TEST REPORT

Report Number : 14040868-E10V2

Applicant	:	APPLE, INC 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
Model	:	A2632
Brand	:	APPLE
FCC ID	:	BCG-E8139A
EUT Description	:	SMARTPHONE
Test Standard(s)	:	FCC CFR 47 Part 2, Part 22, Part 27 and Part 96

Date Of Issue:
AUGUST 12, 2022

Prepared by:
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Revision History

CERT #0751.05

Rev.	Issue Date	Revisions	Revised By
V1	8/4/2022	Initial Review	Eric Ting
V2	8/12/2022	Address TCB questions section 2, 6.2, 6.4, and 8.1.3	Eric Ting

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE, INC 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A
Model	A2632
Brand	APPLE
FCC ID	BCG-E8139A
EUT Description	SMARTPHONE
Serial Number	Conducted: C7205400BJ1LYT2U, Radiated: KFJ2592MFD & KCF16NH2M0
Sample Receipt Date	APRIL 19, 2022
Date Tested	APRIL 25, 2022 to JULY 01, 2022
Applicable Standards	FCC CFR 47 Part 2, Part 22, Part 27 and Part 96
Test Results	COMPLIES

UL LLC tested the above equipment in accordance with the requirements set forth in the above standards. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. All samples tested were in good operating condition throughout the entire test program. Measurement Uncertainties are published for informational purposes only and were not taken into account unless noted otherwise.

This document may not be altered or revised in any way unless done so by UL LLC and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL LLC 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 A2LA, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released By:	Prepared By:
	
Thu Chan Staff Engineer UL LLC	Eric Ting Test Engineer UL LLC.

2. SUMMARY OF TEST RESULTS

This report contains data provided by the customer which can impact the validity of results. UL LLC is only responsible for the validity of results after the integration of the data provided by the customer.

Requirement Description	Band	Requirement Clause Number (FCC)	Result	Remarks
RF Conducted Output Power		2.1046	Complies	
Effective Radiated Power	5	22.913 (a)(5)	Complies	
Equivalent Isotropic Radiated power	7, 41, 48	27.50 (h) (2) 96.41 (b)	Complies	
Occupied Bandwidth	5, 7, 41, 48	2.1049	Complies	
Band Edge and Emission Mask	5, 7, 41, 48	2.1051, 22.917 (a), 27.53 (m)(4) &(m)(6), 96.41(e)	Complies	
Out of Band Emissions	5, 7, 41, 48	2.1051, 22.917 (a), 27.53 (m)(4) &(m)(6), 96.41(e)	Complies	
Frequency Stability	5, 7, 41, 48	2.1055, 22.355, 27.54	Complies	
Peak-to-Average Ratio	5, 7, 41, 48	27.50 (d) (5), 96.41 (g)	Complies	
Field Strength of Spurious Radiation	5, 7, 41, 48	2.1053, 22.917 (a), 27.53 (m)(4) &(m)(6), 96.41(e)	Complies	

3. TEST METHODOLOGY

The tests documented in this report were performed in accordance with the following:

- ANSI C63.26:2015
- FCC CFR 47 Part 2, Part 22, Part 24, Part 27 and Part 96
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- FCC KDB 971168 D02 v02r01: Misc Rev Approv License Devices
- FCC KDB 412172 D01 v01r01. Determining ERP and EIRP

4. FACILITIES AND ACCREDITATION

UL LLC is accredited by A2LA, certification #0751.05, for all testing performed within the scope of this report. Testing was performed at the locations noted below.

	Address	ISED CABID	ISED Company Number	FCC Registration
☒	Building 1: 47173 Benicia Street, Fremont, CA 94538, USA	US0104	2324A	550739
☒	Building 2: 47266 Benicia Street, Fremont, CA 94538, USA	US0104	22541	550739
☐	Building 4: 47658 Kato Rd, Fremont, CA 94538, USA	US0104	2324B	550739

5. DECISION RULES AND MEASUREMENT UNCERTAINTY

5.1. METROLOGICAL TRACEABILITY

All test and measuring equipment utilized to perform the tests documented in this report are calibrated on a regular basis, with a maximum time between calibrations of one year or the manufacturers' recommendation, whichever is less, and where applicable is traceable to recognized national standards.

5.2. DECISION RULES

The Decision Rule is based on Simple Acceptance in accordance with ISO Guide 98-4:2012 Clause 8.2. (Measurement uncertainty is not taken into account when stating conformity with a specified requirement.)

5.3. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

PARAMETER	U_{Lab}
Worst Case Radiated Disturbance, 9KHz to 30 MHz	2.84 dB
Worst Case Radiated Disturbance, 30 to 1000 MHz	6.01 dB
Worst Case Radiated Disturbance, 1000 to 18000 MHz	4.73 dB
Worst Case Radiated Disturbance, 18000 to 26000 MHz	4.51 dB
Worst Case Radiated Disturbance, 26000 to 40000 MHz	5.29 dB
Occupied Channel Bandwidth	±1.22 %
Temperature	±2.26%
Supply voltages	±0.57 %
Time	±3.39 %

Uncertainty figures are valid to a confidence level of 95%.

5.4. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

6. EQUIPMENT UNDER TEST

6.1. DESCRIPTION OF EUT

The Apple iPhone is a smartphone with multimedia functions (music, application support, and video),cellular GSM, GPRS, EGPRS, UMTS, LTE, 5G FR1, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wideband, GPS, NFC and MSS. All models except reference model support at least one UICC based SIM. The second SIM is either an UICC based p-SIM (physical SIM) or e-SIM (electronic SIM). The device supports a built-in inductive charging transmitter and receiver. The rechargeable battery is not user accessible.

Testing was performed on the parent model and is used to support the application for the parent and variants identified in this report based on the test plan submitted and approved via KDB inquiry by the FCC and by ISED-Canada.

6.2. MAXIMUM OUTPUT POWER

ERP/EIRP TEST PROCEDURE

ANSI C63.26:2015
KDB 971168 D01 Section 5.6

ERP/EIRP = PMeas + GT − LC
where: ERP/EIRP = effective or equivalent radiated power, respectively (expressed in the same units as PMeas, typically dBW or dBm);
PMeas = measured transmitter output power or PSD, in dBm or dBW;
GT = gain of the transmitting antenna, in dBd (ERP) or dBi (EIRP);
LC = signal attenuation in the connecting cable between the transmitter and antenna, in dB.

For devices utilizing multiple antennas, KDB 662911 provides guidance for determining the effective array transmit antenna gain term to be used in the above equation.

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations average conducted and ERP/EIRP output powers as follows:

Note: The maximum output for L-Ch and H-Ch of LTE B48 2CA may be lower than M-Ch due to the different AMPR based on the 3GPP CA_NS10 AMPR table.

Note: The maximum output for L-Ch of LTE41 CA may be lower than M-Ch due to different AMPR based on the 3GPP CA_NS04 AMPR table.

OUTPUT POWER FOR LTE BAND 5

Part 22H	
ERP Limit (W)	7.00
Antenna Gain (dBi) (Ant 1)	-5.70

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (kHz)	Emission Designator
3+5	QPSK	825.5	846.5	25.70	17.85	0.061	7390	7M39G7W
	16QAM			25.49	17.64	0.058	7380	7M38D7W
5+3	QPSK	826.5	847.5	25.70	17.85	0.061	7420	7M42G7W
	16QAM			25.30	17.45	0.056	7430	7M43D7W
5+10	QPSK	826.5	844.0	25.70	17.85	0.061	13620	13M6G7W
	16QAM			24.59	16.74	0.047	13680	13M7D7W
10+5	QPSK	829.0	846.5	25.70	17.85	0.061	13810	13M8G7W
	16QAM			24.97	17.12	0.052	13790	13M8D7W
10+10	QPSK	829.0	844.0	25.70	17.85	0.061	18590	18M6G7W
	16QAM			24.79	16.94	0.049	18580	18M6D7W

OUTPUT POWER FOR LTE BAND 7

Part 27 / RSS 199	
EIRP Limit (W)	2.00
Antenna Gain (dBi) (Ant 3)	-0.60

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (kHz)	Emission Designator
10+20	QPSK	2505.5	2560.0	25.00	24.40	0.275	28050	28M1G7W
	16QAM			24.21	23.61	0.230	28010	28M0D7W
20+10	QPSK	2510.0	2564.5	25.00	24.40	0.275	28150	28M2G7W
	16QAM			24.26	23.66	0.232	28120	28M1D7W
15+15	QPSK	2507.5	2562.5	25.00	24.40	0.275	28620	28M6G7W
	16QAM			24.25	23.65	0.232	28590	28M6D7W
15+20	QPSK	2507.8	2560.0	25.00	24.40	0.275	32850	32M9G7W
	16QAM			24.24	23.64	0.231	32760	32M8D7W
20+15	QPSK	2510.0	2562.2	25.00	24.40	0.275	32800	32M8G7W
	16QAM			24.37	23.77	0.238	32660	32M7D7W
20+20	QPSK	2510.0	2560.0	25.00	24.40	0.275	37640	37M6G7W
	16QAM			24.32	23.72	0.236	37580	37M6D7W

