYSIGHT	8491B010	MY39272293	2025-07-23
Attenuator	KEYSIGHT	8491B/020	MY39272302	2025-07-24
E-Field Probe	SPEAG	EX3DV4	7314	2025-05-23
E-Field Probe	SPEAG	EX3DV4	7545	2025-09-03
E-Field Probe	SPEAG	EX3DV4	7646	2025-03-15
E-Field Probe	SPEAG	EX3DV4	3871	2025-09-04
Data Acquisition Electronics	SPEAG	DAE4	1468	2025-08-15
Data Acquisition Electronics	SPEAG	DAE4	1670	2025-05-15
Data Acquisition Electronics	SPEAG	DAE4	1671	2025-04-18
Data Acquisition Electronics	SPEAG	DAE4	1668	2025-04-18
System Validation Dipole	SPEAG	CLA -13	1015	2025-08-22
System Validation Dipole	SPEAG	D750V3	1205	2025-04-18
System Validation Dipole	SPEAG	D835V2	4d174	2025-09-16
System Validation Dipole	SPEAG	D1750V2	1125	2024-11-30
System Validation Dipole	SPEAG	D1750V2	1180	2025-10-15
System Validation Dipole	SPEAG	D1900V2	5d190	2024-11-16
System Validation Dipole	SPEAG	D1900V2	5d199	2025-03-13
System Validation Dipole	SPEAG	D2450V2	960	2025-03-14
System Validation Dipole	SPEAG	D2600V2	1097	2025-09-13
System Validation Dipole	SPEAG	D5GHzV2	1325	2025-04-21
Thermometer	Lutron	MHB-382SD	AK.12102	2025-07-24
Thermometer	Lutron	MHB-382SD	AK.18789	2025-07-24
Thermometer	Lutron	MHB-382SD	AJ.42446	2025-07-24

Note(s):

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations. (for blue box items)
3. All equipments were used until Cal.Due data.

Test Equipment (Continued)

Others

Name of Equipment	Manufacturer	Type/Model	Serial No.	Cal. Due Date
Base Station Simulator	R & S	CMW500	162790	2025-07-25
Base Station Simulator	R & S	CMW500	169803	2025-03-25
Base Station Simulator	R & S	CMW500	169802	2025-01-03
Base Station Simulator	R & S	CMW500	169800	2025-07-24
UXM 5G Wireless Test Platform	KEYSIGHT	E7515B	MY59150850	2025-01-03
Radio Communication Test Station	Anritsu	MT8000A	6272466165	2025-08-20
Radio Communication Analyzer	Anritsu	MT8821C	6161094351	2025-08-20

Note(s):

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. Refer to Appendix F that mentioned about justification for Extended SAR Dipole Calibrations. (for blue box items)
3. All equipments were used until Cal.Due data.

5. Measurement Uncertainty

Measurement Uncertainty of 100MHz to 6GHz

Per KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz, when the highest measured 1-g SAR within a frequency band is < 1.5 W/kg and the measured 10-g SAR within a frequency band is < 3.75 W/kg. The expanded SAR measurement uncertainty must be ≤ 30%, for a confidence interval of k = 2. If these conditions are met, extensive SAR measurement uncertainty analysis described in IEEE Std 1528-2013 is not required in SAR reports submitted for equipment approval.

Measurement Uncertainty of 9MHz to 19MHz

Measurement uncertainty for 9 MHz to 19 MHz
(According to IEEE 62209-1528)

a	b	c		d	e	f	g	h =	l =	k
					f(d,k)			*c×f/e*	*c×g/e*	
Uncertainty component	Reference	Tol. 1 g (±%)	Tol. 10 g (±%)	Prob. Dist.	Div.	*ci* (1 g)	*ci* (10 g)	1 g *ui* (± %)	10 g *ui* (± %)	vi
Measurement System Errors										
Probe Calibration	8.4.1.1	13.3		Normal	2	1	1	6.7	6.7	∞
Probe Calibration Drift	8.4.1.2	1.7		Rectangular	1.732	1	1	1.0	1.0	∞
Probe Linearity	8.4.1.3	4.7		Rectangular	1.732	1	1	2.7	2.7	∞
Broadband Signal	8.4.1.4	0.8		Rectangular	1.732	1	1	0.5	0.5	∞
Probe Isotropy	8.4.1.5	7.6		Rectangular	1.732	1	1	4.4	4.4	∞
Data Acquisition	8.4.1.6	0.3		Normal	1	1	1	0.3	0.3	∞
RF Ambient	8.4.1.7	1.8		Normal	1	1	1	1.8	1.8	∞
Probe Positioning	8.4.1.8	0.006		Normal	1	0.14	0.14	0.10	0.10	∞
Data Processing	8.4.1.9	1.2		Normal	1	1	1	1.2	1.2	∞
Phantom and Device Errors										
Conductivity (meas.)DAK	8.4.2.1	2.5		Normal	1	0.78	0.71	2.0	1.8	∞
Conductivity (temp.)BB	8.4.2.2	5.4		Rectangular	1.732	0.78	0.71	2.4	2.2	∞
Phantom Permittivity	8.4.2.3	14.0		Rectangular	1.732	0	0	0.0	0.0	∞
Distance DUT -TSL	8.4.2.4	2.0		Normal	1	2	2	4.0	4.0	∞
Device Positioning	8.4.2.5	**1.0**	**2.3**	Normal	1	1	1	1.0	2.3	**40**
Device Holder	8.4.2.6	3.6		Normal	1	1	1	3.6	3.6	∞
DUT Modulation	8.4.2.7	2.4		Rectangular	1.732	1	1	1.4	1.4	∞
Time-average SAR	8.4.2.8	1.7		Rectangular	1.732	1	1	1.0	1.0	∞
DUT drift	8.4.2.9	5.0		Normal	1	1	1	5.0	5.0	∞
Correction to the SAR results										
Deviation to Target	8.4.3.1	1.9		Normal	1	1	0.84	1.9	1.6	∞
Combined Standard Uncertainty Uc(y) =				RSS				12.16	12.23	
Expanded Uncertainty U, Coverage Factor = 2, > 95 % Confidence =								**24.33**	**24.47**	

5.1. DECISION RULE

Measurement Uncertainty is not applied when providing statements of conformity in accordance with IEC Guide 115:2023, 4.3.3.

6. Device Under Test (DUT) Information

6.1. DUT Description

Device Dimension	Refer to Appendix A.					
Back Cover	☒ The Back Cover is not removable.					
Battery Options	☒ The rechargeable battery is not user accessible					
Wireless Router (Hotspot)	Wi-Fi Hotspot mode permits the device to share its cellular data connection with other Wi-Fi-enabled devices. ☒ Mobile Hotspot (Wi-Fi 2.4 GHz)					
Wi-Fi Direct	Wi-Fi Direct enabled devices transfer data directly between each other ☒ Wi-Fi Direct (Wi-Fi 2.4 GHz) ☒ Wi-Fi Direct (Wi-Fi 5.2 GHz_UNII-1, Wi-Fi 5.8 GHz_UNII-3)					
Test Sample Information	**No.**	**S/N**	**Notes**	**No.**	**S/N**	**Notes**
	1	R3CX90B4JSX	Main Conduction	7	R3CX90B4Z0Z	SAR
	2	R3CX90B52PM	Main Conduction	8	R3CX90B4MKL	SAR
	3	R3CX90B51SW	Main Conduction	9	R3CX90B52DD	SAR
	4	R3CX90B4ZLT	WLAN Conduction	10	R3CX90B503T	SAR
	5	R3CX90B4J4V	SAR	11	R3CX90B52GV	SAR
	6	R3CX90B4N2K	SAR			

6.2. Wireless Technologies

Wireless technologies	Frequency bands	Operating mode		Duty Cycle used for SAR testing
GSM	850 1900	Voice (GMSK) GPRS (GMSK) EGPRS (8PSK)	GPRS Multi-Slot Class: ☐ Class 8 - 1 Up, 4 Down ☐ Class 10 - 2 Up, 4 Down ☒ Class 12 - 4 Up, 4 Down ☐ Class 33 - 4 Up, 5 Down	GSM Voice: 12.5% (E)GPRS: 1 Slot: 12.5% 2 Slots: 25% 3 Slots: 37.5% 4 Slots: 50%
	Does this device support DTM (Dual Transfer Mode)? ☐ Yes ☒ No			
W-CDMA (UMTS)	Band V	UMTS Rel. 99 (Voice & Data) HSDPA (Category 24) HSUPA (Category 6) DC-HSDPA (Category 24) HSPA+ (DL only)		100%
LTE	**FDD Bands** 2 / 5 / 12 / 26 / 66 **TDD Bands** 41	QPSK 16QAM 64QAM Rel. 15 Carrier Aggregation (1 Uplink and 2 Downlinks)		100% (FDD) 63.3% (TDD) Power Class 3
	Does this device support SV-LTE (1xRTT-LTE)? ☐ Yes ☒ No			
5G NR (Sub 6)	**FDD Band** n5	DFT-s-ODFM: ■ π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM CP-ODFM: ■QPSK, 16QAM, 64QAM, 256QAM		100%
Wi-Fi	2.4 GHz	802.11b, 802.11g, 802.11n (HT20)		99.5% (802.11b-SISO)
	5 GHz	802.11a / 802.11n (HT20/40) 802.11ac (VHT20/40/80)		98.4% (802.11a SISO) 93.2% (802.11ac (VHT80-SISO)
	Does this device support bands 5.60 ~ 5.65 GHz? ☒ Yes ☐ No			
	Does this device support Band gap channel(s)? ☒ Yes ☐ No			
Bluetooth	2.4 GHz	Version 5.3 LE		76.8%(BDR)
NFC	13.56 MHz	Type A/B/F/V		100%

Notes:

1. Wi-Fi & Bluetooth were tested SAR using highest duty cycle. Measured duty cycle plots are in Section.9.
2. The duty cycle of LTE Band 41 Power class 3 was tested at the highest duty cycle according to the Sec 6.7 guide.

6.3. Time-Averaging feature

The equipment under test (EUT) contains MediaTek TA-SAR supporting WWAN technologies (2G/3G/4G/5G-Sub6). Mediatek has enabled the TA-SAR (Time Averaged Specific Absorption Rate) algorithm to control instantaneous TX power for transmit frequencies, so that the total time-averaged RF exposures are less than FCC requirement. And The EUT has also supports to WLAN/BT/NFC technologies, but There are not support to TA-SAR algorithm. The TA-SAR (Time Averaged Specific Absorption Rate) algorithm maintains the time-averaged transmit power, in turn, time-averaged RF exposure of SAR_design_target, below the predefined time-average power limit, for each characterized technology and band. TA-SAR (Time Averaged Specific Absorption Rate) algorithm allows the device to transmit at higher power instantaneously as high as Pmax, when needed, but enforces power limiting to maintain time-averaged transmit power to PLimit. Table 6.4.5 shows PLimit NV settings and maximum tune up output power Pmax configured for this EUT for various transmit conditions (ECI = Exposure Condition Index) in Sec.6.4.4.

6.4. Part.0 Plimit Characterization

This section shows SAR characterization of WWAN radios. Characterization is achieved by determining *Plimit* for WWAN radios that correspond to the *SAR_design_target* after accounting for all device design related uncertainty.

6.4.1. Nomenclature for SAR Characterization Report for WWAN

Term	Descroption
P_max	Maximum Tx power that can be transmitted physically from RFIC for a given RAT.
SAR_regulatory_limit	SAR value limit specified by FCC.
SAR_design_Target	Target SAR level using in TAS algorithm. This SAR value should be less than SAR regulatory limit and should be determined after accounting for all uncertainties and other design considerations.
P_limit	Measured Tx power at SAR design target
SAR Char (SAR Characterization)	Table containing Plimit for all technologies and bands.

Table 6.4.1 Definitions for TA-SAR algorithm

6.4.2. SAR Characterizations

WWAN SAR Design Target

SAR_Design_target is determined by ensuring that it is less than FCC SAR limit after accounting for total device designed related uncertainties specified by the manufacturer.

WWAN_SAR_design_target			
$SAR\_design\_target < SAR\_regulatory\_limit \times 10^{\frac{-Total\ Uncertainty}{10}}$			
1g SAR (W/kg)		***10g SAR (W/kg)***	
Total Uncertainty	**1.0 dB**	**Total Uncertainty**	**1.0 dB**
SAR_regulatory_limit	**1.6 W/kg**	***SAR_regulatory_limit***	**4.0 W/kg**
SAR_design_target	**1.0 W/kg**	***SAR_design_target***	**2.5 W/kg**

Table 6.4.2 Definitions of uncertainty and design target for WWAN techs.

6.4.3. SAR Determination

ECI and SAR Determination in WWAN techs

This device uses different Exposure Condition Index (ECI) **via MediaTek TAS** to configure different time averaged power levels based on certain exposure scenarios. Depending on the detection scheme implemented in the wireless device, the worst-case SAR was determined by measurements for the relevant exposure conditions for that ECI. Detailed descriptions of the detection mechanisms are included in the operational description

The radio Exposure Condition Index (ECI) conditions used in below table represent different exposure scenarios.

RF exposure Conditions	Technologuies Supported	ECI conditions	Description
Head	All WWAN bands	1 (RCV)	1. Device positioned next to head. 2. Receiver Active.
Body-worn	All WWAN bands	0 (Free)	1. Device being used with a body-worn accessory.
Hotspot	All WWAN bands	2 (Hotspot)	1. Device transmits in hotspot mode near body. 2. Hotspot Mode Active.
Phablet 10-g	All WWAN bands	0 (Free)	1. Device is held with hand.

Table 6.4.3 ECI and Corresponding Exposure Scenarios

Note(s):
ECI Scenarios priority: RCV → Hotspot → Free

6.4.4. Plimit Determination

Plimit determination of ECI scenarios

SAR results corresponding to P_{max} for each antenna/technology/band/ECI can be found in Section.10. P_{limit} is calculated by linearly scaling with the P_{max} to correspond to *the SAR_ design_target*. P_{limit} determination for each exposure scenario corresponding to *SAR_design_target* is shown in table.
If Plimit is lower than Pmax, then SAR Char's SAR data were referred to SAR data in SAR report.

ECI state	Plimit Determination Scenarios
RCV	Plimit is calculated based on 1g Head exposure SAR results.
Hotspot	Plimit is calculated based on 1g Hotspot exposure SAR results at 5 mm test distance.
Free	Plimit is calculated based on 1g Body worn SAR measured at 5 mm test distance.

Table 6.4.4 P_{Limit} Determination of WWAN's ECI scenarios

Note(s):
Body conditions (Body-worn & Hotspot) tested to 1g SAR at 5 mm test distance, so Phablet 10g SAR test is not required for determining Plimit in Free state.

Table 6.4.5 P_{Limit} result according to technologies and bands in each ECI

Exposure condition		Head (RCV)	Body-worn & Hotspot	Phablet 10-g	Pmax (Maximum tune-up Power) (dBm)
Spatial-average		1g	1g	10g	
Test distance (mm)		0	5	0	
ECI		1	0 & 2	0	
RF Air Interface	Antenna	P_{limit} corresponding to 1.0 W/kg (SAR_design_target) (1g)			
GSM 850	Ant.A	32.57	19.82	N/A	25.3
GSM 1900	Ant.B	34.02	16.82	N/A	21.8
WCDMA Band V	Ant.A	30.87	22.00	N/A	24.0
LTE Band 2	Ant.B	33.01	19.00	N/A	23.0
LTE Band 5	Ant.A	31.15	22.00	N/A	24.5
LTE Band 12	Ant.A	34.90	22.00	N/A	24.5
LTE Band 26	Ant.A	31.15	21.00	N/A	24.5
LTE Band 41	Ant.B	30.84	17.00	N/A	22.5
LTE Band 66	Ant.B	32.79	19.00	N/A	23.0
NR Band n5	Ant.A	30.30	22.00	N/A	24.0

Notes:

1. All *PLimit* and maximum tune up output *Pmax* levels entered in above Table correspond to average power levels after accounting for duty cycle in the case of TDD modulation schemes (for e.g., GSM/LTE TDD).
2. Maximum tune up output power *Pmax* is used to configure EUT during RF tune up procedures. The maximum allowed output power is equal to maximum tune up output power + 1dB device design uncertainty.
3. Measurement Condition: All conducted power and SAR measurements in this SAR report were performed by setting static Power condition.
4. If *PLimit* is higher than *Pmax* for some modes / bands, The modes/bands will operate at a power level up to *Pmax*.
5. Compared with the *PLimit* declared in each ECI by the manufacturer and the *PLimit* (calculation) calculated by the SAR measurement of each ECI, the lower power was applied to the NV as the *PLimit* at each ECI configurations.
6. *PLimit* value listed above table is referenced from Sec.10. Some bands were determined more conservative Plimit instead of calculation Plimit Sec.10.

6.5. Maximum Allowed Output power

WWAN Bands maximum allowed output power

Maximum allowed output power means that Pmax or PLimit + 1dB device uncertainty for each ECI.

GSM Bands

RF Air interface	Antenna	Mode	Time Slots	Maximum allowed output power (dBm)							
				Pmax		Plimit					
						ECI = 0 (Free)		ECI = 1 (RCV)		ECI = 2 (HOTSPOT)	
				Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM850	Ant.A	Voice	1	**34.50**	**25.31**	**30.00**	**20.81**	**34.50**	**25.31**	**30.00**	**20.81**
		GPRS	1	**34.50**	**25.31**	**30.00**	**20.81**	**34.50**	**25.31**	**30.00**	**20.81**
		GPRS	2	**32.50**	**26.32**	**27.00**	**20.82**	**32.50**	**26.32**	**27.00**	**20.82**
		GPRS	3	**30.00**	**25.58**	**25.00**	**20.58**	**30.00**	**25.58**	**25.00**	**20.58**
		GPRS	4	**28.50**	**25.33**	**23.50**	**20.33**	**28.50**	**25.33**	**23.50**	**20.33**
		EGPRS	1	**26.00**	**16.81**	**26.00**	**16.81**	**26.00**	**16.81**	**26.00**	**16.81**
		EGPRS	2	**25.00**	**18.82**	**25.00**	**18.82**	**25.00**	**18.82**	**25.00**	**18.82**
		EGPRS	3	**22.50**	**18.08**	**22.50**	**18.08**	**22.50**	**18.08**	**22.50**	**18.08**
		EGPRS	4	**21.00**	**17.83**	**21.00**	**17.83**	**21.00**	**17.83**	**21.00**	**17.83**
GSM1900	Ant.B	Voice	1	**31.00**	**21.81**	**27.00**	**17.81**	**31.00**	**21.81**	**27.00**	**17.81**
		GPRS	1	**31.00**	**21.81**	**27.00**	**17.81**	**31.00**	**21.81**	**27.00**	**17.81**
		GPRS	2	**29.00**	**22.82**	**24.00**	**17.82**	**29.00**	**22.82**	**24.00**	**17.82**
		GPRS	3	**27.00**	**22.58**	**22.00**	**17.58**	**27.00**	**22.58**	**22.00**	**17.58**
		GPRS	4	**26.00**	**22.83**	**20.50**	**17.33**	**26.00**	**22.83**	**20.50**	**17.33**
		EGPRS	1	**25.50**	**16.31**	**25.50**	**16.31**	**25.50**	**16.31**	**25.50**	**16.31**
		EGPRS	2	**24.00**	**17.82**	**24.00**	**17.82**	**24.00**	**17.82**	**24.00**	**17.82**
		EGPRS	3	**21.00**	**16.58**	**21.00**	**16.58**	**21.00**	**16.58**	**21.00**	**16.58**
		EGPRS	4	**20.00**	**16.83**	**20.00**	**16.83**	**20.00**	**16.83**	**20.00**	**16.83**

WCDMA Bands

RF Air interface	Antenna	Mode	Maximum allowed output power (dBm)			
			Pmax	Plimit		
				ECI = 0 (Free)	ECI = 1 (RCV)	ECI = 2 (Hotspot)
W-CDMA Band V	Ant.A	Rel 99	**25.00**	**23.00**	**25.00**	**23.00**
		HSDPA	**24.00**	**22.00**	**24.00**	**22.00**
		HSUPA	**23.00**	**22.00**	**23.00**	**22.00**
		DC-HSDPA	**24.00**	**22.00**	**24.00**	**22.00**

Note(s):

1. Detail of ECI (Exposure Condition Index) conditions, please refer to Sec.6.4.4.

WWAN Bands maximum allowed output power (Continued)

Maximum allowed output power means that Pmax or PLimit + 1dB device uncertainty for each ECI.

LTE Bands

RF Air interface	Antenna	Mode	Maximum allowed output power (dBm)			
			Pmax	Plimit		
				ECI = 0 (Free)	ECI = 1 (RCV)	ECI = 2 (Hotspot)
LTE Band 2	Ant.B	QPSK	**24.00**	**20.00**	**24.00**	**20.00**
LTE Band 5	Ant.A	QPSK	**25.50**	**23.00**	**25.50**	**23.00**
LTE Band 12	Ant.A	QPSK	**25.50**	**23.00**	**25.50**	**23.00**
LTE Band 26	Ant.A	QPSK	**25.50**	**22.00**	**25.50**	**22.00**
LTE Band 66	Ant.B	QPSK	**24.00**	**20.00**	**24.00**	**20.00**
LTE Band 41	Ant.B	QPSK	**25.50**	**20.00**	**25.50**	**20.00**

NR Bands

RF Air interface	Antenna	Mode	Maximum allowed output power (dBm)			
			Pmax	Plimit		
				ECI = 0 (Free)	ECI = 1 (RCV)	RSI = 2 (Hotspot)
NR Band n5	Ant.A	DFT-s-OFDM QPSK	**25.00**	**23.00**	**25.00**	**23.00**

Note(s):

1. Detail of ECI (Exposure Condition Index) conditions, please refer to Sec.6.4.4.

WLAN Bands maximum allowed output power

Maximum allowed output power means that Target Power+ 1dB device uncertainty.

Maximum Power

RF Air interface	Band		Maximum allowed output power (dBm)				
			802.11 mode				
			2.4GHz SISO (Ant.F) / 5GHz SISO (Ant.F)				
			a	b	g	n	ac
WiFi 2.4 GHz	DTS	Ch 1 - 11		17.0	17.0	17.0	
		Ch12		9.0	9.0	9.0	
		Ch 13		9.0	9.0	9.0	
WiFi 5 GHz (BW : 20MHz)	UNII-1		17.0			17.0	17.0
	UNII-2A		17.0			17.0	17.0
	UNII-2C		17.0			17.0	17.0
	UNII-3		17.0			17.0	17.0
WiFi 5 GHz (BW : 40MHz)	UNII-1					15.0	15.0
	UNII-2A					15.0	15.0
	UNII-2C					15.0	15.0
	UNII-3					15.0	15.0
WiFi 5 GHz (BW : 80MHz)	UNII-1						14.0
	UNII-2A						14.0
	UNII-2C						14.0
	UNII-3						14.0

Reduced Power

RF Air interface	Band		Maximum allowed output power (dBm)				
			802.11 mode				
			2.4GHz SISO (Ant.F) / 5GHz SISO (Ant.F)				
			a	b	g	n	ac
WiFi 2.4 GHz	DTS	Ch 1 - 11		17.0	17.0	17.0	
		Ch12		9.0	9.0	9.0	
		Ch 13		9.0	9.0	9.0	
WiFi 5 GHz (BW : 20MHz)	UNII-1		14.0			14.0	14.0
	UNII-2A		14.0			14.0	14.0
	UNII-2C		14.0			14.0	14.0
	UNII-3		14.0			14.0	14.0
WiFi 5 GHz (BW : 40MHz)	UNII-1					14.0	14.0
	UNII-2A					14.0	14.0
	UNII-2C					14.0	14.0
	UNII-3					14.0	14.0
WiFi 5 GHz (BW : 80MHz)	UNII-1						14.0
	UNII-2A						14.0
	UNII-2C						14.0
	UNII-3						14.0

Note(s):

WLAN has supported to reduced power during RCV active.

BT(Bluetooth) Max power

RF Air interface	Max. Output Power (dBm)
	Ant.D
Bluetooth (BDR) (1Mbps)	12.0
Bluetooth (EDR)	9.0
Bluetooth LE (1M)	7.0
Bluetooth LE (2M)	7.0

6.6. General LTE SAR Test and Reporting Considerations

Item	Description						
Frequency range, Channel Bandwidth, Numbers and Frequencues	Band 2	Frequency range: 1850 - 1910 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	18700/ 1860	18675/ 1857.5	18650/ 1855	18625/ 1852.5	18615/ 1851.5	18607/ 1850.7
	Mid	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880	18900/ 1880
	High	19100/ 1900	19125/ 1902.5	19150/ 1905	19175/ 1907.5	19185/ 1908.5	19193/ 1909.3
	Band 66	Frequency range: 1710 - 1780 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	132072/ 1720	132047/ 1717.5	132022/ 1715	131997/ 1712.5	131987/ 1711.5	131979/ 1710.7
	Mid	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745	132322/ 1745
	High	132572/ 1770	132597/ 1772.5	132622/ 1775	132647/ 1777.5	132657/ 1778.5	132665/ 1779.3
	Band 5	Frequency range: 824 - 849 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			20450/ 829	20425/ 826.5	20415/ 825.5	20407/ 824.7
	Mid			20525/ 836.5	20525/ 836.5	20525/ 836.5	20525/ 836.5
	High			20600/ 844	20625/ 846.5	20635/ 847.5	20643/ 848.3
	Band 26	Frequency range: 814 - 849 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low		26765/ 821.5	26740/ 819	26715/ 816.5	26705/ 815.5	26697/ 814.7
	Mid		26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5	26865/ 831.5
	High		26965/ 841.5	26990/ 844	27015/ 846.5	27025/ 847.5	27033/ 848.3
	Band 12	Frequency range: 699 - 716 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low			23060/ 704	23035/ 701.5	23025/ 700.5	23017/ 699.7
	Mid			23095/ 707.5	23095/ 707.5	23095/ 707.5	23095/ 707.5
	High			23130/ 711	23155/ 713.5	23165/ 714.5	23173/ 715.3
	Band 41	Frequency range: 2496 - 2690 MHz					
		Channel Bandwidth					
		20 MHz	15 MHz	10 MHz	5 MHz	3 MHz	1.4 MHz
	Low	39750/ 2506.0					
	Low-Mid	40185/ 2549.5					
	Mid	40620/ 2593.0					
	Mid-High	41055/ 2636.5					
	High	41490/ 2680.0					

Notes:

1. Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. 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 SAR for LTE devices.
2. LTE Band 41 test channels in accordance with October 2014 TCB workshop for all channels bandwidths.
3. SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

General LTE SAR Test and Reporting Considerations (Continued)

LTE transmitter and antenna implementation	Refer to Appendix A.
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}) 1.4 MHz | 3.0 MHz | 5 MHz | 10 MHz | 15 MHz | 20 MHz | MPR (dB) 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
Power reduction	Yes.
Spectrum plots for RB configuration	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.

Notes:

1. Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths. 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 SAR for LTE devices.
2. LTE Band 41 test channels in accordance with October 2014 TCB workshop for all channels bandwidths.
3. SAR Testing for LTE was performed with the same number of RB and RB offsets transmitting on all TTI frames (maximum TTI).

6.7. 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	$6592 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$	$7680 \cdot T_s$	$2192 \cdot T_s$	$2560 \cdot T_s$
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	$26336 \cdot T_s$			$7680 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$
5	$6592 \cdot T_s$	$4384 \cdot T_s$	$5120 \cdot T_s$	$20480 \cdot T_s$		
6	$19760 \cdot T_s$			$23040 \cdot T_s$		
7	$21952 \cdot T_s$			$12800 \cdot T_s$		
8	$24144 \cdot T_s$			-	-	-
9	$13168 \cdot T_s$			-	-	-

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	63.33
1	5 ms	D	S	U	U	D	D	S	U	U	D	43.33
2	5 ms	D	S	U	D	D	D	S	U	D	D	23.33
3	10 ms	D	S	U	U	U	D	D	D	D	D	31.67
4	10 ms	D	S	U	U	D	D	D	D	D	D	21.67
5	10 ms	D	S	U	D	D	D	D	D	D	D	11.67
6	5 ms	D	S	U	U	U	D	S	U	U	D	53.33

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

Example for Calculated Duty Cycle for Uplink-Downlink Configuration 0:
Calculated Duty Cycle = 5120 x [1/(15000 x 2048)] x 2 + 6 ms = 63.33%
where
T_s = 1/(15000 x 2048) seconds

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% duty cycle in power class 3.

6.8. NR (Sub 6GHz) SAR Test and Reporting Considerations

Item	Description													
Frequency range, Channel Bandwidth, Numbers and Frequencues	Band n5	Frequency range: 824 - 849 MHz												
		Channel Bandwidth												
		100 MHz	90 MHz	80 MHz	70 MHz	60 MHz	50 MHz	40 MHz	35 MHz	30 MHz	25 MHz	20 MHz	15 MHz	10 MHz	5 MHz
	Low											166800/ 834	166300/ 831.5	165800/ 829	165300/ 826.5
	Mid											167300/ 836.5	167300/ 836.5	167300/ 836.5	167300/ 836.5
	High											167800/ 839	168300/ 841.5	168800/ 844	169300/ 846.5
SCS	NR FDD Bands : 15 kHz														
Modulations Supported in UL	DFT-s-OFDM: π/2 BPSK, QPSK, 16QAM, 64QAM, 256QAM & CP-OFDM: QPSK, 16QAM, 64QAM, 256QAM														
A-MPR (Additional MPR) disabled for SAR Testing?	Yes														
EN-DC Carrier Aggregation Possible Combinations															
LTE Anchor Bands for NR Band n5	LTE B2/66														

Notes:

1. SAR test for NR bands and LTE anchor Bands were performed separately due to limitations in SAR probe calibration factors.
2. NR configurations of SAR test were determined according to Section 5.2 of KDB 941225 D05.

7. RF Exposure Conditions (Test Configurations)

Refer to Appendix A for the specific details of the antenna-to-antenna and antenna-to-edge(s) distances.

Wireless technologies	RF Exposure Conditions	Antenaa	DUT-to-User Separation	Test Positions			
				Right Touch	Right Tilt	Left Touch	Left Tilt
WWAN & WLAN/BT	Head	All WWAN/WLAN/BT Antennas (Ant.A/B/F)	0 mm	**Yes**	**Yes**	**Yes**	**Yes**

Wireless technologies	RF Exposure Conditions	Antenaa	DUT-to-User Separation	Test Positions					
				Rear	Front	Top	Left	Bottom	Right
WWAN	Body-worn & Hotspot	Ant.A	5 mm	**Yes**	**Yes**	**No**	**No**	**Yes**	**Yes**
		Ant.B	5 mm	**Yes**	**Yes**	**No**	**Yes**	**Yes**	**No**
WLAN/BT	Body-worn & Hotspot	2.4GHz WLAN/BT Antenna (Ant.F)	5 mm	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**
	Body-worn & Near Body[2]	5GHz WLAN Antenna (Ant.F)	5 mm	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**
NFC	Near Body[2]	NFC Ant.	5 mm	**Yes**	**Yes**	**Yes**	**Yes**	**No**	**No**

Notes:

1. For Hotspot exposure condition, SAR is not required because the distance from the antenna to the edge is > 25 mm as per KDB 941225 D06 Hotspot SAR.
2. For Near body exposure condition, Near Body condition tested 1-g SAR on all surfaces and side edges with antenna located at ≤ 25mm from that surface or edge, at 5mm test distance.
3. Per manufacturer guide, NFC SAR was considered about Near Body condition.
4. For Head exposure condition, All WWAN/WLAN/BT Antennas are required Head SAR test.
5. For Body-worn exposure condition, SAR test is considered for Rear and Front test positions.
6. The Body-worn minimum separation distance is 5mm. To cover both body-worn and hotspot RF exposure conditions testing was performed at a separation distance of 5mm.

8. Dielectric Property Measurements & System Check

8.1. Dielectric Property Measurements

The temperature of the tissue-equivalent medium used during measurement must also be within 18°C to 25°C and within ± 2°C of the temperature when the tissue parameters are characterized.
The dielectric parameters must be measured before the tissue-equivalent medium is used in a series of SAR measurements. The Tissue Dielectric parameters (100MHz to 6GHz) should be re-measured after each 3 – 4 days of use; or earlier if the dielectric parameters can become out of tolerance; for example, when the parameters are marginal at the beginning of the measurement series.
Tissue dielectric parameters were measured at the low, middle and high frequency of each operating frequency range of the test device.
For The Tissue Dielectric parameters (9MHz to 19MHz). The parameters must be measured before 24 hours.

1. Tissue Dielectric Parameters (100MHz to 6GHz)
FCC KDB 865664 D01 SAR Measurement 100 MHz to 6 GHz

Target Frequency (MHz)	Head	
	ε_r	σ (S/m)
150	52.3	0.76
300	45.3	0.87
450	43.5	0.87
835	41.5	0.90
900	41.5	0.97
915	41.5	0.98
1450	40.5	1.20
1610	40.3	1.29
1800 – 2000	40.0	1.40
2450	39.2	1.80
3000	38.5	2.40
5000	36.2	4.45
5100	36.1	4.55
5200	36.0	4.66
5300	35.9	4.76
5400	35.8	4.86
5500	35.6	4.96
5600	35.5	5.07
5700	35.4	5.17
5800	35.3	5.27
6000	35.1	5.48

SAR test were performed in All RF exposure conditions using Head tissue according to TCB workshop note of April. 2019.

IEEE Std 1528-2013
Refer to Table 3 within the IEEE Std 1528-2013

2. Tissue Dielectric Parameters (9MHz to 19MHz)

Target Frequency (MHz)	Head	
	ε_r	σ (S/m)
9	55.0	0.75
13	55.0	0.75
19	55.0	0.75

IEC_IEEE Std 62209-1528 : 2020
Refer to Table 2 within the IEC_IEEE Std 62209-1528 : 2020.

Dielectric Property Measurements Results:

SAR 6 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2024-10-28	Head 835	e'	43.1700	Relative Permittivity (ϵ_r):	43.17	41.50	4.02	5
		e''	18.7800	Conductivity (σ):	0.87	0.90	-3.12	5
	Head 810	e'	43.2400	Relative Permittivity (ϵ_r):	43.24	41.65	3.81	5
		e''	19.1600	Conductivity (σ):	0.86	0.90	-3.87	5
	Head 850	e'	43.1400	Relative Permittivity (ϵ_r):	43.14	41.50	3.95	5
		e''	18.5500	Conductivity (σ):	0.88	0.92	-4.18	5
2024-11-01	Head 835	e'	43.2000	Relative Permittivity (ϵ_r):	43.20	41.50	4.10	5
		e''	19.1200	Conductivity (σ):	0.89	0.90	-1.37	5
	Head 810	e'	43.2700	Relative Permittivity (ϵ_r):	43.27	41.65	3.88	5
		e''	19.4900	Conductivity (σ):	0.88	0.90	-2.22	5
	Head 850	e'	43.1600	Relative Permittivity (ϵ_r):	43.16	41.50	4.00	5
		e''	18.8800	Conductivity (σ):	0.89	0.92	-2.48	5
2024-11-05	Head 835	e'	42.4600	Relative Permittivity (ϵ_r):	42.46	41.50	2.31	5
		e''	20.1700	Conductivity (σ):	0.94	0.90	4.05	5
	Head 810	e'	42.5700	Relative Permittivity (ϵ_r):	42.57	41.65	2.20	5
		e''	20.5400	Conductivity (σ):	0.93	0.90	3.05	5
	Head 850	e'	42.4100	Relative Permittivity (ϵ_r):	42.41	41.50	2.19	5
		e''	19.9400	Conductivity (σ):	0.94	0.92	3.00	5
2024-11-11	Head 835	e'	42.8900	Relative Permittivity (ϵ_r):	42.89	41.50	3.35	5
		e''	20.2600	Conductivity (σ):	0.94	0.90	4.52	5
	Head 810	e'	42.9600	Relative Permittivity (ϵ_r):	42.96	41.65	3.14	5
		e''	20.6400	Conductivity (σ):	0.93	0.90	3.55	5
	Head 850	e'	42.8500	Relative Permittivity (ϵ_r):	42.85	41.50	3.25	5
		e''	20.0300	Conductivity (σ):	0.95	0.92	3.46	5
2024-11-22	Head 835	e'	43.1200	Relative Permittivity (ϵ_r):	43.12	41.50	3.90	5
		e''	19.3500	Conductivity (σ):	0.90	0.90	-0.18	5
	Head 810	e'	43.2100	Relative Permittivity (ϵ_r):	43.21	41.65	3.74	5
		e''	19.7400	Conductivity (σ):	0.89	0.90	-0.96	5
	Head 850	e'	43.0800	Relative Permittivity (ϵ_r):	43.08	41.50	3.81	5
		e''	19.1300	Conductivity (σ):	0.90	0.92	-1.19	5
2024-11-25	Head 1900	e'	39.0100	Relative Permittivity (ϵ_r):	39.01	40.00	-2.48	5
		e''	13.3300	Conductivity (σ):	1.41	1.40	0.59	5
	Head 1850	e'	38.9100	Relative Permittivity (ϵ_r):	38.91	40.00	-2.73	5
		e''	13.3500	Conductivity (σ):	1.37	1.40	-1.91	5
	Head 1915	e'	39.0400	Relative Permittivity (ϵ_r):	39.04	40.00	-2.40	5
		e''	13.3400	Conductivity (σ):	1.42	1.40	1.46	5

SAR 7 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2024-10-28	Head 1900	e'	40.0100	Relative Permittivity (ϵ_r):	40.01	40.00	0.02	5
		e''	13.5900	Conductivity (σ):	1.44	1.40	2.55	5
	Head 1850	e'	40.0600	Relative Permittivity (ϵ_r):	40.06	40.00	0.15	5
		e''	13.6300	Conductivity (σ):	1.40	1.40	0.15	5
	Head 1915	e'	40.0000	Relative Permittivity (ϵ_r):	40.00	40.00	0.00	5
		e''	13.5800	Conductivity (σ):	1.45	1.40	3.29	5
2024-11-01	Head 1750	e'	41.9300	Relative Permittivity (ϵ_r):	41.93	40.08	4.60	5
		e''	13.8000	Conductivity (σ):	1.34	1.37	-1.91	5
	Head 1710	e'	42.0000	Relative Permittivity (ϵ_r):	42.00	40.15	4.62	5
		e''	13.9100	Conductivity (σ):	1.32	1.35	-1.77	5
	Head 1780	e'	41.8600	Relative Permittivity (ϵ_r):	41.86	40.04	4.55	5
		e''	13.7500	Conductivity (σ):	1.36	1.39	-1.80	5
2024-11-01	Head 1900	e'	41.6700	Relative Permittivity (ϵ_r):	41.67	40.00	4.18	5
		e''	13.6600	Conductivity (σ):	1.44	1.40	3.08	5
	Head 1850	e'	41.7400	Relative Permittivity (ϵ_r):	41.74	40.00	4.35	5
		e''	13.6600	Conductivity (σ):	1.41	1.40	0.37	5
	Head 1915	e'	41.6500	Relative Permittivity (ϵ_r):	41.65	40.00	4.13	5
		e''	13.6400	Conductivity (σ):	1.45	1.40	3.74	5
2024-11-05	Head 13	e'	55.82	Relative Permittivity (ϵ_r):	55.82	55.00	1.49	5
		e''	1053.19	Conductivity (σ):	0.76	0.75	1.51	5
	Head 12	e'	55.79	Relative Permittivity (ϵ_r):	55.79	55.00	1.44	5
		e''	1107.50	Conductivity (σ):	0.74	0.75	-1.47	5
	Head 14	e'	55.81	Relative Permittivity (ϵ_r):	55.81	55.00	1.47	5
		e''	1006.61	Conductivity (σ):	0.78	0.75	4.48	5

SAR 7 Room (Continued)

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2024-11-06	Head 1900	e'	40.7100	Relative Permittivity (ϵ_r):	40.71	40.00	1.78	5
		e''	13.3500	Conductivity (σ):	1.41	1.40	0.74	5
	Head 1850	e'	40.8000	Relative Permittivity (ϵ_r):	40.80	40.00	2.00	5
		e''	13.4000	Conductivity (σ):	1.38	1.40	-1.54	5
	Head 1915	e'	40.6900	Relative Permittivity (ϵ_r):	40.69	40.00	1.72	5
		e''	13.3200	Conductivity (σ):	1.42	1.40	1.31	5
2024-11-06	Head 1750	e'	41.0900	Relative Permittivity (ϵ_r):	41.09	40.08	2.51	5
		e''	13.6200	Conductivity (σ):	1.33	1.37	-3.19	5
	Head 1710	e'	41.1600	Relative Permittivity (ϵ_r):	41.16	40.15	2.53	5
		e''	13.7000	Conductivity (σ):	1.30	1.35	-3.25	5
	Head 1780	e'	41.0000	Relative Permittivity (ϵ_r):	41.00	40.04	2.40	5
		e''	13.5600	Conductivity (σ):	1.34	1.39	-3.16	5
2024-11-11	Head 1900	e'	39.7200	Relative Permittivity (ϵ_r):	39.72	40.00	-0.70	5
		e''	13.1300	Conductivity (σ):	1.39	1.40	-0.92	5
	Head 1850	e'	39.7400	Relative Permittivity (ϵ_r):	39.74	40.00	-0.65	5
		e''	13.1400	Conductivity (σ):	1.35	1.40	-3.45	5
	Head 1915	e'	39.7200	Relative Permittivity (ϵ_r):	39.72	40.00	-0.70	5
		e''	13.1200	Conductivity (σ):	1.40	1.40	-0.21	5

SAR 8 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2024-10-30	Head 835	e'	41.6400	Relative Permittivity (ϵ_r):	41.64	41.50	0.34	5
		e''	19.8200	Conductivity (σ):	0.92	0.90	2.25	5
	Head 810	e'	41.7200	Relative Permittivity (ϵ_r):	41.72	41.65	0.16	5
		e''	20.2300	Conductivity (σ):	0.91	0.90	1.50	5
	Head 850	e'	41.6000	Relative Permittivity (ϵ_r):	41.60	41.50	0.24	5
		e''	19.6000	Conductivity (σ):	0.93	0.92	1.24	5
2024-11-04	Head 835	e'	41.1400	Relative Permittivity (ϵ_r):	41.14	41.50	-0.87	5
		e''	20.0300	Conductivity (σ):	0.93	0.90	3.33	5
	Head 810	e'	41.2000	Relative Permittivity (ϵ_r):	41.20	41.65	-1.09	5
		e''	20.4700	Conductivity (σ):	0.92	0.90	2.70	5
	Head 850	e'	41.1000	Relative Permittivity (ϵ_r):	41.10	41.50	-0.96	5
		e''	19.7800	Conductivity (σ):	0.93	0.92	2.17	5
2024-11-05	Head 5200	e'	35.7707	Relative Permittivity (ϵ_r):	35.77	35.99	-0.61	5
		e''	15.7600	Conductivity (σ):	4.56	4.65	-2.03	5
	Head 5250	e'	35.6800	Relative Permittivity (ϵ_r):	35.68	35.93	-0.70	5
		e''	15.8200	Conductivity (σ):	4.62	4.70	-1.79	5
	Head 5600	e'	35.1700	Relative Permittivity (ϵ_r):	35.17	35.53	-1.02	5
		e''	16.1100	Conductivity (σ):	5.02	5.06	-0.87	5
	Head 5750	e'	34.8600	Relative Permittivity (ϵ_r):	34.86	35.36	-1.42	5
		e''	16.4600	Conductivity (σ):	5.26	5.21	0.94	5
	Head 5800	e'	34.6900	Relative Permittivity (ϵ_r):	34.69	35.30	-1.73	5
		e''	16.3900	Conductivity (σ):	5.29	5.27	0.30	5
	Head 5925	e'	34.3500	Relative Permittivity (ϵ_r):	34.35	35.20	-2.41	5
		e''	15.9900	Conductivity (σ):	5.27	5.40	-2.45	5

SAR 9 Room

Date	Freq. (MHz)	Liquid Parameters			Measured	Target	Delta (%)	Limit ±(%)
2024-10-28	Head 2450	e'	37.3000	Relative Permittivity (ϵ_r):	37.30	39.20	-4.85	5
		e''	13.6900	Conductivity (σ):	1.86	1.80	3.61	5
	Head 2400	e'	37.4400	Relative Permittivity (ϵ_r):	37.44	39.30	-4.72	5
		e''	13.7600	Conductivity (σ):	1.84	1.75	4.83	5
	Head 2500	e'	37.2300	Relative Permittivity (ϵ_r):	37.23	39.14	-4.87	5
		e''	13.7400	Conductivity (σ):	1.91	1.85	3.02	5
2024-10-30	Head 750	e'	40.2800	Relative Permittivity (ϵ_r):	40.28	41.96	-4.01	5
		e''	21.2600	Conductivity (σ):	0.89	0.89	-0.73	5
	Head 680	e'	40.5300	Relative Permittivity (ϵ_r):	40.53	42.32	-4.23	5
		e''	22.8400	Conductivity (σ):	0.86	0.89	-2.72	5
	Head 790	e'	40.1700	Relative Permittivity (ϵ_r):	40.17	41.76	-3.80	5
		e''	20.5400	Conductivity (σ):	0.90	0.90	0.68	5
2024-11-01	Head 2450	e'	38.4900	Relative Permittivity (ϵ_r):	38.49	39.20	-1.81	5
		e''	13.4500	Conductivity (σ):	1.83	1.80	1.79	5
	Head 2400	e'	38.5900	Relative Permittivity (ϵ_r):	38.59	39.30	-1.80	5
		e''	13.5500	Conductivity (σ):	1.81	1.75	3.23	5
	Head 2500	e'	38.3800	Relative Permittivity (ϵ_r):	38.38	39.14	-1.93	5
		e''	13.5500	Conductivity (σ):	1.88	1.85	1.59	5
2024-11-05	Head 2450	e'	39.9300	Relative Permittivity (ϵ_r):	39.93	39.20	1.86	5
		e''	13.4100	Conductivity (σ):	1.83	1.80	1.49	5
	Head 2400	e'	39.4900	Relative Permittivity (ϵ_r):	39.49	39.30	0.49	5
		e''	13.4400	Conductivity (σ):	1.79	1.75	2.39	5
	Head 2500	e'	39.3300	Relative Permittivity (ϵ_r):	39.33	39.14	0.49	5
		e''	13.4900	Conductivity (σ):	1.88	1.85	1.14	5
2024-11-05	Head 2600	e'	39.1500	Relative Permittivity (ϵ_r):	39.15	39.01	0.36	5
		e''	13.5400	Conductivity (σ):	1.96	1.96	-0.24	5
	Head 2495	e'	39.3300	Relative Permittivity (ϵ_r):	39.33	39.14	0.48	5
		e''	13.4800	Conductivity (σ):	1.87	1.85	1.16	5
	Head 2700	e'	38.9600	Relative Permittivity (ϵ_r):	38.96	38.88	0.19	5
		e''	13.5600	Conductivity (σ):	2.04	2.07	-1.67	5
2024-11-06	Head 750	e'	40.8500	Relative Permittivity (ϵ_r):	40.85	41.96	-2.65	5
		e''	20.9800	Conductivity (σ):	0.87	0.89	-2.03	5
	Head 680	e'	41.0600	Relative Permittivity (ϵ_r):	41.06	42.32	-2.98	5
		e''	22.5800	Conductivity (σ):	0.85	0.89	-3.82	5
	Head 790	e'	40.7300	Relative Permittivity (ϵ_r):	40.73	41.76	-2.46	5
		e''	20.2700	Conductivity (σ):	0.89	0.90	-0.64	5
2024-11-11	Head 2600	e'	38.2100	Relative Permittivity (ϵ_r):	38.21	39.01	-2.05	5
		e''	13.5800	Conductivity (σ):	1.96	1.96	0.05	5
	Head 2495	e'	38.3700	Relative Permittivity (ϵ_r):	38.37	39.14	-1.98	5
		e''	13.5300	Conductivity (σ):	1.88	1.85	1.53	5
	Head 2700	e'	38.0300	Relative Permittivity (ϵ_r):	38.03	38.88	-2.20	5
		e''	13.5800	Conductivity (σ):	2.04	2.07	-1.52	5

8.2. 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 of 100MHZ to 6GHz frequency range 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. For The System verification of 9MHz to 19MHz frequency range, The System verification must be performed before 24 hours.

System Performance Check Measurement Conditions (100MHz to 6GHz):

- 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 dipole center 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 2.5 mm.
  For 5 GHz band - Distance between probe sensors and phantom surface was set to 1.4 mm
- The dipole input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

System Performance Check Measurement Conditions (13MHz):

- 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
- The DASY system with an E-Field Probe was used for the measurements.
- The CLA(Confined Loop Antennas) was mounted on the small tripod so that the CLA feed point was positioned below the center marking of the flat phantom section and the CLA was oriented parallel to the body axis (the long side of the phantom). The standard measuring distance was 0 mm separation distance from CLA center to the Phantom surface.
- The CLA input power (forward power) was 100 mW.
- The results are normalized to 1 W input power.

Reference Target SAR Values

The reference SAR values can be obtained from the calibration certificate of system validation dipoles.

System Dipole	Serial No.	Cal. Date	Cal.due date	Target SAR Values (W/kg)	
				1g/10g	Head
D750V3	1205	2023-04-18	2025-04-18	1g	8.55
				10g	5.59
D835V2	4d174	2024-09-16	2025-09-16	1g	9.44
				10g	6.09
D1750V2	1125	2022-11-30	2024-11-30	1g	37.40
				10g	19.70
D1750V2	1180	2024-10-15	2025-10-15	1g	37.00
				10g	19.70
D1900V2	5d190	2022-11-16	2024-11-16	1g	39.70
				10g	20.70
D1900V2	5d199	2024-03-13	2025-03-13	1g	39.70
				10g	20.70
D2450V2	960	2024-03-14	2025-03-14	1g	51.8
				10g	24.1
D2600V2	1097	2024-09-13	2025-09-13	1g	57.3
				10g	25.6
D5GHzV2 (5250 MHz)	1325	2023-04-21	2025-04-21	1g	79.6
				10g	22.7
D5GHzV2 (5600 MHz)	1325	2023-04-21	2025-04-21	1g	83.9
				10g	23.8
D5GHzV2 (5750 MHz)	1325	2023-04-21	2025-04-21	1g	80.4
				10g	22.7
D5GHzV2 (5800 MHz)	1325	2023-04-21	2025-04-21	1g	80.5
				10g	22.5
CLA-13	1015	2024-08-22	2025-08-22	1g	0.54
				10g	0.33

Note(s):

1. For System Validation Dipole, Calibration interval applied every 2 years according to referencing KDB 865664 guidance.
2. For CLA, Calibration interval applied every year.
3. Refer to Appendix F that mentioned about justification

System Check Results

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.

SAR 6 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2024-10-28	D835V2	4d174	Head	1g	0.96	9.6	9.44	1.59	
				10g	0.64	6.4	6.09	5.58	
2024-11-01	D835V2	4d174	Head	1g	0.97	9.7	9.44	2.33	
				10g	0.64	6.4	6.09	4.60	
2024-11-05	D835V2	4d174	Head	1g	1.00	10.0	9.44	5.72	
				10g	0.66	6.6	6.09	7.55	
2024-11-11	D835V2	4d174	Head	1g	1.00	10.0	9.44	5.93	1
				10g	0.66	6.6	6.09	8.05	
2024-11-22	D835V2	4d174	Head	1g	0.97	9.7	9.44	2.65	
				10g	0.64	6.4	6.09	4.43	
2024-11-25	D1900V2	5d199	Head	1g	4.06	40.6	39.70	2.27	
				10g	2.19	21.9	20.50	6.83	

SAR 7 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2024-10-28	D1900V2	5d190	Head	1g	4.13	41.3	39.70	4.03	
				10g	2.22	22.2	20.70	7.25	
2024-11-01	D1750V2	1125	Head	1g	3.50	35.0	37.40	-6.42	
				10g	1.88	18.8	19.70	-4.57	
2024-11-01	D1900V2	5d190	Head	1g	4.30	43.0	39.70	8.31	2
				10g	2.25	22.5	20.70	8.70	
2024-11-05	CLA-13	1015	Head	1g	0.05	0.5	0.54	0.56	3
				10g	0.03	0.3	0.33	-0.90	
2024-11-06	D1900V2	5d199	Head	1g	4.07	40.7	39.70	2.52	
				10g	2.12	21.2	20.70	2.42	
2024-11-06	D1750V2	1180	Head	1g	3.39	33.9	37.00	-8.38	4
				10g	1.83	18.3	19.70	-7.11	
2024-11-11	D1900V2	5d199	Head	1g	4.19	41.9	39.70	5.54	5
				10g	2.26	22.6	20.70	9.18	

SAR 8 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2024-10-30	D835V2	4d174	Head	1g	0.98	9.8	9.44	3.60	
				10g	0.64	6.4	6.09	5.25	
2024-11-04	D835V2	4d174	Head	1g	0.98	9.8	9.44	3.81	
				10g	0.64	6.4	6.09	5.42	
2024-11-05	D5GHzV2 (5250)	1325	Head	1g	8.58	85.8	79.60	7.79	6
				10g	2.49	24.9	22.70	9.69	
2024-11-05	D5GHzV2 (5600)	1325	Head	1g	8.44	84.4	83.90	0.60	
				10g	2.42	24.2	23.80	1.68	
2024-11-05	D5GHzV2 (5750)	1325	Head	1g	8.50	85.0	80.40	5.72	
				10g	2.44	24.4	22.70	7.49	
2024-11-05	D5GHzV2 (5800)	1325	Head	1g	8.43	84.3	80.50	4.72	
				10g	2.41	24.1	22.50	7.11	

SAR 9 Room

Date Tested	System Dipole		T.S. Liquid		Measured Results		Target (Ref. Value)	Delta ±10 %	Plot No.
	Type	Serial #			Zoom Scan to 100 mW	Normalize to 1 W			
2024-10-28	D2450V2	960	Head	1g	4.89	48.9	51.80	-5.60	7
				10g	2.31	23.1	24.10	-4.15	
2024-10-30	D750V3	1205	Head	1g	0.82	8.2	8.55	-4.68	
				10g	0.55	5.5	5.59	-2.15	
2024-11-01	D2450V2	960	Head	1g	5.05	50.5	51.80	-2.51	
				10g	2.38	23.8	24.10	-1.24	
2024-11-05	D2450V2	960	Head	1g	5.09	50.9	51.80	-1.74	
				10g	2.40	24.0	24.10	-0.41	
2024-11-05	D2600V2	1097	Head	1g	5.28	52.8	57.30	-7.85	8
				10g	2.42	24.2	25.60	-5.47	
2024-11-06	D750V3	1205	Head	1g	0.81	8.1	8.55	-5.61	9
				10g	0.54	5.4	5.59	-3.04	
2024-11-11	D2600V2	1097	Head	1g	5.72	57.2	57.30	-0.17	
				10g	2.60	26.0	25.60	1.56	

9. Conducted Output Power Measurements

9.1. GSM

Per KDB 941225 D01 3G SAR Procedures:

SAR test reduction for GPRS and EDGE modes is determined by the source-based time-averaged output power specified for production units, including tune-up tolerance. The data mode with highest specified time-averaged output power should be tested for SAR compliance in the applicable exposure conditions. For modes with the same specified maximum output power and tolerance, the higher number time-slot configuration should be tested.

GSM850 (Ant.A) Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Allowed Average Power (dBm)				Maximum Allowed Average Power (dBm)			
					ECI = 1				ECI = 0, 2			
					Measured		Tune-up Limit		Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	128	824.2	33.04	23.85	34.5	25.3	29.59	20.40	30.0	20.8
			190	836.6	33.09	23.90			29.73	20.54		
			251	848.8	32.91	23.72			29.58	20.39		
GPRS (GMSK)	CS1	1	128	824.2	33.05	23.86	34.5	25.3	29.59	20.40	30.0	20.8
			190	836.6	33.06	23.87			29.71	20.52		
			251	848.8	32.88	23.69			29.56	20.37		
		2	128	824.2	31.58	25.40	32.5	26.3	26.20	20.02	27.0	20.8
			190	836.6	31.63	25.45			26.42	20.24		
			251	848.8	31.48	25.30			26.31	20.13		
		3	128	824.2	29.09	24.67	30.0	25.6	24.25	19.83	25.0	20.6
			190	836.6	29.22	24.80			24.53	20.11		
			251	848.8	29.09	24.67			24.41	19.99		
		4	128	824.2	27.58	24.41	28.5	25.3	22.76	19.59	23.5	20.3
			190	836.6	27.75	24.58			23.08	19.91		
			251	848.8	27.68	24.51			23.04	19.87		
EGPRS (8PSK)	MCS5	1	128	824.2	25.54	16.35	26.0	16.8	25.26	16.07	26.0	16.8
			190	836.6	25.67	16.48			25.42	16.23		
			251	848.8	25.64	16.45			25.40	16.21		
		2	128	824.2	24.15	17.97	25.0	18.8	23.79	17.61	25.0	18.8
			190	836.6	24.32	18.14			24.01	17.83		
			251	848.8	24.30	18.12			23.99	17.81		
		3	128	824.2	21.48	17.06	22.5	18.1	21.38	16.96	22.5	18.1
			190	836.6	21.85	17.43			21.54	17.12		
			251	848.8	21.82	17.40			21.52	17.10		
		4	128	824.2	20.08	16.91	21.0	17.8	19.80	16.63	21.0	17.8
			190	836.6	20.27	17.10			20.02	16.85		
			251	848.8	20.29	17.12			20.03	16.86		

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- GMSK (GPRS) mode with 2 time slots for ECI = 0, 1, 2 based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/kg.

GSM1900 (Ant.B) Measured Results

Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Maximum Allowed Average Power (dBm)				Maximum Allowed Average Power (dBm)			
					ECI = 1				ECI = 0, 2			
					Measured		Tune-up Limit		Measured		Tune-up Limit	
					Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr	Burst Pwr	Frame Pwr
GSM (Voice)	CS1	1	512	1850.2	29.33	20.14	31.0	21.8	26.51	17.32	27.0	17.8
			661	1880.0	29.27	20.08			26.55	17.36		
			810	1909.8	29.17	19.98			26.51	17.32		
GPRS (GMSK)	CS1	1	512	1850.2	29.35	20.16	31.0	21.8	26.50	17.31	27.0	17.8
			661	1880.0	29.26	20.07			26.52	17.33		
			810	1909.8	29.15	19.96			26.47	17.28		
		2	512	1850.2	28.34	22.16	29.0	22.8	23.43	17.25	24.0	17.8
			661	1880.0	28.30	22.12			23.41	17.23		
			810	1909.8	28.18	22.00			23.36	17.18		
		3	512	1850.2	26.13	21.71	27.0	22.6	21.44	17.02	22.0	17.6
			661	1880.0	26.13	21.71			21.37	16.95		
			810	1909.8	26.05	21.63			21.18	16.76		
		4	512	1850.2	24.85	21.68	26.0	22.8	20.24	17.07	20.5	17.3
			661	1880.0	24.90	21.73			20.07	16.90		
			810	1909.8	24.82	21.65			19.82	16.65		
EGPRS (8PSK)	MCS5	1	512	1850.2	24.34	15.15	25.5	16.3	24.21	15.02	25.5	16.3
			661	1880.0	24.22	15.03			24.14	14.95		
			810	1909.8	24.19	15.00			24.11	14.92		
		2	512	1850.2	23.04	16.86	24.0	17.8	21.94	15.76	24.0	17.8
			661	1880.0	22.96	16.78			21.89	15.71		
			810	1909.8	22.95	16.77			21.90	15.72		
		3	512	1850.2	20.74	16.32	21.0	16.6	19.87	15.45	21.0	16.6
			661	1880.0	20.68	16.26			19.77	15.35		
			810	1909.8	20.69	16.27			19.75	15.33		
		4	512	1850.2	19.36	16.19	20.0	16.8	18.23	15.06	20.0	16.8
			661	1880.0	19.25	16.08			18.12	14.95		
			810	1909.8	19.24	16.07			18.09	14.92		

Notes:

The worst-case configuration and mode for SAR testing is determined to be as follows:

- GMSK (GPRS) mode with 4 time slots for ECI = 1, GMSK (GPRS) mode with 2 time slots for ECI = 0, 2 based on the Tune-up Procedure. Refer to §6.3.
- SAR is not required for EGPRS (8PSK) mode because the maximum output power and tune-up limit is ≤ 1/4dB higher than GMSK GPRS or the adjusted SAR of the highest reported SAR of GMSK GPRS is ≤ 1.2W/kg.

9.2. W-CDMA

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 DUT 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:

	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 v13.
A summary of these settings are illustrated below:

	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-DPDCH	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 v9.5.0. A summary of these settings are illustrated below:

Downlink Physical Channels are set as per 3GPP TS34.121-1 v9.0.0 E.5.0

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 v9.5.0 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	Processes	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.		

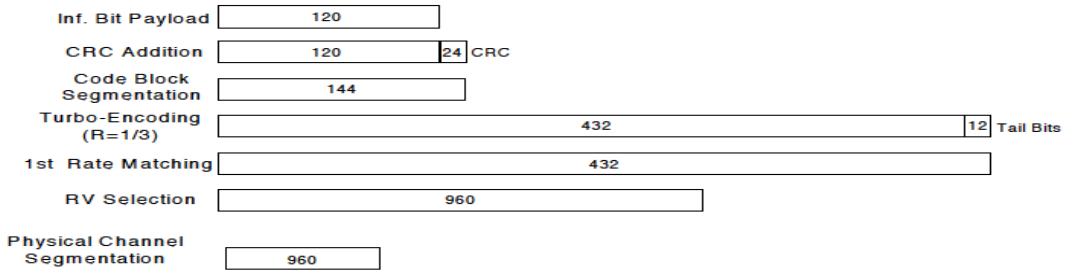


Figure C.8.19: Coding rate for Fixed reference Channel H-Set 12 (QPSK)

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 12			
	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	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	DACK	8			
	DNAK	8			
	DCQI	8			
	Ack-Nack Repetition factor	3			
	CQI Feedback	4ms			
	CQI Repetition Factor	2			
	Ahs = βhs/ βc	30/15			

HSPA+

HSPA+ is only supported to down link. Therefore, the RF conducted power is not measured.

W-CDMA Band V (Ant.A) Measured Results

Mode		UL Ch No.	Freq. (MHz)	Maximum Allowed Average Power (dBm)			Maximum Allowed Average Power (dBm)		
				ECI =1			ECI = 0, 2		
				Measured Pwr	MPR	Tune-up Limit	Measured Pwr	MPR	Tune-up Limit
Release 99	Rel 99 (RMC, 12.2 kbps)	4132	826.4	24.19	N/A	25.0	21.38	N/A	23.0
		4183	836.6	24.09			21.56		
		4233	846.6	24.22			21.48		
HSDPA	Subtest 1	4132	826.4	23.22	1.0	24.0	21.41	1.0	22.0
		4183	836.6	23.11			21.58		
		4233	846.6	23.23			21.52		
	Subtest 2	4132	826.4	23.25	1.0	24.0	21.45	1.0	22.0
		4183	836.6	23.14			21.62		
		4233	846.6	23.26			21.53		
	Subtest 3	4132	826.4	22.81	1.5	23.5	21.49	1.0	22.0
		4183	836.6	22.69			21.67		
		4233	846.6	22.81			21.58		
	Subtest 4	4132	826.4	22.78	1.5	23.5	21.46	1.0	22.0
		4183	836.6	22.66			21.63		
		4233	846.6	22.79			21.56		
HSUPA	Subtest 1	4132	826.4	21.24	3.0	22.0	20.51	2.0	21.0
		4183	836.6	21.13			20.62		
		4233	846.6	21.23			20.53		
	Subtest 2	4132	826.4	21.25	3.0	22.0	20.44	2.0	21.0
		4183	836.6	21.13			20.61		
		4233	846.6	21.22			20.53		
	Subtest 3	4132	826.4	21.23	2.0	23.0	20.48	2.0	21.0
		4183	836.6	21.12			20.65		
		4233	846.6	21.20			20.55		
	Subtest 4	4132	826.4	20.74	3.5	21.5	19.99	2.0	21.0
		4183	836.6	20.64			20.16		
		4233	846.6	20.73			20.08		
	Subtest 5	4132	826.4	22.22	2.0	23.0	21.44	1.0	22.0
		4183	836.6	22.11			21.62		
		4233	846.6	22.19			21.53		
DC-HSDPA	Subtest 1	4132	826.4	23.23	1.0	24.0	21.48	1.0	22.0
		4183	836.6	23.12			21.65		
		4233	846.6	23.21			21.55		
	Subtest 2	4132	826.4	23.20	1.0	24.0	21.46	1.0	22.0
		4183	836.6	23.12			21.64		
		4233	846.6	23.24			21.59		
	Subtest 3	4132	826.4	22.69	1.5	23.5	21.48	1.0	22.0
		4183	836.6	22.61			21.62		
		4233	846.6	22.71			21.54		
	Subtest 4	4132	826.4	22.73	1.5	23.5	21.47	1.0	22.0
		4183	836.6	22.60			21.63		
		4233	846.6	22.72			21.56		

9.3. LTE

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”.

Table 6.2.4-1: Additional Maximum Power Reduction (A-MPR)

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

Maximum Output Power (Tune-up Limit) for LTE

According to April 2015 TCB workshop, SAR test exclusion can be applied for testing overlapping LTE bands as follows:

a) The maximum output power, including tolerance, for the smaller band must be ≤ the larger band to qualify for the SAR test exclusion.
b) The channel bandwidth and other operating parameters for the smaller band must be fully supported by the larger band.

- LTE Band 5 (824 – 849 MHz) is covered by LTE Band 26 (814 – 849 MHz) in case of ECI = 1 (RCV)

Maximum bandwidth does not support at least three non-overlapping channels in certain channel bandwidths.

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 SAR for LTE Devices.

LTE QPSK configuration has the highest maximum average output power per 3GPP standard.

SAR measurement is not required for Higher order modulations. When the highest maximum output power for Higher order modulations are ≤ 0.5 dB higher than the QPSK or when the reported SAR for QPSK configuration is ≤ 1.45 W/kg.