OUTPUT POWER FOR LTE BAND 41

Part 27	
EIRP Limit (W)	2.00
Antenna Gain (dBi) (Ant 3)	-0.60

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (kHz)	Emission Designator
5+20	QPSK	2499.3	2680.0	28.00	27.40	0.550	22590	22M6G7W
	16QAM			26.42	25.82	0.382	22630	22M6D7W
20+5	QPSK	2506.0	2686.7	28.00	27.40	0.550	22820	22M8G7W
	16QAM			26.69	26.09	0.406	22770	22M8D7W
10+20	QPSK	2501.5	2680.0	28.00	27.40	0.550	27440	27M4G7W
	16QAM			26.63	26.03	0.401	27450	27M5D7W
20+10	QPSK	2506.0	2684.5	28.00	27.40	0.550	27600	27M6G7W
	16QAM			26.42	25.82	0.382	27650	27M7D7W
15+15	QPSK	2503.5	2682.5	28.00	27.40	0.550	28120	28M1G7W
	16QAM			27.14	26.54	0.451	28140	28M1D7W
15+20	QPSK	2503.8	2680.0	28.00	27.40	0.550	32400	32M4G7W
	16QAM			27.35	26.75	0.473	32370	32M4D7W
20+15	QPSK	2506.0	2682.2	28.00	27.40	0.550	32200	32M2G7W
	16QAM			27.20	26.60	0.457	32220	32M2D7W
20+20	QPSK	2506.0	2680.0	28.00	27.40	0.550	37320	37M3G7W
	16QAM			27.27	26.67	0.465	37290	37M3D7W

OUTPUT POWER FOR LTE BAND 48

LOW CHANNEL

Part 96	
EIRP Limit (W)/ 10MHz	0.20
Antenna Gain (dBi) (Ant 7)	-1.50

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (kHz)	Emission Designator
5+20	QPSK	3553.3	3690.0	20.90	19.40	0.087	22500	22M5G7W
	16QAM			20.30	18.80	0.076	22620	22M6D7W
20+5	QPSK	3560.0	3696.7	20.88	19.38	0.087	22750	22M8G7W
	16QAM			20.03	18.53	0.071	22730	22M7D7W
10+20	QPSK	3555.5	3690.0	20.84	19.34	0.086	27270	27M3G7W
	16QAM			20.19	18.69	0.074	27280	27M3D7W
20+10	QPSK	3560.0	3694.5	20.88	19.38	0.087	27510	27M5G7W
	16QAM			20.17	18.67	0.074	27520	27M5D7W
15+20	QPSK	3557.8	3690.0	20.88	19.38	0.087	32300	32M3G7W
	16QAM			20.21	18.71	0.074	32280	32M3D7W
20+15	QPSK	3560.0	3692.2	20.84	19.34	0.086	32170	32M2G7W
	16QAM			20.81	19.31	0.085	32170	32M2D7W
20+20	QPSK	3560.0	3690.0	20.74	19.24	0.084	37210	37M2G7W
	16QAM			20.13	18.63	0.073	37210	37M2D7W

MID CHANNEL

Part 96	
EIRP Limit (W)/ 10MHz	0.20
Antenna Gain (dBi) (Ant 9)	0.80

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (kHz)	Emission Designator
5+20	QPSK	3553.3	3690.0	21.30	22.10	0.162	22500	22M5G7W
	16QAM			20.72	21.52	0.142	22620	22M6D7W
20+5	QPSK	3560.0	3696.7	21.30	22.10	0.162	22750	22M8G7W
	16QAM			20.27	21.07	0.128	22730	22M7D7W
10+20	QPSK	3555.5	3690.0	21.30	22.10	0.162	27270	27M3G7W
	16QAM			20.67	21.47	0.140	27280	27M3D7W
20+10	QPSK	3560.0	3694.5	21.30	22.10	0.162	27510	27M5G7W
	16QAM			20.54	21.34	0.136	27520	27M5D7W
15+20	QPSK	3557.8	3690.0	21.30	22.10	0.162	32300	32M3G7W
	16QAM			20.62	21.42	0.139	32280	32M3D7W
20+15	QPSK	3560.0	3692.2	21.30	22.10	0.162	32170	32M2G7W
	16QAM			21.22	22.02	0.159	32170	32M2D7W
20+20	QPSK	3560.0	3690.0	21.30	22.10	0.162	37210	37M2G7W
	16QAM			20.69	21.49	0.141	37210	37M2D7W

HIGH CHANNEL

Part 96	
EIRP Limit (W)/ 10MHz	0.20
Antenna Gain (dBi) (Ant 9)	1.20

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (kHz)	Emission Designator
5+20	QPSK	3553.3	3690.0	18.30	19.50	0.089	22500	22M5G7W
	16QAM			17.87	19.07	0.081	22620	22M6D7W
20+5	QPSK	3560.0	3696.7	18.30	19.50	0.089	22750	22M8G7W
	16QAM			17.57	18.77	0.075	22730	22M7D7W
10+20	QPSK	3555.5	3690.0	19.73	20.93	0.124	27270	27M3G7W
	16QAM			18.72	19.92	0.098	27280	27M3D7W
20+10	QPSK	3560.0	3694.5	16.69	17.89	0.062	27510	27M5G7W
	16QAM			18.72	19.92	0.098	27520	27M5D7W
15+20	QPSK	3557.8	3690.0	19.74	20.94	0.124	32300	32M3G7W
	16QAM			18.79	19.99	0.100	32280	32M3D7W
20+15	QPSK	3560.0	3692.2	18.30	19.50	0.089	32170	32M2G7W
	16QAM			18.29	19.49	0.089	32170	32M2D7W
20+20	QPSK	3560.0	3690.0	17.57	18.77	0.075	37210	37M2G7W
	16QAM			15.63	16.83	0.048	37210	37M2D7W

6.3. SOFTWARE AND FIRMWARE

The EUT firmware installed during testing was version 0.15.02

6.4. MAXIMUM ANTENNA GAIN

The antenna(s) gain and type, as provided by the manufacturer' are as follows:

LTE and 5G NR Bands	Frequency Range (MHz)	ANT 1 Antenna Gain (dBi)	ANT 2 Antenna Gain (dBi)	ANT 3 Antenna Gain (dBi)	ANT 4 Antenna Gain (dBi)	ANT 7 Antenna Gain (dBi)	ANT 8 Antenna Gain (dBi)	ANT 9 Antenna Gain (dBi)
LTE Band 5	824 – 849	-5.7	-6.1					
LTE Band 7	2500 – 2570	-1.7	-2.9	-0.6	-2.1			
LTE Band 41	2496 – 2690	-1.7	-2.9	-0.6	-2.0			
LTE Band 48 (Low)	3550 – 3600				-1.5	-1.5	-3.6	0.7
LTE Band 48 (Mid)	3600 – 3650				-1.3	-1.9	-2.4	0.8
LTE Band 48 (High)	3650 – 3700				-0.4	-1.7	-0.8	1.2

Note: for Band48 there are three antenna gains for different frequency range within assigned frequency spectrum. As a result, different antennas and conducted power combination are used to get the maximum EIRP or output powers.

6.5. WORST-CASE CONFIGURATION AND MODE

The EUT supports LTE dual carrier Bands of: Band 5, Band 7, Band 41, and Band 48.

The worst-case scenario for all measurements is based on the average conducted output power measurement investigation results. Output power measurements were measured on QPSK, 16QAM and 64QAM modulations. It was found that QPSK and 16QAM results were worst case. All testing was performed using QPSK and 16QAM modulations to represent the worst case. For testing purposes emissions on sections 8 and 9 were measured while QPSK was set at or above target power for all bands. Conducted tests were performed on the worst-case antenna port because it has the highest conducted power. The worst-case antenna port is shown in the table below.

LTE Bands	Worst case Antenna Port for Conducted Power
LTE BAND 5, 7, and 41	Ant1
LTE BAND 48	Ant 7

For Band Edge and Emission Mask: The highest BW combo and sample lower BW combinations were tested. Combination pairs of the same BW are considered generally equivalent. The RB combinations were selected such that the signal is active closest to the band limit, as this is the worst case.

For Out of Band Emissions: The highest combination and a sample lower combination was tested. The highest power RB combination was selected as worst case.

The EUT was investigated in three orthogonal orientations X/Y/Z on all ANT 1, ANT2, ANT3, ANT4, ANT7, ANT8 and ANT 9 antennas to determine the worst-case orientation. The following table exabit the worst-case orientation for different frequency bands. The full tests of the EUT have made upon the orientations that shown in the table below.