LTE Band 2 (Ant.B) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Allowed Average Power (dBm)					Maximum Allowed Average Power (dBm)				
				ECI = 1					ECI = 0, 2				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18700	18900	19100			18700	18900	19100		
				1860 MHz	1880 MHz	1900 MHz			1860 MHz	1880 MHz	1900 MHz		
20 MHz	QPSK	1	0	22.84	22.84	22.93	0.0	24.0	18.73	18.71	18.85	0.0	20.0
		1	49	22.71	23.01	22.95	0.0	24.0	18.69	18.99	18.74	0.0	20.0
		1	99	23.00	22.77	22.89	0.0	24.0	18.83	18.85	18.78	0.0	20.0
		50	0	21.76	21.93	21.90	1.0	23.0	18.71	18.98	18.87	0.0	20.0
		50	24	21.77	21.92	21.90	1.0	23.0	18.77	18.88	18.88	0.0	20.0
		50	50	21.85	21.89	21.87	1.0	23.0	18.82	18.89	18.84	0.0	20.0
		100	0	21.79	21.95	21.89	1.0	23.0	18.81	18.90	18.85	0.0	20.0
	16QAM	1	0	22.46	22.04	22.23	1.0	23.0	19.11	19.09	19.16	0.0	20.0
		1	49	21.98	22.27	22.16	1.0	23.0	18.86	18.97	18.86	0.0	20.0
		1	99	22.11	22.04	22.05	1.0	23.0	18.99	19.50	19.13	0.0	20.0
		50	0	20.71	20.96	20.90	2.0	22.0	18.70	18.85	18.83	0.0	20.0
		50	24	20.78	20.90	20.90	2.0	22.0	18.76	18.89	18.89	0.0	20.0
		50	50	20.86	20.89	20.88	2.0	22.0	18.88	18.88	18.87	0.0	20.0
		100	0	20.80	20.93	20.90	2.0	22.0	18.72	18.89	18.83	0.0	20.0
	64QAM	1	0	20.97	21.03	21.04	2.0	22.0	19.23	19.14	18.94	0.0	20.0
		1	49	20.85	20.92	20.83	2.0	22.0	19.13	19.15	19.11	0.0	20.0
		1	99	20.93	20.90	20.84	2.0	22.0	19.03	19.31	18.81	0.0	20.0
		50	0	19.77	19.96	19.88	3.0	21.0	18.72	18.93	18.86	0.0	20.0
		50	24	19.75	19.93	19.90	3.0	21.0	18.75	18.86	18.83	0.0	20.0
		50	50	19.84	19.92	19.86	3.0	21.0	18.84	18.87	18.89	0.0	20.0
		100	0	19.82	19.90	19.89	3.0	21.0	18.73	18.90	18.82	0.0	20.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18675	18900	19125			18675	18900	19125		
				1857.5 MHz	1880 MHz	1902.5 MHz			1857.5 MHz	1880 MHz	1902.5 MHz		
15 MHz	QPSK	1	0	22.74	22.88	22.80	0.0	24.0	18.72	18.83	18.75	0.0	20.0
		1	37	22.66	22.95	22.84	0.0	24.0	18.71	18.87	18.91	0.0	20.0
		1	74	22.82	23.01	22.79	0.0	24.0	18.77	18.76	18.80	0.0	20.0
		36	0	21.74	21.88	21.84	1.0	23.0	18.74	18.82	18.79	0.0	20.0
		36	20	21.73	21.88	21.83	1.0	23.0	18.72	18.83	18.77	0.0	20.0
		36	39	21.74	21.93	21.90	1.0	23.0	18.71	18.85	18.81	0.0	20.0
		75	0	21.82	21.89	21.88	1.0	23.0	18.74	18.86	18.85	0.0	20.0
	16QAM	1	0	22.26	21.91	21.87	1.0	23.0	19.34	18.93	19.10	0.0	20.0
		1	37	21.90	22.15	21.99	1.0	23.0	19.02	19.10	18.95	0.0	20.0
		1	74	21.86	22.12	22.30	1.0	23.0	19.51	19.50	19.06	0.0	20.0
		36	0	20.72	20.87	20.84	2.0	22.0	18.76	18.85	18.77	0.0	20.0
		36	20	20.72	20.85	20.82	2.0	22.0	18.70	18.80	18.80	0.0	20.0
		36	39	20.77	20.91	20.87	2.0	22.0	18.69	18.88	18.84	0.0	20.0
		75	0	20.81	20.90	20.85	2.0	22.0	18.74	18.83	18.83	0.0	20.0
	64QAM	1	0	20.86	20.83	21.18	2.0	22.0	18.98	18.82	18.94	0.0	20.0
		1	37	20.90	21.04	20.81	2.0	22.0	18.93	19.02	18.80	0.0	20.0
		1	74	21.01	21.09	21.14	2.0	22.0	19.05	19.05	19.22	0.0	20.0
		36	0	19.79	19.90	19.86	3.0	21.0	18.74	18.82	18.86	0.0	20.0
		36	20	19.79	19.89	19.78	3.0	21.0	18.74	18.86	18.82	0.0	20.0
		36	39	19.79	19.87	19.92	3.0	21.0	18.76	18.86	18.87	0.0	20.0
		75	0	19.81	19.90	19.85	3.0	21.0	18.77	18.91	18.82	0.0	20.0

LTE Band 2 (Ant.B) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18650	18900	19150			18650	18900	19150		
				1855 MHz	1880 MHz	1905 MHz			1855 MHz	1880 MHz	1905 MHz		
10 MHz	QPSK	1	0	22.76	22.88	22.84	0.0	24.0	18.64	18.81	18.71	0.0	20.0
		1	25	22.83	22.90	22.79	0.0	24.0	18.73	18.81	18.77	0.0	20.0
		1	49	22.83	22.74	22.77	0.0	24.0	18.60	18.77	18.74	0.0	20.0
		25	0	21.75	21.92	21.84	1.0	23.0	18.73	18.83	18.79	0.0	20.0
		25	12	21.78	21.91	21.86	1.0	23.0	18.74	18.87	18.83	0.0	20.0
		25	25	21.72	21.93	21.86	1.0	23.0	18.72	18.83	18.85	0.0	20.0
		50	0	21.76	21.88	21.81	1.0	23.0	18.72	18.82	18.76	0.0	20.0
	16QAM	1	0	21.71	22.08	22.05	1.0	23.0	19.28	18.91	18.62	0.0	20.0
		1	25	22.03	21.94	22.33	1.0	23.0	18.82	19.34	19.42	0.0	20.0
		1	49	21.75	21.81	22.07	1.0	23.0	18.60	18.93	19.12	0.0	20.0
		25	0	20.71	20.92	20.81	2.0	22.0	18.75	18.90	18.75	0.0	20.0
		25	12	20.78	20.92	20.85	2.0	22.0	18.76	18.86	18.86	0.0	20.0
		25	25	20.67	20.90	20.83	2.0	22.0	18.68	18.85	18.89	0.0	20.0
		50	0	20.75	20.91	20.82	2.0	22.0	18.72	18.83	18.79	0.0	20.0
	64QAM	1	0	20.85	20.83	20.93	2.0	22.0	18.95	18.88	19.00	0.0	20.0
		1	25	21.10	21.27	21.06	2.0	22.0	18.74	18.83	19.05	0.0	20.0
		1	49	21.16	21.11	20.98	2.0	22.0	18.92	18.98	18.97	0.0	20.0
		25	0	19.73	19.93	19.86	3.0	21.0	18.75	18.75	18.79	0.0	20.0
		25	12	19.67	19.89	19.86	3.0	21.0	18.74	18.84	18.84	0.0	20.0
		25	25	19.75	19.94	19.95	3.0	21.0	18.68	18.83	18.78	0.0	20.0
		50	0	19.73	19.86	19.79	3.0	21.0	18.70	18.77	18.79	0.0	20.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18625	18900	19175			18625	18900	19175		
				1852.5 MHz	1880 MHz	1907.5 MHz			1852.5 MHz	1880 MHz	1907.5 MHz		
5 MHz	QPSK	1	0	22.79	22.83	22.85	0.0	24.0	18.72	18.87	18.74	0.0	20.0
		1	12	22.83	22.88	22.84	0.0	24.0	18.74	18.86	18.79	0.0	20.0
		1	24	22.74	22.88	22.80	0.0	24.0	18.65	18.73	18.90	0.0	20.0
		12	0	21.78	21.93	21.89	1.0	23.0	18.69	18.84	18.81	0.0	20.0
		12	7	21.78	21.91	21.82	1.0	23.0	18.74	18.80	18.84	0.0	20.0
		12	13	21.78	21.90	21.88	1.0	23.0	18.72	18.82	18.85	0.0	20.0
		25	0	21.84	21.95	21.90	1.0	23.0	18.78	18.87	18.86	0.0	20.0
	16QAM	1	0	22.07	22.64	22.07	1.0	23.0	18.81	19.24	19.04	0.0	20.0
		1	12	21.92	21.89	22.23	1.0	23.0	19.00	19.03	19.13	0.0	20.0
		1	24	22.29	22.05	21.94	1.0	23.0	18.98	19.62	19.21	0.0	20.0
		12	0	20.70	20.91	20.90	2.0	22.0	18.78	18.88	18.82	0.0	20.0
		12	7	20.82	20.99	20.87	2.0	22.0	18.69	18.82	18.84	0.0	20.0
		12	13	20.72	20.89	20.92	2.0	22.0	18.69	18.77	18.92	0.0	20.0
		25	0	20.82	20.94	20.95	2.0	22.0	18.66	18.85	18.83	0.0	20.0
	64QAM	1	0	20.96	20.87	20.98	2.0	22.0	18.64	19.09	18.71	0.0	20.0
		1	12	20.97	21.15	21.11	2.0	22.0	18.96	19.29	18.81	0.0	20.0
		1	24	20.81	20.85	21.33	2.0	22.0	19.08	19.08	19.14	0.0	20.0
		12	0	19.83	20.00	19.94	3.0	21.0	18.72	18.94	18.85	0.0	20.0
		12	7	19.78	19.90	19.94	3.0	21.0	18.87	18.87	18.95	0.0	20.0
		12	13	19.87	19.92	19.87	3.0	21.0	18.65	18.86	18.92	0.0	20.0
		25	0	19.77	19.92	19.85	3.0	21.0	18.69	18.75	18.87	0.0	20.0

LTE Band 2 (Ant.B) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18615	18900	19185			18615	18900	19185		
				1851.5 MHz	1880 MHz	1908.5 MHz			1851.5 MHz	1880 MHz	1908.5 MHz		
3 MHz	QPSK	1	0	22.70	22.84	22.73	0.0	24.0	18.61	18.75	18.79	0.0	20.0
		1	8	22.71	22.82	22.77	0.0	24.0	18.67	18.80	18.71	0.0	20.0
		1	14	22.71	22.88	22.79	0.0	24.0	18.67	18.85	18.74	0.0	20.0
		8	0	21.73	21.87	21.84	1.0	23.0	18.68	18.83	18.77	0.0	20.0
		8	4	21.74	21.93	21.85	1.0	23.0	18.73	18.81	18.80	0.0	20.0
		8	7	21.77	21.86	21.85	1.0	23.0	18.73	18.81	18.82	0.0	20.0
		15	0	21.69	21.82	21.86	1.0	23.0	18.67	18.79	18.77	0.0	20.0
	16QAM	1	0	22.19	22.08	21.85	1.0	23.0	18.64	18.91	19.27	0.0	20.0
		1	8	21.91	21.84	21.87	1.0	23.0	19.26	18.99	19.01	0.0	20.0
		1	14	21.97	22.10	21.82	1.0	23.0	18.93	19.26	18.83	0.0	20.0
		8	0	20.75	20.96	20.98	2.0	22.0	18.64	18.88	18.85	0.0	20.0
		8	4	20.82	20.85	20.99	2.0	22.0	18.60	18.83	18.82	0.0	20.0
		8	7	20.76	20.86	21.03	2.0	22.0	18.76	18.85	18.97	0.0	20.0
		15	0	20.73	20.80	20.87	2.0	22.0	18.71	18.74	18.74	0.0	20.0
	64QAM	1	0	20.81	21.11	21.06	2.0	22.0	18.91	19.10	18.95	0.0	20.0
		1	8	20.98	21.02	21.10	2.0	22.0	19.01	19.21	18.71	0.0	20.0
		1	14	20.68	21.13	21.00	2.0	22.0	19.16	18.69	18.94	0.0	20.0
		8	0	19.79	20.00	19.95	3.0	21.0	18.67	18.77	18.84	0.0	20.0
		8	4	19.81	19.97	19.89	3.0	21.0	18.83	18.79	18.79	0.0	20.0
		8	7	19.83	19.86	19.88	3.0	21.0	18.63	18.76	18.81	0.0	20.0
		15	0	19.64	19.78	19.78	3.0	21.0	18.63	18.83	18.81	0.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				18607	18900	19193			18607	18900	19193		
				1850.7 MHz	1880 MHz	1909.3 MHz			1850.7 MHz	1880 MHz	1909.3 MHz		
1.4 MHz	QPSK	1	0	22.73	22.90	22.80	0.0	24.0	18.63	18.77	18.82	0.0	20.0
		1	3	22.72	22.82	23.00	0.0	24.0	18.64	18.84	18.71	0.0	20.0
		1	5	22.80	22.85	22.94	0.0	24.0	18.71	18.83	18.75	0.0	20.0
		3	0	22.75	22.88	22.81	0.0	24.0	18.72	18.82	18.74	0.0	20.0
		3	1	22.77	22.87	22.87	0.0	24.0	18.71	18.83	18.78	0.0	20.0
		3	3	22.69	22.88	22.87	0.0	24.0	18.66	18.79	18.78	0.0	20.0
		6	0	21.71	21.92	21.84	1.0	23.0	18.68	18.76	18.80	0.0	20.0
	16QAM	1	0	21.95	22.27	22.21	1.0	23.0	18.95	18.79	19.12	0.0	20.0
		1	3	21.96	22.58	22.46	1.0	23.0	18.69	18.89	18.95	0.0	20.0
		1	5	22.01	22.19	22.49	1.0	23.0	18.53	19.17	18.81	0.0	20.0
		3	0	21.62	21.86	21.79	1.0	23.0	18.67	18.67	18.74	0.0	20.0
		3	1	21.76	21.83	21.82	1.0	23.0	18.53	18.77	18.76	0.0	20.0
		3	3	21.58	21.96	21.84	1.0	23.0	18.65	18.67	18.85	0.0	20.0
		6	0	20.76	21.10	20.89	2.0	22.0	18.85	18.90	18.86	0.0	20.0
	64QAM	1	0	20.67	21.24	21.07	2.0	22.0	18.91	19.15	19.06	0.0	20.0
		1	3	20.85	20.81	21.04	2.0	22.0	18.75	19.11	18.85	0.0	20.0
		1	5	20.75	20.92	21.12	2.0	22.0	18.99	19.01	18.83	0.0	20.0
		3	0	20.97	20.99	20.86	2.0	22.0	18.75	18.85	18.55	0.0	20.0
		3	1	20.88	20.76	20.92	2.0	22.0	18.74	18.94	19.03	0.0	20.0
		3	3	20.78	20.77	20.98	2.0	22.0	18.90	18.66	18.88	0.0	20.0
		6	0	19.71	19.85	19.98	3.0	21.0	18.66	18.73	18.82	0.0	20.0

LTE Band 5 (Ant.A) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Allowed Average Power (dBm)					Maximum Allowed Average Power (dBm)				
				ECI = 1					ECI = 0, 2				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				20450	20525	20600			20450	20525	20600		
				829 MHz	836.5 MHz	844 MHz			829 MHz	836.5 MHz	844 MHz		
10 MHz	QPSK	1	0		24.68		0.0	25.5		22.01		0.0	23.0
		1	25		24.79		0.0	25.5		22.13		0.0	23.0
		1	49		24.64		0.0	25.5		22.12		0.0	23.0
		25	0		23.60		1.0	24.5		22.10		0.0	23.0
		25	12		23.64		1.0	24.5		22.10		0.0	23.0
		25	25		23.76		1.0	24.5		22.11		0.0	23.0
		50	0		23.62		1.0	24.5		22.07		0.0	23.0
	16QAM	1	0		23.68		1.0	24.5		22.11		0.0	23.0
		1	25		24.10		1.0	24.5		22.25		0.0	23.0
		1	49		23.94		1.0	24.5		22.00		0.0	23.0
		25	0		22.62		2.0	23.5		22.04		0.0	23.0
		25	12		22.63		2.0	23.5		22.03		0.0	23.0
		25	25		22.59		2.0	23.5		22.04		0.0	23.0
		50	0		22.63		2.0	23.5		22.05		0.0	23.0
	64QAM	1	0		22.94		2.0	23.5		22.34		0.0	23.0
		1	25		22.58		2.0	23.5		22.07		0.0	23.0
		1	49		22.81		2.0	23.5		22.43		0.0	23.0
		25	0		21.55		3.0	22.5		21.57		0.5	22.5
		25	12		21.58		3.0	22.5		21.61		0.5	22.5
		25	25		21.62		3.0	22.5		21.53		0.5	22.5
		50	0		21.61		3.0	22.5		21.62		0.5	22.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				20425	20525	20625			20425	20525	20625		
				826.5 MHz	836.5 MHz	846.5 MHz			826.5 MHz	836.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	24.67	24.58	24.90	0.0	25.5	22.04	22.05	22.07	0.0	23.0
		1	12	24.66	24.60	24.65	0.0	25.5	21.92	22.02	22.15	0.0	23.0
		1	24	24.42	24.66	24.92	0.0	25.5	21.89	22.02	22.14	0.0	23.0
		12	0	23.68	23.59	23.75	1.0	24.5	22.06	21.97	22.08	0.0	23.0
		12	7	23.62	23.60	23.78	1.0	24.5	21.96	21.96	22.06	0.0	23.0
		12	13	23.59	23.64	23.78	1.0	24.5	21.94	21.95	22.06	0.0	23.0
		25	0	23.70	23.62	23.79	1.0	24.5	21.96	22.01	22.11	0.0	23.0
	16QAM	1	0	23.86	23.84	23.74	1.0	24.5	22.19	22.13	21.86	0.0	23.0
		1	12	23.74	23.94	23.88	1.0	24.5	21.89	22.22	22.16	0.0	23.0
		1	24	23.62	23.73	23.89	1.0	24.5	22.03	22.25	22.53	0.0	23.0
		12	0	22.69	22.61	22.73	2.0	23.5	22.00	21.90	22.07	0.0	23.0
		12	7	22.54	22.66	22.80	2.0	23.5	22.08	22.00	22.02	0.0	23.0
		12	13	22.56	22.67	22.69	2.0	23.5	21.90	21.93	22.06	0.0	23.0
		25	0	22.57	22.67	22.80	2.0	23.5	21.94	21.99	22.02	0.0	23.0
	64QAM	1	0	22.74	22.69	22.91	2.0	23.5	22.00	22.16	22.10	0.0	23.0
		1	12	23.12	22.80	22.94	2.0	23.5	22.22	22.10	22.36	0.0	23.0
		1	24	22.39	22.92	23.02	2.0	23.5	21.83	22.31	22.13	0.0	23.0
		12	0	21.73	21.65	21.86	3.0	22.5	21.63	21.54	21.63	0.5	22.5
		12	7	21.72	21.76	21.84	3.0	22.5	21.43	21.62	21.67	0.5	22.5
		12	13	21.65	21.65	21.73	3.0	22.5	21.54	21.46	21.52	0.5	22.5
		25	0	21.63	21.57	21.76	3.0	22.5	21.45	21.51	21.75	0.5	22.5

LTE Band 5 (Ant.A) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				20415	20525	20635			20415	20525	20635		
				825.5 MHz	836.5 MHz	847.5 MHz			825.5 MHz	836.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	24.59	24.60	24.71	0.0	25.5	21.95	21.89	22.04	0.0	23.0
		1	8	24.75	24.60	24.63	0.0	25.5	21.95	21.95	22.03	0.0	23.0
		1	14	24.50	24.57	24.69	0.0	25.5	21.86	21.95	22.00	0.0	23.0
		8	0	23.61	23.57	23.76	1.0	24.5	22.00	21.92	22.07	0.0	23.0
		8	4	23.65	23.60	23.81	1.0	24.5	21.99	21.89	22.08	0.0	23.0
		8	7	23.70	23.60	23.77	1.0	24.5	21.95	21.90	22.10	0.0	23.0
		15	0	23.62	23.54	23.72	1.0	24.5	21.94	21.91	22.06	0.0	23.0
	16QAM	1	0	24.05	23.76	23.69	1.0	24.5	22.72	21.90	22.14	0.0	23.0
		1	8	23.76	23.67	24.39	1.0	24.5	22.13	21.92	22.76	0.0	23.0
		1	14	23.61	23.94	23.50	1.0	24.5	22.15	22.40	22.58	0.0	23.0
		8	0	22.74	22.58	22.77	2.0	23.5	21.97	21.93	22.08	0.0	23.0
		8	4	22.64	22.68	22.87	2.0	23.5	22.09	21.99	22.19	0.0	23.0
		8	7	22.59	22.57	22.78	2.0	23.5	22.01	21.88	22.18	0.0	23.0
		15	0	22.62	22.65	22.68	2.0	23.5	21.88	21.89	22.15	0.0	23.0
	64QAM	1	0	22.65	22.85	22.83	2.0	23.5	22.29	22.00	22.19	0.0	23.0
		1	8	22.44	22.65	22.91	2.0	23.5	22.13	21.95	22.47	0.0	23.0
		1	14	22.63	22.41	22.90	2.0	23.5	22.03	21.84	21.93	0.0	23.0
		8	0	21.65	21.56	21.81	3.0	22.5	21.52	21.51	21.65	0.5	22.5
		8	4	21.63	21.41	21.68	3.0	22.5	21.60	21.49	21.69	0.5	22.5
		8	7	21.62	21.61	21.72	3.0	22.5	21.55	21.55	21.71	0.5	22.5
		15	0	21.61	21.63	21.73	3.0	22.5	21.51	21.43	21.65	0.5	22.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				20407	20525	20643			20407	20525	20643		
				824.7 MHz	836.5 MHz	848.3 MHz			824.7 MHz	836.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	24.54	24.60	24.85	0.0	25.5	21.90	21.93	22.07	0.0	23.0
		1	3	24.52	24.49	24.62	0.0	25.5	21.82	21.85	22.21	0.0	23.0
		1	5	24.63	24.58	24.69	0.0	25.5	21.88	21.87	22.07	0.0	23.0
		3	0	24.61	24.63	24.66	0.0	25.5	21.99	21.94	22.09	0.0	23.0
		3	1	24.62	24.64	24.68	0.0	25.5	21.96	21.89	22.08	0.0	23.0
		3	3	24.66	24.59	24.79	0.0	25.5	22.12	21.89	22.06	0.0	23.0
		6	0	23.68	23.61	23.67	1.0	24.5	21.91	21.92	22.16	0.0	23.0
	16QAM	1	0	23.68	23.92	23.74	1.0	24.5	22.52	21.68	22.30	0.0	23.0
		1	3	23.82	23.85	23.88	1.0	24.5	22.27	22.39	22.22	0.0	23.0
		1	5	23.81	23.65	23.96	1.0	24.5	22.08	22.11	22.34	0.0	23.0
		3	0	23.49	23.57	23.66	1.0	24.5	21.92	21.83	22.18	0.0	23.0
		3	1	23.66	23.73	23.64	1.0	24.5	22.03	21.91	21.92	0.0	23.0
		3	3	23.53	23.58	23.71	1.0	24.5	21.79	21.79	21.99	0.0	23.0
		6	0	22.69	22.59	22.68	2.0	23.5	21.92	22.06	22.13	0.0	23.0
	64QAM	1	0	22.79	22.73	22.81	2.0	23.5	21.90	21.90	22.38	0.0	23.0
		1	3	22.82	22.65	23.05	2.0	23.5	22.07	22.05	22.33	0.0	23.0
		1	5	22.83	22.64	22.59	2.0	23.5	22.08	22.35	22.44	0.0	23.0
		3	0	22.87	22.79	22.86	2.0	23.5	22.03	22.06	22.05	0.5	22.5
		3	1	22.74	22.55	22.65	2.0	23.5	22.25	22.17	22.12	0.5	22.5
		3	3	22.72	22.60	22.85	2.0	23.5	22.10	22.01	22.18	0.5	22.5
		6	0	21.61	21.67	21.81	3.0	22.5	21.53	21.19	21.35	0.5	22.5

LTE Band 12 (Ant.A) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Allowed Average Power (dBm)					Maximum Allowed Average Power (dBm)				
				ECI = 1					ECI = 0, 2				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				23060	23095	23130			23060	23095	23130		
				704 MHz	707.5 MHz	711 MHz			704 MHz	707.5 MHz	711 MHz		
10 MHz	QPSK	1	0		24.49		0.0	25.5		21.83		0.0	23.0
		1	25		24.64		0.0	25.5		21.75		0.0	23.0
		1	49		24.72		0.0	25.5		22.10		0.0	23.0
		25	0		23.51		1.0	24.5		21.90		0.0	23.0
		25	12		23.62		1.0	24.5		21.91		0.0	23.0
		25	25		23.51		1.0	24.5		21.84		0.0	23.0
		50	0		23.45		1.0	24.5		21.92		0.0	23.0
	16QAM	1	0		23.83		1.0	24.5		22.75		0.0	23.0
		1	25		23.89		1.0	24.5		22.59		0.0	23.0
		1	49		24.02		1.0	24.5		22.12		0.0	23.0
		25	0		22.56		2.0	23.5		21.95		0.0	23.0
		25	12		22.68		2.0	23.5		21.91		0.0	23.0
		25	25		22.56		2.0	23.5		21.75		0.0	23.0
		50	0		22.55		2.0	23.5		21.87		0.0	23.0
	64QAM	1	0		22.83		2.0	23.5		22.14		0.0	23.0
		1	25		22.93		2.0	23.5		22.36		0.0	23.0
		1	49		22.65		2.0	23.5		22.37		0.0	23.0
		25	0		21.60		3.0	22.5		21.33		0.5	22.5
		25	12		21.49		3.0	22.5		21.43		0.5	22.5
		25	25		21.59		3.0	22.5		21.40		0.5	22.5
		50	0		21.55		3.0	22.5		21.40		0.5	22.5

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				23035	23095	23155			23035	23095	23155		
				701.5 MHz	707.5 MHz	713.5 MHz			701.5 MHz	707.5 MHz	713.5 MHz		
5 MHz	QPSK	1	0	24.46	24.45	24.67	0.0	25.5	21.72	21.85	21.91	0.0	23.0
		1	12	24.44	24.77	24.77	0.0	25.5	21.78	21.82	22.09	0.0	23.0
		1	24	24.39	24.47	24.67	0.0	25.5	21.93	21.95	21.81	0.0	23.0
		12	0	23.41	23.52	23.73	1.0	24.5	21.82	21.96	22.07	0.0	23.0
		12	7	23.45	23.56	23.65	1.0	24.5	21.85	21.94	22.07	0.0	23.0
		12	13	23.37	23.48	23.73	1.0	24.5	21.99	21.89	22.01	0.0	23.0
		25	0	23.47	23.58	23.71	1.0	24.5	21.87	21.92	22.06	0.0	23.0
	16QAM	1	0	24.10	24.04	24.04	1.0	24.5	22.31	21.87	22.30	0.0	23.0
		1	12	23.54	23.63	23.91	1.0	24.5	22.21	22.18	22.33	0.0	23.0
		1	24	23.54	23.83	23.63	1.0	24.5	22.12	22.23	22.19	0.0	23.0
		12	0	22.48	22.65	22.79	2.0	23.5	21.93	21.92	22.01	0.0	23.0
		12	7	22.57	22.58	22.84	2.0	23.5	21.90	21.87	22.07	0.0	23.0
		12	13	22.60	22.54	22.68	2.0	23.5	21.87	21.91	22.10	0.0	23.0
		25	0	22.58	22.60	22.75	2.0	23.5	21.86	21.85	22.09	0.0	23.0
	64QAM	1	0	22.69	22.54	22.71	2.0	23.5	21.89	22.24	21.94	0.0	23.0
		1	12	22.99	22.52	23.08	2.0	23.5	22.08	22.25	22.15	0.0	23.0
		1	24	22.61	22.74	22.95	2.0	23.5	22.06	22.09	22.18	0.0	23.0
		12	0	21.55	21.65	21.62	3.0	22.5	21.30	21.49	21.56	0.5	22.5
		12	7	21.56	21.78	21.67	3.0	22.5	21.40	21.35	21.53	0.5	22.5
		12	13	21.48	21.72	21.69	3.0	22.5	21.49	21.36	21.50	0.5	22.5
		25	0	21.55	21.56	21.70	3.0	22.5	21.41	21.33	21.50	0.5	22.5

LTE Band 12 (Ant.A) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				23025	23095	23165			23025	23095	23165		
				700.5 MHz	707.5 MHz	714.5 MHz			700.5 MHz	707.5 MHz	714.5 MHz		
3 MHz	QPSK	1	0	24.35	24.52	24.64	0.0	25.5	21.68	22.02	21.92	0.0	23.0
		1	8	24.22	24.48	24.52	0.0	25.5	21.64	21.84	21.97	0.0	23.0
		1	14	24.29	24.50	24.54	0.0	25.5	21.88	21.78	21.93	0.0	23.0
		8	0	23.34	23.55	23.56	1.0	24.5	21.74	21.91	21.97	0.0	23.0
		8	4	23.33	23.49	23.68	1.0	24.5	21.83	21.87	22.06	0.0	23.0
		8	7	23.35	23.43	23.70	1.0	24.5	21.72	21.80	22.05	0.0	23.0
		15	0	23.39	23.50	23.64	1.0	24.5	21.73	21.89	21.99	0.0	23.0
	16QAM	1	0	23.83	24.14	23.71	1.0	24.5	22.07	22.63	22.82	0.0	23.0
		1	8	23.45	24.22	23.96	1.0	24.5	22.12	22.41	22.55	0.0	23.0
		1	14	23.65	23.74	23.74	1.0	24.5	22.05	22.47	22.30	0.0	23.0
		8	0	22.45	22.70	22.82	2.0	23.5	21.75	21.97	22.08	0.0	23.0
		8	4	22.38	22.64	22.62	2.0	23.5	21.75	21.89	22.06	0.0	23.0
		8	7	22.45	22.62	22.78	2.0	23.5	21.81	21.77	22.23	0.0	23.0
		15	0	22.44	22.56	22.61	2.0	23.5	21.75	21.83	21.97	0.0	23.0
	64QAM	1	0	22.59	22.68	22.86	2.0	23.5	21.71	21.87	22.11	0.0	23.0
		1	8	22.33	22.77	22.97	2.0	23.5	21.41	21.81	21.97	0.0	23.0
		1	14	22.87	22.48	23.14	2.0	23.5	22.01	22.25	22.39	0.0	23.0
		8	0	21.43	21.68	21.75	3.0	22.5	21.32	21.45	21.57	0.5	22.5
		8	4	21.34	21.52	21.61	3.0	22.5	21.18	21.34	21.47	0.5	22.5
		8	7	21.54	21.54	21.69	3.0	22.5	21.29	21.22	21.60	0.5	22.5
		15	0	21.46	21.52	21.72	3.0	22.5	21.26	21.42	21.50	0.5	22.5
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				23017	23095	23173			23017	23095	23173		
				699.7 MHz	707.5 MHz	715.3 MHz			699.7 MHz	707.5 MHz	715.3 MHz		
1.4 MHz	QPSK	1	0	24.26	24.57	24.60	0.0	25.5	21.68	21.85	22.10	0.0	23.0
		1	3	24.35	24.55	24.68	0.0	25.5	21.61	21.96	22.03	0.0	23.0
		1	5	24.23	24.41	24.54	0.0	25.5	21.66	21.96	22.10	0.0	23.0
		3	0	24.29	24.49	24.61	0.0	25.5	21.74	21.84	22.03	0.0	23.0
		3	1	24.26	24.45	24.57	0.0	25.5	21.73	21.83	22.00	0.0	23.0
		3	3	24.35	24.47	24.65	0.0	25.5	21.68	21.79	21.98	0.0	23.0
		6	0	23.17	23.52	23.61	1.0	24.5	21.66	21.87	21.98	0.0	23.0
	16QAM	1	0	23.58	24.23	24.11	1.0	24.5	22.29	22.27	22.46	0.0	23.0
		1	3	23.91	23.52	24.12	1.0	24.5	21.91	21.96	22.26	0.0	23.0
		1	5	23.77	23.76	23.52	1.0	24.5	22.05	21.94	22.41	0.0	23.0
		3	0	23.27	23.44	23.59	1.0	24.5	21.60	22.03	21.89	0.0	23.0
		3	1	23.37	23.37	23.47	1.0	24.5	21.80	21.89	22.25	0.0	23.0
		3	3	23.26	23.33	23.50	1.0	24.5	21.69	21.89	21.99	0.0	23.0
		6	0	22.58	22.67	22.88	2.0	23.5	21.74	22.07	22.16	0.0	23.0
	64QAM	1	0	22.52	22.90	23.04	2.0	23.5	22.21	21.63	22.55	0.0	23.0
		1	3	22.69	23.09	22.95	2.0	23.5	22.11	22.05	22.44	0.0	23.0
		1	5	22.34	22.74	22.87	2.0	23.5	22.23	21.84	22.37	0.0	23.0
		3	0	22.60	22.68	22.84	2.0	23.5	21.85	21.89	22.23	0.5	22.5
		3	1	22.51	22.86	22.64	2.0	23.5	21.60	21.90	22.08	0.5	22.5
		3	3	22.25	22.74	23.06	2.0	23.5	22.01	21.81	22.11	0.5	22.5
		6	0	21.44	21.42	21.63	3.0	22.5	21.17	21.49	21.50	0.5	22.5

LTE Band 26 (Ant.A) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Allowed Average Power (dBm)					Maximum Allowed Average Power (dBm)				
				ECI = 1					ECI = 0, 2				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				26765	26865	26965			26765	26865	26965		
				821.5 MHz	831.5 MHz	841.5 MHz			821.5 MHz	831.5 MHz	841.5 MHz		
15 MHz	QPSK	1	0		24.57		0.0	25.5		21.22		0.0	22.0
		1	37		24.48		0.0	25.5		21.12		0.0	22.0
		1	74		24.37		0.0	25.5		20.93		0.0	22.0
		36	0		23.63		1.0	24.5		21.12		0.0	22.0
		36	20		23.53		1.0	24.5		21.11		0.0	22.0
		36	39		23.53		1.0	24.5		21.02		0.0	22.0
		75	0		23.56		1.0	24.5		21.12		0.0	22.0
	16QAM	1	0		23.89		1.0	24.5		21.27		0.0	22.0
		1	37		23.73		1.0	24.5		21.54		0.0	22.0
		1	74		23.75		1.0	24.5		21.04		0.0	22.0
		36	0		22.54		2.0	23.5		21.09		0.0	22.0
		36	20		22.53		2.0	23.5		21.08		0.0	22.0
		36	39		22.52		2.0	23.5		21.11		0.0	22.0
		75	0		22.57		2.0	23.5		21.13		0.0	22.0
	64QAM	1	0		23.09		2.0	23.5		21.44		0.0	22.0
		1	37		23.10		2.0	23.5		21.28		0.0	22.0
		1	74		23.13		2.0	23.5		21.23		0.0	22.0
		36	0		21.57		3.0	22.5		21.12		0.0	22.0
		36	20		21.54		3.0	22.5		21.09		0.0	22.0
		36	39		21.54		3.0	22.5		21.08		0.0	22.0
		75	0		21.60		3.0	22.5		21.11		0.0	22.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				26740	26865	26990			26740	26865	26990		
				819 MHz	831.5 MHz	844 MHz			819 MHz	831.5 MHz	844 MHz		
10 MHz	QPSK	1	0	24.53	24.56	24.62	0.0	25.5	21.05	21.28	21.01	0.0	22.0
		1	25	24.52	24.34	24.51	0.0	25.5	21.06	21.06	21.04	0.0	22.0
		1	49	24.51	24.42	24.27	0.0	25.5	21.19	21.06	21.17	0.0	22.0
		25	0	23.53	23.62	23.70	1.0	24.5	21.08	21.18	21.17	0.0	22.0
		25	12	23.52	23.61	23.67	1.0	24.5	21.13	21.15	21.16	0.0	22.0
		25	25	23.54	23.63	23.66	1.0	24.5	21.14	21.13	21.17	0.0	22.0
		50	0	23.55	23.59	23.69	1.0	24.5	21.10	21.13	21.12	0.0	22.0
	16QAM	1	0	23.56	23.45	23.59	1.0	24.5	21.22	21.46	21.64	0.0	22.0
		1	25	23.51	23.41	23.64	1.0	24.5	21.27	21.47	21.45	0.0	22.0
		1	49	23.52	23.43	23.61	1.0	24.5	21.74	21.35	21.62	0.0	22.0
		25	0	22.62	22.61	22.71	2.0	23.5	21.07	21.22	21.16	0.0	22.0
		25	12	22.59	22.61	22.68	2.0	23.5	21.03	21.16	21.07	0.0	22.0
		25	25	22.61	22.61	22.67	2.0	23.5	21.08	21.09	21.17	0.0	22.0
		50	0	22.56	22.56	22.69	2.0	23.5	21.13	21.15	21.17	0.0	22.0
	64QAM	1	0	22.87	22.72	22.70	2.0	23.5	21.25	21.14	21.58	0.0	22.0
		1	25	22.84	22.70	22.75	2.0	23.5	21.06	21.16	21.16	0.0	22.0
		1	49	22.86	22.70	22.84	2.0	23.5	21.45	21.17	21.65	0.0	22.0
		25	0	21.57	21.67	21.73	3.0	22.5	21.03	21.14	21.23	0.0	22.0
		25	12	21.56	21.65	21.70	3.0	22.5	21.09	21.08	21.14	0.0	22.0
		25	25	21.59	21.68	21.72	3.0	22.5	21.10	21.13	21.10	0.0	22.0
		50	0	21.56	21.59	21.68	3.0	22.5	21.07	21.18	21.14	0.0	22.0