Frequency Bands	ANT1	ANT2	ANT3	ANT4	ANT7	ANT8	ANT9
663 – 849 MHz	X	X	N/A	N/A	N/A	N/A	N/A
2300 – 2700 MHz	Z	X	X	X	N/A	N/A	N/A
3300 – 3980 MHz	N/A	N/A	N/A	Y	X	Z	Y

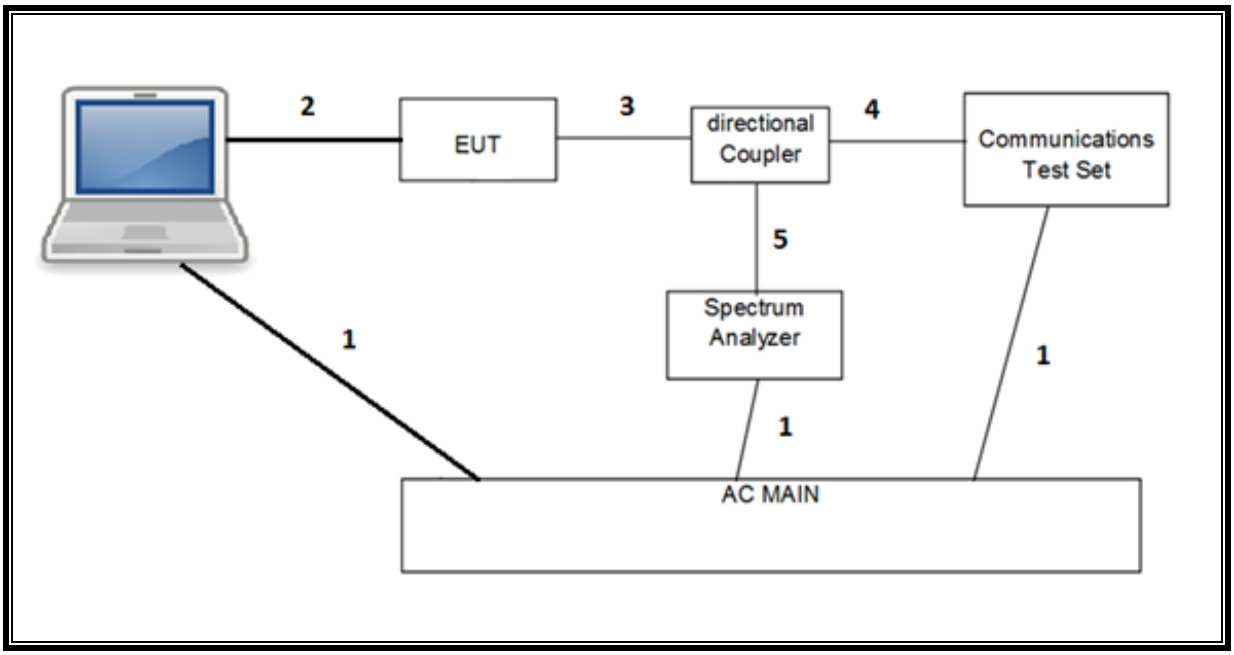
Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 18GHz. There were no emissions found with less than 20dB of margin from 9kHz to 1GHz.

For interband transmission of multiple channels in Ant 1 and Ant 2 in Cellular bands, tests were conducted for various configurations having the highest power, least separation in frequencies and widest operation bandwidths. No noticeable new emission was found.

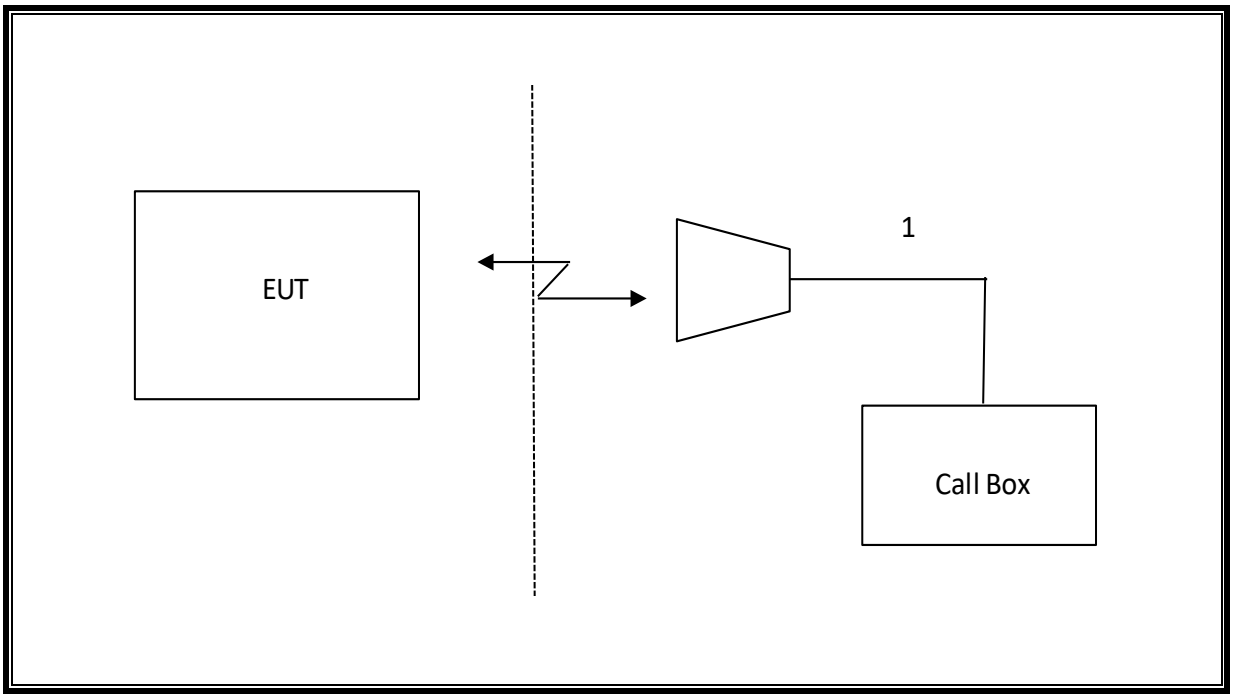
6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description		**Manufacturer**	**Model**	**Serial Number**		**FCC ID/ DoC**
Laptop		Apple	MacBook Pro	HRP082673		BCGA1708
AC/DC adapter		Apple	A1718	C4H64450HH3GN8RA6		N/A
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	AC	3	US 115V	Un-shielded	2.0	N/A
2	USB	1	DC	Un-shielded	1.0	N/A
3	RF In/Out	1	EUT	Un-shielded	0.6	N/A
4	RF In/Out	1	Communication Test Set	Un-shielded	1.2	N/A
5	RF In/Out	1	Barrel	N/A	N/A	N/A
I/O CABLES (RF RADIATED TEST)						
Cable No.	**Port**	**# of Identical Ports**	**Connector Type**	**Cable Type**	**Cable Length (m)**	**Remarks**
1	RF In/Out	1	Antenna	Un-shielded	5.0	N/A

CONDUCTED SETUP



RADIATED SETUP



7. TEST AND MEASUREMENT EQUIPMENT

The following test and measurement equipment was utilized for the tests documented in this report:

TEST EQUIPMENT LIST				
Description	**Manufacturer**	**Model**	**Asset**	**Cal Due**
*Antenna, Horn 1-18GHz	ETS Lindgren	3117	79834	06/08/2223
*Antenna, Horn 1-18GHz	ETS Lindgren	3117	80403	06/08//2023
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	85151	03/21/2023
RF Filter Box, 1-18GHz	UL-FR1 (CTECH)	NA	168535	07/16/2022
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	85212	0/30/2023
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight	N9030A	85213	01/19/2023
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight	N9030A	125178	01/24/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85201	02/01/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85214	02/02/2023
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	80400	02/01/2023
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	80397	02/01/2023
Spectrum Analyzer, PXA, 3Hz to 50GHz w/Ext. Mixer	Keysight	N9030A	T342	02/01/2023
Spectrum Analyzer, PSA 3Hz to 44GHz	Keysight	E4440A	81311	02/02/2023
Directional Coupler	KRYTAR	152610	T1161	09/23/2022
Directional Coupler	KRYTAR	152610	T1536	09/23/2022
Directional Coupler	KRYTAR	152610	T1537	09/23/2022
Power Meter, P-series single channel	Keysight	N1912A	90630	01/24/2023
Power Meter, P-series single channel	Keysight	N1912A	90719	01/24/2023
Power Meter, P-series single channel	Agilent	N1911A	82174	01/24/2023
Power Sensor, P – series, 50MHz to 18GHz, Wideband	Keysight	N1921A	90389	01/25/2023
Filter, HPF 1.2GHz	Micro-Tronics	152043	152043	7/29/2022
Filter, BRF 1850 – 1910 MHz	Micro-Tronics	155055	155055	12/20/2022
Filter, BRF 2495 – 2690 MHz	Micro-Tronics	155050	155055	7/30/2022
Filter, BRF 3.4 – 3.8GHz	Micro-Tronics	208398	208398	7/30/2022
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	80397	02/01/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85827	02/21/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	80105	02/21/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	159994	02/23/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85806	02/22/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85943	02/20/2023
5G NR Communication Test Set, Call Box	Keysight	UXM	207269	01/24/2023
5G NR Communication Test Set, Call Box	Keysight	UXM	MY60101138	12/21/2023
*Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	T754	11/12/2022
*Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	T1154	11/12/2022
Amplifier, 218GHz to 26.5GHz	Amplical	AMP18G26.5-60	215705	02/26/2023
Amplifier, 26.5GHz to 40GHz	Amplical	AMP26G40-65	172346	02/01/2023
Antenna, Horn 18 to 26.5GHz	ARA	MWH-1826/B	172362	02/09/2023
Antenna, Horn 26.5GHz to 40GHz	ARA	MWH-2640/B	172365	03/08/2023
Antenna, Active Loop 9KHz to 30MHz	EMCO	6502	T35	10/05/2022
UL AUTOMATION SOFTWARE				
CLT Software	UL	UL RF	Ver 3.4, May 20, 2022	
Power Measurement Software	UL	UL RF	Ver 3.1.4, April 29, 2022	
Radiated test software	UL	UL RF	Ver 9.5, Jan 21, 2022	

NOTES:

1. * Testing is completed before equipment expiration date.
2. ** Equipment listed above that has a calibration due date during the testing period, the testing is completed before equipment expiration date.