LTE Band 26 (Ant.A) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				26715	26865	27015			26715	26865	27015		
				816.5 MHz	831.5 MHz	846.5 MHz			816.5 MHz	831.5 MHz	846.5 MHz		
5 MHz	QPSK	1	0	24.60	24.64	24.67	0.0	25.5	20.96	21.18	21.09	0.0	22.0
		1	12	24.68	24.66	24.44	0.0	25.5	21.00	21.18	21.18	0.0	22.0
		1	24	24.59	24.62	24.20	0.0	25.5	21.10	21.14	21.17	0.0	22.0
		12	0	23.50	23.57	23.72	1.0	24.5	21.04	21.16	21.24	0.0	22.0
		12	7	23.49	23.54	23.66	1.0	24.5	21.06	21.13	21.21	0.0	22.0
		12	13	23.52	23.52	23.69	1.0	24.5	21.02	21.11	21.17	0.0	22.0
		25	0	23.54	23.57	23.72	1.0	24.5	21.09	21.22	21.21	0.0	22.0
	16QAM	1	0	23.60	23.76	23.67	1.0	24.5	21.62	21.64	21.37	0.0	22.0
		1	12	23.70	23.78	23.87	1.0	24.5	21.48	21.31	21.30	0.0	22.0
		1	24	23.61	23.77	23.73	1.0	24.5	21.27	21.26	21.54	0.0	22.0
		12	0	22.57	22.63	22.84	2.0	23.5	21.05	21.22	21.23	0.0	22.0
		12	7	22.57	22.63	22.77	2.0	23.5	21.05	21.15	21.17	0.0	22.0
		12	13	22.57	22.61	22.82	2.0	23.5	21.01	21.13	21.25	0.0	22.0
		25	0	22.47	22.57	22.78	2.0	23.5	21.08	21.16	21.18	0.0	22.0
	64QAM	1	0	22.44	22.78	22.89	2.0	23.5	21.23	21.39	21.15	0.0	22.0
		1	12	22.53	22.84	22.97	2.0	23.5	21.27	21.51	21.15	0.0	22.0
		1	24	22.46	22.83	22.94	2.0	23.5	21.17	21.17	21.17	0.0	22.0
		12	0	21.57	21.64	21.65	3.0	22.5	21.12	21.17	21.28	0.0	22.0
		12	7	21.58	21.64	21.59	3.0	22.5	21.10	21.10	21.29	0.0	22.0
		12	13	21.59	21.63	21.65	3.0	22.5	21.09	21.22	21.13	0.0	22.0
		25	0	21.54	21.58	21.68	3.0	22.5	21.03	21.20	21.11	0.0	22.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				26705	26865	27025			26705	26865	27025		
				815.5 MHz	831.5 MHz	847.5 MHz			815.5 MHz	831.5 MHz	847.5 MHz		
3 MHz	QPSK	1	0	24.37	24.46	24.59	0.0	25.5	21.05	21.11	21.11	0.0	22.0
		1	8	24.42	24.50	24.47	0.0	25.5	20.93	21.10	21.15	0.0	22.0
		1	14	24.45	24.53	24.26	0.0	25.5	20.99	21.16	21.10	0.0	22.0
		8	0	23.43	23.52	23.59	1.0	24.5	21.01	21.15	21.23	0.0	22.0
		8	4	23.41	23.50	23.60	1.0	24.5	20.99	21.10	21.18	0.0	22.0
		8	7	23.45	23.48	23.59	1.0	24.5	20.98	21.05	21.19	0.0	22.0
		15	0	23.44	23.49	23.58	1.0	24.5	21.00	21.10	21.17	0.0	22.0
	16QAM	1	0	23.47	23.38	23.62	1.0	24.5	21.05	21.61	21.15	0.0	22.0
		1	8	23.51	23.43	23.73	1.0	24.5	21.17	21.42	21.29	0.0	22.0
		1	14	23.52	23.38	23.59	1.0	24.5	21.35	21.26	21.46	0.0	22.0
		8	0	22.50	22.63	22.70	2.0	23.5	21.11	21.16	21.22	0.0	22.0
		8	4	22.50	22.61	22.69	2.0	23.5	21.04	21.06	21.24	0.0	22.0
		8	7	22.53	22.59	22.72	2.0	23.5	21.02	21.21	21.29	0.0	22.0
		15	0	22.42	22.51	22.64	2.0	23.5	21.12	21.06	21.10	0.0	22.0
	64QAM	1	0	22.75	22.63	22.73	2.0	23.5	21.31	21.45	21.29	0.0	22.0
		1	8	22.84	22.70	22.75	2.0	23.5	20.95	21.35	21.12	0.0	22.0
		1	14	22.84	22.60	22.73	2.0	23.5	20.70	21.26	21.31	0.0	22.0
		8	0	21.55	21.46	21.67	3.0	22.5	21.09	21.12	21.15	0.0	22.0
		8	4	21.55	21.43	21.67	3.0	22.5	21.08	21.16	21.31	0.0	22.0
		8	7	21.57	21.41	21.66	3.0	22.5	21.08	21.24	21.23	0.0	22.0
		15	0	21.44	21.53	21.59	3.0	22.5	20.93	21.15	21.12	0.0	22.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				26697	26865	27033			26697	26865	27033		
				814.7 MHz	831.5 MHz	848.3 MHz			814.7 MHz	831.5 MHz	848.3 MHz		
1.4 MHz	QPSK	1	0	24.45	24.62	24.54	0.0	25.5	20.94	21.14	21.09	0.0	22.0
		1	3	24.45	24.57	24.56	0.0	25.5	21.10	21.15	21.15	0.0	22.0
		1	5	24.47	24.63	24.55	0.0	25.5	21.02	21.05	21.12	0.0	22.0
		3	0	24.44	24.43	24.60	0.0	25.5	20.98	21.10	21.18	0.0	22.0
		3	1	24.46	24.43	24.61	0.0	25.5	20.97	21.06	21.16	0.0	22.0
		3	3	24.45	24.44	24.65	0.0	25.5	21.01	21.09	21.24	0.0	22.0
		6	0	23.47	23.48	23.58	1.0	24.5	20.93	21.03	21.15	0.0	22.0
	16QAM	1	0	23.85	23.58	23.63	1.0	24.5	21.27	21.61	21.67	0.0	22.0
		1	3	23.80	23.58	23.57	1.0	24.5	21.02	21.12	21.31	0.0	22.0
		1	5	23.84	23.61	23.65	1.0	24.5	21.20	21.37	21.46	0.0	22.0
		3	0	23.63	23.53	23.71	1.0	24.5	20.91	20.92	21.10	0.0	22.0
		3	1	23.64	23.50	23.73	1.0	24.5	20.89	21.20	21.21	0.0	22.0
		3	3	23.61	23.51	23.75	1.0	24.5	21.06	21.00	20.95	0.0	22.0
		6	0	22.35	22.61	22.76	2.0	23.5	21.05	21.15	21.15	0.0	22.0
	64QAM	1	0	22.81	22.60	22.80	2.0	23.5	21.39	21.18	21.38	0.0	22.0
		1	3	22.91	22.61	22.74	2.0	23.5	20.75	21.57	21.34	0.0	22.0
		1	5	22.85	22.61	22.78	2.0	23.5	21.26	21.44	21.14	0.0	22.0
		3	0	22.73	22.59	22.51	2.0	23.5	21.12	21.04	21.23	0.0	22.0
		3	1	22.73	22.60	22.50	2.0	23.5	21.05	21.00	21.23	0.0	22.0
		3	3	22.72	22.58	22.52	2.0	23.5	20.97	21.15	21.29	0.0	22.0
		6	0	21.43	21.75	21.68	3.0	22.5	21.01	21.07	21.01	0.0	22.0

LTE Band 66 (Ant.B) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Allowed Average Power (dBm)					Maximum Allowed Average Power (dBm)				
				ECI = 1					ECI = 0, 2				
				Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132072	132322	132572			132072	132322	132572		
				1720 MHz	1745 MHz	1770 MHz			1720 MHz	1745 MHz	1770 MHz		
20 MHz	QPSK	1	0	22.79	23.03	22.96	0.0	24.0	18.74	18.87	18.88	0.0	20.0
		1	49	23.06	23.10	22.91	0.0	24.0	18.98	18.98	18.88	0.0	20.0
		1	99	23.32	23.22	23.02	0.0	24.0	19.13	19.11	18.85	0.0	20.0
		50	0	21.99	22.05	21.92	1.0	23.0	19.09	19.12	18.83	0.0	20.0
		50	24	22.10	22.10	21.97	1.0	23.0	19.01	18.95	18.92	0.0	20.0
		50	50	22.22	22.21	22.03	1.0	23.0	19.16	19.01	18.93	0.0	20.0
		100	0	22.10	22.08	21.93	1.0	23.0	19.24	19.10	18.83	0.0	20.0
	16QAM	1	0	22.16	22.43	22.05	1.0	23.0	19.27	18.96	18.89	0.0	20.0
		1	49	22.46	22.78	22.13	1.0	23.0	18.91	19.35	19.60	0.0	20.0
		1	99	22.33	22.58	22.13	1.0	23.0	19.21	19.26	18.97	0.0	20.0
		50	0	20.94	21.02	20.90	2.0	22.0	18.86	18.87	18.83	0.0	20.0
		50	24	21.10	21.13	20.98	2.0	22.0	19.01	18.90	18.96	0.0	20.0
		50	50	21.16	21.15	20.99	2.0	22.0	19.11	19.04	19.00	0.0	20.0
		100	0	21.04	21.10	20.95	2.0	22.0	18.97	19.07	18.89	0.0	20.0
	64QAM	1	0	21.20	21.09	21.13	2.0	22.0	18.79	19.04	19.00	0.0	20.0
		1	49	20.96	20.99	20.97	2.0	22.0	19.41	19.29	19.03	0.0	20.0
		1	99	21.10	21.39	21.04	2.0	22.0	19.00	19.41	19.17	0.0	20.0
		50	0	19.92	20.00	19.86	3.0	21.0	18.86	18.96	18.79	0.0	20.0
		50	24	20.01	20.07	19.93	3.0	21.0	19.02	19.04	18.93	0.0	20.0
		50	50	20.17	20.15	19.97	3.0	21.0	19.10	18.78	18.96	0.0	20.0
		100	0	20.08	20.06	19.88	3.0	21.0	19.01	18.99	18.87	0.0	20.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132047	132322	132597			132047	132322	132597		
				1717.5 MHz	1745 MHz	1772.5 MHz			1717.5 MHz	1745 MHz	1772.5 MHz		
15 MHz	QPSK	1	0	22.81	22.95	22.78	0.0	24.0	18.75	18.83	18.71	0.0	20.0
		1	37	23.25	23.13	22.99	0.0	24.0	18.90	19.00	18.94	0.0	20.0
		1	74	23.08	23.08	22.97	0.0	24.0	19.05	19.07	18.91	0.0	20.0
		36	0	21.95	21.97	21.92	1.0	23.0	18.87	18.88	18.86	0.0	20.0
		36	20	22.00	22.08	22.01	1.0	23.0	18.91	19.01	18.91	0.0	20.0
		36	39	22.06	22.14	21.94	1.0	23.0	19.00	19.08	18.90	0.0	20.0
		75	0	21.99	22.08	21.95	1.0	23.0	18.95	18.98	18.89	0.0	20.0
	16QAM	1	0	22.01	22.05	22.08	1.0	23.0	18.54	18.61	18.88	0.0	20.0
		1	37	22.27	22.31	22.35	1.0	23.0	19.02	19.49	18.71	0.0	20.0
		1	74	22.23	22.60	21.77	1.0	23.0	19.44	19.16	18.68	0.0	20.0
		36	0	20.92	21.01	20.90	2.0	22.0	18.84	18.89	18.85	0.0	20.0
		36	20	20.94	21.17	20.98	2.0	22.0	18.90	19.04	18.94	0.0	20.0
		36	39	21.07	21.13	20.97	2.0	22.0	18.99	19.03	18.91	0.0	20.0
		75	0	21.02	21.10	20.98	2.0	22.0	18.92	18.96	18.95	0.0	20.0
	64QAM	1	0	20.91	21.11	20.90	2.0	22.0	19.10	19.07	18.73	0.0	20.0
		1	37	21.14	21.12	21.45	2.0	22.0	18.93	19.28	18.88	0.0	20.0
		1	74	21.39	21.43	21.18	2.0	22.0	19.33	19.43	18.78	0.0	20.0
		36	0	19.93	20.00	19.87	3.0	21.0	18.85	18.90	18.89	0.0	20.0
		36	20	19.98	20.10	19.97	3.0	21.0	18.91	19.05	18.95	0.0	20.0
		36	39	20.15	20.17	19.99	3.0	21.0	19.02	19.11	18.93	0.0	20.0
		75	0	19.97	20.05	20.02	3.0	21.0	18.93	18.98	18.90	0.0	20.0

LTE Band 66 (Ant.B) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				132022	132322	132622			132022	132322	132622		
				1715 MHz	1745 MHz	1775 MHz			1715 MHz	1745 MHz	1775 MHz		
10 MHz	QPSK	1	0	23.12	23.14	22.87	0.0	24.0	18.75	18.77	18.84	0.0	20.0
		1	25	22.88	23.20	22.96	0.0	24.0	18.84	19.14	18.98	0.0	20.0
		1	49	22.98	23.06	22.89	0.0	24.0	19.00	19.05	18.75	0.0	20.0
		25	0	21.91	22.02	21.98	1.0	23.0	18.80	18.92	18.95	0.0	20.0
		25	12	21.97	22.09	21.98	1.0	23.0	18.89	18.99	18.93	0.0	20.0
		25	25	22.03	22.12	21.97	1.0	23.0	18.96	19.03	18.92	0.0	20.0
		50	0	22.01	22.07	22.00	1.0	23.0	18.92	19.02	18.91	0.0	20.0
	16QAM	1	0	22.18	21.93	21.99	1.0	23.0	18.83	19.05	19.03	0.0	20.0
		1	25	22.09	22.33	22.09	1.0	23.0	19.13	19.14	19.40	0.0	20.0
		1	49	22.23	22.58	21.89	1.0	23.0	19.27	19.24	19.22	0.0	20.0
		25	0	20.90	21.02	20.97	2.0	22.0	18.86	18.86	18.99	0.0	20.0
		25	12	20.89	21.13	20.97	2.0	22.0	18.91	18.98	18.94	0.0	20.0
		25	25	20.96	21.06	20.93	2.0	22.0	18.98	19.05	18.87	0.0	20.0
		50	0	20.97	21.07	20.99	2.0	22.0	18.92	18.95	18.92	0.0	20.0
	64QAM	1	0	20.85	21.04	21.07	2.0	22.0	18.80	18.89	18.71	0.0	20.0
		1	25	21.19	21.04	21.02	2.0	22.0	19.26	19.29	19.20	0.0	20.0
		1	49	21.20	21.35	21.23	2.0	22.0	19.31	18.83	18.74	0.0	20.0
		25	0	19.88	19.95	19.95	3.0	21.0	18.80	18.90	18.91	0.0	20.0
		25	12	19.86	20.01	19.89	3.0	21.0	18.85	18.97	18.92	0.0	20.0
		25	25	20.01	20.03	19.93	3.0	21.0	19.05	19.01	18.88	0.0	20.0
		50	0	19.95	20.04	19.97	3.0	21.0	18.89	18.93	18.97	0.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131997	132322	132647			131997	132322	132647		
				1712.5 MHz	1745 MHz	1777.5 MHz			1712.5 MHz	1745 MHz	1777.5 MHz		
5 MHz	QPSK	1	0	22.85	22.98	23.22	0.0	24.0	18.76	18.83	18.89	0.0	20.0
		1	12	22.91	23.03	22.94	0.0	24.0	18.73	19.04	18.85	0.0	20.0
		1	24	22.85	23.15	22.83	0.0	24.0	18.91	18.99	18.92	0.0	20.0
		12	0	21.93	22.03	22.00	1.0	23.0	18.84	18.94	18.95	0.0	20.0
		12	7	21.91	22.07	21.94	1.0	23.0	18.81	18.98	18.87	0.0	20.0
		12	13	21.95	22.09	21.93	1.0	23.0	18.88	18.97	18.83	0.0	20.0
		25	0	21.97	22.11	21.99	1.0	23.0	18.87	19.00	18.96	0.0	20.0
	16QAM	1	0	22.26	21.99	22.59	1.0	23.0	19.69	19.55	19.20	0.0	20.0
		1	12	22.09	22.26	22.31	1.0	23.0	19.49	19.10	19.65	0.0	20.0
		1	24	21.95	22.19	22.10	1.0	23.0	19.51	19.39	18.97	0.0	20.0
		12	0	20.98	21.04	21.08	2.0	22.0	18.80	19.08	19.00	0.0	20.0
		12	7	20.95	21.03	20.89	2.0	22.0	18.85	19.06	18.85	0.0	20.0
		12	13	21.01	21.11	21.02	2.0	22.0	18.76	18.98	18.82	0.0	20.0
		25	0	20.97	21.02	20.97	2.0	22.0	18.83	19.04	18.90	0.0	20.0
	64QAM	1	0	21.26	21.39	21.16	2.0	22.0	19.09	19.39	19.00	0.0	20.0
		1	12	21.30	21.05	21.11	2.0	22.0	19.25	19.01	19.16	0.0	20.0
		1	24	21.31	21.37	20.75	2.0	22.0	19.05	19.24	18.79	0.0	20.0
		12	0	19.86	20.13	20.14	3.0	21.0	18.81	18.87	18.95	0.0	20.0
		12	7	19.93	20.08	19.86	3.0	21.0	18.88	19.06	18.95	0.0	20.0
		12	13	19.93	20.07	20.04	3.0	21.0	18.93	19.00	18.86	0.0	20.0
		25	0	19.95	20.05	20.00	3.0	21.0	18.93	18.94	18.96	0.0	20.0

LTE Band 66 (Ant.B) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131987	132322	132657			131987	132322	132657		
				1711.5 MHz	1745 MHz	1778.5 MHz			1711.5 MHz	1745 MHz	1778.5 MHz		
3 MHz	QPSK	1	0	22.83	22.96	22.86	0.0	24.0	18.70	18.88	18.82	0.0	20.0
		1	8	22.77	22.97	22.83	0.0	24.0	18.70	18.93	18.85	0.0	20.0
		1	14	22.86	23.07	22.81	0.0	24.0	18.81	18.87	18.78	0.0	20.0
		8	0	21.89	22.02	21.88	1.0	23.0	18.77	18.87	18.86	0.0	20.0
		8	4	21.92	22.06	21.87	1.0	23.0	18.79	18.97	18.80	0.0	20.0
		8	7	21.96	22.05	21.89	1.0	23.0	18.80	19.01	18.81	0.0	20.0
		15	0	21.89	22.01	21.85	1.0	23.0	18.80	18.89	18.77	0.0	20.0
	16QAM	1	0	22.46	22.19	21.95	1.0	23.0	19.00	19.28	19.06	0.0	20.0
		1	8	22.14	22.22	21.95	1.0	23.0	19.09	18.72	18.83	0.0	20.0
		1	14	21.84	22.43	21.91	1.0	23.0	18.90	19.17	18.91	0.0	20.0
		8	0	20.93	21.02	20.98	2.0	22.0	18.81	19.07	18.91	0.0	20.0
		8	4	20.87	21.06	20.99	2.0	22.0	18.72	19.03	18.90	0.0	20.0
		8	7	20.92	21.08	20.90	2.0	22.0	18.81	19.06	18.90	0.0	20.0
		15	0	20.84	21.13	20.82	2.0	22.0	18.71	18.96	18.85	0.0	20.0
	64QAM	1	0	20.90	21.06	20.99	2.0	22.0	18.98	19.08	19.05	0.0	20.0
		1	8	21.07	21.17	21.14	2.0	22.0	19.05	19.13	19.07	0.0	20.0
		1	14	21.07	21.34	20.81	2.0	22.0	19.09	19.42	18.78	0.0	20.0
		8	0	19.82	20.04	20.05	3.0	21.0	18.72	18.97	18.92	0.0	20.0
		8	4	19.77	20.12	20.03	3.0	21.0	18.68	19.02	18.91	0.0	20.0
		8	7	19.81	20.12	19.96	3.0	21.0	18.88	19.05	18.80	0.0	20.0
		15	0	19.85	20.01	19.93	3.0	21.0	18.76	18.82	18.87	0.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
				131979	132322	132665			131979	132322	132665		
				1710.7 MHz	1745 MHz	1779.3 MHz			1710.7 MHz	1745 MHz	1779.3 MHz		
1.4 MHz	QPSK	1	0	22.88	23.07	22.88	0.0	24.0	18.77	18.95	18.76	0.0	20.0
		1	3	22.91	23.04	22.87	0.0	24.0	18.64	18.92	18.86	0.0	20.0
		1	5	22.83	23.09	22.85	0.0	24.0	18.79	18.93	18.81	0.0	20.0
		3	0	22.85	23.10	22.89	0.0	24.0	18.79	18.87	18.79	0.0	20.0
		3	1	22.95	23.06	22.90	0.0	24.0	18.76	18.99	18.82	0.0	20.0
		3	3	22.90	22.99	22.91	0.0	24.0	18.75	18.96	18.84	0.0	20.0
		6	0	21.87	22.07	21.88	1.0	23.0	18.76	18.92	18.84	0.0	20.0
	16QAM	1	0	22.25	22.39	22.19	1.0	23.0	19.00	19.19	19.03	0.0	20.0
		1	3	22.30	22.03	21.90	1.0	23.0	18.93	19.08	19.04	0.0	20.0
		1	5	22.46	22.41	21.95	1.0	23.0	19.22	19.10	19.02	0.0	20.0
		3	0	21.84	21.93	21.79	1.0	23.0	18.61	18.80	18.77	0.0	20.0
		3	1	21.87	21.98	21.82	1.0	23.0	18.56	18.83	18.74	0.0	20.0
		3	3	21.89	21.96	21.87	1.0	23.0	18.75	18.83	18.79	0.0	20.0
		6	0	20.80	21.04	20.95	2.0	22.0	18.88	18.85	19.02	0.0	20.0
	64QAM	1	0	20.98	21.34	21.27	2.0	22.0	18.99	19.22	18.85	0.0	20.0
		1	3	20.88	21.28	21.03	2.0	22.0	19.03	19.14	18.80	0.0	20.0
		1	5	21.00	21.36	21.39	2.0	22.0	19.28	19.17	18.96	0.0	20.0
		3	0	20.89	21.22	20.98	2.0	22.0	19.00	18.96	18.90	0.0	20.0
		3	1	21.11	20.91	20.84	2.0	22.0	18.92	19.06	18.69	0.0	20.0
		3	3	20.72	20.97	21.02	2.0	22.0	18.89	18.93	18.83	0.0	20.0
		6	0	19.82	19.87	19.77	3.0	21.0	18.80	18.88	18.88	0.0	20.0

LTE Band 41 (Ant.B) Measured Results

BW (MHz)	Mode	RB Allocation	RB offset	Maximum Allowed Average Power (dBm)							Maximum Allowed Average Power (dBm)						
				ECI = 1							ECI = 0, 2						
				Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490			39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
20 MHz	QPSK	1	0	24.24	23.49	24.25	23.94	23.92	0.0	25.5	18.90	17.96	18.06	18.70	18.29	0.0	20.0
		1	49	24.22	23.63	24.54	23.94	24.02	0.0	25.5	18.93	18.01	18.24	18.79	18.38	0.0	20.0
		1	99	24.05	23.49	24.35	23.78	23.94	0.0	25.5	18.59	17.88	18.23	18.78	18.22	0.0	20.0
		50	0	23.27	22.46	23.40	22.94	22.96	1.0	24.5	18.84	17.96	18.06	18.81	18.47	0.0	20.0
		50	24	23.20	22.49	23.40	22.87	22.89	1.0	24.5	18.87	17.94	18.11	18.82	18.45	0.0	20.0
		50	50	23.13	22.49	23.43	22.82	22.88	1.0	24.5	18.88	18.02	18.13	18.83	18.49	0.0	20.0
		100	0	23.17	22.49	23.38	22.90	22.89	1.0	24.5	18.87	17.95	18.12	18.77	18.38	0.0	20.0
	16QAM	1	0	23.26	23.26	23.14	23.67	23.10	1.0	24.5	19.12	18.22	18.14	18.77	18.73	0.0	20.0
		1	49	23.27	23.42	23.42	23.61	23.10	1.0	24.5	19.00	17.99	18.17	18.79	18.54	0.0	20.0
		1	99	23.14	23.17	23.33	23.45	23.03	1.0	24.5	18.76	17.85	18.32	18.86	18.30	0.0	20.0
		50	0	22.16	21.53	22.40	22.01	21.91	2.0	23.5	18.86	18.03	18.13	18.75	18.47	0.0	20.0
		50	24	22.09	21.54	22.46	21.91	21.84	2.0	23.5	18.80	17.92	18.16	18.77	18.53	0.0	20.0
		50	50	22.01	21.52	22.47	21.85	21.85	2.0	23.5	18.70	17.86	18.16	18.71	18.33	0.0	20.0
		100	0	22.16	21.47	22.42	21.88	21.87	2.0	23.5	18.82	17.95	18.18	18.75	18.39	0.0	20.0
	64QAM	1	0	22.58	21.60	22.26	22.07	21.98	2.0	23.5	18.54	17.83	17.69	18.45	18.28	0.0	20.0
		1	49	22.48	21.66	22.47	22.06	22.17	2.0	23.5	18.39	17.63	17.77	18.36	17.99	0.0	20.0
		1	99	22.46	21.61	22.39	21.85	22.00	2.0	23.5	18.32	17.51	17.84	18.43	17.91	0.0	20.0
		50	0	21.06	20.45	21.31	21.20	20.93	3.0	22.5	18.86	18.00	18.02	18.81	18.46	0.0	20.0
		50	24	21.02	20.52	21.39	21.15	20.89	3.0	22.5	18.83	17.99	18.18	18.85	18.37	0.0	20.0
		50	50	20.98	20.52	21.44	21.12	20.83	3.0	22.5	18.76	17.87	18.20	18.73	18.38	0.0	20.0
		100	0	21.03	20.43	21.42	21.08	20.78	3.0	22.5	18.74	17.98	18.19	18.79	18.37	0.0	20.0
BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490			39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
15 MHz	QPSK	1	0	23.98	23.49	23.89	23.94	23.55	0.0	25.5	18.98	18.11	18.04	18.70	18.57	0.0	20.0
		1	37	23.90	23.47	24.09	23.96	23.51	0.0	25.5	18.74	18.00	18.16	18.78	18.41	0.0	20.0
		1	74	23.76	23.49	24.03	23.80	23.44	0.0	25.5	18.72	17.88	18.19	18.69	18.21	0.0	20.0
		36	0	22.92	22.48	22.93	22.91	22.46	1.0	24.5	18.89	17.93	18.10	18.73	18.42	0.0	20.0
		36	20	22.85	22.38	22.98	22.81	22.46	1.0	24.5	18.75	17.88	18.09	18.71	18.40	0.0	20.0
		36	39	22.76	22.48	23.01	22.80	22.41	1.0	24.5	18.68	17.79	18.13	18.64	18.35	0.0	20.0
		75	0	22.85	22.47	22.97	22.82	22.47	1.0	24.5	18.71	17.92	18.11	18.79	18.50	0.0	20.0
	16QAM	1	0	23.65	23.15	23.67	23.69	23.26	1.0	24.5	19.08	18.08	18.05	18.82	18.59	0.0	20.0
		1	37	23.56	23.14	23.81	23.68	23.26	1.0	24.5	18.98	17.94	18.12	18.78	18.49	0.0	20.0
		1	74	23.45	23.16	23.78	23.51	23.18	1.0	24.5	18.87	17.85	18.36	18.76	18.30	0.0	20.0
		36	0	21.97	21.53	22.01	22.01	21.55	2.0	23.5	18.77	17.90	17.97	18.74	18.40	0.0	20.0
		36	20	21.92	21.46	22.08	21.87	21.50	2.0	23.5	18.79	17.82	18.00	18.74	18.34	0.0	20.0
		36	39	21.85	21.51	22.07	21.90	21.45	2.0	23.5	18.64	17.77	18.03	18.62	18.22	0.0	20.0
		75	0	21.92	21.51	22.05	21.92	21.51	2.0	23.5	18.86	17.90	18.15	18.83	18.44	0.0	20.0
	64QAM	1	0	22.18	21.65	22.01	22.05	21.63	2.0	23.5	18.61	17.70	17.69	18.37	18.11	0.0	20.0
		1	37	22.07	21.61	22.17	22.06	21.59	2.0	23.5	18.34	17.61	17.68	18.35	18.09	0.0	20.0
		1	74	21.94	21.62	22.14	21.91	21.51	2.0	23.5	18.26	17.51	17.84	18.38	17.95	0.0	20.0
		36	0	21.04	20.45	21.07	21.18	20.70	3.0	22.5	18.88	17.96	18.10	18.73	18.44	0.0	20.0
		36	20	20.99	20.51	21.16	21.10	20.67	3.0	22.5	18.83	17.81	18.02	18.78	18.41	0.0	20.0
		36	39	20.90	20.48	21.16	21.08	20.57	3.0	22.5	18.67	17.88	18.12	18.67	18.28	0.0	20.0
		75	0	20.97	20.46	21.12	21.13	20.64	3.0	22.5	18.76	17.98	18.13	18.73	18.43	0.0	20.0

LTE Band 41 (Ant.B) Measured Results (Continued)

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490			39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
10 MHz	QPSK	1	0	23.90	23.44	23.92	23.90	23.49	0.0	25.5	18.81	18.01	18.07	18.81	18.46	0.0	20.0
		1	25	23.78	23.42	23.95	23.82	23.44	0.0	25.5	18.70	17.91	18.11	18.74	18.43	0.0	20.0
		1	49	23.73	23.47	23.99	23.80	23.41	0.0	25.5	18.81	17.90	18.13	18.78	18.43	0.0	20.0
		25	0	22.88	22.38	22.92	22.83	22.43	1.0	24.5	18.81	17.98	18.13	18.77	18.40	0.0	20.0
		25	12	22.77	22.41	22.95	22.81	22.36	1.0	24.5	18.87	17.86	18.04	18.74	18.46	0.0	20.0
		25	25	22.77	22.39	23.00	22.75	22.37	1.0	24.5	18.73	17.91	18.24	18.75	18.42	0.0	20.0
		50	0	22.82	22.42	22.92	22.81	22.42	1.0	24.5	18.87	17.86	18.13	18.81	18.36	0.0	20.0
	16QAM	1	0	23.62	23.12	23.62	23.59	23.16	1.0	24.5	19.06	18.13	18.26	18.89	18.68	0.0	20.0
		1	25	23.48	23.07	23.67	23.52	23.10	1.0	24.5	18.90	17.96	18.13	18.74	18.49	0.0	20.0
		1	49	23.44	23.13	23.77	23.47	23.08	1.0	24.5	18.80	17.96	18.36	18.82	18.54	0.0	20.0
		25	0	21.94	21.46	21.98	21.88	21.48	2.0	23.5	18.81	17.91	18.05	18.71	18.46	0.0	20.0
		25	12	21.85	21.46	22.02	21.82	21.43	2.0	23.5	18.73	17.82	18.04	18.72	18.31	0.0	20.0
		25	25	21.81	21.47	22.04	21.84	21.45	2.0	23.5	18.70	17.89	18.08	18.74	18.39	0.0	20.0
		50	0	21.85	21.49	21.97	21.87	21.44	2.0	23.5	18.93	17.93	18.12	18.82	18.47	0.0	20.0
	64QAM	1	0	22.08	21.62	22.03	22.02	21.58	2.0	23.5	18.55	17.71	17.77	18.43	18.20	0.0	20.0
		1	25	21.98	21.51	22.11	21.97	21.50	2.0	23.5	18.36	17.53	17.78	18.32	18.02	0.0	20.0
		1	49	21.95	21.62	22.10	21.91	21.51	2.0	23.5	18.40	17.56	17.85	18.44	18.04	0.0	20.0
		25	0	20.91	20.39	21.04	21.12	20.67	3.0	22.5	18.88	18.04	18.16	18.80	18.46	0.0	20.0
		25	12	20.89	20.43	21.11	21.05	20.60	3.0	22.5	18.81	17.94	18.06	18.76	18.49	0.0	20.0
		25	25	20.86	20.43	21.10	21.02	20.56	3.0	22.5	18.78	17.87	18.16	18.75	18.40	0.0	20.0
		50	0	20.89	20.44	21.08	21.06	20.60	3.0	22.5	18.77	17.91	18.18	18.79	18.36	0.0	20.0

BW (MHz)	Mode	RB Allocation	RB offset	Measured Pwr (dBm)					MPR	Tune-up Limit	Measured Pwr (dBm)					MPR	Tune-up Limit
				39750	40185	40620	41055	41490			39750	40185	40620	41055	41490		
				2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz			2506 MHz	2549.5 MHz	2593 MHz	2636.5 MHz	2680 MHz		
5 MHz	QPSK	1	0	23.83	23.42	23.90	23.90	23.42	0.0	25.5	18.83	17.98	18.01	18.80	18.37	0.0	20.0
		1	12	23.85	23.47	23.98	23.90	23.44	0.0	25.5	18.84	17.99	18.09	18.81	18.38	0.0	20.0
		1	24	23.78	23.44	23.97	23.77	23.42	0.0	25.5	18.73	17.83	18.18	18.71	18.35	0.0	20.0
		12	0	22.92	22.49	23.04	22.86	22.44	1.0	24.5	18.92	17.91	18.05	18.71	18.44	0.0	20.0
		12	7	22.88	22.46	22.99	22.83	22.47	1.0	24.5	18.72	17.91	18.09	18.75	18.40	0.0	20.0
		12	13	22.85	22.43	23.03	22.85	22.42	1.0	24.5	18.74	17.84	18.14	18.74	18.46	0.0	20.0
		25	0	22.88	22.44	23.00	22.76	22.44	1.0	24.5	18.80	17.89	18.08	18.83	18.44	0.0	20.0
	16QAM	1	0	23.57	23.14	23.60	23.55	23.09	1.0	24.5	19.02	17.98	18.17	18.84	18.55	0.0	20.0
		1	12	23.53	23.12	23.70	23.57	23.07	1.0	24.5	18.92	18.01	18.26	18.77	18.37	0.0	20.0
		1	24	23.49	23.14	23.69	23.47	23.05	1.0	24.5	18.94	17.88	18.19	18.83	18.54	0.0	20.0
		12	0	21.94	21.46	22.02	21.90	21.46	2.0	23.5	18.70	17.89	18.09	18.65	18.36	0.0	20.0
		12	7	21.91	21.46	22.02	21.89	21.45	2.0	23.5	18.83	17.84	18.16	18.73	18.34	0.0	20.0
		12	13	21.85	21.44	22.02	21.81	21.45	2.0	23.5	18.72	17.87	18.10	18.71	18.38	0.0	20.0
		25	0	21.89	21.50	22.05	21.89	21.50	2.0	23.5	18.79	17.87	18.15	18.75	18.49	0.0	20.0
	64QAM	1	0	22.08	21.64	22.08	21.99	21.54	2.0	23.5	18.52	17.59	17.71	18.39	18.12	0.0	20.0
		1	12	22.08	21.66	22.10	22.05	21.57	2.0	23.5	18.52	17.56	17.74	18.41	18.02	0.0	20.0
		1	24	21.96	21.57	22.17	21.91	21.50	2.0	23.5	18.42	17.50	17.77	18.41	18.01	0.0	20.0
		12	0	20.97	20.47	21.13	21.18	20.66	3.0	22.5	18.93	17.98	18.16	18.77	18.47	0.0	20.0
		12	7	20.95	20.47	21.17	21.16	20.63	3.0	22.5	18.83	17.90	18.14	18.77	18.42	0.0	20.0
		12	13	20.91	20.45	21.17	21.11	20.61	3.0	22.5	18.80	17.96	18.10	18.80	18.41	0.0	20.0
		25	0	20.95	20.47	21.15	21.08	20.61	3.0	22.5	18.79	17.90	18.10	18.77	18.42	0.0	20.0

9.3.1. LTE Carrier Aggregation

DL Inter-Band (Contiguous)

E-UTRA CA configuration	Bandwidth Combination Set	E-UTRA Band	Allowed Channel BW Per Carrier (MHz)					Max Aggregated BW
			1st Carrier	2nd Carrier	3rd Carrier	4th Carrier	5th Carrier	
41C	(0)	Band 41	10	20				40
			15	15, 20				
			20	10, 15, 20				
	(1)	Band 41	5, 10	20				40
			15	15, 20				
			20	5, 10, 15, 20				
	(2)	Band 41	10	15, 20				40
			15	10, 15, 20				
			20	10, 15, 20				
	(3)	Band 41	10	20				40
			20	20				

LTE Downlink Carrier Aggregation Combinations

LTE Release 10 Carrier Aggregation

Index	2CC	Restriction	Completely Covered by Measurement Superset
2CC#1	41C		

DL CA output power results

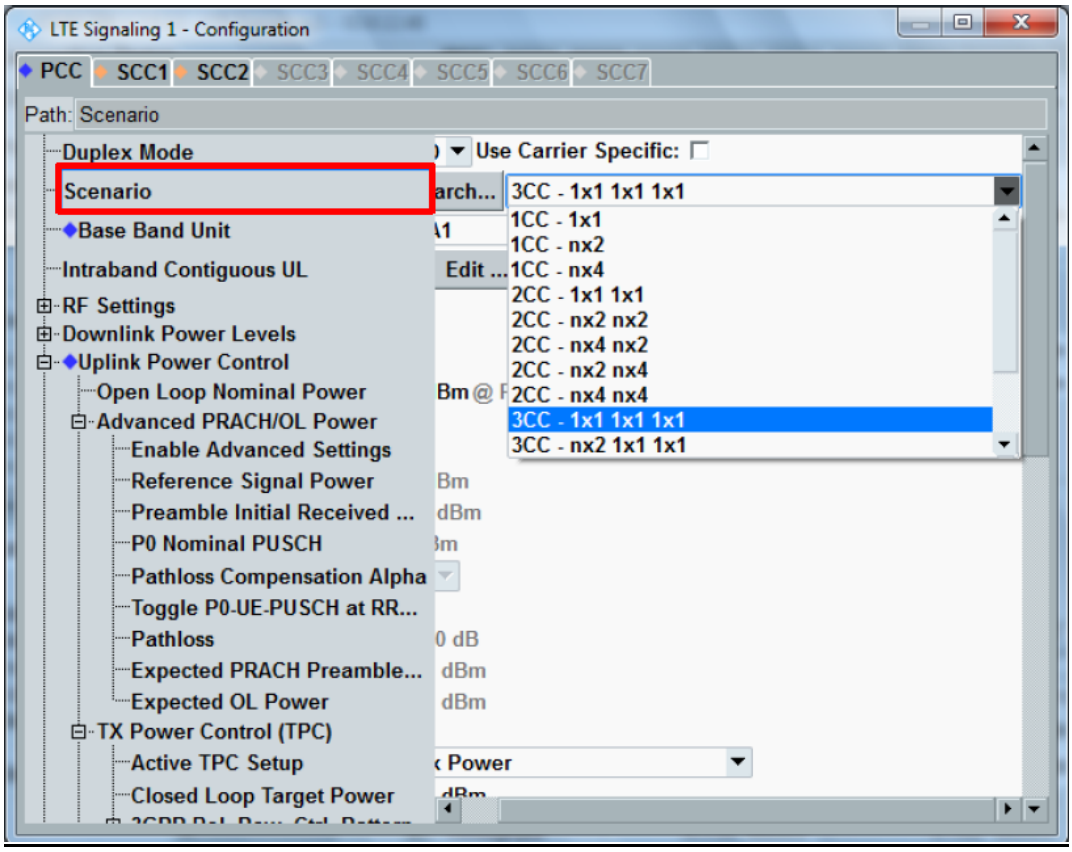
E-UTRA CA configutation (BCS)	Bands				UL							DL								LTE Rel 8 Tx. Power [dBm]	LTE Rel 10 Tx. Power [dBm]	Delta
	PCC	SCC1	SCC2	SCC3	PCC							PCC				SCC1						
	1st	2nd	3rd	4th	Band	Mode	BW (MHz)	Channel	Freq. (MHz)	RB Allocation	RB offset	Band	BW (MHz)	Channel	Freq. (MHz)	Band	BW (MHz)	Channel	Freq. (MHz)			
41C	41C	41C			41	QPSK	20	40620	2593	1	49	41	20	40620	2593	41	20	40818	2612.8	24.54	24.52	-0.02

Note:

1. Per KDB 941225 D05A LTE Rel. 10 KDB Inquiry Sheet: SAR is excluded for Carrier Aggregation when measured power does not exceed LTE Release 8 by more than a 1/4 dB.