8. RF OUTPUT POWER VERIFICATION

RULE PART(S)

FCC: §2.1046, §22.913, §27.50

RESULT

EUT includes different power levels for head use configuration and body use configuration and the below tables contain the highest of all configurations average conducted output powers as follows:

8.1. OUTPUT POWER

8.1.1. LTE BAND 5

Test Engineer ID:	39004	Test Date:	5/9/2022

OUTPUT POWER FOR LTE BAND 5 (3.0MHz + 5.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm) ANT 1 QPSK	ANT 1 16QAM	ANT 1 64QAM	ANT 1 256QAM	ANT 2 QPSK	ANT 2 16QAM	ANT 2 64QAM	ANT 2 256QAM
3MHz / 5MHz	825.5	829.4	1	14	1	0	24.14	25.27	24.25	22.27	24.51	23.76	22.24	21.77
			15	0	25	0	25.69	**25.49**	**24.48**	**22.50**	**24.70**	**23.98**	**22.47**	**21.95**
	834.0	837.9	1	14	1	0	25.49	24.90	23.90	21.92	24.49	22.84	21.36	20.85
			15	0	25	0	25.69	25.10	24.08	22.09	24.63	22.92	21.41	20.93
	842.5	846.5	1	14	1	0	25.53	25.09	24.13	22.11	24.51	23.25	21.58	21.02
			15	0	25	0	**25.70**	25.08	24.10	22.08	24.67	23.33	21.71	21.18

OUTPUT POWER FOR LTE BAND 5 (5.0MHz + 3.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm) ANT 1 QPSK	ANT 1 16QAM	ANT 1 64QAM	ANT 1 256QAM	ANT 2 QPSK	ANT 2 16QAM	ANT 2 64QAM	ANT 2 256QAM
5MHz / 3MHz	826.5	830.4	1	24	1	0	25.61	25.29	23.94	22.45	24.67	23.93	22.97	21.94
			25	0	15	0	**25.70**	**25.30**	**24.00**	**22.50**	**24.70**	**23.98**	**22.98**	**21.98**
	835.0	838.9	1	24	1	0	25.58	24.96	23.61	22.11	24.57	22.91	21.92	20.94
			25	0	15	0	25.68	24.99	23.67	22.18	24.59	22.90	21.91	20.92
	843.6	847.5	1	24	1	0	25.56	24.64	23.28	21.78	24.61	23.27	22.25	21.24
			25	0	15	0	25.67	24.59	23.29	21.81	24.69	23.18	22.17	21.14

OUTPUT POWER FOR LTE BAND 5 (5.0MHz + 10.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm) ANT 1 QPSK	ANT 1 16QAM	ANT 1 64QAM	ANT 1 256QAM	ANT 2 QPSK	ANT 2 16QAM	ANT 2 64QAM	ANT 2 256QAM
5MHz / 10MHz	826.5	833.7	1	24	1	0	**25.70**	**24.59**	**23.55**	**22.15**	**24.70**	**23.68**	**22.77**	**21.71**
			25	0	50	0	16.08	15.66	14.61	13.14	22.83	21.81	20.81	19.81
	831.6	838.8	1	24	1	0	24.05	22.62	21.61	20.13	24.59	22.78	22.72	21.69
			25	0	50	0	25.61	24.50	23.51	22.04	22.78	20.79	20.76	19.77
	836.8	844.0	1	24	1	0	16.04	15.63	14.65	13.09	24.65	23.57	22.72	21.69
			25	0	50	0	24.04	22.61	21.57	20.08	22.78	21.76	20.74	19.76

OUTPUT POWER FOR LTE BAND 5 (10.0MHz + 5.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm) ANT 1 QPSK	ANT 1 16QAM	ANT 1 64QAM	ANT 1 256QAM	ANT 2 QPSK	ANT 2 16QAM	ANT 2 64QAM	ANT 2 256QAM
10MHz/ 5MHz	829.0	836.2	1	49	1	0	**25.70**	**24.97**	**23.70**	**22.17**	24.58	**23.76**	**23.84**	**21.84**
			50	0	25	0	23.90	22.94	21.63	20.13	22.64	21.81	22.82	19.82
	834.3	841.5	1	49	1	0	25.60	24.85	23.58	22.12	24.65	23.67	23.70	21.74
			50	0	25	0	23.88	22.89	21.60	20.10	22.63	21.78	22.79	19.79
	839.3	846.5	1	49	1	0	25.60	24.93	23.62	22.14	**24.70**	23.75	23.82	21.82
			50	0	25	0	23.87	22.88	21.60	20.09	22.63	21.81	22.79	19.79

OUTPUT POWER FOR LTE BAND 5 (10.0MHz + 10.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm) ANT 1 QPSK	ANT 1 16QAM	ANT 1 64QAM	ANT 1 256QAM	ANT 2 QPSK	ANT 2 16QAM	ANT 2 64QAM	ANT 2 256QAM
10MHz/ 10MHz	829.0	838.9	1	49	1	0	25.68	24.72	23.53	22.02	**24.70**	**23.77**	**22.74**	21.72
			1	0	1	49	15.48	15.22	14.07	12.57	14.20	14.18	13.13	12.22
			50	0	50	0	24.02	22.77	21.59	20.11	22.73	21.76	20.77	19.78
	831.5	841.4	1	49	1	0	25.66	24.69	23.56	22.06	23.69	23.72	13.26	**21.74**
			1	0	1	49	15.50	15.27	14.06	12.57	14.08	14.22	13.28	12.23
			50	0	50	0	24.03	22.82	21.62	20.11	21.72	21.78	21.79	19.77
	834.1	844.0	1	49	1	0	**25.70**	**24.79**	**23.64**	**22.09**	14.21	23.74	22.71	21.69
			1	0	1	49	15.50	15.31	14.07	12.65	14.23	14.23	13.18	12.20
			50	0	50	0	24.05	22.85	21.63	20.15	22.74	21.77	20.77	19.80

8.1.2. LTE BAND 7

Test Engineer ID:	39004	Test Date:	5/26/2022

OUTPUT POWER FOR LTE BAND 7 (10.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
10MHz / 20MHz	2505.5	2519.9	1	49	1	0	**25.70**	24.85	23.45	**21.34**	**23.20**	23.10	**22.62**	**21.08**	**25.00**	**24.21**	**22.96**	**21.99**	**23.20**	**22.25**	**21.52**	**20.01**
			50	0	100	0	24.08	23.52	22.91	21.19	21.33	21.30	20.81	19.30	22.81	22.21	21.00	19.96	21.24	20.33	19.63	18.12
	2525.6	2540.0	1	49	1	0	25.66	24.82	**24.22**	21.32	23.15	**23.11**	22.57	21.05	24.59	24.02	22.75	21.68	23.04	22.09	21.43	19.88
			50	0	100	0	24.05	23.15	23.14	21.19	21.25	21.18	20.69	19.20	22.64	22.15	20.86	19.79	21.17	20.27	19.56	18.06
	2545.6	2560.0	1	49	1	0	25.63	**24.87**	23.55	21.24	23.01	22.99	22.48	21.03	24.33	23.88	22.61	21.61	23.09	22.12	21.48	19.96
			50	0	100	0	24.00	22.43	23.08	21.12	21.14	21.11	20.63	19.11	22.43	22.10	20.80	19.79	21.18	20.27	19.55	18.06

OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 10.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz / 10MHz	2510.0	2524.4	1	99	1	0	**25.70**	**25.44**	23.18	21.15	**23.20**	**22.43**	**21.91**	**21.28**	**25.00**	**24.26**	**21.86**	**22.06**	**23.20**	**22.33**	**21.23**	**20.12**
			100	0	50	0	24.20	23.17	22.75	**21.18**	21.00	20.35	19.84	19.27	22.98	22.22	19.82	20.04	21.18	20.32	18.92	18.12
	2530.1	2544.5	1	99	1	0	25.65	25.27	**23.57**	21.17	22.97	22.24	21.75	21.15	24.66	24.01	21.61	21.83	23.11	22.26	20.79	20.08
			100	0	50	0	24.09	23.10	23.06	21.14	20.92	20.24	19.75	19.15	22.72	21.99	19.59	19.82	21.14	20.27	18.88	18.08
	2550.1	2564.5	1	99	1	0	25.68	25.31	22.90	21.08	22.94	22.22	21.64	21.05	24.76	23.97	21.57	21.74	23.15	22.25	20.88	20.03
			100	0	50	0	24.01	23.08	23.03	21.06	20.92	20.19	19.70	19.11	22.48	21.98	19.58	19.74	21.16	20.29	18.91	18.10

OUTPUT POWER FOR LTE BAND 7 (15.0MHz + 15.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
15MHz / 15MHz	2507.5	2522.5	1	74	1	0	**25.70**	**25.05**	23.34	21.40	**23.20**	**22.32**	**21.13**	**20.75**	**25.00**	**24.25**	**22.83**	**21.61**	**23.20**	**22.36**	**21.06**	**20.10**
			75	0	75	0	24.22	22.54	22.84	21.23	21.21	20.42	19.21	18.83	23.06	22.29	20.85	19.54	21.20	20.33	19.10	18.10
	2527.5	2542.5	1	74	1	0	25.57	25.00	**23.70**	**21.43**	23.03	22.30	21.12	20.61	24.74	23.91	22.50	21.22	23.16	22.12	20.95	19.93
			75	0	75	0	24.15	22.58	23.15	21.19	21.12	20.34	19.13	18.73	22.81	22.00	20.61	19.36	21.16	20.28	19.05	18.05
	2547.5	2562.5	1	74	1	0	25.69	25.01	23.26	21.35	23.06	22.20	20.97	20.62	24.70	23.97	22.45	21.18	23.11	22.18	20.97	19.98
			75	0	75	0	24.07	22.56	23.20	21.14	21.13	20.28	19.12	18.72	22.80	21.98	20.58	19.33	21.18	20.30	19.07	18.07

OUTPUT POWER FOR LTE BAND 7 (15.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
15MHz / 20MHz	2507.8	2524.9	1	74	1	0	**25.70**	**25.11**	23.14	**21.42**	**23.20**	**22.47**	**21.72**	**20.66**	**25.00**	**24.24**	**22.99**	**21.13**	**23.20**	**22.59**	**21.99**	20.97
			75	0	100	0	24.20	22.70	23.22	21.23	21.26	20.58	19.80	18.80	23.13	22.32	21.01	19.22	21.29	20.72	20.13	19.11
	2525.3	2542.4	1	74	1	0	16.48	24.98	**23.85**	21.39	23.18	22.45	21.60	20.61	24.80	24.01	22.73	20.94	23.10	22.53	21.89	**21.11**
			75	0	100	0	24.13	22.60	23.78	21.19	21.25	20.55	19.77	18.76	22.95	22.16	20.86	19.07	21.25	20.68	20.08	19.12
	2542.9	2560.0	1	74	1	0	25.63	24.84	23.35	21.31	23.15	22.45	21.62	20.59	16.34	24.00	22.66	20.83	**23.20**	22.54	21.91	20.87
			75	0	100	0	24.10	22.59	23.24	21.15	21.26	20.57	19.77	18.76	22.85	22.10	20.79	18.98	21.28	20.72	20.12	19.06

OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 15.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz / 15MHz	2510.0	2527.1	1	99	1	0	25.52	**25.10**	**22.50**	21.21	**23.20**	**22.70**	22.16	**21.37**	24.93	**24.37**	**23.08**	**21.16**	**23.20**	**22.34**	21.26	**20.46**
			100	0	75	0	25.19	23.32	21.27	20.79	22.91	21.47	21.00	20.19	**25.00**	23.53	22.35	20.36	22.77	21.91	20.01	19.04
	2527.6	2544.7	1	99	1	0	25.49	24.93	22.39	21.33	23.10	22.59	**22.18**	21.28	24.65	24.13	22.80	20.79	23.18	22.32	21.20	20.32
			100	0	75	0	**25.70**	24.10	21.68	**21.56**	23.11	21.88	21.37	20.58	24.77	23.85	22.67	20.63	23.08	22.22	20.30	19.42
	2545.1	2562.2	1	99	1	0	25.53	24.94	22.30	21.00	23.13	22.50	22.08	21.22	24.71	23.97	22.79	20.76	23.16	22.30	**21.28**	20.32
			100	0	75	0	25.65	23.89	21.15	21.28	22.68	21.35	20.87	20.07	24.73	23.52	22.33	20.31	22.72	21.86	19.97	19.05

OUTPUT POWER FOR LTE BAND 7 (20.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz/ 20MHz	2510.0	2529.8	1	99	1	0	**25.70**	25.04	23.37	**21.33**	**23.20**	22.31	22.31	**21.35**	**25.00**	**24.32**	**23.00**	**22.07**	**23.20**	**22.41**	**21.12**	20.10
			1	0	1	99	14.94	15.82	14.89	14.27	13.39	14.58	13.58	12.69	15.52	16.01	14.79	13.74	14.57	14.73	13.62	12.66
			100	0	100	0	24.07	22.66	22.91	21.22	21.24	21.31	20.31	19.30	22.96	22.29	20.98	19.97	21.22	20.32	19.12	18.12
	2525.1	2544.9	1	99	1	0	25.61	**25.15**	**23.74**	21.28	23.16	**22.32**	**22.32**	12.97	24.75	24.09	22.77	21.83	23.11	22.27	21.10	**20.11**
			1	0	1	99	15.90	15.92	15.51	14.89	13.76	14.91	13.91	19.27	16.02	16.43	15.18	14.22	14.87	14.90	13.70	12.71
			100	0	100	0	23.98	22.59	23.11	21.19	21.21	21.26	20.26	21.18	22.81	22.16	20.81	19.82	21.20	20.29	19.12	18.09
	2540.2	2560.0	1	99	1	0	25.54	25.05	15.63	21.25	23.10	22.18	22.18	21.13	24.60	24.03	22.71	21.66	23.11	22.26	21.03	20.02
			1	0	1	99	15.99	16.52	15.60	15.08	13.53	14.65	13.65	12.37	15.98	16.31	14.98	14.03	14.67	14.81	13.62	12.64
			100	0	100	0	23.95	22.54	15.63	21.11	21.06	21.21	20.21	19.13	22.71	22.04	20.74	19.77	21.20	20.27	19.07	18.08

8.1.3. LTE BAND 41

Test Engineer ID:	39004	Test Date:	5/26/2022

OUTPUT POWER FOR LTE BAND 41 (5.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
5MHz / 20MHz	2499.3	2511.0	1	24	1	0	23.56	23.12	22.57	21.89	24.51	24.04	22.92	22.50	23.86	23.00	22.42	21.87	23.35	23.01	22.25	21.09
			25	0	100	0	23.01	22.89	22.15	21.45	24.39	23.61	22.52	22.28	23.65	22.81	22.62	21.24	22.81	22.15	22.00	20.86
	2583.8	2595.5	1	24	1	0	**28.70**	**27.02**	**26.32**	25.27	**28.70**	**27.94**	**27.51**	**26.55**	**28.00**	**26.42**	25.17	**23.93**	**27.70**	**26.64**	**24.71**	20.52
			25	0	100	0	27.70	25.61	26.31	**25.32**	27.83	26.54	26.10	25.10	26.38	25.14	19.13	23.87	26.75	24.97	22.90	**21.54**
	2668.3	2680.0	1	24	1	0	28.54	26.04	26.10	25.12	28.60	27.91	27.46	26.48	27.19	25.33	**25.75**	22.78	27.32	26.49	24.54	20.05
			25	0	100	0	26.68	24.60	25.83	25.22	27.80	26.53	26.05	25.03	25.24	23.98	24.85	22.82	27.65	24.99	22.89	21.35

OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 5.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz / 5MHz	2506.0	2517.7	1	99	1	0	23.32	23.35	23.39	23.33	25.11	25.11	25.19	25.12	21.89	21.82	21.90	21.87	22.96	23.00	22.93	**22.98**
			100	0	25	0	23.37	23.35	23.37	23.32	25.15	25.10	25.17	25.17	21.85	21.83	21.90	21.83	22.91	22.92	22.97	22.91
	2590.5	2602.2	1	99	1	0	28.67	**28.00**	**26.32**	**25.32**	**28.70**	**28.08**	**26.63**	**26.19**	**28.00**	**26.69**	25.69	23.80	**27.70**	**26.97**	**24.63**	21.50
			100	0	25	0	27.81	26.71	24.85	23.85	27.71	26.64	25.23	24.74	26.57	25.07	**25.85**	**23.83**	26.74	25.76	22.72	20.75
	2675.0	2686.7	1	99	1	0	**28.70**	27.05	25.35	24.35	28.50	27.22	25.78	25.30	27.46	25.70	18.33	22.70	27.62	26.49	24.41	21.71
			100	0	25	0	26.80	25.71	23.86	22.86	26.81	25.75	24.35	23.85	25.47	24.01	18.29	22.83	26.02	25.05	22.67	21.48

OUTPUT POWER FOR LTE BAND 41 (10.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
10MHz / 20MHz	2501.5	2515.9	1	49	1	0	27.30	26.78	26.57	23.38	**28.70**	**28.65**	**28.45**	25.16	25.84	25.40	24.73	21.84	26.92	26.45	**26.13**	22.95
			50	0	100	0	23.31	23.39	23.26	23.31	25.13	25.16	25.13	25.16	21.90	21.86	21.89	21.90	22.92	22.91	23.00	**23.00**
	2583.6	2598.0	1	49	1	0	**28.70**	**28.18**	**26.62**	**24.90**	28.70	27.79	27.02	**26.48**	**28.00**	**26.63**	18.76	23.87	**27.70**	**27.47**	24.70	21.74
			50	0	100	0	27.80	26.86	25.35	23.65	27.83	26.56	25.73	25.22	26.50	25.16	18.77	**23.92**	26.88	26.82	22.71	21.48
	2665.6	2680.0	1	49	1	0	28.62	27.09	25.57	23.95	28.70	27.83	26.89	26.42	27.26	25.35	**25.76**	22.85	27.28	27.27	24.62	21.50
			50	0	100	0	26.77	25.83	24.33	22.63	27.85	26.57	25.68	25.19	25.36	24.04	24.86	22.86	26.80	26.80	22.76	21.72

OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 10.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz / 10MHz	2506.0	2520.4	1	99	1	0	28.37	26.81	25.91	24.81	26.81	26.99	26.02	25.47	**28.00**	26.10	24.82	22.87	26.99	26.41	24.56	21.64
			100	0	50	0	26.47	25.20	24.28	23.30	27.18	25.62	24.62	24.14	26.17	24.71	24.86	23.05	26.47	25.11	**24.60**	**21.77**
	2588.1	2602.5	1	99	1	0	**28.70**	**27.57**	**26.72**	**25.69**	**28.70**	**27.60**	**26.61**	**26.11**	**28.00**	**26.42**	25.60	23.64	**27.70**	**27.09**	24.56	21.63
			100	0	50	0	27.63	26.26	25.38	24.36	27.77	26.26	25.28	24.75	26.54	25.09	**25.62**	**23.85**	27.16	25.79	22.45	21.56
	2670.1	2684.5	1	99	1	0	28.59	26.81	25.85	24.87	28.63	26.91	25.94	25.37	27.21	25.56	25.41	22.80	27.62	26.44	24.54	21.54
			100	0	50	0	26.62	25.26	24.36	23.35	26.95	25.47	24.48	23.99	25.46	23.99	24.84	22.84	26.43	25.07	22.46	21.65

OUTPUT POWER FOR LTE BAND 41 (15.0MHz + 15.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
15MHz / 15MHz	2503.5	2518.5	1	74	1	0	27.70	27.39	25.85	25.39	26.85	27.48	26.07	25.57	26.15	26.84	24.49	23.01	27.45	26.39	24.32	21.63
			75	0	75	0	26.80	25.91	24.38	23.89	27.24	26.02	24.61	24.12	26.05	25.21	24.76	23.09	25.89	24.84	23.41	**21.69**
	2585.5	2600.5	1	74	1	0	28.63	**27.99**	**26.55**	**26.04**	**28.70**	**28.03**	26.62	26.09	**28.00**	**27.14**	**25.79**	23.69	27.24	**26.99**	**24.64**	21.62
			75	0	75	0	27.79	26.84	25.35	24.84	27.85	26.62	25.20	24.70	26.52	25.65	25.75	**23.87**	26.56	25.51	23.59	21.00
	2667.5	2682.5	1	74	1	0	**28.70**	27.26	25.70	25.24	28.65	28.00	**26.80**	**26.37**	27.29	26.00	25.71	22.80	**27.70**	26.86	24.31	21.17
			75	0	75	0	26.80	25.83	24.34	23.85	27.78	26.52	25.27	24.82	25.40	24.54	25.69	22.85	26.52	25.47	23.21	**21.69**

OUTPUT POWER FOR LTE BAND 41 (15.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
15MHz / 20MHz	2503.8	2520.9	1	74	1	0	23.39	23.38	23.38	23.32	25.13	25.10	25.17	25.17	21.83	21.86	21.87	21.81	22.92	22.97	23.00	**22.94**
			75	0	100	0	23.37	23.35	23.32	23.33	25.12	25.12	25.10	25.19	21.84	21.89	21.84	21.81	22.92	22.97	22.97	22.94
	2583.3	2600.4	1	74	1	0	28.62	**28.03**	**27.10**	**26.05**	**28.70**	**27.94**	**26.75**	**26.16**	**28.00**	**27.35**	25.62	23.84	**27.70**	**27.00**	24.59	21.66
			75	0	100	0	27.87	26.89	25.88	24.79	28.03	26.60	25.40	24.82	27.17	25.86	24.70	**23.92**	26.84	25.42	22.58	21.71
	2662.9	2680.0	1	74	1	0	**28.70**	27.00	26.03	25.05	27.15	27.73	26.74	25.94	27.97	26.30	**25.66**	22.74	27.32	26.78	**24.72**	21.43
			75	0	100	0	26.86	25.87	24.87	23.77	28.50	26.57	25.37	24.75	26.15	24.82	24.89	22.86	26.79	25.38	22.25	21.66

OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 15.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz / 15MHz	2506.0	2523.1	1	99	1	0	28.64	27.10	25.81	25.04	28.55	26.34	25.38	24.40	27.77	26.69	24.23	23.21	25.60	24.96	24.21	22.38
			100	0	75	0	26.76	25.15	23.90	23.13	27.68	**28.33**	25.34	24.33	26.59	24.83	24.24	23.65	25.84	25.16	24.09	22.50
	2585.6	2602.7	1	99	1	0	28.68	**27.99**	**26.70**	**25.93**	28.48	28.15	27.05	26.05	27.52	**27.20**	**25.62**	24.55	27.62	**26.96**	**24.31**	22.08
			100	0	75	0	28.31	26.67	25.46	24.69	**28.70**	28.28	**27.24**	**26.27**	**28.00**	26.36	25.61	**25.20**	26.99	26.90	23.33	**22.52**
	2665.1	2682.2	1	99	1	0	**28.70**	27.97	26.69	25.92	28.40	27.97	26.99	26.02	27.62	27.13	18.37	24.51	**27.70**	26.46	24.07	21.53
			100	0	75	0	28.01	26.48	25.26	24.49	28.49	28.14	27.14	26.18	27.61	26.90	18.34	24.99	26.97	26.10	23.26	21.80

OUTPUT POWER FOR LTE BAND 41 (20.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 1				ANT 2				ANT 3				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz/ 20MHz	2506.0	2525.8	1	99	1	0	20.65	20.21	19.21	17.79	20.76	20.15	19.20	18.18	22.00	20.45	23.21	23.01	20.39	26.81	23.72	21.74
			1	0	1	99	19.06	19.08	18.13	17.13	20.70	20.42	19.41	18.42	19.37	18.32	23.65	17.93	19.64	19.92	24.42	20.34
			100	0	100	0	26.83	25.91	24.95	23.95	27.25	25.80	24.76	23.80	27.17	25.05	24.55	23.10	26.12	25.39	24.49	**21.82**
	2583.1	2602.9	1	99	1	0	28.65	**28.30**	**27.36**	**26.36**	**28.70**	**27.74**	**26.75**	**25.76**	19.84	**27.27**	**25.20**	23.72	**27.70**	**27.46**	**24.69**	21.62
			1	0	1	99	19.49	19.73	18.68	17.68	21.33	20.94	19.96	19.01	19.90	18.79	24.51	18.19	20.42	20.65	22.45	20.56
			100	0	100	0	27.87	26.90	25.90	24.90	27.91	26.40	25.40	24.42	**28.00**	25.89	24.99	**23.92**	26.78	26.04	23.33	21.58
	2660.2	2680.0	1	99	1	0	**28.70**	27.34	26.37	25.37	28.66	27.53	26.74	25.54	19.37	26.24	24.47	22.67	27.31	27.34	24.34	21.40
			1	0	1	99	18.91	19.20	18.23	17.23	21.32	20.85	19.87	18.86	19.32	18.28	24.52	17.70	20.39	20.60	23.81	20.48
			100	0	100	0	26.82	25.88	24.88	23.88	27.78	26.37	25.37	24.35	26.97	24.85	24.53	22.88	26.72	26.01	23.21	21.48

8.1.4. LTE BAND 48

Test Engineer ID:	39004	Test Date:	5/27/2022

OUTPUT POWER FOR LTE BAND 48 (5.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 7				ANT 8				ANT 9				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
5MHz / 20MHz	3553.3	3565.0	1	24	1	0	20.90	20.30	19.27	19.14	20.13	19.49	19.39	19.46	18.02	17.64	16.38	13.43	19.40	19.15	17.80	17.53
			25	0	100	0	19.23	18.26	18.23	19.25	18.50	17.48	17.48	17.48	16.52	15.48	15.40	13.48	18.23	17.21	19.64	17.62
	3615.8	3627.5	1	24	1	0	**23.90**	**23.90**	**23.10**	19.31	**23.30**	**22.63**	**22.68**	**22.67**	**21.30**	**20.72**	**19.47**	**16.50**	**22.80**	**22.28**	**20.73**	**17.75**
			25	0	100	0	22.27	21.25	19.15	19.34	21.61	20.60	20.61	20.59	19.61	18.60	18.45	16.46	21.23	20.23	19.75	**17.75**
	3678.3	3690.0	1	24	1	0	20.86	20.51	19.41	**19.39**	20.03	19.40	19.41	19.43	18.30	17.87	16.47	13.54	19.70	19.29	18.15	17.61
			25	0	100	0	19.37	18.35	18.39	19.38	18.35	17.35	17.35	17.35	16.70	15.72	15.53	13.51	18.14	17.14	18.14	17.66

OUTPUT POWER FOR LTE BAND 48 (20.0MHz + 5.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 7				ANT 8				ANT 9				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz / 5MHz	3560.0	3571.7	1	99	1	0	20.88	20.03	19.13	19.09	20.22	19.52	19.56	19.63	18.09	17.34	**19.41**	16.29	19.80	18.99	17.55	17.54
			100	0	25	0	19.19	18.18	18.22	19.27	18.68	17.69	17.69	17.68	16.49	15.48	18.33	16.37	18.14	17.14	16.66	**17.66**
	3622.5	3634.2	1	99	1	0	**23.90**	**23.90**	**23.00**	19.13	**23.30**	**22.53**	**22.62**	**22.54**	**21.30**	**20.27**	19.05	16.37	**22.80**	**21.95**	**20.56**	17.34
			100	0	25	0	19.12	18.12	15.83	19.26	21.78	20.78	20.78	20.75	19.41	18.43	19.15	16.31	21.10	20.10	19.65	17.65
	3685.0	3696.7	1	99	1	0	20.90	20.28	19.31	**19.44**	20.14	19.40	19.41	19.32	18.30	17.57	19.27	**16.53**	19.67	19.00	14.08	17.35
			100	0	25	0	19.28	18.25	18.38	19.39	18.56	17.54	17.56	17.52	16.56	15.57	18.42	16.45	18.03	17.02	14.09	17.56