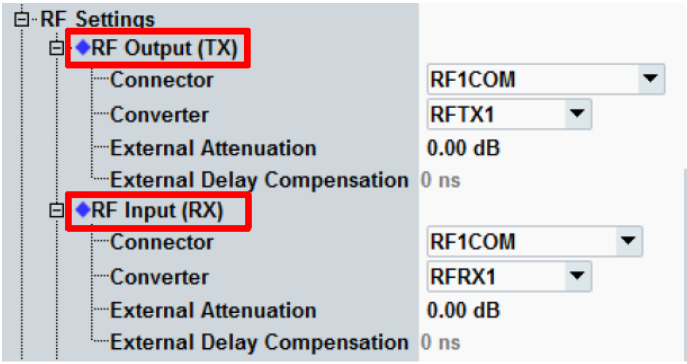
LTE Downlink Carrier Aggregation - Output Power measurement procedures

- Change the Scenario in the Configuration of LTE Signaling
  e.g. 3CC – 1x1 1x1 1x1

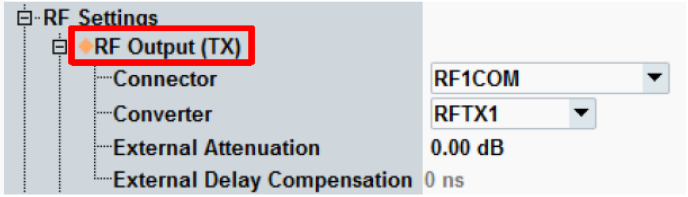


- Set the RF Output/Input Connector and Converter for PCC/SCC1/SCC2 in each tab.

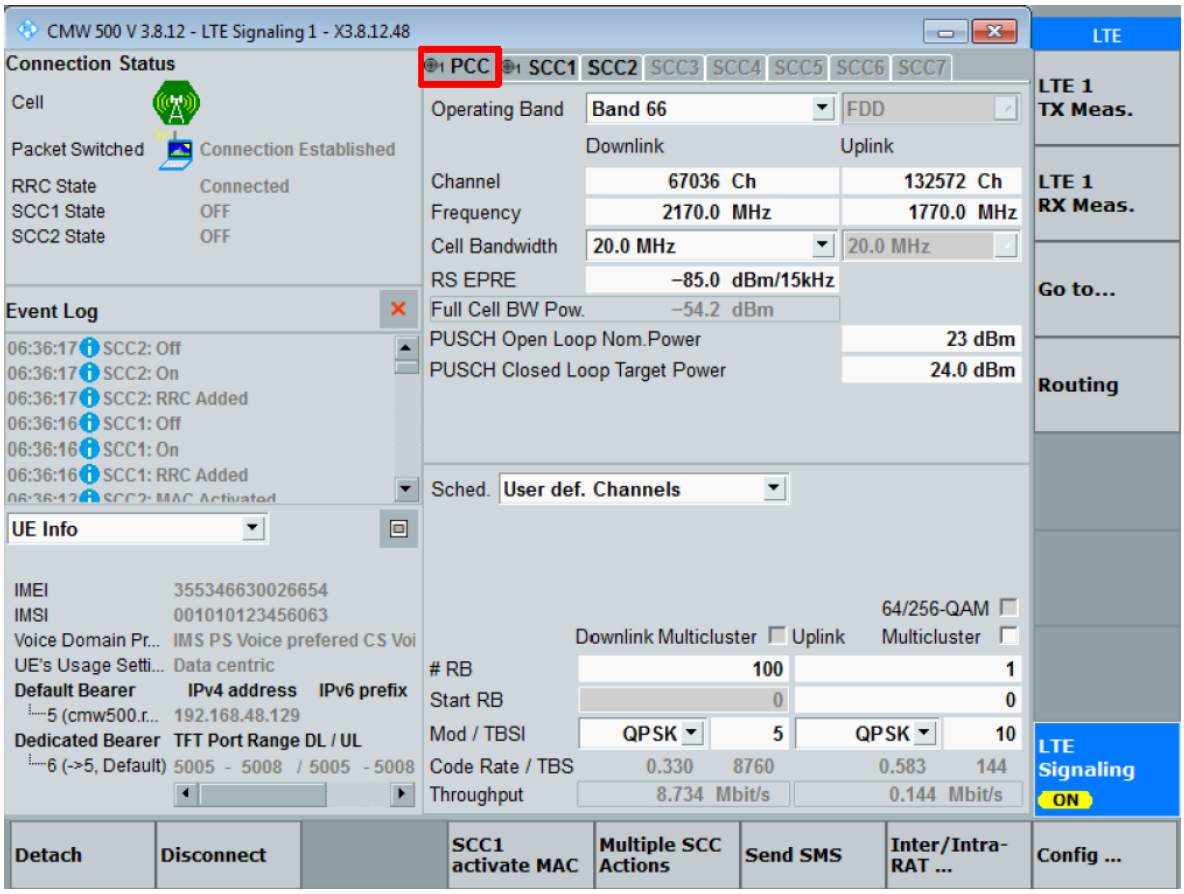
<RF Output/Input - Connector/Converter for PCC>



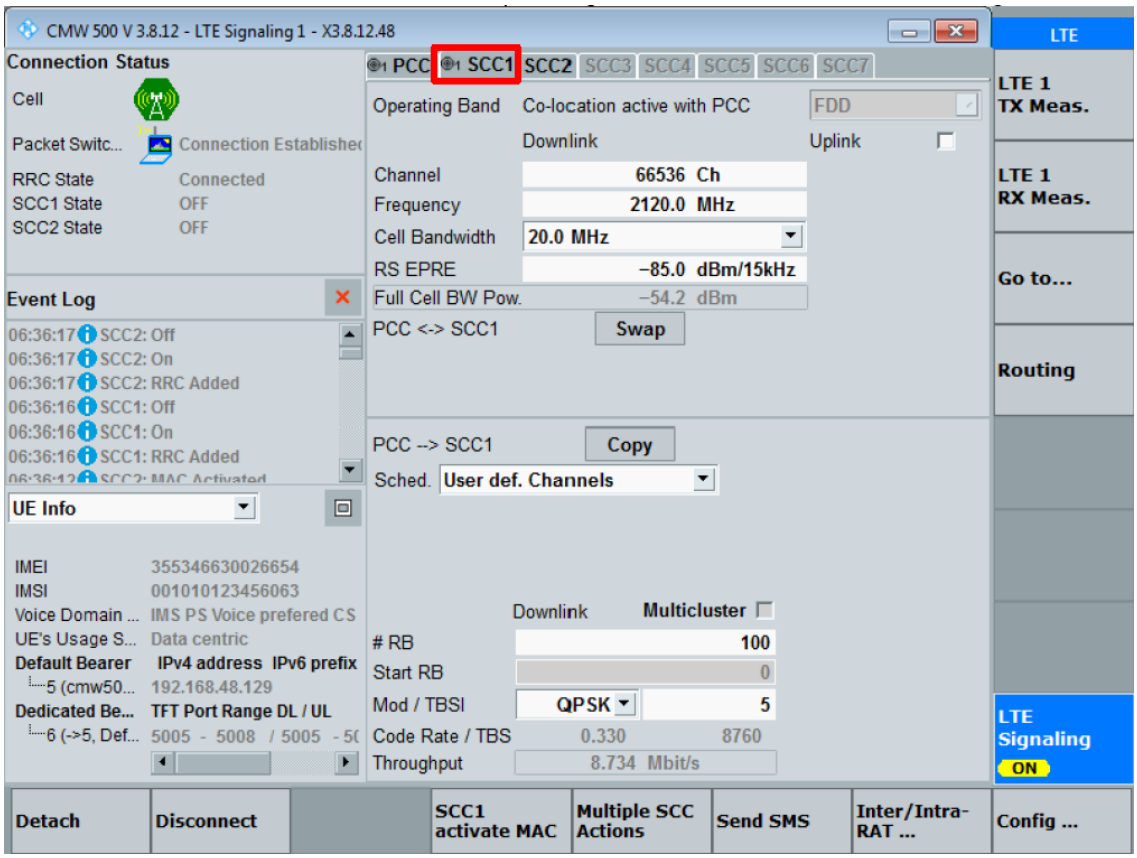
<RF Output – Connector/Converter for SCC1/SCC2>

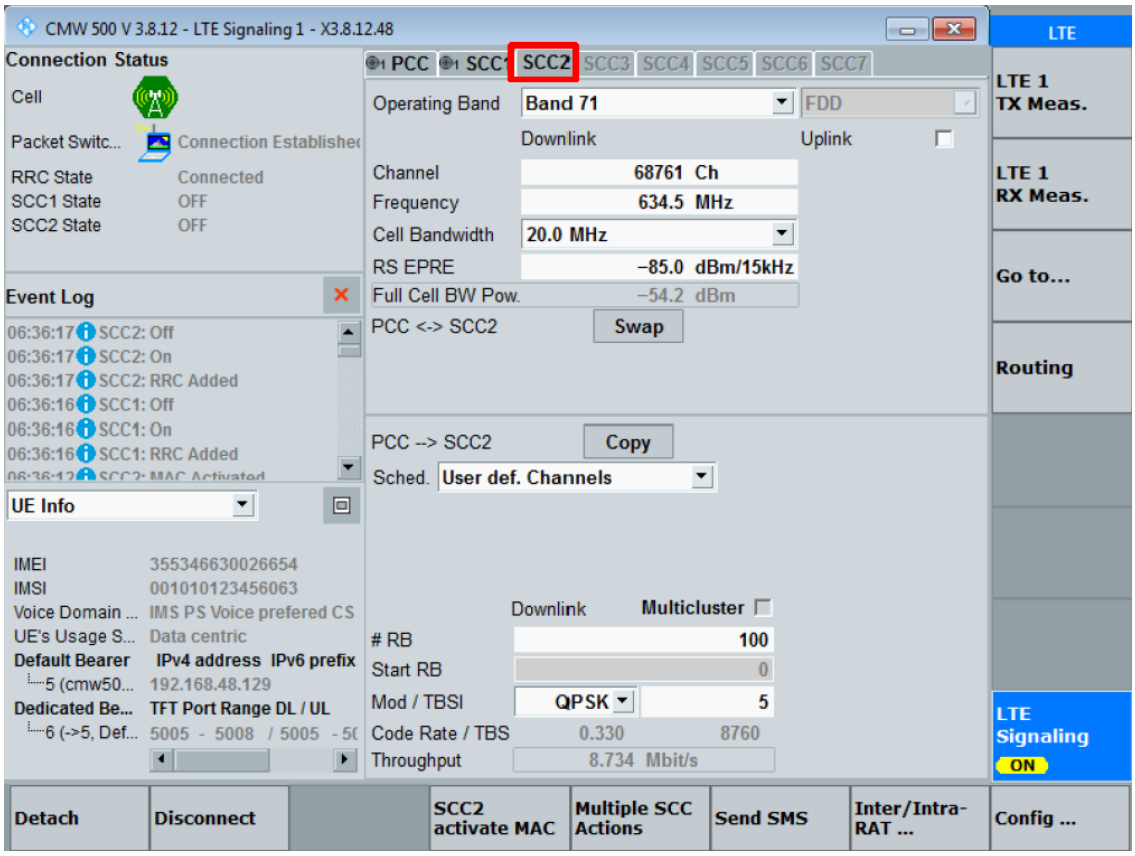


- Back to the LTE Signal screen, and then select the PCC tab,
  Set operating band, BW, channel and RB configurations for PCC

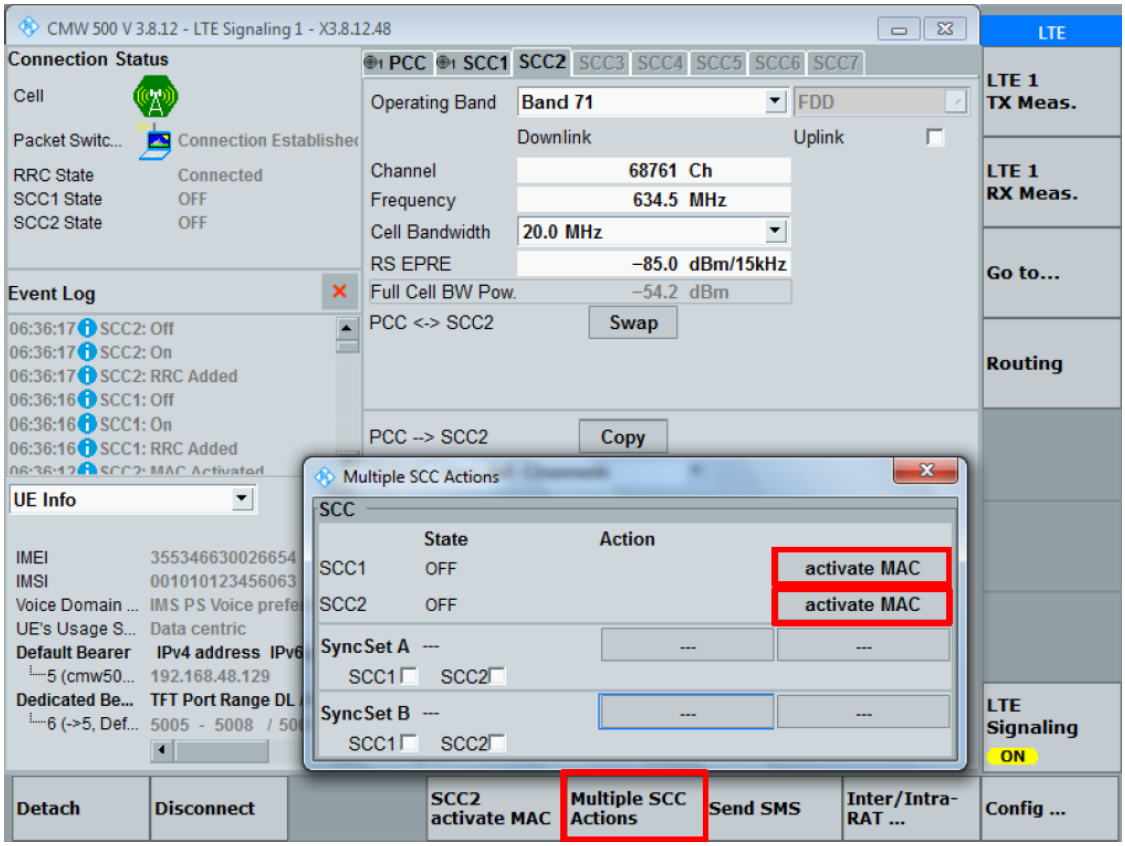


- Select the SCC1/SCC2 tab, set operating band, BW, channel and RB configurations for SCC1/SCC2

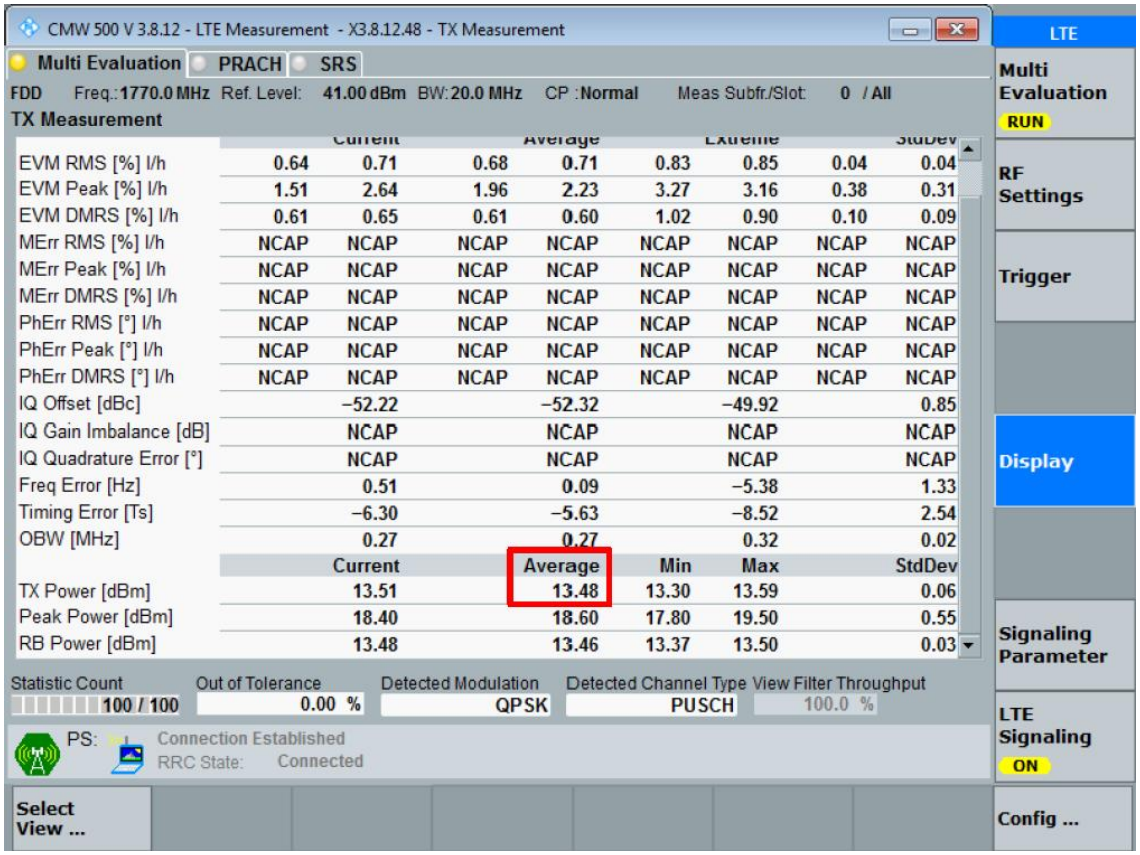


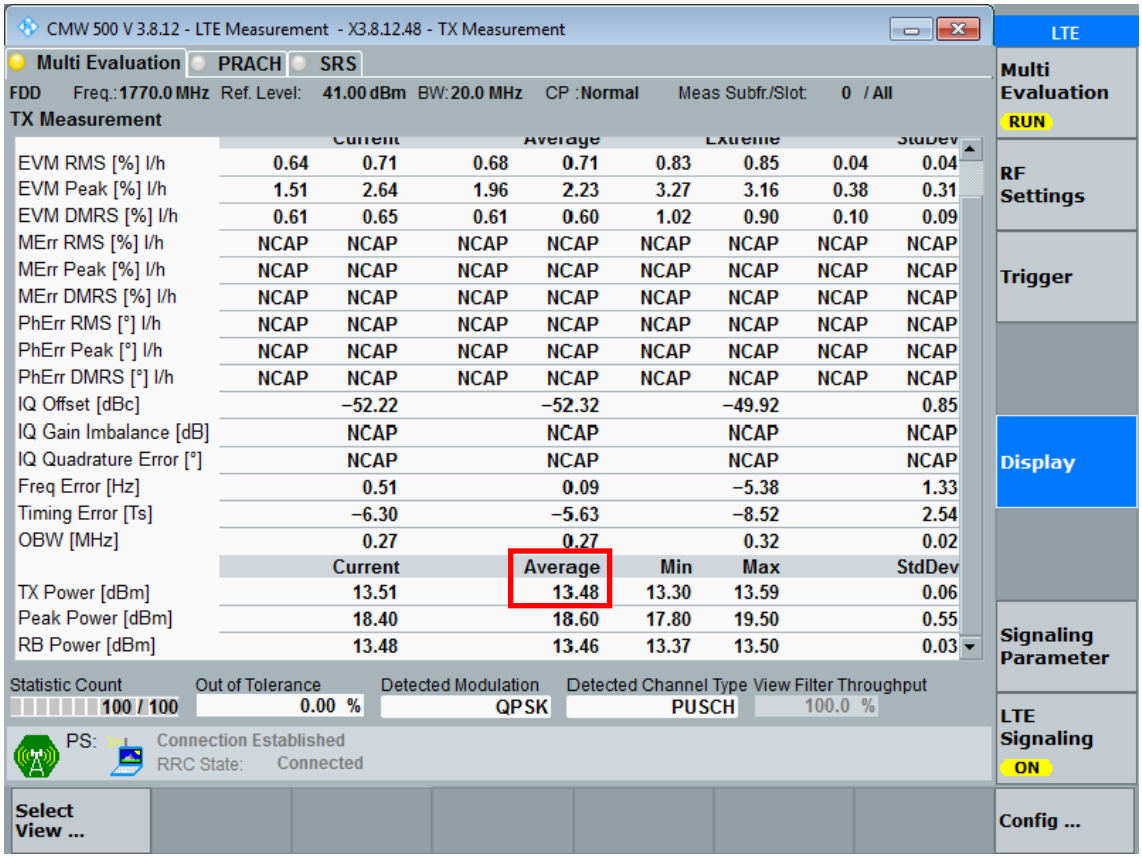


- Connect and Activate MAC for all SCCs



- Read the output power of DL CA in **TX Measurement** (LTE Tx Meas.)





9.4. NR (Sub 6GHz)

The following tests were conducted according to the test requirements outlined in section 6.2 of the 3GPP TS 138.521-1 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 TS138.521-1.

Table 6.2.2.3-1: Maximum Power Reduction (MPR) for Power 3

Modulation	MPR (dB)		
	Edge RB allocations	Outer RB allocations	Inner RB allocations
DFT-s-OFDM PI/2 BPSK	≤ 3.5[1]	≤ 1.2[1]	≤ 0.2[1]
	≤ 0.5[2]		0[2]
DFT-s-OFDM QPSK	≤ 1		0
DFT-s-OFDM 16 QAM	≤ 2		≤ 1
DFT-s-OFDM 64 QAM	≤ 2.5		
DFT-s-OFDM 256 QAM	≤ 4.5		
CP-OFDM QPSK	≤ 3		≤ 1.5
CP-OFDM 16 QAM	≤ 3		≤ 2
CP-OFDM 64 QAM	≤ 3.5		
CP-OFDM 256 QAM	≤ 6.5		

NOTE 1: Applicable for UE operating in TDD mode with PI/2 BPSK modulation and UE indicates support for UE capability *powerBoosting-pi2BPSK* and if the IE *powerBoostPi2BPSK* is set to 1 and 40 % or less slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79. The reference power of 0dB MPR is 26dBm.

NOTE 2: Applicable for UE operating in FDD mode, or in TDD mode in bands other than n40, n41, n77, n78 and n79 and if the IE *powerBoostPi2BPSK* is set to 0 and if more than 40% of slots in radio frame are used for UL transmission for bands n40, n41, n77, n78 and n79.

The allowed A-MPR values specified below in Table 6.2.3.3.1-1 of 3GPP TS138.521-1 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”

Table 6.2.3.3.1-1: Additional maximum power reduction (A-MPR)

Network Signalling label	Requirements (subclause)	NR Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01		Table 5.2-1	5, 10, 15, 20, 25, 30, 40, 50, 60, 80, 90, 100	Table 5.3.2-1	N/A

Uplink RB allocations were used to Table 6.1-1 of the 3GPP TS 138.521-1.

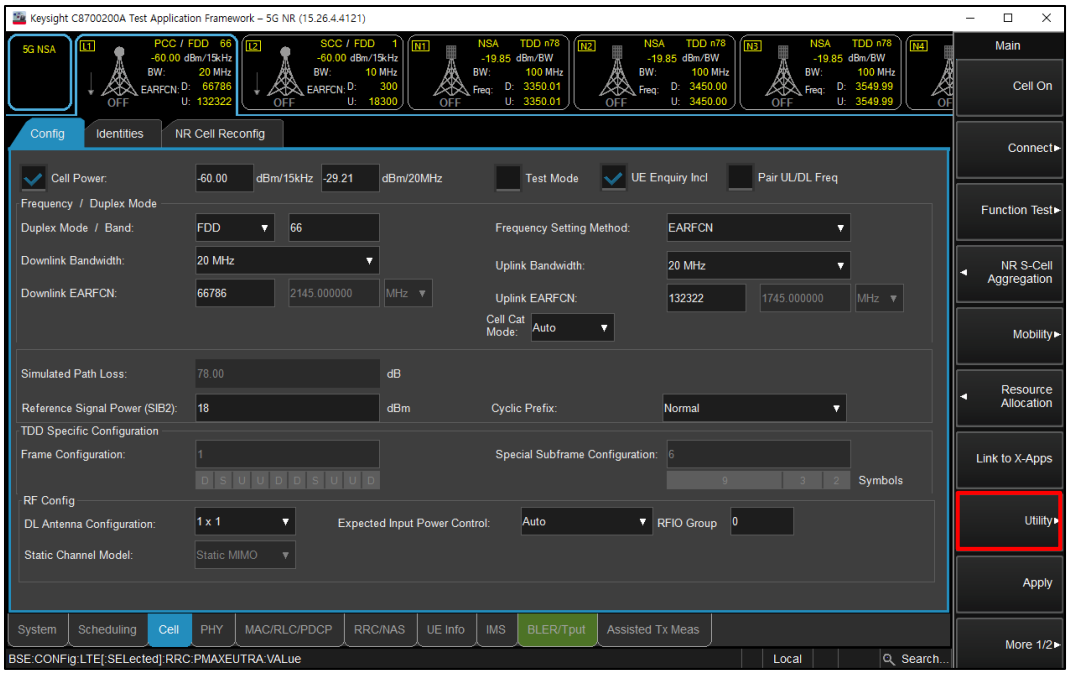
Channel Bandwidth	SCS(kHz)	OFDM	RB allocation							
			Edge_Full_Left	Edge_Full_Right	Edge_1RB_Left	Edge_1RB_Right	Outer_Full	Inner_Full	Inner_1RB_Left	Inner_1RB_Right
5MHz	15	DFT-s	2@0	2@23	1@0	1@24	25@0	12@6	1@1	1@23
		CP	2@0	2@23	1@0	1@24	25@0	13@6	1@1	1@23
	30	DFT-s	2@0	2@9	1@0	1@10	10@0	5@2[1]	1@1	1@9
		CP	2@0	2@9	1@0	1@10	11@0	5@2[1]	1@1	1@9
	60	DFT-s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		CP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
10MHz	15	DFT-s	2@0	2@50	1@0	1@51	50@0	25@12	1@1	1@50
		CP	2@0	2@50	1@0	1@51	52@0	26@13	1@1	1@50
	30	DFT-s	2@0	2@22	1@0	1@23	24@0	12@6	1@1	1@22
		CP	2@0	2@22	1@0	1@23	24@0	12@6	1@1	1@22
	60	DFT-s	2@0	2@9	1@0	1@10	10@0	5@2[1]	1@1	1@9
		CP	2@0	2@9	1@0	1@10	11@0	5@2[1]	1@1	1@9
15MHz	15	DFT-s	2@0	2@77	1@0	1@78	75@0	36@18	1@1	1@77
		CP	2@0	2@77	1@0	1@78	79@0	39@19[1]	1@1	1@77
	30	DFT-s	2@0	2@36	1@0	1@37	36@0	18@9	1@1	1@36
		CP	2@0	2@36	1@0	1@37	38@0	19@9	1@1	1@36
	60	DFT-s	2@0	2@16	1@0	1@17	18@0	9@4	1@1	1@16
		CP	2@0	2@16	1@0	1@17	18@0	9@4	1@1	1@16
20MHz	15	DFT-s	2@0	2@104	1@0	1@105	100@0	50@25	1@1	1@104
		CP	2@0	2@104	1@0	1@105	106@0	53@26	1@1	1@104
	30	DFT-s	2@0	2@49	1@0	1@50	50@0	25@12	1@1	1@49
		CP	2@0	2@49	1@0	1@50	51@0	25@12[1]	1@1	1@49
	60	DFT-s	2@0	2@22	1@0	1@23	24@0	12@6	1@1	1@22
		CP	2@0	2@22	1@0	1@23	24@0	12@6	1@1	1@22
25MHz	15	DFT-s	2@0	2@131	1@0	1@132	128@0	64@32	1@1	1@131
		CP	2@0	2@131	1@0	1@132	133@0	67@33	1@1	1@131
	30	DFT-s	2@0	2@63	1@0	1@64	64@0	32@16	1@1	1@63
		CP	2@0	2@63	1@0	1@64	65@0	33@16	1@1	1@63
	60	DFT-s	2@0	2@29	1@0	1@30	30@0	15@7[1]	1@1	1@29
		CP	2@0	2@29	1@0	1@30	31@0	15@7[1]	1@1	1@29
30MHz	15	DFT-s	2@0	2@158	1@0	1@159	160@0	80@40	1@1	1@158
		CP	2@0	2@158	1@0	1@159	160@0	80@40	1@1	1@158
	30	DFT-s	2@0	2@76	1@0	1@77	75@0	36@18	1@1	1@76
		CP	2@0	2@76	1@0	1@77	78@0	39@19	1@1	1@76
	60	DFT-s	2@0	2@36	1@0	1@37	36@0	18@9	1@1	1@36
		CP	2@0	2@36	1@0	1@37	38@0	19@9	1@1	1@36
40MHz	15	DFT-s	2@0	2@214	1@0	1@215	216@0	108@54	1@1	1@214
		CP	2@0	2@214	1@0	1@215	216@0	108@54	1@1	1@214
	30	DFT-s	2@0	2@104	1@0	1@105	100@0	50@25	1@1	1@104
		CP	2@0	2@104	1@0	1@105	106@0	53@26	1@1	1@104
	60	DFT-s	2@0	2@49	1@0	1@50	50@0	25@12	1@1	1@49
		CP	2@0	2@49	1@0	1@50	51@0	25@12[1]	1@1	1@49
50MHz	15	DFT-s	2@0	2@268	1@0	1@269	270@0	135@67	1@1	1@268
		CP	2@0	2@268	1@0	1@269	270@0	135@67	1@1	1@268
	30	DFT-s	2@0	2@131	1@0	1@132	128@0	64@32	1@1	1@131
		CP	2@0	2@131	1@0	1@132	133@0	67@33	1@1	1@131
	60	DFT-s	2@0	2@63	1@0	1@64	64@0	32@16	1@1	1@63
		CP	2@0	2@63	1@0	1@64	65@0	33@16	1@1	1@63
60MHz	15	DFT-s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		CP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30	DFT-s	2@0	2@160	1@0	1@161	162@0	81@40	1@1	1@160
		CP	2@0	2@160	1@0	1@161	162@0	81@40	1@1	1@160
	60	DFT-s	2@0	2@77	1@0	1@78	75@0	36@18	1@1	1@77
		CP	2@0	2@77	1@0	1@78	79@0	39@19[1]	1@1	1@77
80MHz	15	DFT-s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		CP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30	DFT-s	2@0	2@215	1@0	1@216	216@0	108@54	1@1	1@215
		CP	2@0	2@215	1@0	1@216	217@0	109@54	1@1	1@215
	60	DFT-s	2@0	2@105	1@0	1@106	100@0	50@25	1@1	1@105
		CP	2@0	2@105	1@0	1@106	107@0	53@26[1]	1@1	1@105
90MHz	15	DFT-s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		CP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30	DFT-s	2@0	2@243	1@0	1@244	240@0	120@60	1@1	1@243
		CP	2@0	2@243	1@0	1@244	245@0	123@61	1@1	1@243
	60	DFT-s	2@0	2@119	1@0	1@120	120@0	60@30	1@1	1@119
		CP	2@0	2@119	1@0	1@120	121@0	61@30	1@1	1@119
100MHz	15	DFT-s	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
		CP	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	30	DFT-s	2@0	2@271	1@0	1@272	270@0	135@67	1@1	1@271
		CP	2@0	2@271	1@0	1@272	273@0	137@68	1@1	1@271
	60	DFT-s	2@0	2@133	1@0	1@134	135@0	64@32	1@1	1@133
		CP	2@0	2@133	1@0	1@134	135@0	67@33[1]	1@1	1@133

Note 1: The allocated RB number L_{CRB} is ceil(N_{RB}/2) -1 in order to meet Inner RB allocation definition ($RB_{Start,Low} \leq RB_{Start} \leq RB_{Start,High}$) described in subclause 6.2.2 of TS 38.101-1 [2].

Procedures used to establish power measurement for NR Bands

Switching to NSA mode or SA mode

- Click the “Utility” button in the right of Test application screen
- Select “5G NR NSA” in the “TA Mode Switch” for NSA mode
- Select “5G NR Standalone” in the “TA Mode Switch” for SA mode

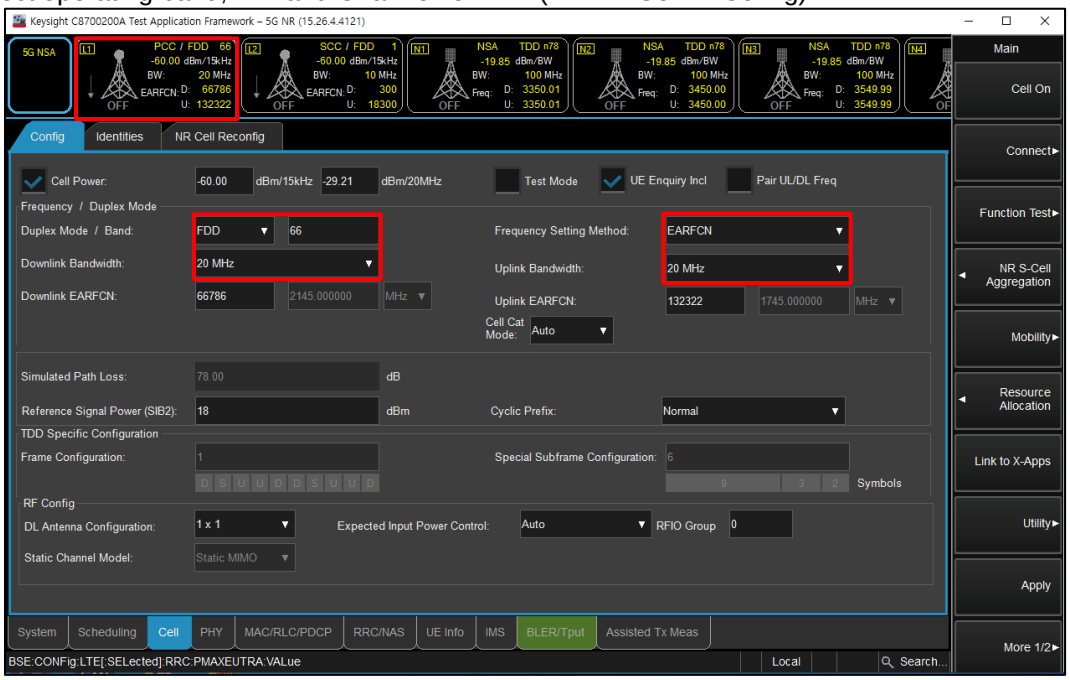


(Figure 1-1)

(Figure 1-2)

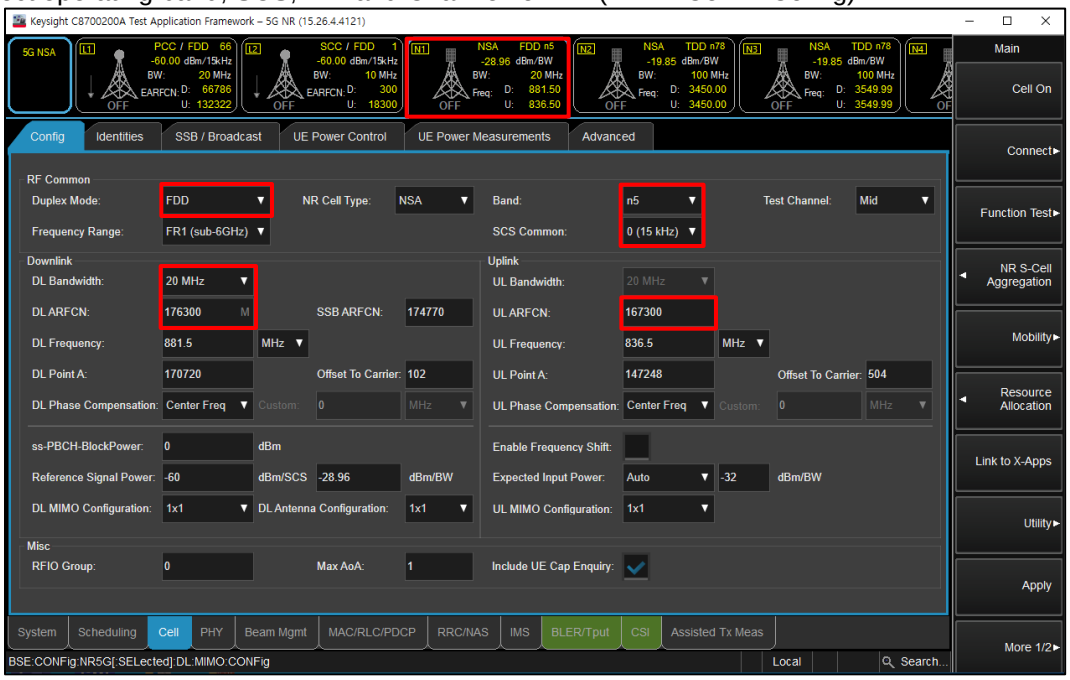
NSA Mode

- Select operating band, BW and Channel for LTE (LTE -> Cell -> Config)



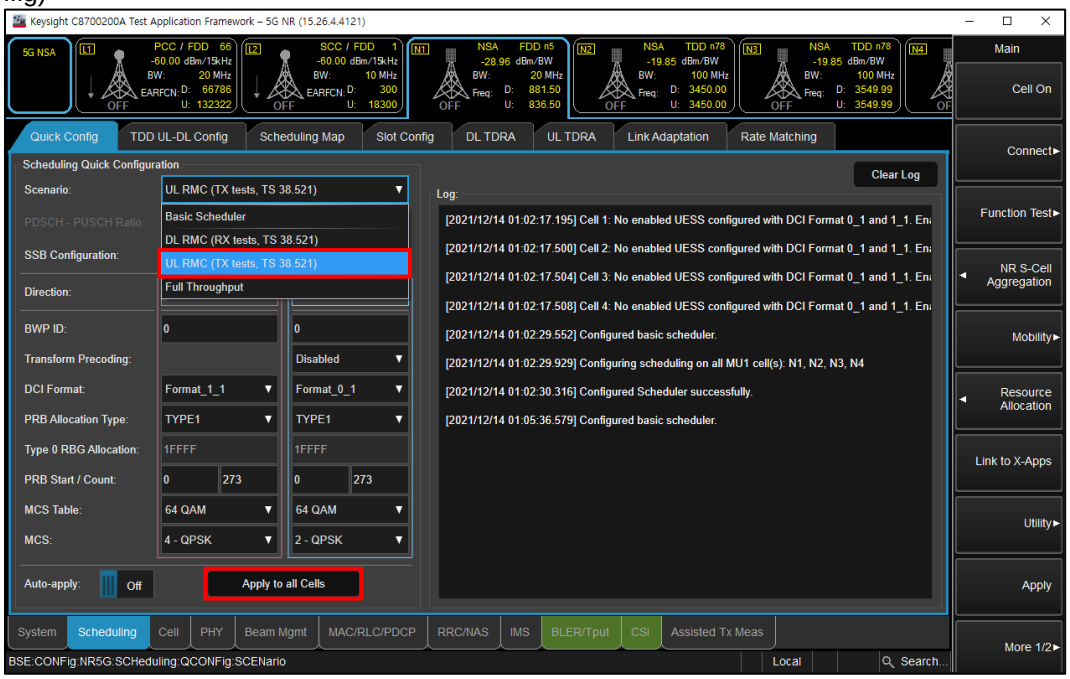
(Figure 2-1)

- Select operating band, SCS, BW and Channel for NR (NR -> Cell -> Config)



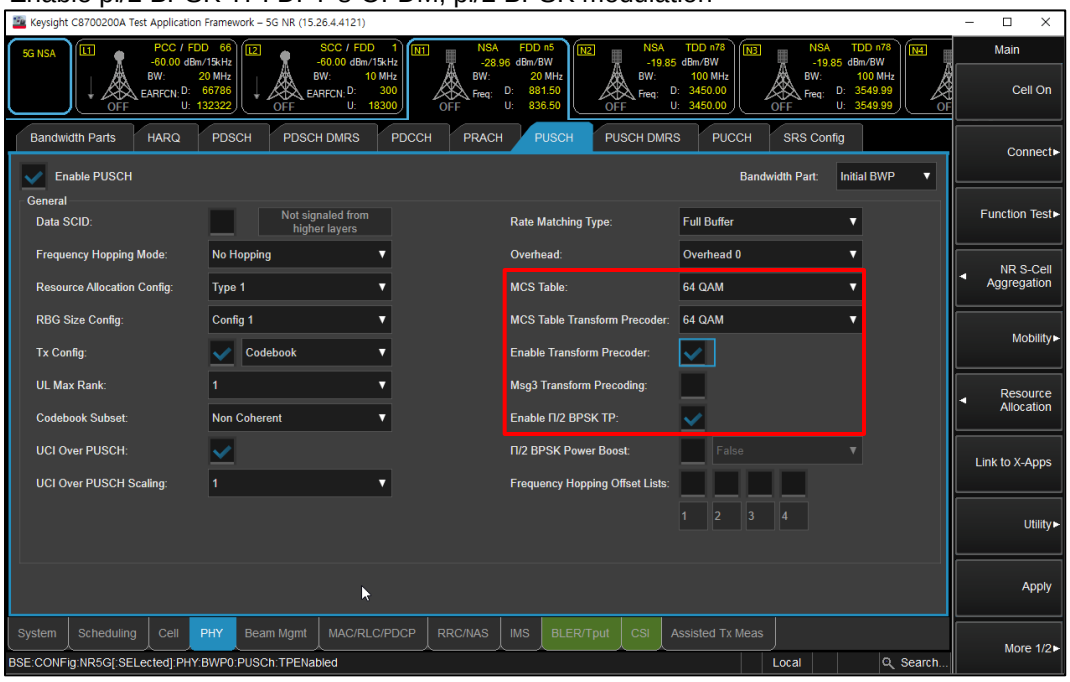
(Figure 2-2)

- Select “UL RMC (TX tests, TS 38.521)” for maximum power RB scheduling (NR -> Scheduling -> Quick Config)



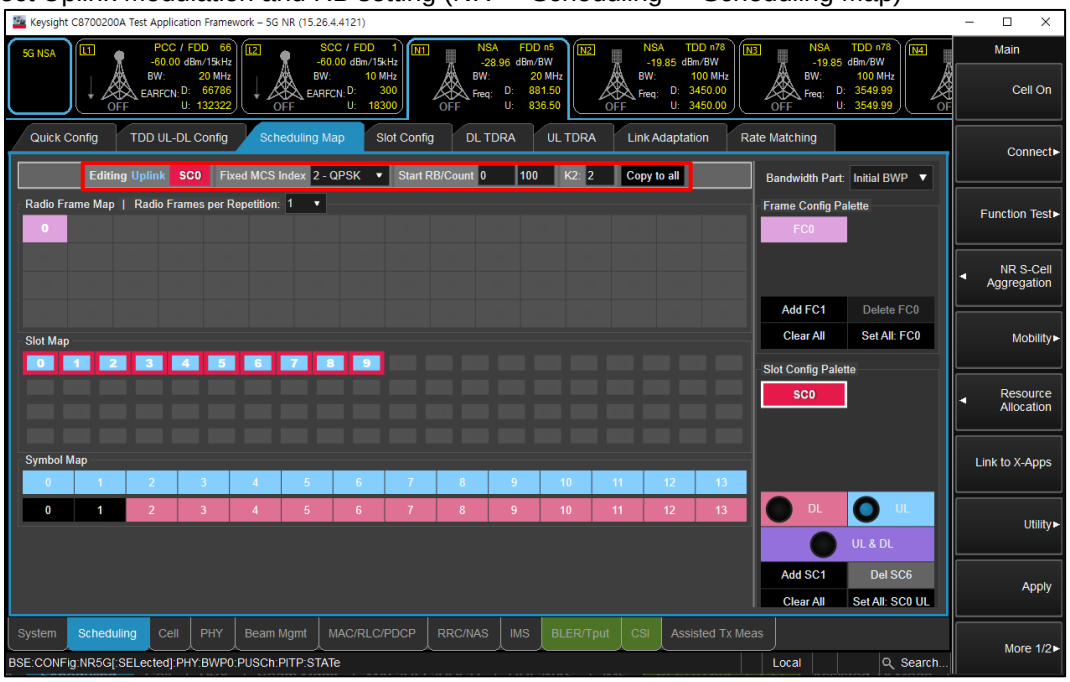
(Figure 2-3)

- To set waveform for NR Band (NR -> PHY -> PUSCH)
  - Select highest modulation in the MCS Table and MCS Table Transform Precoder
  - Enable Transform Precoder: DFT-s-OFDM / disable for CP-OFDM
  - Enable pi/2 BPSK TP: DFT-s-OFDM, pi/2 BPSK modulation



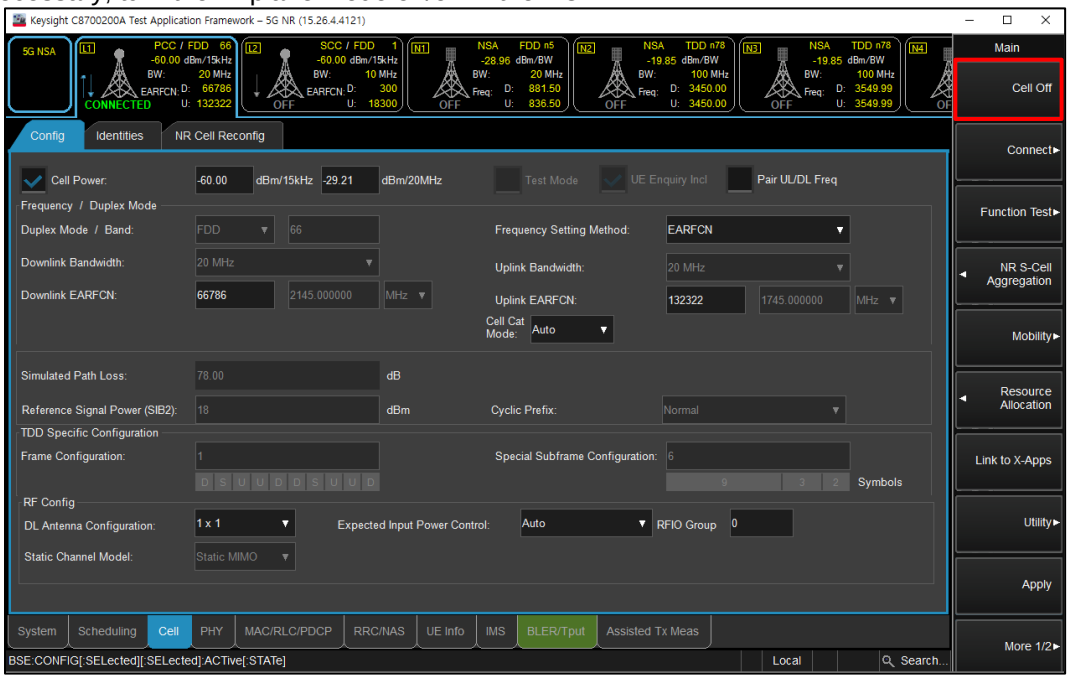
(Figure 2-4)

- Select Uplink Modulation and RB setting (NR -> Scheduling -> Scheduling Map)



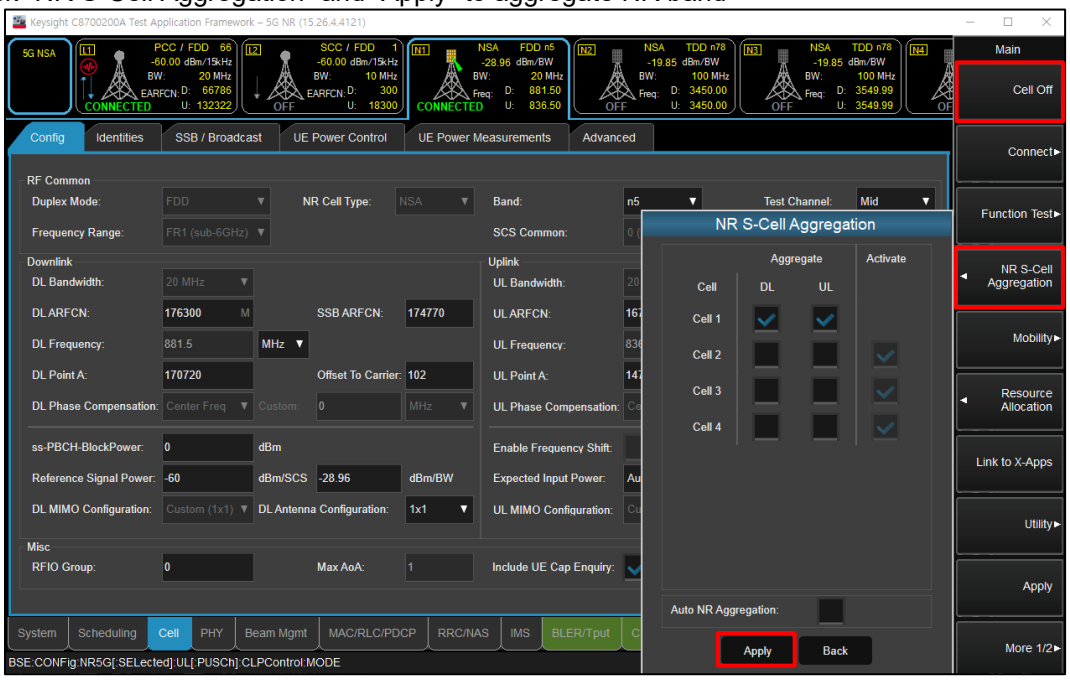
(Figure 2-5)

- Click “Cell On” button in the right of Test application screen in the LTE tab
- If necessary, turn the Airplane Mode on/off in the DUT



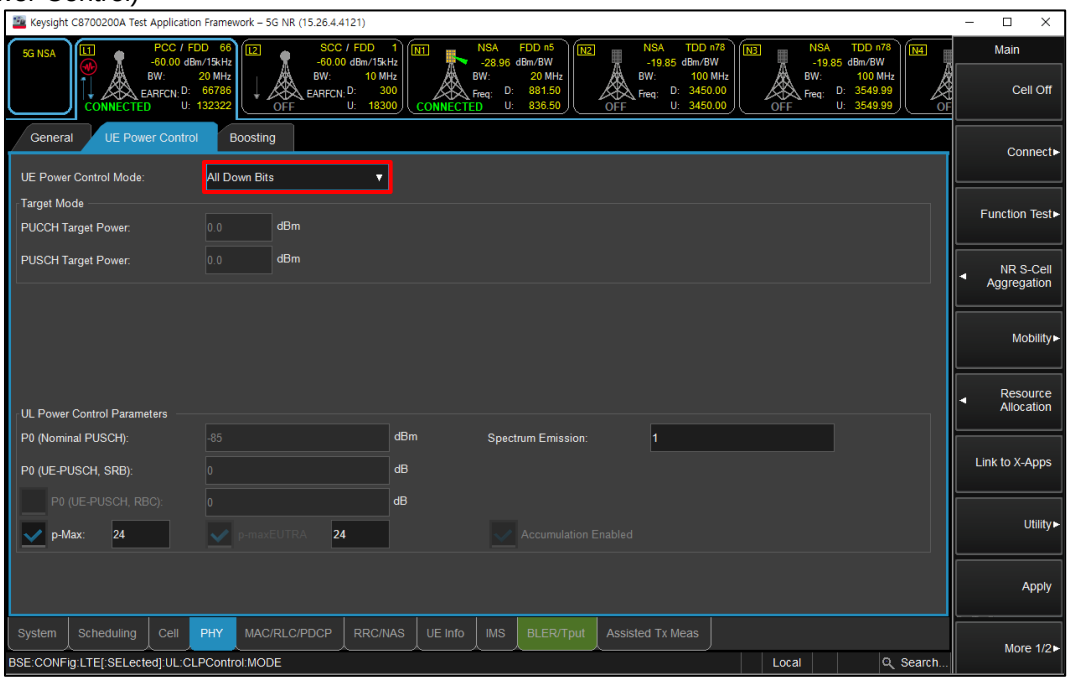
(Figure 2-6)

- Click “Cell On” button in the right of Test application screen in the NR tab
- Click “NR S-Cell Aggregation” and “Apply” to aggregate NR band



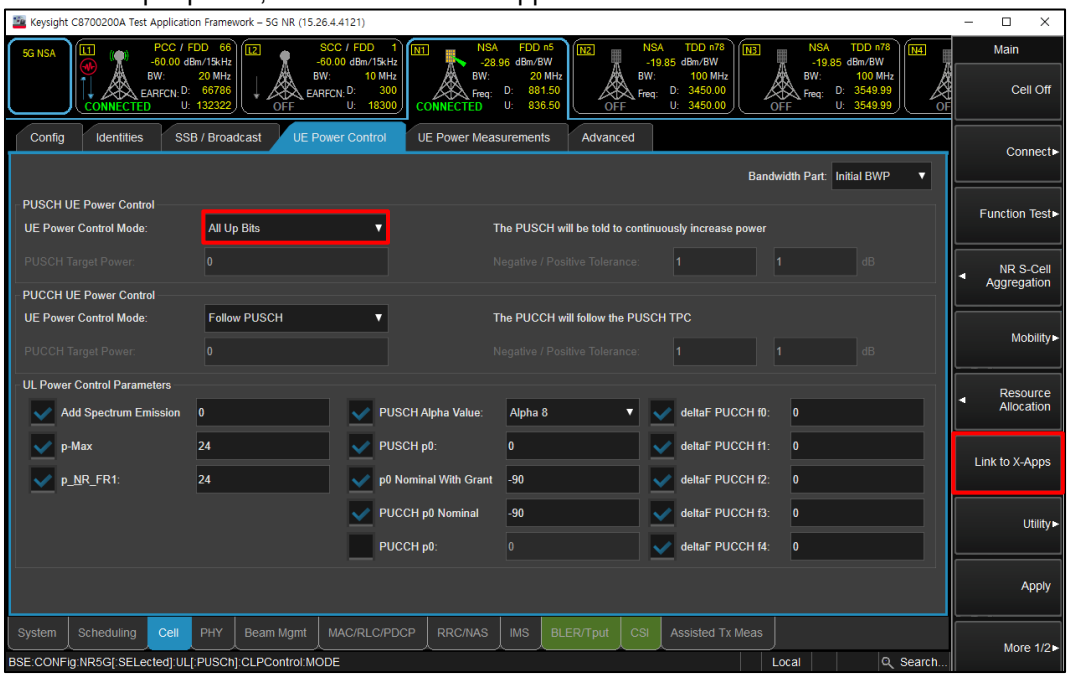
(Figure 2-7)

- Select “All Down Bits” of UL Power control Mode in LTE tab for NR maximum power (LTE -> PHY -> UE Power Control)



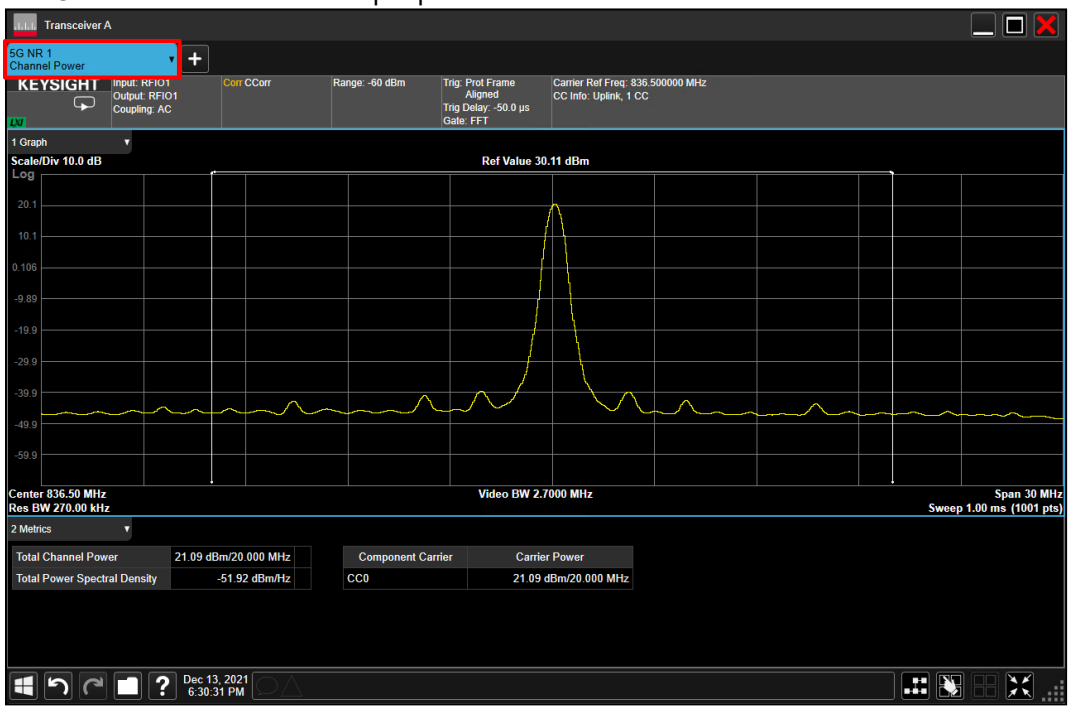
(Figure 2-8)

- Select “All Up Bits” of UL Power control Mode in NR tab for NR maximum power (NR -> Cell -> UE Power Control)
- To read the output power, click the “Link to X-Apps”



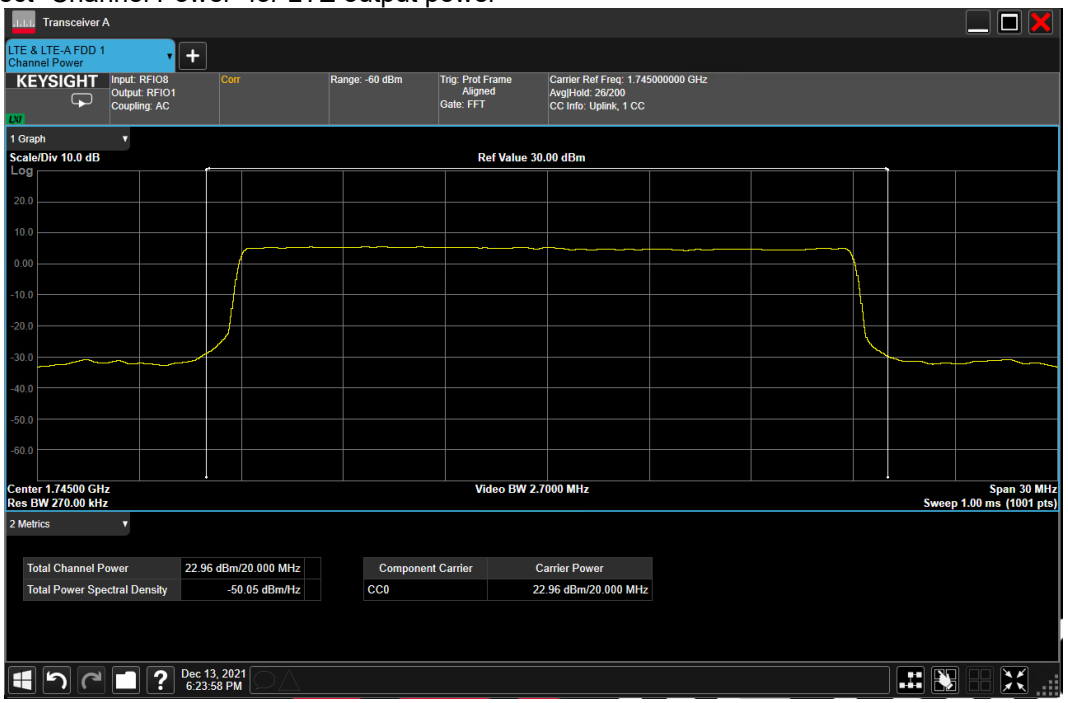
(Figure 2-9)

- Select “Channel Power” for NR output power



(Figure 2-10)

- Select “Channel Power” for LTE output power



(Figure 2-11)

NR Band n5 (Ant.A) Measured Results

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Maximum Allowed Average Power (dBm)					Maximum Allowed Average Power (dBm)				
					ECI = 1					ECI = 0, 2				
					Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
					166800	167300	167800			166800	167300	167800		
					834.00 MHz	836.50 MHz	839.00 MHz			834.00 MHz	836.50 MHz	839.00 MHz		
20 MHz	DFT-s-OFDM	π/2 BPSK	1	1		23.45		0.0	25.0		22.31		0.0	23.0
			1	52		23.46		0.0	25.0		22.31		0.0	23.0
			1	104		23.43		0.0	25.0		22.28		0.0	23.0
			50	0		22.83		0.5	24.5		22.37		0.0	23.0
			50	28		23.85		0.0	25.0		22.35		0.0	23.0
			50	56		22.64		0.5	24.5		22.27		0.0	23.0
			100	0		22.76		0.5	24.5		22.31		0.0	23.0
		QPSK	1	1		23.59		0.0	25.0		22.32		0.0	23.0
			1	52		23.85		0.0	25.0		22.33		0.0	23.0
			1	104		23.51		0.0	25.0		22.27		0.0	23.0
			50	0		22.83		1.0	24.0		22.39		0.0	23.0
			50	28		23.86		0.0	25.0		22.40		0.0	23.0
			50	56		22.63		1.0	24.0		22.28		0.0	23.0
			100	0		22.77		1.0	24.0		22.33		0.0	23.0
		16QAM	1	1		22.82		1.0	24.0		22.44		0.0	23.0
			1	52		22.96		1.0	24.0		22.42		0.0	23.0
			1	104		22.68		1.0	24.0		22.36		0.0	23.0
		64QAM	1	1		21.45		2.5	22.5		22.05		0.5	22.5
		256QAM	1	1		19.16		4.5	20.5		19.90		2.5	20.5
	CP-OFDM	QPSK	1	1		22.03		1.5	23.5		22.11		0.0	23.0
BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
					166300	167300	168300			166300	167300	168300		
					831.50 MHz	836.50 MHz	841.50 MHz			831.50 MHz	836.50 MHz	841.50 MHz		
15 MHz	DFT-s-OFDM	π/2 BPSK	1	1		23.62		0.0	25.0		22.28		0.0	23.0
			1	39		23.66		0.0	25.0		22.30		0.0	23.0
			1	77		23.6		0.0	25.0		22.29		0.0	23.0
			36	0		22.82		0.5	24.5		22.33		0.0	23.0
			36	21		23.86		0.0	25.0		22.33		0.0	23.0
			36	43		22.72		0.5	24.5		22.32		0.0	23.0
			75	0		22.81		0.5	24.5		22.33		0.0	23.0
		QPSK	1	1		23.67		0.0	25.0		22.29		0.0	23.0
			1	39		23.8		0.0	25.0		22.29		0.0	23.0
			1	77		23.55		0.0	25.0		22.29		0.0	23.0
			36	0		22.81		1.0	24.0		22.33		0.0	23.0
			36	21		23.83		0.0	25.0		22.34		0.0	23.0
			36	43		22.73		1.0	24.0		22.32		0.0	23.0
			75	0		22.81		1.0	24.0		22.34		0.0	23.0
		16QAM	1	1		22.85		1.0	24.0		22.40		0.0	23.0
			1	39		22.93		1.0	24.0		22.37		0.0	23.0
			1	77		22.72		1.0	24.0		22.39		0.0	23.0
		64QAM	1	1		21.39		2.5	22.5		21.99		0.5	22.5
		256QAM	1	1		19.28		4.5	20.5		19.90		2.5	20.5
	CP-OFDM	QPSK	1	1		22.05		1.5	23.5		22.07		0.0	23.0

NR Band n5 (Ant.A) Measured Results (Continued)

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
					165800	167300	168800			165800	167300	168800		
					829.00 MHz	836.50 MHz	844.00 MHz			829.00 MHz	836.50 MHz	844.00 MHz		
10 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.57		23.65	0.0	25.0	22.35		22.27	0.0	23.0
			1	25	23.52		23.51	0.0	25.0	22.24		22.23	0.0	23.0
			1	50	23.52		23.5	0.0	25.0	22.24		22.33	0.0	23.0
			25	0	22.8		22.75	0.5	24.5	22.46		22.32	0.0	23.0
			25	13	23.73		23.67	0.0	25.0	22.34		22.34	0.0	23.0
			25	27	22.8		22.62	0.5	24.5	22.28		22.35	0.0	23.0
			50	0	22.74		22.69	0.5	24.5	22.35		22.33	0.0	23.0
		QPSK	1	1	23.61		23.68	0.0	25.0	22.35		22.27	0.0	23.0
			1	25	23.6		23.47	0.0	25.0	22.24		22.24	0.0	23.0
			1	50	23.78		23.52	0.0	25.0	22.24		22.33	0.0	23.0
			25	0	22.77		22.76	1.0	24.0	22.46		22.33	0.0	23.0
			25	13	23.74		23.67	0.0	25.0	22.33		22.34	0.0	23.0
			25	27	22.79		22.62	1.0	24.0	22.29		22.35	0.0	23.0
			50	0	22.74		22.69	1.0	24.0	22.35		22.33	0.0	23.0
		16QAM	1	1	22.85		22.76	1.0	24.0	22.43		22.35	0.0	23.0
			1	25	22.8		22.68	1.0	24.0	22.41		22.36	0.0	23.0
			1	50	22.96		22.68	1.0	24.0	22.35		22.43	0.0	23.0
		64QAM	1	1	21.5		21.57	2.5	22.5	21.96		21.86	0.5	22.5
		256QAM	1	1	19.42		19.42	4.5	20.5	19.90		19.82	2.5	20.5
	CP-OFDM	QPSK	1	1	22.09		22.12	1.5	23.5	22.14		22.12	0.0	23.0