OUTPUT POWER FOR LTE BAND 48 (10.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 7				ANT 8				ANT 9				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
10MHz / 20MHz	3555.5	3569.9	1	49	1	0	20.84	20.19	19.22	19.40	20.20	19.43	19.40	22.32	18.13	17.60	**19.33**	16.48	19.77	19.17	**20.52**	17.69
			50	0	100	0	19.30	18.29	18.41	19.38	18.54	17.52	17.51	20.51	19.68	18.67	18.45	16.48	18.15	17.19	19.71	17.71
	3615.6	3630.0	1	49	1	0	**23.90**	**23.25**	**22.19**	19.29	**23.30**	**22.65**	**22.72**	**22.65**	**21.30**	**20.67**	19.21	16.45	**22.80**	**22.20**	20.49	17.62
			50	0	100	0	22.26	21.26	21.42	19.43	21.66	20.64	20.64	20.64	19.64	18.66	18.49	16.50	21.22	20.21	19.75	**17.76**
	3675.6	3690.0	1	49	1	0	20.90	20.35	19.24	**19.49**	20.07	19.34	19.37	22.34	18.30	17.75	19.31	16.56	19.65	19.10	17.37	17.60
			50	0	100	0	19.32	18.37	18.48	19.45	18.39	17.40	17.39	20.42	19.73	18.72	18.56	**16.63**	18.14	17.13	16.65	17.62

OUTPUT POWER FOR LTE BAND 48 (20.0MHz + 10.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 7				ANT 8				ANT 9				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz / 10MHz	3560.0	3574.4	1	99	1	0	20.88	20.17	**18.37**	19.14	20.19	19.44	19.44	19.56	18.30	17.61	19.43	16.36	19.80	19.13	**17.57**	17.59
			100	0	50	0	19.21	18.20	18.28	19.31	18.58	17.58	17.58	17.60	16.67	15.67	18.50	16.52	18.17	17.16	16.67	17.67
	3620.1	3634.5	1	99	1	0	**23.90**	**23.05**	15.86	18.99	**23.30**	**22.49**	**22.49**	**22.50**	**21.30**	**20.54**	19.33	16.23	**22.80**	**22.60**	14.24	17.49
			100	0	50	0	22.15	21.14	15.86	19.28	21.66	20.66	20.66	20.65	19.62	18.63	18.44	16.47	21.15	20.13	14.24	**17.68**
	3680.1	3694.5	1	99	1	0	20.90	20.24	15.98	19.17	19.98	19.20	19.20	19.20	13.17	17.72	**19.46**	16.43	18.66	19.01	14.11	17.45
			100	0	50	0	19.26	18.25	15.94	**19.39**	18.40	17.39	17.39	17.41	16.69	18.72	16.50	**16.58**	18.07	17.05	14.18	17.57

OUTPUT POWER FOR LTE BAND 48 (15.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 7				ANT 8				ANT 9				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
15MHz / 20MHz	3557.8	3574.9	1	74	1	0	20.88	20.21	19.25	19.37	20.05	19.36	19.43	19.45	18.16	17.65	**19.35**	16.48	19.80	19.16	17.52	17.60
			75	0	100	0	19.35	18.30	18.40	19.42	18.42	17.42	17.43	17.41	19.63	18.71	18.46	16.50	18.23	17.18	16.70	17.67
	3615.3	3632.4	1	74	1	0	**23.90**	**23.21**	**22.19**	19.28	**23.30**	**22.53**	**22.55**	**22.50**	**21.30**	**20.62**	19.25	16.44	**22.80**	**22.19**	**20.46**	17.60
			75	0	100	0	22.30	21.31	21.40	19.42	21.54	20.55	20.54	20.54	19.66	18.68	18.51	16.52	21.22	20.23	19.74	**17.74**
	3672.9	3690.0	1	74	1	0	20.90	20.36	19.24	19.40	19.97	19.26	19.23	19.27	18.30	17.69	19.31	16.47	19.66	19.08	17.40	17.53
			75	0	100	0	19.43	18.39	18.50	**19.51**	18.29	17.29	17.28	17.28	19.74	18.79	18.60	**16.64**	18.18	17.13	17.67	17.66

OUTPUT POWER FOR LTE BAND 48 (20.0MHz + 15.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 7				ANT 8				ANT 9				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz / 15MHz	3560.0	3577.1	1	99	1	0	20.81	20.70	20.55	20.44	20.16	20.09	20.02	20.00	18.21	18.24	17.94	17.69	19.75	19.78	19.21	18.74
			100	0	75	0	20.84	20.81	20.34	20.13	20.20	19.64	19.65	19.66	18.24	18.24	18.10	17.41	19.80	19.74	19.35	18.60
	3617.6	3634.7	1	99	1	0	**23.90**	**23.67**	**23.40**	**23.53**	**23.30**	**23.22**	**23.03**	**23.06**	**21.30**	**21.22**	**20.37**	**20.64**	**22.80**	**22.64**	22.15	21.73
			100	0	75	0	23.79	23.66	23.36	23.42	23.00	22.99	22.99	22.99	21.17	21.20	20.11	20.11	22.79	22.60	**22.16**	**21.88**
	3675.1	3692.2	1	99	1	0	20.67	20.45	18.38	20.85	19.99	19.78	19.86	19.83	18.24	18.26	17.53	17.97	17.01	19.69	19.11	19.02
			100	0	75	0	20.90	20.85	18.38	20.88	19.55	19.60	19.65	19.66	18.30	18.29	17.48	17.17	19.70	19.73	19.09	19.23

OUTPUT POWER FOR LTE BAND 48 (20.0MHz + 20.0MHz)

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)													
							ANT 7				ANT 8				ANT 9				ANT 4			
							QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM	QPSK	16QAM	64QAM	256QAM
20MHz/ 20MHz	3560.0	3579.8	1	99	1	0	20.74	20.13	19.14	19.10	20.26	19.41	19.50	19.49	18.28	17.70	16.51	13.53	19.39	19.22	17.21	17.54
			1	0	1	99	19.62	19.62	19.14	15.61	11.97	11.93	11.96	11.96	17.27	17.27	16.52	9.98	17.68	17.63	17.63	14.10
			100	0	100	0	19.20	18.20	19.14	19.31	18.56	17.54	17.61	17.56	17.79	15.81	**16.54**	13.71	18.26	17.24	17.56	17.76
	3615.1	3634.9	1	99	1	0	**23.90**	**23.11**	**22.16**	19.05	**23.30**	**22.60**	**22.53**	**22.59**	**21.30**	**20.69**	16.38	16.47	**22.80**	**22.16**	**20.46**	17.69
			1	0	1	99	22.70	22.73	22.10	15.69	15.03	15.01	14.95	15.02	13.24	13.31	16.39	13.06	14.74	14.75	14.14	14.36
			100	0	100	0	22.18	21.23	22.11	19.29	21.65	20.64	20.64	20.62	20.80	19.78	16.40	**16.68**	21.22	20.23	19.75	**17.77**
	3670.2	3690.0	1	99	1	0	20.90	20.26	19.32	**19.33**	20.02	19.25	19.26	19.19	18.09	17.34	16.00	13.60	17.52	19.06	17.46	17.68
			1	0	1	99	12.89	12.80	12.97	15.96	11.79	11.79	11.76	11.81	10.19	10.16	16.50	10.19	11.73	11.72	11.08	14.35
			100	0	100	0	19.36	18.34	18.39	19.00	18.40	17.39	17.37	17.44	17.57	15.63	16.10	13.81	18.22	17.19	16.71	17.74

9. CONDUCTED TEST RESULTS

9.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

The transmitter output was connected to a calibrated coaxial cable and coupler, the other end of which was connected to a spectrum analyzer. The occupied bandwidth was measured with the spectrum analyzer at the middle channel in each band. The 99% and -26dB bandwidths was also measured and recorded.

RESULTS

There is no limit required and power is the same for low, middle and high channel; therefore, only middle channel was tested. Only QPSK plots are reported to show setting parameter complies with testing method/procedure.