BW (MHz)	Modulation	Mode	RB Allocation	RB offset	Measured Pwr (dBm)			MPR	Tune-up Limit	Measured Pwr (dBm)			MPR	Tune-up Limit
					165300	167300	169300			165300	167300	169300		
					826.50 MHz	836.50 MHz	846.50 MHz			826.50 MHz	836.50 MHz	846.50 MHz		
5 MHz	DFT-s-OFDM	π/2 BPSK	1	1	23.57	23.71	23.61	0.0	25.0	22.36	22.26	22.29	0.0	23.0
			1	12	23.57	23.66	23.58	0.0	25.0	22.29	22.24	22.26	0.0	23.0
			1	23	23.66	23.89	23.61	0.0	25.0	22.27	22.29	22.35	0.0	23.0
			12	0	22.84	22.88	22.79	0.5	24.5	22.51	22.31	22.44	0.0	23.0
			12	6	23.79	23.75	23.69	0.0	25.0	22.42	22.33	22.41	0.0	23.0
			12	13	22.76	22.92	22.7	0.5	24.5	22.38	22.36	22.44	0.0	23.0
			25	0	22.79	22.89	22.75	0.5	24.5	22.45	22.32	22.46	0.0	23.0
		QPSK	1	1	23.64	23.79	23.58	0.0	25.0	22.33	22.26	22.29	0.0	23.0
			1	12	23.59	23.90	23.49	0.0	25.0	22.28	22.24	22.26	0.0	23.0
			1	23	23.63	23.72	23.57	0.0	25.0	22.27	22.30	22.36	0.0	23.0
			12	0	22.84	22.89	22.77	1.0	24.0	22.50	22.32	22.46	0.0	23.0
			12	6	23.8	23.75	23.62	0.0	25.0	22.42	22.33	22.41	0.0	23.0
			12	13	22.78	22.91	22.69	1.0	24.0	22.38	22.36	22.45	0.0	23.0
			25	0	22.78	22.88	22.75	1.0	24.0	22.46	22.34	22.46	0.0	23.0
		16QAM	1	1	22.8	22.92	22.74	1.0	24.0	22.44	22.37	22.40	0.0	23.0
			1	12	22.77	22.9	22.64	1.0	24.0	22.41	22.33	22.36	0.0	23.0
			1	23	22.85	22.86	22.68	1.0	24.0	22.41	22.37	22.44	0.0	23.0
		64QAM	1	1	21.51	21.45	21.53	2.5	22.5	21.94	21.87	21.89	0.5	22.5
		256QAM	1	1	19.17	19.21	19.25	4.5	20.5	19.92	19.90	19.82	2.5	20.5
	CP-OFDM	QPSK	1	1	22.07	22.23	22.02	1.5	23.5	22.13	22.07	22.09	0.0	23.0

9.5. Wi-Fi 2.4 GHz (DTS Band)

WLAN Ant.F output power results (Maximum Power)

Antenna	Mode	Data Rate	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	SAR Test (Yes/No)
WiFi 2.4G Ant.F	802.11b	1 Mbps	1	2412	16.33	17	Yes
			6	2437	16.74		
			11	2462	16.66		
			12	2467	Not Required	9	No
			13	2472		9	
	802.11g	6 Mbps	Not Required			17	No
	802.11n (HT20)	MCS 0	Not Required			17	No

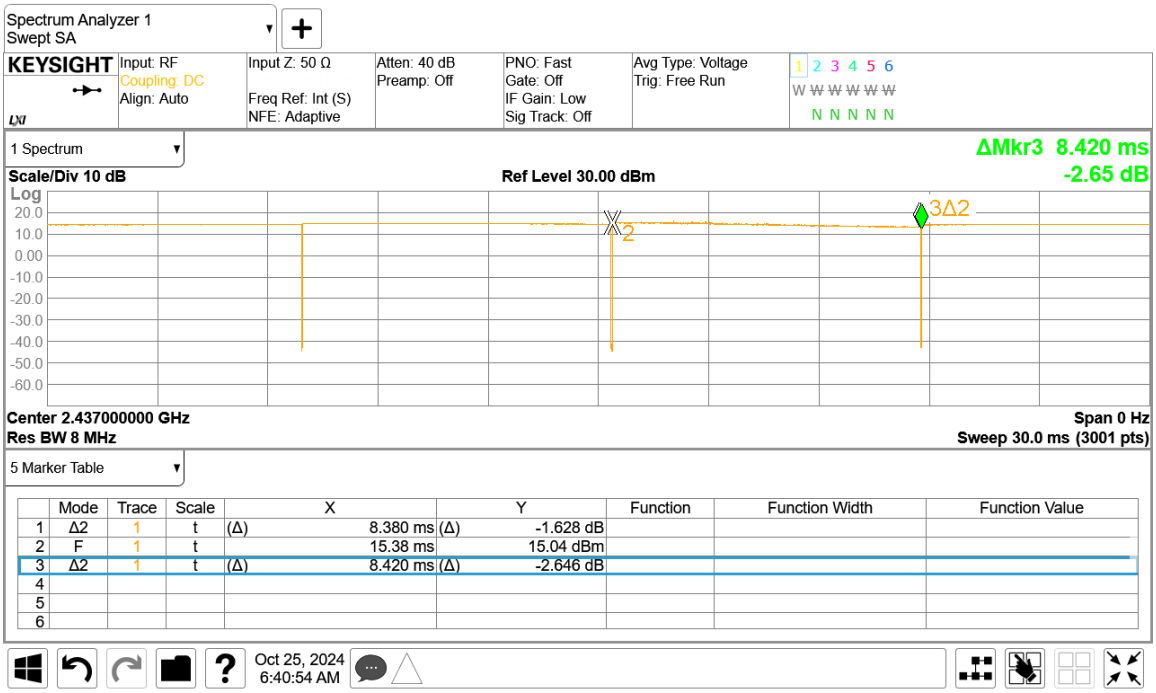
Note(s):

1. SAR is not required for 802.11g/n modes when the adjusted SAR for 802.11b is < 1.2 W/kg.
2. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11n/g/ax mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band. Additional output power measurements were not deemed necessary.
3. Additionally, SAR is not required for Channels 12 and 13 because the tune-up limit and the measured output power for these two channels are no greater than those for the default test channels. Refer to §6.3.

Duty Factor Measured Result

Mode	T on (ms)	Period (ms)	Maximum Duty Cyle	Measured Duty Cycle	Crest Factor (maximum duty/ measured duty cycle)
802.11b	8.380	8.420	100.00%	99.52%	1.00

Duty Cycle plot (802.11b)



9.6. Wi-Fi 5GHz (U-NII Bands)

WLAN Ant.F output power Results

Band (GHz)	Mode	Data Rate	Ch #	Freq. (MHz)	Normal WLAN mode power					
					Max. Average Power			Reduced. Average Power		
					Avg Pwr (dBm)	Target Pwr	SAR Test (Yes/No)	Avg Pwr (dBm)	Target Pwr	SAR Test (Yes/No)
UNII-2A	802.11a	6 Mbps	52	5260	16.49	17	Yes	Not Required	14	No
			56	5280	16.52					
			60	5300	16.54					
			64	5320	16.50					
	802.11n (HT20)	MCS0	Not Required			17	No	Not Required	14	No
	802.11n (HT40)	MCS0	Not Required			15	No	Not Required	14	No
	802.11ac (VHT80)	MCS0	58	5290	Not Required	14	No	13.70	14	Yes
UNII-2C	802.11a	6 Mbps	100	5500	16.59	17	Yes	Not Required	14	No
			120	5600	16.36					
			124	5620	16.27					
			144	5720	16.41					
	802.11n (HT20)	MCS0	Not Required			17	No	Not Required	14	No
	802.11n (HT40)	MCS0	Not Required			15	No	Not Required	14	No
	802.11ac (VHT80)	MCS0	106	5330	Not Required	14	No	13.34	14	Yes
			122	5610				13.62		
			138	5690				13.49		
UNII-3 or §15.247	802.11a	6 Mbps	149	5745	16.50	17	Yes	Not Required	14	No
			157	5785	16.67					
			165	5825	16.75					
	802.11n (HT20)	MCS0	Not Required			17	No	Not Required	14	No
	802.11n (HT40)	MCS0	Not Required			15	No	Not Required	14	No
	802.11ac (VHT80)	MCS0	155	5775	Not Required	14	No	13.39	14	Yes

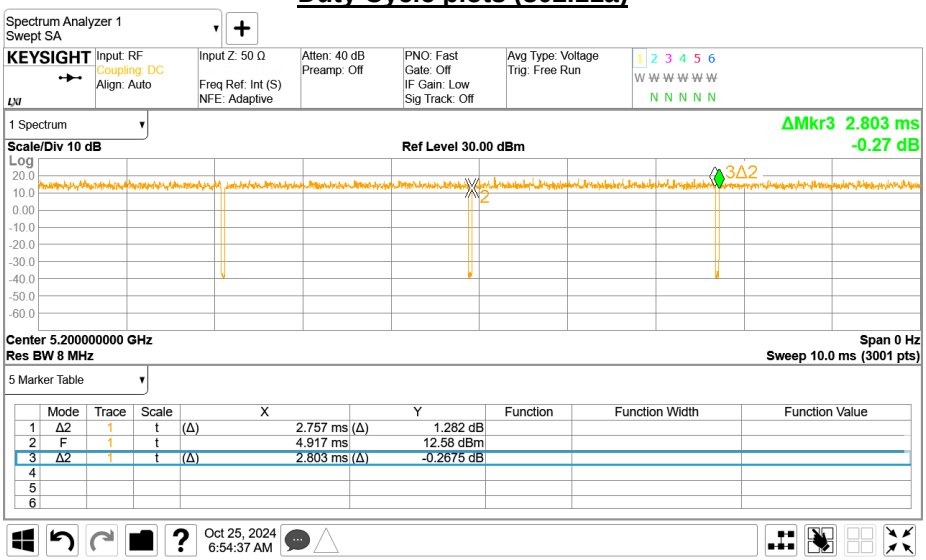
Note(s):

1. For "Not required", SAR Test reduction was applied from KDB 248227 guidance, Sec. 2.1, b), 1) when the same maximum power is specified for multiple transmission modes in a frequency band, the largest channel bandwidth, lowest order modulation, lowest data rate and lowest order 802.11a/g/n/ac mode is used for SAR measurement, on the highest measured output power channel in the initial test configuration, for each frequency band.
2. When the same transmission mode configurations have the same maximum output power on the same channel for the 802.11 a/g/n/ac modes, the channel in the lower order/sequence 802.11 mode (i.e. a, g, n and ac) is selected.
3. When the specified maximum output power is the same for both UNII band I and UNII band 2A, begin SAR measurement in UNII band 2A; and if the highest *reported* SAR for UNII band 2A is
   - ≤ 1.2 W/kg, SAR is not required for UNII band I
   - > 1.2 W/kg, both bands should be tested independently for SAR.

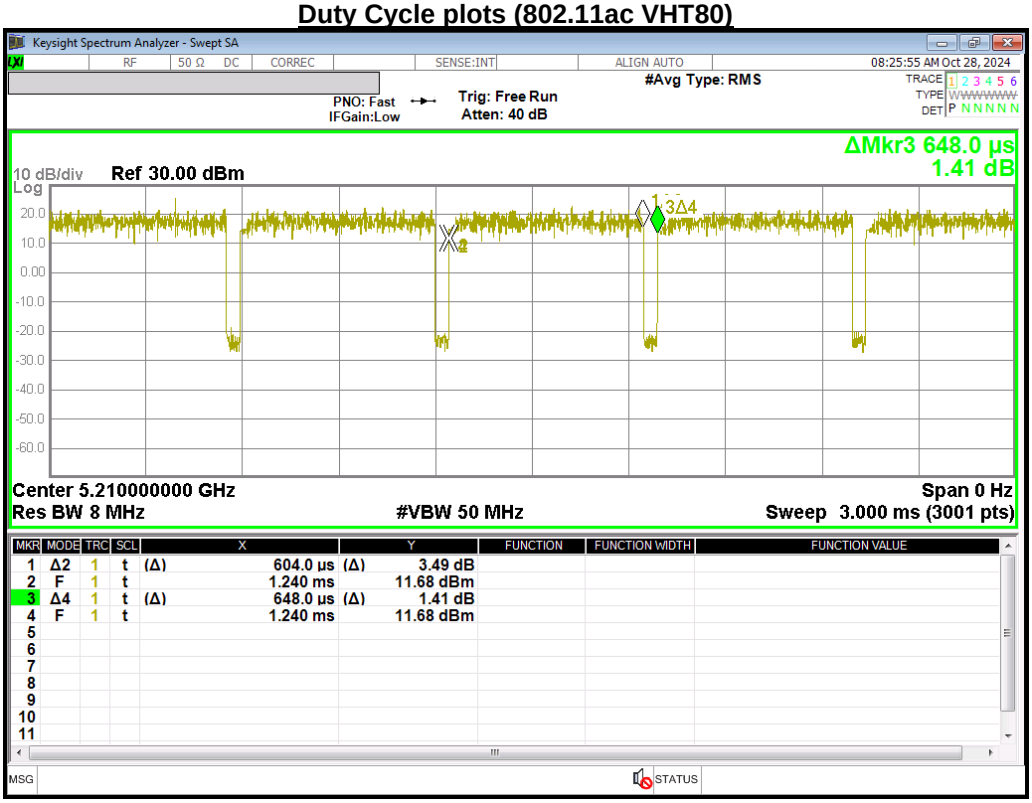
Duty Factor Measured Results

Mode	T on (ms)	Period (ms)	Maximum Duty Cycle	Measured Duty Cycle	Crest Factor (Maximum duty/ Measured duty cycle)
802.11a	2.757	2.803	100.00%	98.36%	1.02
802.11ac VHT 80	0.604	0.648	100.00%	93.21%	1.07

Duty Cycle plots (802.11a)



Duty Cycle plots (802.11ac VHT80)



9.7. Bluetooth

Bluetooth Ant.F output power Results

Band (GHz)	Antenna	Mode	Ch #	Freq. (MHz)	Meas. Avg Pwr (dBm)	Max. Tune-up Limit (dBm)	SAR Test (Yes/No)
Bluetooth 2.4G	Bluetooth Ant.F	Bluetooth (BDR)	0	2402	9.23	12	Yes
			39	2441	11.41		
			78	2480	11.68		
		Bluetooth (EDR)	0	2402	Not Required	9	No
			39	2441			
			78	2480			
		Bluetooth (LE 1M)	0	2402	Not Required	7	No
			19	2440			
			39	2480			
		Bluetooth (LE 2M)	0	2402	Not Required	7	No
			19	2440			
			39	2480			

Duty Factor Measured Results

Mode	T on (ms)	Period (ms)	Maximum Duty Cyle	Measured Duty Cycle	Crest Factor (maximum duty/ measured duty cycle)
BDR - DH5	2.880	3.750	79.00%	76.80%	1.03

Duty Cycle plot (BDR-DH5)

Note(s):

1. Maximum Duty Cycle is mentioned in Operational description. Detail of BT Duty Cycle refer to Operational description.

10. Measured and Reported (Scaled) SAR Results

SAR Test Reduction criteria are as follows:

- Reported SAR(W/kg) for WWAN= Measured SAR *Tune-up Scaling Factor
- Reported SAR(W/kg) for Wi-Fi and Bluetooth= Measured SAR * Tune-up scaling factor * Duty Cycle scaling factor
- Wi-Fi Duty Cycle scaling factor = 1 / Duty cycle (%)
- BT Duty Cycle scaling factor = Maximum Duty cycle / Duty cycle (%)

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

KDB 648474 D04 Handset SAR:

With headset attached, when the reported SAR for body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for that body-worn accessory with a headset attached to the handset.

KDB 648474 D04 Handset SAR (Phablet Only):

For smart phones, with a display diagonal dimension > 15.0 cm or an overall diagonal dimension > 16.0 cm.
When hotspot mode does not apply, 10-g extremity SAR is required for all surfaces and edges with an antenna located at ≤ 25mm
From that surface or edge in direct contact with a flat phantom, to address interactive hand use exposure conditions. When hotspot mode applies, 10-g extremity SAR is required only for the surfaces and edges with hotspot mode 1-g reported SAR > 1.2 W/kg;
However, when power reduction applies to hotspot mode the measured SAR must be scaled to the maximum output power, Including tolerance, allowed for phablet modes to compare with the 1.2 W/kg SAR test reduction threshold.

Additional 1-g SAR testing at 5 mm is not required when hotspot mode 10-g extremity SAR is not required for the surfaces and edges

KDB 941225 D01 SAR test for 3G devices:

When the maximum output power and tune-up tolerance specified for production units in a secondary mode is ≤ ¼ dB higher than the primary mode or when the highest reported SAR of the primary mode is scaled by the ratio of specified maximum output power and tune-up tolerance of secondary to primary mode and the adjusted SAR is ≤ 1.2 W/kg, SAR measurement is not required for the secondary mode.

KDB 941225 D05 SAR for LTE Devices:

SAR test reduction is applied using the following criteria:

- Start with the largest channel bandwidth and measure SAR for QPSK with 1 RB, and 50% RB allocation, using the RB offset and required test channel combination with the highest maximum output power among RB offsets at the upper edge, middle and lower edge of each required test channel.
- When the reported SAR is > 0.8 W/kg, testing for other Channels is performed at the highest output power level for 1RB, and 50% RB configuration for that channel.
- Testing for 100% RB configuration is performed at the highest output power level for 100% RB configuration across the Low, Mid and High Channel when the highest reported SAR for 1 RB and 50% RB are > 0.8 W/kg. Testing for the remaining required channels is not needed because the reported SAR for 100% RB Allocation < 1.45 W/kg.
- Testing for 16-QAM modulation is not required because the reported SAR for QPSK is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of QPSK.
- Testing for the other channel bandwidths is not required because the reported SAR for the highest channel bandwidth is < 1.45 W/Kg and its output power is not more than 0.5 dB higher than that of the highest channel bandwidth.
- For LTE bands that do not support at least three non-overlapping channels in certain channel bandwidths, test the available non-overlapping channels instead. 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; therefore, the requirement for H, M and L channels may not fully apply.

KDB 248227 D01 SAR meas for 802.11:

SAR test reduction for 802.11 Wi-Fi transmission mode configurations are considered separately for DSSS and OFDM. An initial test position is determined to reduce the number of tests required for certain exposure configurations with multiple test positions. An initial test configuration is determined for each frequency band and aggregated band according to maximum output power, channel bandwidth, wireless mode configurations and other operating parameters to streamline the measurement requirements. For 2.4 GHz DSSS, either the initial test position or DSSS procedure is applied to reduce the number of SAR tests; these are mutually exclusive. For OFDM, an initial test position is only applicable to next to the ear, UMPC mini-tablet and hotspot mode configurations, which is tested using the initial test configuration to facilitate test reduction. For other exposure conditions with a fixed test position, SAR test reduction is determined using only the initial test configuration.

The multiple test positions require SAR measurements in head, hotspot mode or UMPC mini-tablet configurations may be reduced according to the highest reported SAR determined using the *initial test position(s)* by applying the DSSS or OFDM SAR measurement procedures in the required wireless mode test configuration(s). The *initial test position(s)* is measured using the highest measured maximum output power channel in the required wireless mode test configuration(s). When the *reported* SAR for the *initial test position* is:

- ≤ 0.4 W/kg, further SAR measurement is not required for the other test positions in that exposure configuration and wireless mode combination within the frequency band or aggregated band. DSSS and OFDM configurations are considered separately according to the required SAR procedures.
- > 0.4 W/kg, SAR is repeated using the same wireless mode test configuration tested in the *initial test position* to measure the subsequent next closet/smallest test separation distance and maximum coupling test position, on the highest maximum output power channel, until the *reported* SAR is ≤ 0.8 W/kg or all required test positions are tested.
  - For subsequent test positions with equivalent test separation distance or when exposure is dominated by coupling conditions, the position for maximum coupling condition should be tested.
  - When it is unclear, all equivalent conditions must be tested.
- For all positions/configurations tested using the *initial test position* and subsequent test positions, when the *reported* SAR is > 0.8 W/kg, measure the SAR for these positions/configurations on the subsequent next highest measured output power channel(s) until the *reported* SAR is ≤ 1.2 W/kg or all required test channels are considered.
  - The additional power measurements required for this step should be limited to those necessary for identifying subsequent highest output power channels to apply the test reduction.
- When the specified maximum output power is the same for both UNII 1 and UNII 2A, begin SAR measurements in UNII 2A with the channel with the highest measured output power. If the reported SAR for UNII 2A is ≤ 1.2 W/kg, SAR is not required for UNII 1; otherwise treat the remaining bands separately and test them independently for SAR.
- When the specified maximum output power is different between UNII 1 and UNII 2A, begin SAR with the band that has the higher specified maximum output. If the highest reported SAR for the band with the highest specified power is ≤ 1.2 W/kg, testing for the band with the lower specified output power is not required; otherwise test the remaining bands independently for SAR.

To determine the *initial test position*, Area Scans were performed to determine the position with the *Maximum Value of SAR (measured)*. The position that produced the highest *Maximum Value of SAR* is considered the worst case position; thus used as the *initial test position*.

10.1. GSM 850

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.A	Head	GPRS 2 Slots	1	0	Left Touch	190	836.6	32.5	31.63	0.167	0.204		39.40	38.75
Ant.A	Head	GPRS 2 Slots	1	0	Left Tilt	190	836.6	32.5	31.63	0.092	0.112		41.99	
Ant.A	Head	GPRS 2 Slots	1	0	Right Touch	190	836.6	32.5	31.63	0.194	0.237	1	38.75	
Ant.A	Head	GPRS 2 Slots	1	0	Right Tilt	190	836.6	32.5	31.63	0.109	0.133		41.26	
Ant.A	Body worn & Hotspot	GPRS 2 Slots	2	5	Rear	128	824.4	27.0	26.20	0.902	1.084		26.65	26.10
Ant.A	Body worn & Hotspot	GPRS 2 Slots	2	5	Rear	190	836.6	27.0	26.42	0.936	1.070		26.71	
Ant.A	Body worn & Hotspot	GPRS 2 Slots	2	5	Rear	251	848.8	27.0	26.31	1.050	1.231	2	26.10	
Ant.A	Body worn & Hotspot	GPRS 2 Slots	2	5	Front	190	836.6	27.0	26.42	0.333	0.381		31.20	
Ant.A	Hotspot	GPRS 2 Slots	2	5	Bottom	190	836.6	27.0	26.42	0.705	0.806		27.94	
Ant.A	Hotspot	GPRS 2 Slots	2	5	Right	190	836.6	27.0	26.42	0.363	0.415		30.82	
Ant.A	Body worn (with Headset)	GPRS2 Slots	2	5	Rear	251	848.8	27.0	26.31	0.942	1.104		26.57	

10.2. GSM 1900

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.B	Head	GPRS 4 Slots	1	0	Left Touch	661	1880.0	26.00	24.90	0.036	0.046		39.34	37.19
Ant.B	Head	GPRS 4 Slots	1	0	Left Tilt	661	1880.0	26.00	24.90	0.059	0.076	3	37.19	
Ant.B	Head	GPRS 4 Slots	1	0	Right Touch	661	1880.0	26.00	24.90	0.051	0.066		37.82	
Ant.B	Head	GPRS 4 Slots	1	0	Right Tilt	661	1880.0	26.00	24.90	0.045	0.058		38.37	
Ant.B	Body worn & Hotspot	GPRS 2 Slots	2	5	Rear	512	1850.2	24.00	23.43	1.050	1.197	4	23.22	23.22
Ant.B	Body worn & Hotspot	GPRS 2 Slots	2	5	Rear	661	1880.0	24.00	23.41	1.030	1.180		23.28	
Ant.B	Body worn & Hotspot	GPRS 2 Slots	2	5	Rear	810	1909.8	24.00	23.36	1.020	1.182		23.27	
Ant.B	Body worn & Hotspot	GPRS 2 Slots	2	5	Front	661	1880.0	24.00	23.41	0.299	0.343		28.65	
Ant.B	Hotspot	GPRS 2 Slots	2	5	Left	661	1880.0	24.00	23.41	0.305	0.349		28.57	
Ant.B	Hotspot	GPRS 2 Slots	2	5	Bottom	512	1850.2	24.00	23.43	0.827	0.943		24.25	
Ant.B	Hotspot	GPRS 2 Slots	2	5	Bottom	661	1880.0	24.00	23.41	0.815	0.934		24.30	
Ant.B	Hotspot	GPRS 2 Slots	2	5	Bottom	810	1909.8	24.00	23.36	0.756	0.876		24.57	

10.3. WCDMA Band V

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.A	Head	Rel 99 RMC	1	0	Left Touch	4183	836.6	25.00	24.09	0.180	0.222		31.54	30.87
Ant.A	Head	Rel 99 RMC	1	0	Left Tilt	4183	836.6	25.00	24.09	0.099	0.122		34.13	
Ant.A	Head	Rel 99 RMC	1	0	Right Touch	4183	836.6	25.00	24.09	0.210	0.259	5	30.87	
Ant.A	Head	Rel 99 RMC	1	0	Right Tilt	4183	836.6	25.00	24.09	0.136	0.168		32.75	
Ant.A	Body worn & Hotspot	Rel 99 RMC	2	5	Rear	4132	826.4	23.00	21.38	0.682	0.990		23.04	22.79
Ant.A	Body worn & Hotspot	Rel 99 RMC	2	5	Rear	4183	836.6	23.00	21.56	0.686	0.956		23.20	
Ant.A	Body worn & Hotspot	Rel 99 RMC	2	5	Rear	4233	846.6	23.00	21.48	0.739	1.049	6	22.79	
Ant.A	Body worn & Hotspot	Rel 99 RMC	2	5	Front	4183	836.6	23.00	21.56	0.265	0.369		27.33	
Ant.A	Hotspot	Rel 99 RMC	2	5	Bottom	4183	836.6	23.00	21.56	0.514	0.716		24.45	
Ant.A	Hotspot	Rel 99 RMC	2	5	Right	4183	836.6	23.00	21.56	0.267	0.372		27.29	

Note(s):

1. When the reported SAR for a body-worn accessory, measured without a headset connected to the handset, is > 1.2 W/kg, the highest reported SAR configuration for that wireless mode and frequency band should be repeated for the body-worn accessory with a headset attached to the handset.

10.4. LTE Band 2 (20MHz Bandwidth)

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	RB Allocation	RB Offset	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.B	Head	QPSK	1	0	Left Touch	18900	1880.0	1	49	24.00	23.01	0.068	0.085		34.68	33.01
Ant.B	Head	QPSK	1	0	Left Touch	18900	1880.0	50	0	23.00	21.93	0.060	0.077		34.15	
Ant.B	Head	QPSK	1	0	Left Tilt	18900	1880.0	1	49	24.00	23.01	0.068	0.085		34.68	
Ant.B	Head	QPSK	1	0	Left Tilt	18900	1880.0	50	0	23.00	21.93	0.054	0.069		34.61	
Ant.B	Head	QPSK	1	0	Right Touch	18900	1880.0	1	49	24.00	23.01	0.100	0.126	7	33.01	
Ant.B	Head	QPSK	1	0	Right Touch	18900	1880.0	50	0	23.00	21.93	0.078	0.100		33.01	
Ant.B	Head	QPSK	1	0	Rightt Tilt	18900	1880.0	1	49	24.00	23.01	0.078	0.098		34.09	
Ant.B	Head	QPSK	1	0	Rightt Tilt	18900	1880.0	50	0	23.00	21.93	0.063	0.081		33.94	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	18700	1860.0	1	49	20.00	18.69	0.682	0.922		20.35	19.91
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	18700	1860.0	50	0	20.00	18.71	0.675	0.908		20.42	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	18900	1880.0	1	49	20.00	18.99	0.713	0.900		20.46	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	18900	1880.0	50	0	20.00	18.98	0.706	0.893		20.49	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	18900	1880.0	100	0	20.00	18.90	0.704	0.907		20.42	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	19100	1900.0	1	49	20.00	18.74	0.763	1.020	8	19.91	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	19100	1900.0	50	0	20.00	18.87	0.745	0.966		20.15	
Ant.B	Body worn & Hotspot	QPSK	2	5	Front	18900	1880.0	1	49	20.00	18.99	0.239	0.302		25.21	
Ant.B	Body worn & Hotspot	QPSK	2	5	Front	18900	1880.0	50	0	20.00	18.98	0.241	0.305		25.16	
Ant.B	Hotspot	QPSK	2	5	Left	18900	1880.0	1	49	20.00	18.99	0.264	0.333		24.77	
Ant.B	Hotspot	QPSK	2	5	Left	18900	1880.0	50	0	20.00	18.98	0.274	0.347		24.60	
Ant.B	Hotspot	QPSK	2	5	Bottom	18900	1880.0	1	49	20.00	18.99	0.507	0.640		21.94	
Ant.B	Hotspot	QPSK	2	5	Bottom	18900	1880.0	50	0	20.00	18.98	0.489	0.618		22.09	

10.5. LTE Band 5 (10MHz Bandwidth)

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	RB Allocation	RB Offset	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.A	Body worn & Hotspot	QPSK	2	5	Rear	20525	836.5	1	25	23.00	22.13	0.611	0.747	9	24.27	24.27
Ant.A	Body worn & Hotspot	QPSK	2	5	Rear	20525	836.5	25	25	23.00	22.11	0.585	0.718		24.44	
Ant.A	Body worn & Hotspot	QPSK	2	5	Front	20525	836.5	1	25	23.00	22.13	0.250	0.305		28.15	
Ant.A	Body worn & Hotspot	QPSK	2	5	Front	20525	836.5	25	25	23.00	22.11	0.242	0.297		28.27	
Ant.A	Hotspot	QPSK	2	5	Bottom	20525	836.5	1	25	23.00	22.13	0.434	0.530		25.76	
Ant.A	Hotspot	QPSK	2	5	Bottom	20525	836.5	25	25	23.00	22.11	0.423	0.519		25.85	
Ant.A	Hotspot	QPSK	2	5	Right	20525	836.5	1	25	23.00	22.13	0.242	0.296		28.29	
Ant.A	Hotspot	QPSK	2	5	Right	20525	836.5	25	25	23.00	22.11	0.231	0.284		28.47	

Note(s):

For Head exposure, it was excluded from the test because it overlapped with LTE Band 26.

10.6. LTE Band 12 (10MHz Bandwidth)

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	RB Allocation	RB Offset	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.A	Head	QPSK	1	0	Left Touch	23095	707.5	1	49	25.50	24.72	0.088	0.105		35.28	34.90
Ant.A	Head	QPSK	1	0	Left Touch	23095	707.5	25	12	24.50	23.62	0.061	0.075		35.77	
Ant.A	Head	QPSK	1	0	Left Tilt	23095	707.5	1	49	25.50	24.72	0.048	0.057		37.91	
Ant.A	Head	QPSK	1	0	Left Tilt	23095	707.5	25	12	24.50	23.62	0.034	0.042		38.31	
Ant.A	Head	QPSK	1	0	Right Touch	23095	707.5	1	49	25.50	24.72	0.096	0.115	10	34.90	
Ant.A	Head	QPSK	1	0	Right Touch	23095	707.5	25	12	24.50	23.62	0.066	0.081		35.42	
Ant.A	Head	QPSK	1	0	Right Tilt	23095	707.5	1	49	25.50	24.72	0.048	0.057		37.91	
Ant.A	Head	QPSK	1	0	Right Tilt	23095	707.5	25	12	24.50	23.62	0.033	0.040		38.43	
Ant.A	Body worn & Hotspot	QPSK	2	5	Rear	23095	707.5	1	49	23.00	22.10	0.280	0.344	11	27.63	27.63
Ant.A	Body worn & Hotspot	QPSK	2	5	Rear	23095	707.5	25	12	23.00	21.91	0.242	0.311		28.07	
Ant.A	Body worn & Hotspot	QPSK	2	5	Front	23095	707.5	1	49	23.00	22.10	0.095	0.117		32.32	
Ant.A	Body worn & Hotspot	QPSK	2	5	Front	23095	707.5	25	12	23.00	21.91	0.082	0.105		32.77	
Ant.A	Hotspot	QPSK	2	5	Bottom	23095	707.5	1	49	23.00	22.10	0.178	0.219		29.60	
Ant.A	Hotspot	QPSK	2	5	Bottom	23095	707.5	25	12	23.00	21.91	0.153	0.197		30.06	
Ant.A	Hotspot	QPSK	2	5	Right	23095	707.5	1	49	23.00	22.10	0.151	0.186		30.31	
Ant.A	Hotspot	QPSK	2	5	Right	23095	707.5	25	12	23.00	21.91	0.130	0.167		30.77	

10.7. LTE Band 26 (15MHz Bandwidth)

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	RB Allocation	RB Offset	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.A	Head	QPSK	1	0	Left Touch	26865	831.5	1	0	25.50	24.57	0.188	0.233		31.83	31.15
Ant.A	Head	QPSK	1	0	Left Touch	26865	831.5	36	0	24.50	23.63	0.153	0.187		31.78	
Ant.A	Head	QPSK	1	0	Left Tilt	26865	831.5	1	0	25.50	24.57	0.111	0.138		34.12	
Ant.A	Head	QPSK	1	0	Left Tilt	26865	831.5	36	0	24.50	23.63	0.087	0.106		34.23	
Ant.A	Head	QPSK	1	0	Right Touch	26865	831.5	1	0	25.50	24.57	0.220	0.273	12	31.15	
Ant.A	Head	QPSK	1	0	Right Touch	26865	831.5	36	0	24.50	23.63	0.176	0.215		31.17	
Ant.A	Head	QPSK	1	0	Right Tilt	26865	831.5	1	0	25.50	24.57	0.148	0.183		32.87	
Ant.A	Head	QPSK	1	0	Right Tilt	26865	831.5	36	0	24.50	23.63	0.121	0.148		32.80	
Ant.A	Body worn & Hotspot	QPSK	2	5	Rear	26865	831.5	1	0	22.00	21.22	0.480	0.574		24.41	24.25
Ant.A	Body worn & Hotspot	QPSK	2	5	Rear	26865	831.5	36	0	22.00	21.12	0.486	0.595	13	24.25	
Ant.A	Body worn & Hotspot	QPSK	2	5	Front	26865	831.5	1	0	22.00	21.22	0.179	0.214		28.69	
Ant.A	Body worn & Hotspot	QPSK	2	5	Front	26865	831.5	36	0	22.00	21.12	0.182	0.223		28.52	
Ant.A	Hotspot	QPSK	2	5	Bottom	26865	831.5	1	0	22.00	21.22	0.321	0.384		26.15	
Ant.A	Hotspot	QPSK	2	5	Bottom	26865	831.5	36	0	22.00	21.12	0.335	0.410		25.87	
Ant.A	Hotspot	QPSK	2	5	Right	26865	831.5	1	0	22.00	21.22	0.190	0.227		28.43	
Ant.A	Hotspot	QPSK	2	5	Right	26865	831.5	36	0	22.00	21.12	0.191	0.234		28.31	

10.8. LTE Band 41 (20MHz Bandwidth)

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	RB Allocation	RB Offset	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.B	Head	QPSK	1	0	Left Touch	40620	2593.0	1	49	25.50	24.54	0.148	0.185	14	32.84	32.84
Ant.B	Head	QPSK	1	0	Left Touch	40620	2593.0	50	50	24.50	23.43	0.113	0.145		32.90	
Ant.B	Head	QPSK	1	0	Left Tilt	40620	2593.0	1	49	25.50	24.54	0.089	0.111		35.05	
Ant.B	Head	QPSK	1	0	Left Tilt	40620	2593.0	50	50	24.50	23.43	0.065	0.083		35.30	
Ant.B	Head	QPSK	1	0	Right Touch	40620	2593.0	1	49	25.50	24.54	0.100	0.125		34.54	
Ant.B	Head	QPSK	1	0	Right Touch	40620	2593.0	50	50	24.50	23.43	0.074	0.095		34.74	
Ant.B	Head	QPSK	1	0	Right Tilt	40620	2593.0	1	49	25.50	24.54	0.092	0.115		34.90	
Ant.B	Head	QPSK	1	0	Right Tilt	40620	2593.0	50	50	24.50	23.43	0.072	0.092		34.86	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	39750	2506.0	1	49	20.00	18.93	0.593	0.759		21.20	19.59
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	39750	2506.0	50	50	20.00	18.88	0.597	0.773		21.12	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	39750	2506.0	100	0	20.00	18.87	0.562	0.729		21.37	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	40185	2549.5	1	49	20.00	18.01	0.538	0.851		20.70	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	40185	2549.5	50	50	20.00	18.02	0.529	0.835		20.79	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	40620	2593.0	1	49	20.00	18.24	0.540	0.810		20.92	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	40620	2593.0	50	50	20.00	18.13	0.542	0.834		20.79	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	41055	2636.5	1	49	20.00	18.79	0.678	0.896		20.48	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	41055	2636.5	50	50	20.00	18.83	0.620	0.812		20.91	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	41490	2680.0	1	49	20.00	18.38	0.757	1.099	15	19.59	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	41490	2680.0	50	50	20.00	18.49	0.773	1.094		19.61	
Ant.B	Body worn & Hotspot	QPSK	2	5	Front	39750	2506.0	1	49	20.00	18.93	0.272	0.348		24.58	
Ant.B	Body worn & Hotspot	QPSK	2	5	Front	39750	2506.0	50	50	20.00	18.88	0.272	0.352		24.53	
Ant.B	Hotspot	QPSK	2	5	Left	39750	2506.0	1	49	20.00	18.93	0.121	0.155		28.10	
Ant.B	Hotspot	QPSK	2	5	Left	39750	2506.0	50	50	20.00	18.88	0.121	0.157		28.05	
Ant.B	Hotspot	QPSK	2	5	Bottom	39750	2506.0	1	49	20.00	18.93	0.422	0.540		22.68	
Ant.B	Hotspot	QPSK	2	5	Bottom	39750	2506.0	50	50	20.00	18.88	0.428	0.554		22.57	

10.9. LTE Band 66 (20MHz Bandwidth)

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	RB Allocation	RB Offset	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant.B	Head	QPSK	1	0	Left Touch	132072	1720	1	99	24.00	23.32	0.085	0.099		34.03	32.79
Ant.B	Head	QPSK	1	0	Left Touch	132072	1720	50	50	23.00	22.22	0.071	0.085		33.71	
Ant.B	Head	QPSK	1	0	Left Tilt	132072	1720	1	99	24.00	23.32	0.088	0.103		33.88	
Ant.B	Head	QPSK	1	0	Left Tilt	132072	1720	50	50	23.00	22.22	0.064	0.077		34.16	
Ant.B	Head	QPSK	1	0	Right Touch	132072	1720	1	99	24.00	23.32	0.113	0.132	16	32.79	
Ant.B	Head	QPSK	1	0	Right Touch	132072	1720	50	50	23.00	22.22	0.086	0.103		32.88	
Ant.B	Head	QPSK	1	0	Right Tilt	132072	1720	1	99	24.00	23.32	0.056	0.065		35.84	
Ant.B	Head	QPSK	1	0	Right Tilt	132072	1720	50	50	23.00	22.22	0.047	0.056		35.50	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	132072	1720	1	99	20.00	19.13	0.753	0.920		20.36	19.90
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	132072	1720	50	50	20.00	19.16	0.732	0.888		20.51	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	132072	1720	100	0	20.00	19.24	0.746	0.889		20.51	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	132322	1745	1	99	20.00	19.11	0.814	0.999		20.00	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	132322	1745	50	50	20.00	19.01	0.803	1.009		19.96	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	132572	1770	1	99	20.00	18.85	0.786	1.024	17	19.90	
Ant.B	Body worn & Hotspot	QPSK	2	5	Rear	132572	1770	50	50	20.00	18.93	0.795	1.017		19.93	
Ant.B	Body worn & Hotspot	QPSK	2	5	Front	132072	1720	1	99	20.00	19.13	0.214	0.261		25.83	
Ant.B	Body worn & Hotspot	QPSK	2	5	Front	132072	1720	50	50	20.00	19.16	0.205	0.249		26.04	
Ant.B	Hotspot	QPSK	2	5	Left	132072	1720	1	99	20.00	19.13	0.253	0.309		25.10	
Ant.B	Hotspot	QPSK	2	5	Left	132072	1720	50	50	20.00	19.16	0.242	0.294		25.32	
Ant.B	Hotspot	QPSK	2	5	Bottom	132072	1720	1	99	20.00	19.13	0.519	0.634		21.98	
Ant.B	Hotspot	QPSK	2	5	Bottom	132072	1720	50	50	20.00	19.16	0.521	0.632		21.99	

10.10. NR Band n5 (20MHz Bandwidth)

Antenna	RF Exposure Condition	Mode	ECI	Dist (mm)	Test Position	Channel	Freq. (MHz)	RB Allocation	RB Offset	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.	Part0 Plimit	Minimum Plimit
Ant. A	Head	DFT-s-OFDM QPSK	1	0	Left Touch	167300	836.5	1	52	25.00	23.85	0.195	0.254		30.95	30.30
Ant. A	Head	DFT-s-OFDM QPSK	1	0	Left Touch	167300	836.5	50	28	25.00	23.86	0.207	0.269		30.70	
Ant. A	Head	DFT-s-OFDM QPSK	1	0	Left Tilt	167300	836.5	1	52	25.00	23.85	0.131	0.171		32.68	
Ant. A	Head	DFT-s-OFDM QPSK	1	0	Left Tilt	167300	836.5	50	28	25.00	23.86	0.147	0.191		32.19	
Ant. A	Head	DFT-s-OFDM QPSK	1	0	Right Touch	167300	836.5	1	52	25.00	23.85	0.211	0.275		30.61	
Ant. A	Head	DFT-s-OFDM QPSK	1	0	Right Touch	167300	836.5	50	28	25.00	23.86	0.227	0.295	18	30.30	
Ant. A	Head	DFT-s-OFDM QPSK	1	0	Right Tilt	167300	836.5	1	52	25.00	23.85	0.151	0.197		32.06	
Ant. A	Head	DFT-s-OFDM QPSK	1	0	Right Tilt	167300	836.5	50	28	25.00	23.86	0.167	0.217		31.63	
Ant. A	Body worn & Hotspot	DFT-s-OFDM QPSK	2	5	Rear	167300	836.5	1	52	23.00	22.33	0.630	0.735		24.34	24.17
Ant. A	Body worn & Hotspot	DFT-s-OFDM QPSK	2	5	Rear	167300	836.5	50	28	23.00	22.40	0.666	0.765	19	24.17	
Ant. A	Body worn & Hotspot	DFT-s-OFDM QPSK	2	5	Front	167300	836.5	1	52	23.00	22.33	0.247	0.288		28.40	
Ant. A	Body worn & Hotspot	DFT-s-OFDM QPSK	2	5	Front	167300	836.5	50	28	23.00	22.40	0.284	0.326		27.87	
Ant. A	Hotspot	DFT-s-OFDM QPSK	2	5	Bottom	167300	836.5	1	52	23.00	22.33	0.629	0.734		24.34	
Ant. A	Hotspot	DFT-s-OFDM QPSK	2	5	Bottom	167300	836.5	50	28	23.00	22.40	0.644	0.739		24.31	
Ant. A	Hotspot	DFT-s-OFDM QPSK	2	5	Right	167300	836.5	1	52	23.00	22.33	0.269	0.314		28.03	
Ant. A	Hotspot	DFT-s-OFDM QPSK	2	5	Right	167300	836.5	50	28	23.00	22.40	0.316	0.363		27.40	
Ant.A	Head	CP-OFDM QPSK	1	0	Right Touch	167300	836.5	1	1	23.50	22.03	0.146	0.205		30.39	
Ant.A	Body worn & Hotspot	CP-OFDM QPSK	2	5	Rear	167300	836.5	1	1	23.00	22.11	0.490	0.601		25.21	

Note(s):

1. CP-OFDM mode were evaluated at worst configuration of DFT-s-OFDM in standalone exposure conditions.

10.11. Wi-Fi (DTS Band)

DTS SISO SAR results

Antenna	RF Exposure Condition	Mode	Back-off	Dist (mm)	Test Position	Channel	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Note	Plot No.
Ant. F	Head	802.11b 1Mbps	ON	0	Left Touch	6	2437.0	0.381	99.52	17.00	16.74				
Ant. F	Head	802.11b 1Mbps	ON	0	Left Tilt	6	2437.0	0.379	99.52	17.00	16.74				
Ant. F	Head	802.11b 1Mbps	ON	0	Right Touch	6	2437.0	0.755	99.52	17.00	16.74	0.615	0.656		20
Ant. F	Head	802.11b 1Mbps	ON	0	Right Tilt	6	2437.0	0.626	99.52	17.00	16.74	0.501	0.534	2	
Ant. F	Body worn& Hotspot	802.11b 1Mbps	OFF	5	Rear	6	2437.0	1.040	99.52	17.00	16.74	0.840	0.896		21
Ant. F	Body worn& Hotspot	802.11b 1Mbps	OFF	5	Rear	11	2462.0	0.892	99.52	17.00	16.66	0.719	0.781	3	
Ant. F	Body worn& Hotspot	802.11b 1Mbps	OFF	5	Front	6	2437.0	0.408	99.52	17.00	16.74				
Ant. F	Hotspot	802.11b 1Mbps	OFF	5	Top	6	2437.0	0.629	99.52	17.00	16.74	0.455	0.485	2	
Ant. F	Hotspot	802.11b 1Mbps	OFF	5	Left	6	2437.0	0.544	99.52	17.00	16.74				

10.12. Wi-Fi (U-NII Bands)

U-NII 2A SAR results

Antenna	RF Exposure Condition	Mode	Back-off	Dist (mm)	Test Position	Channel	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Note	Plot No.
Ant. F	Head	802.11ac VHT80	ON	0	Left Touch	58	5290.0	0.164	93.21	14.00	13.70				
Ant. F	Head	802.11ac VHT80	ON	0	Left Tilt	58	5290.0	0.132	93.21	14.00	13.70				
Ant. F	Head	802.11ac VHT80	ON	0	Right Touch	58	5290.0	0.418	93.21	14.00	13.70	0.292	0.336	1	22
Ant. F	Head	802.11ac VHT80	ON	0	Right Tilt	58	5290.0	0.384	93.21	14.00	13.70				
Ant. F	Body worn & Near body	802.11a 6Mbps	OFF	5	Rear	60	5300.0	0.685	98.36	17.00	16.54	0.578	0.653		23
Ant. F	Body worn & Near body	802.11a 6Mbps	OFF	5	Front	60	5300.0	0.393	98.36	17.00	16.54	0.324	0.366	2	
Ant. F	Near body	802.11a 6Mbps	OFF	5	Top	60	5300.0	0.392	98.36	17.00	16.54				
Ant. F	Near body	802.11a 6Mbps	OFF	5	Left	60	5300.0	0.226	98.36	17.00	16.54				

U-NII 2C SAR results

Antenna	RF Exposure Condition	Mode	Back-off	Dist (mm)	Test Position	Channel	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Notr	Plot No.
Ant. F	Head	802.11ac VHT80	ON	0	Left Touch	122	5610.0	0.213	93.21	14.00	13.62				
Ant. F	Head	802.11ac VHT80	ON	0	Left Tilt	122	5610.0	0.225	93.21	14.00	13.62				
Ant. F	Head	802.11ac VHT80	ON	0	Right Touch	122	5610.0	0.465	93.21	14.00	13.62	0.326	0.382	1	24
Ant. F	Head	802.11ac VHT80	ON	0	Right Tilt	122	5610.0	0.370	93.21	14.00	13.62				
Ant. F	Body worn & Near body	802.11a 6Mbps	OFF	5	Rear	100	5500.0	1.020	98.36	17.00	16.59	0.730	0.816		25
Ant. F	Body worn & Near body	802.11a 6Mbps	OFF	5	Rear	144	5720.0	1.010	98.36	17.00	16.41	0.689	0.802	3	
Ant. F	Body worn & Near body	802.11a 6Mbps	OFF	5	Front	100	5500.0	0.482	98.36	17.00	16.59				
Ant. F	Near body	802.11a 6Mbps	OFF	5	Top	100	5500.0	0.498	98.36	17.00	16.59	0.393	0.439	2	
Ant. F	Near body	802.11a 6Mbps	OFF	5	Left	100	5500.0	0.309	98.36	17.00	16.59				

Note(s):

1. When the Highest reported SAR is ≤ 0.4 or 1.0 W/kg (1-g or 10-g respectively). Therefore, further SAR measurements within this exposure condition are not required.
2. Highest reported SAR is > 0.4 or 1.0 W/kg (1-g or 10-g respectively). Due to the highest reported SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 or 2.0 W/kg (1-g or 10-g respectively) was reported.
3. Testing for a second channel was required because the reported SAR for this test position was > 0.8 or 2.0 W/kg (1-g or 10-g respectively).

U-NII 3 SAR results

Antenna	RF Exposure Condition	Mode	Back-off	Dist (mm)	Test Position	Channel	Freq. (MHz)	Area Scan Max. SAR (W/kg)	Duty Cycle (%)	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Note	Plot No.
Ant. F	Head	802.11ac VHT80	ON	0	Left Touch	155	5775.0	0.191	93.21	14.00	13.39				
Ant. F	Head	802.11ac VHT80	ON	0	Left Tilt	155	5775.0	0.220	93.21	14.00	13.39				
Ant. F	Head	802.11ac VHT80	ON	0	Right Touch	155	5775.0	0.597	93.21	14.00	13.39	0.431	0.532		26
Ant. F	Head	802.11ac VHT80	ON	0	Right Tilt	155	5775.0	0.432	93.21	14.00	13.39	0.297	0.367	2	
Ant. F	Body worn & Near body	802.11a 6Mbps	OFF	5	Rear	157	5785.0	1.050	98.36	17.00	16.67	0.839	0.920	3	27
Ant. F	Body worn & Near body	802.11a 6Mbps	OFF	5	Rear	165	5825.0	1.110	98.36	17.00	16.75	0.824	0.887		
Ant. F	Body worn & Near body	802.11a 6Mbps	OFF	5	Front	165	5825.0	0.581	98.36	17.00	16.75	0.486	0.523	2	
Ant. F	Near body	802.11a 6Mbps	OFF	5	Top	165	5825.0	0.267	98.36	17.00	16.75				
Ant. F	Near body	802.11a 6Mbps	OFF	5	Left	165	5825.0	0.552	98.36	17.00	16.75				

Note(s):

1. When the Highest reported SAR is ≤ 0.4 or 1.0 W/kg (1-g or 10-g respectively). Therefore, further SAR measurements within this exposure condition are not required.
2. Highest reported SAR is > 0.4 or 1.0 W/kg (1-g or 10-g respectively). Due to the highest reported SAR for this test position, other test positions in this exposure condition were evaluated until a SAR ≤ 0.8 or 2.0 W/kg (1-g or 10-g respectively) was reported.
3. Testing for a second channel was required because the reported SAR for this test position was > 0.8 or 2.0 W/kg (1-g or 10-g respectively).

10.13. Bluetooth

Antenna	RF Exposure Condition	Mode	Back-off	Dist (mm)	Test Position	Channel	Freq. (MHz)	Duty Cycle (%)	Tune-up Limit (dBm)	Meas. (dBm)	Meas. 1g (W/kg)	Reported. 1g (W/kg)	Plot No.
Ant.F	Head	GFSK DH5	N/A	0	Left Touch	78	2480.0	76.80	12.00	11.68	0.039	0.042	
Ant.F	Head	GFSK DH5	N/A	0	Left Tilt	78	2480.0	76.80	12.00	11.68	0.033	0.036	
Ant.F	Head	GFSK DH5	N/A	0	Right Touch	78	2480.0	76.80	12.00	11.68	0.077	0.083	28
Ant.F	Head	GFSK DH5	N/A	0	Right Tilt	78	2480.0	76.80	12.00	11.68	0.061	0.066	
Ant.F	Body worn& Hotspot	GFSK DH5	N/A	5	Rear	78	2480.0	76.80	12.00	11.68	0.135	0.146	29
Ant.F	Body worn& Hotspot	GFSK DH5	N/A	5	Front	78	2480.0	76.80	12.00	11.68	0.053	0.057	
Ant.F	Hotspot	GFSK DH5	N/A	5	Top	78	2480.0	76.80	12.00	11.68	0.071	0.077	
Ant.F	Hotspot	GFSK DH5	N/A	5	Left	78	2480.0	76.80	12.00	11.68	0.081	0.088	

Note(s):

Body worn power and distance are the same as Hotspot. So used Hotspot data at Body worn exposure. according to referencing KDB 648474 D04 guidance.

10.14. NFC

Mode	RF Exposure Conditions	Dist. (mm)	Test Position	Test setup		Freq. (MHz)	1-g SAR (W/kg)	Plot No.
				Type	Bitrate		Meas.	
PBRS	Near Body	5	Rear	A	106	13.56	0.047	30
			Front	A	106	13.56	0.000	
			Top	A	106	13.56	0.000	
			Left	A	106	13.56	0.000	

11. SAR Measurement Variability

In accordance with published RF Exposure KDB 865664 D01 SAR measurement 100 MHz to 6 GHz. These additional measurements are repeated after the completion of all measurements requiring the same head or body tissue-equivalent medium in a frequency band. The test device should be returned to ambient conditions (normal room temperature) with the battery fully charged before it is re-mounted on the device holder for the repeated measurement(s) to minimize any unexpected variations in the repeated results.

1) Repeated measurement is not required when the original highest measured SAR is <0.8 (1-g respectively); steps 2) through 4) do not apply.
2) When the original highest measured SAR is ≥ 0.8 (1-g), 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 (~ 10% from the 1-g respective SAR limit).
4) Perform a third repeated measurement only if the original, first, or second repeated measurement is ≥ 1.5 (1-g respectively) and the ratio of largest to smallest SAR for the original, first and second repeated measurements is > 1.20.

Peak spatial-average (1g of tissue)

Frequency Band (MHz)	Air Interface	Antenna	RF Exposure Conditions	Test Position	Repeated SAR (Yes/No)	Highest Measured SAR (W/kg)	Repeated Measured SAR (W/kg)	Largest to Smallest SAR Ratio
850	GSM 850	Ant.A	Body worn & Hotspot	Rear	Yes	1.050	1.030	1.02
1750	LTE Band 66	Ant.B	Body worn & Hotspot	Rear	Yes	0.841	0.813	1.03
1900	GSM 1900	Ant.B	Body worn & Hotspot	Rear	Yes	1.050	1.050	1.00
2450	DTS	Ant.F	Body worn & Hotspot	Rear	Yes	0.840	0.797	1.05
5800	U-NII 3	Ant.F	Body worn & Near Body	Rear	Yes	0.839	0.835	1.00

Note(s):

1. Second Repeated Measurement is not required since the ratio of the largest to smallest SAR for the original and first repeated measurement is not > 1.20.

12. Simultaneous Transmission SAR Analysis

Simultaneous Transmission Condition

RF Exposure Condition	Item	Simultaneous transmission scenarios
Head & Body-worn & Hotspot & Near Body	1	WWAN (2G/3G/LTE/NR) + (DTS Ant.1)
	2	WWAN (2G/3G/LTE/NR) + (UNII Ant.1)
	3	WWAN (2G/3G/LTE/NR) + (BT Ant.1)
	4	WWAN (2G/3G/LTE/NR) + (UNII Ant.1 + BT Ant.1)
	5	WWAN (ENDC) + (DTS Ant.1)
	6	WWAN (ENDC) + (UNII Ant.1)
	7	WWAN (ENDC) + (BT Ant.1)
	8	WWAN (ENDC) + (UNII Ant.1 + BT Ant.1)
Near Body	9	Scenatios item (1-8) + NFC

Notes:

1. DTS supports Wi-Fi Direct, Hotspot and VoIP.
2. U-NII supports Wi-Fi Direct, Hotspot and VoIP.
3. GPRS, W-CDMA, LTE, NR supports Hotspot and VoIP
4. U-NII Radio can transmit simultaneously with Bluetooth Radio.
5. NR Radio support only NSA(ENDC) Radio.
6. BT tethering is considered about each RF exposure conditions.
7. NFC can transmit simultaneously with other Radios in Near body condition.

Note(s):

For EN-DC mode, Mediatek's TA algorithm operation is indendent of source of SAR exposure(e.g, LTE vs. NR FR1) and ensures total time-averaged RF exposure compliance for SAR exposure in TAS Validation(Part 2) report. Therefore, simultaneous transmission compliance between 4G+5G NR operation is demonstrated in the TAS validation Report during algorithm validation.
In this SAR Report, simultaneous transmission compliance was evaluated individually with WLAN and/or other radios using one of 4G or 5G NR.

12.1. Simultaneous transmission analysis

Simultaneous transmission SAR test exclusion considerations

Sum of SAR

To qualify for simultaneous transmission SAR test exclusion based upon 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.

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

The antennas for the unlicensed transmitters are closely situated. As a result, the associated SAR hotspots are also closely situated. Some of the sum of SAR calculations yielded results over 1.6 W/kg. The SPSLR calculations for these situations were performed by treating the unlicensed SAR values as a single transmitter. The most conservative distance between all the unlicensed hotspots to the licensed hotspot was used for the value of *d* in the SPSLR calculation.

Sum to Peak Location Separation Ratio

Instead of doing a small volume scan over a co-located antenna pair (Hybrid SPLSR guide), Simultaneous transmission SAR test exclusion may algebraically sum the SAR values of the co-located pair and use that value in SPLSR calculation.

In the calculation Separation distance must use the minimum distance between the spatially separated antenna and the closest antenna of the co-located antenna pair to be conservative.

This device is containing transmitters that may operate simultaneously. Therefore, simultaneous transmission analysis is required. KDB 447498 D04 Interim General RF Exposure Guidance provides two procedures for determining simultaneous transmission SAR test exclusion: Sum of SAR and SAR to Peak Location Ratio (SPLSR) additionally, Sum to Peak Location Ratio was also considered.

In ENDC (LTE + 5G NR) + ER(External Ratio) operation(Non TAS operation techs ex; WLAN, BT, NFC….), LTE and 5G NR are managed and controlled by MediaTek WWAN TA-SAR. Therefore, LTE and 5G NR operation can be considered separately from Step 1 and 2 based on the following method during ENDC operation.

1. **(Condition#1 Sum of WWAN/WLAN/BT)** : The sum of the reported standalone SARs for all simultaneously transmitting antennas shall be below the applicable standalone SAR limit. In LTE+5G NR+C simultaneous transmission, LTE and 5G NR transmissions are managed are controlled by Mediatek WWAN TA-SAR.

$$x * LTE \ + y * 5G\ NR + ER \ \leq 1.6\, W/kg\ (FCC\ limit)$$

Where, for a total of 100% exposure margin, LTE uses x, then the exposure margin left for 5G NR is capped to y.

$$x * LTE + y * 5G\ NR \leq x * \max(LTE, 5G\ NR) + y * \max(LTE, 5G\ NR) \leq \max\ (LTE, 5G\ NR)$$
$$x * LTE + y * 5G\ NR + ER \ \leq \max(LTE, 5G\ NR) + ER \leq 1.6\, W/kg\ (FCC\ limit)$$

If LTE + ER < 1.6 W/kg and 5G NR + ER < 1.6 W/kg can be prove, then ‘x*LTE+y*5G NR+ ER’. Therefore, simultaneous transmission analysis for LTE + 5G NR + ER can be performed in two steps.

Step 1 : Prove SAR Limit of LTE + ER < 1.6 W/kg (FCC limit)
Step 2 : Prove SAR Limit of 5G NR + ER < 1.6 W/kg (FCC limit)

2. **(Condition#2 SPLSR(or Sum-SPLSR)) :** If LTE + ER and/ or 5G NR + ER does not satisfy condition#1, then, the followings need to hold true for compliance :

   i. LTE and ER meet SPLSR (or Sum-SPLSR) criteria, then LTE and ER are decoupled, and

   ii. (100-x)% * 5G NR + ER ≤ FCC limit (or meet SPLSR (or Sum-SPLSR) criteria), and

   iii. x% * LTE + (100-x)% * 5G NR ≤ FCC limit

i and ii are addressed in Part 1 report, and iii is addressed in Part 2 report.

12.1.1. Sum of the SAR for WWAN & WiFi & BT

Condition#1

RF exposure	Test positions	Standalone SAR (W/kg)					Sum of SAR (W/kg)							
		WWAN	DTS	UNII	BT	NFC	WWAN + DTS	WWAN + DTS + NFC	WWAN+ UNII	WWAN+ UNII+NFC	WWAN+ BT	WWAN+ BT+NFC	WWAN+ UNII+BT	WWAN+UNII+ BT+NFC
		1	2	3	4	5	1+2	1+2+5	1+3	1+3+5	1+4	1+4+5	1+3+4	1+3+4+5
Head	Left Touch	0.269	0.656	0.532	0.042		0.925	0.925	0.801	0.801	0.311	0.311	0.843	0.843
	Left Tilt	0.191	0.656	0.532	0.036		0.847	0.847	0.723	0.723	0.227	0.227	0.759	0.759
	Right Touch	0.295	0.656	0.532	0.083		0.951	0.951	0.827	0.827	0.378	0.378	0.910	0.910
	Right Tilt	0.217	0.534	0.382	0.066		0.751	0.751	0.599	0.599	0.283	0.283	0.665	0.665
Body-worn & Hotspot & Near body	Rear	1.231	0.896	0.920	0.146	0.047	2.127	2.174	2.151	2.198	1.377	1.424	2.297	2.344
	Front	0.381	0.896	0.816	0.057	0.000	1.277	1.277	1.197	1.197	0.438	0.438	1.254	1.254
Hotspot & Near Body	Top	0.000	0.485	0.920	0.077	0.000	0.485	0.485	0.920	0.920	0.077	0.077	0.997	0.997
	Left	0.349	0.896	0.920	0.088	0.000	1.245	1.245	1.269	1.269	0.437	0.437	1.357	1.357
	Bottom	0.943	0.000	0.000	0.000	0.000	0.943	0.943	0.943	0.943	0.943	0.943	0.943	0.943
	Right	0.415	0.000	0.000	0.000	0.000	0.415	0.415	0.415	0.415	0.415	0.415	0.415	0.415

Note:

1. Simultaneous transmission scenario (1+2) is a subset of (1+2+5) scenario.
2. Simultaneous transmission scenario (1+3 & 1+3+4 & 1+3+5) are a subset of (1+3+4+5) scenario.

Summation of WWAN and WLAN

Positions	WWAN		ER		Sum of SAR	Note
	Band	SAR	Band	SAR		
Rear 5mm	GSM 850	1.231	DTS + NFC	0.943	2.174	1
	GSM 1900	1.197		0.943	2.140	1
	WCDMA 5	1.049		0.943	1.992	1
	LTE B2	1.020		0.943	1.963	1
	LTE B5	0.747		0.943	1.690	1
	LTE B12	0.344		0.943	1.287	
	LTE B26	0.595		0.943	1.538	
	LTE B66	1.024		0.943	1.967	1
	LTE B41	1.099		0.943	2.042	1
	NR Bn5	0.765		0.943	1.708	1
	GSM 850	1.231	UNII+BT +NFC	1.113	2.344	1
	GSM 1900	1.197		1.113	2.310	1
	WCDMA 5	1.049		1.113	2.162	1
	LTE B2	1.020		1.113	2.133	1
	LTE B5	0.747		1.113	1.860	1
	LTE B12	0.344		1.113	1.457	
	LTE B26	0.595		1.113	1.708	1
	LTE B66	1.024		1.113	2.137	1
	LTE B41	1.099		1.113	2.212	1
	NR Bn5	0.765		1.113	1.878	1

Note:

Additional evaluation is required due to over FCC limit. So please refer to Condition#2.

1. Need to SPLSR criteria

Condition#2

SPLSR(or Sum-SPLSR) calculation results

Test Position	No.	WWAN	ER	WWAN			ER				WWAN + ER SUM SAR (W/kg)	Calculated Distance(mm)	Closest distance (mm)	Sum-SPLSR Results
				SAR (W/kg)	X-axis location (mm)	Y-axis location (mm)	SAR (W/kg)	Band	X-axis location (mm)	Y-axis location (mm)				
Rear	1	GSM 850	DTS+NFC	1.231	-11.3	79.4	0.943	DTS	-58.5	-69.5	2.174	156.2	120.4	0.03
								NFC	-11.5	-41.0		120.4		
	2	GSM 1900	DTS+NFC	1.197	-45.6	85.8	0.943	DTS	-58.5	-69.5	2.140	155.8	131.3	0.02
								NFC	-11.5	-41.0		131.3		
	3	WCDMA 5	DTS+NFC	1.049	-10.8	79.9	0.943	DTS	-58.5	-69.5	1.992	156.8	120.9	0.02
								NFC	-11.5	-41.0		120.9		
	4	LTE B2	DTS+NFC	1.020	-44.8	84.1	0.943	DTS	-58.5	-69.5	1.963	154.2	129.5	0.02
								NFC	-11.5	-41.0		129.5		
	5	LTE B5	DTS+NFC	0.747	-10.3	80.9	0.943	DTS	-58.5	-69.5	1.690	157.9	121.9	0.02
								NFC	-11.5	-41.0		121.9		
	6	LTE B66	DTS+NFC	1.024	-47.3	85.8	0.943	DTS	-58.5	-69.5	1.967	155.7	131.8	0.02
								NFC	-11.5	-41.0		131.8		
	7	LTE B41	DTS+NFC	1.099	-50.0	78.5	0.943	DTS	-58.5	-69.5	2.042	148.2	125.5	0.02
								NFC	-11.5	-41.0		125.5		
	8	NR Bn5	DTS+NFC	0.765	-12.7	85.1	0.943	DTS	-58.5	-69.5	1.708	161.2	126.1	0.02
								NFC	-11.5	-41.0		126.1		
	9	GSM 850	UNII+BT+NFC	1.231	-11.3	79.4	1.113	UNII	-55.0	-76.6	2.344	162.0	120.4	0.03
								BT	-58.5	-71.0		157.6		
								NFC	-11.5	-41.0		120.4		
	10	GSM 1900	UNII+BT+NFC	1.197	-45.6	85.8	1.113	UNII	-55.0	-76.6	2.310	162.7	131.3	0.03
								BT	-58.5	-71.0		157.3		
								NFC	-11.5	-41.0		131.3		
	11	WCDMA 5	UNII+BT+NFC	1.049	-10.8	79.9	1.113	UNII	-55.0	-76.6	2.162	162.6	120.9	0.03
								BT	-58.5	-71.0		158.3		
								NFC	-11.5	-41.0		120.9		
	12	LTE B2	UNII+BT+NFC	1.020	-44.8	84.1	1.113	UNII	-55.0	-76.6	2.133	161.0	129.5	0.02
								BT	-58.5	-71.0		155.7		
								NFC	-11.5	-41.0		129.5		
	13	LTE B5	UNII+BT+NFC	0.747	-10.3	80.9	1.113	UNII	-55.0	-76.6	1.860	163.7	121.9	0.02
								BT	-58.5	-71.0		159.4		
								NFC	-11.5	-41.0		121.9		
	14	LTE B26	UNII+BT+NFC	0.595	-10.3	80.9	1.113	UNII	-55.0	-76.6	1.708	163.7	121.9	0.02
								BT	-58.5	-71.0		159.4		
								NFC	-11.5	-41.0		121.9		
	15	LTE B66	UNII+BT+NFC	1.024	-47.3	85.8	1.113	UNII	-55.0	-76.6	2.137	162.6	131.8	0.02
								BT	-58.5	-71.0		157.2		
								NFC	-11.5	-41.0		131.8		
	16	LTE B41	UNII+BT+NFC	1.099	-50.0	78.5	1.113	UNII	-55.0	-76.6	2.212	155.2	125.5	0.03
								BT	-58.5	-71.0		149.7		
								NFC	-11.5	-41.0		125.5		
	17	NR Bn5	UNII+BT+NFC	0.765	-12.7	85.1	1.113	UNII	-55.0	-76.6	1.878	167.1	126.1	0.02
								BT	-58.5	-71.0		162.7		
								NFC	-11.5	-41.0		126.1		

Note(s):

1. The x-axis and y-axis locations for ER were chosen to be the closest distance from WWAN.
2. According to 2022 Apr TCBC Workshop, SPLSR (Sum-Peak Location Separation Ratio) can algebraically sum the SAR values of the co-located pair and use that value in SPLSR calculation. Use the minimum distance between the spatially separated antenna and the closest antenna of the co-located antenna pair to be conservative.
3. Worst combinations SPLSR criteria results is not over 0.04 (1-g SAR) in all antenna pair(WWAN & ER). So additional test is not required.

Conclusion:

Simultaneous Transmission SAR analysis results is satisfied the FCC Limit requirement according to follow procedures with “Sum of SAR” or “SPLSR” or “SUM-SPLSR”.

Appendixes

Refer to separated files for the following appendixes.

S-4791511838-S1 FCC Report SAR App A Photos

S-4791511838-S1 FCC Report SAR App B Test Plots

S-4791511838-S1 FCC Report SAR App C System Plots

S-4791511838-S1 FCC Report SAR App D SAR Tissue

S-4791511838-S1 FCC Report SAR App E Probe Certi

S-4791511838-S1 FCC Report SAR App F Dipole Certi

END OF REPORT