LTE BAND 5

Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 5	3MHz + 5MHz BAND QPSK	15/0 + 25/0	836.5	7.39	8.00
	3MHz + 5MHz BAND 16QAM			7.38	8.04
	5MHz + 3MHz BAND QPSK	25/0 + 15/0		7.42	8.13
	5MHz + 3MHz BAND 16QAM			7.43	8.15
	5MHz + 10MHz BAND QPSK	25/0 + 50/0		13.62	14.30
	5MHz + 10MHz BAND 16QAM			13.68	14.34
	10MHz + 5MHz BAND QPSK	50/0 + 25/0		13.81	14.87
	10MHz + 5MHz BAND 16QAM			13.79	14.75
	10MHz + 10MHz BAND QPSK	50/0 + 50/0		18.59	19.71
	10MHz + 10MHz BAND 16QAM			18.58	19.67

LTE BAND 7

Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 7	10MHz + 20MHz BAND QPSK	50/0 + 100/0	2535	28.05	30.07
	10MHz + 20MHz BAND 16QAM			28.01	30.02
	20MHz + 10MHz BAND QPSK	100/0 + 50/0		28.15	30.31
	20MHz + 10MHz BAND 16QAM			28.12	30.22
	15MHz + 15MHz BAND QPSK	75/0 + 75/0		28.62	30.82
	15MHz + 15MHz BAND 16QAM			28.59	30.80
	15MHz + 20MHz BAND QPSK	75/0 + 100/0		32.85	35.07
	15MHz + 20MHz BAND 16QAM			32.76	35.11
	20MHz + 15MHz BAND QPSK	100/0 + 75/0		32.80	35.30
	20MHz + 15MHz BAND 16QAM			32.66	35.12
	20MHz + 20MHz BAND QPSK	100/0 + 100/0		37.64	40.18
	20MHz + 20MHz BAND 16QAM			37.58	40.17

LTE BAND 41

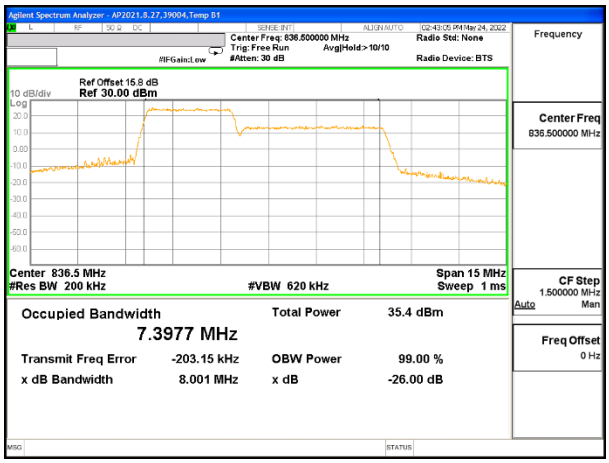
Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 41 (FCC)	5MHz + 20MHz BAND QPSK	25/0 + 100/0	2593	22.59	24.05
	5MHz + 20MHz BAND 16QAM			22.63	24.95
	20MHz + 5MHz BAND QPSK	100/0 + 25/0		22.82	26.49
	20MHz + 5MHz BAND 16QAM			22.77	24.84
	10MHz + 20MHz BAND QPSK	50/0 + 100/0		27.44	29.31
	10MHz + 20MHz BAND 16QAM			27.45	29.72
	20MHz + 10MHz BAND QPSK	100/0 + 50/0		27.60	30.31
	20MHz + 10MHz BAND 16QAM			27.65	29.97
	15MHz + 15MHz BAND QPSK	75/0 + 75/0		28.12	29.82

	15MHz + 15MHz BAND 16QAM			28.14	29.64
	15MHz + 20MHz BAND QPSK	75/0 + 100/0		32.40	35.11
	15MHz + 20MHz BAND 16QAM			32.37	34.35
	20MHz + 15MHz BAND QPSK	100/0 + 75/0		32.20	34.32
	20MHz + 15MHz BAND 16QAM			32.22	34.34
	20MHz + 20MHz BAND QPSK	100/0 + 100/0		37.32	39.51
	20MHz + 20MHz BAND 16QAM			37.29	39.20

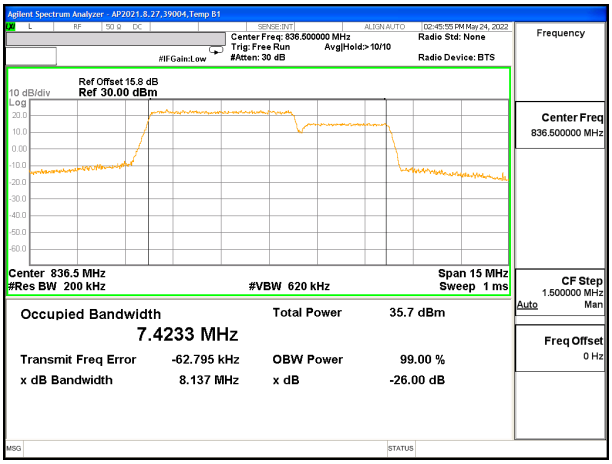
LTE BAND 48

Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 48 (FCC)	5MHz + 20MHz BAND QPSK	25/0 + 100/0	3625	22.50	24.02
	5MHz + 20MHz BAND 16QAM			22.62	23.90
	20MHz + 5MHz BAND QPSK	100/0 + 25/0		22.75	23.96
	20MHz + 5MHz BAND 16QAM			22.73	23.96
	10MHz + 20MHz BAND QPSK	50/0 + 100/0		27.27	28.76
	10MHz + 20MHz BAND 16QAM			27.28	28.76
	20MHz + 10MHz BAND QPSK	100/0 + 50/0		27.51	29.31
	20MHz + 10MHz BAND 16QAM			27.52	29.31
	15MHz + 20MHz BAND QPSK	75/0 + 100/0		32.30	35.74
	15MHz + 20MHz BAND 16QAM			32.28	35.73
	20MHz + 15MHz BAND QPSK	100/0 + 75/0		32.17	33.70
	20MHz + 15MHz BAND 16QAM			32.17	34.27
	20MHz + 20MHz BAND QPSK	100/0 + 100/0		37.21	38.81
	20MHz + 20MHz BAND 16QAM			37.21	38.80

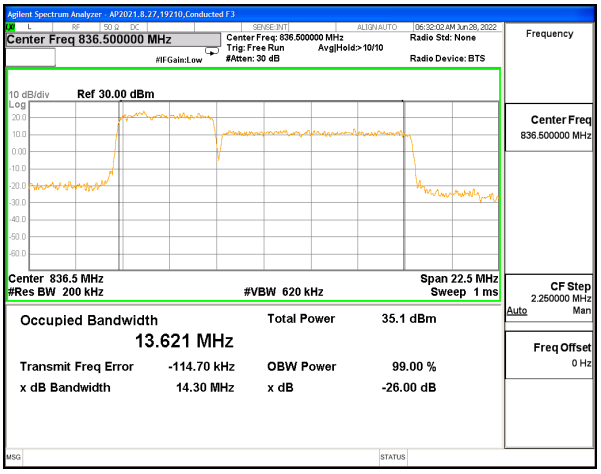
9.1.1. LTE BAND 5



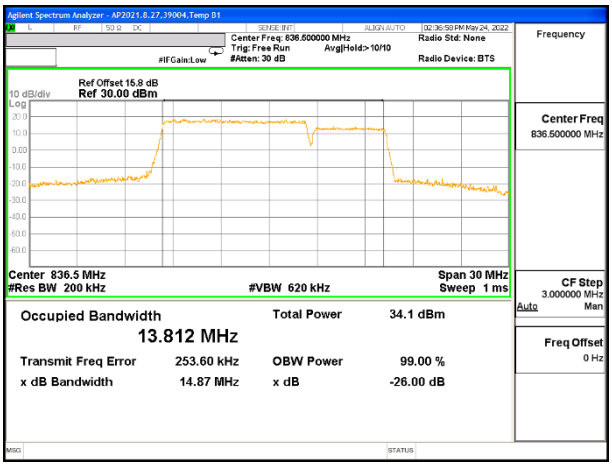
LTE B5 3MHz + 5MHz QPSK RB15-0 + RB25-0



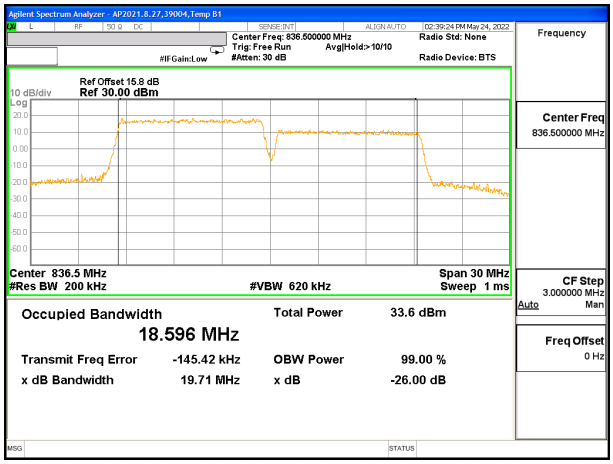
LTE B5 5MHz + 3MHz QPSK RB25-0 + RB15-0



LTE B5 5MHz + 10MHz QPSK RB25-0 + RB50-0



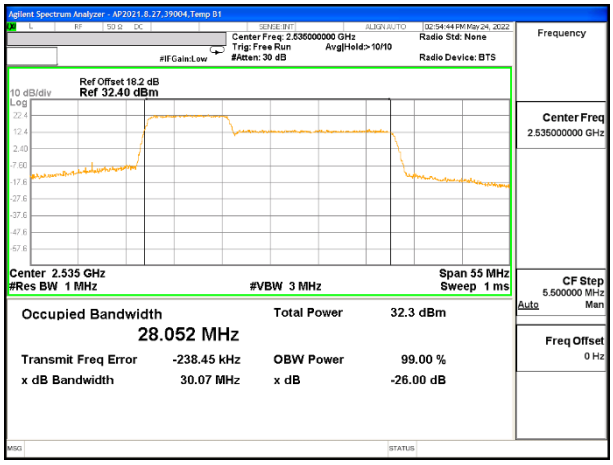
LTE B5 10MHz + 5MHz QPSK RB50-0 + RB25-0



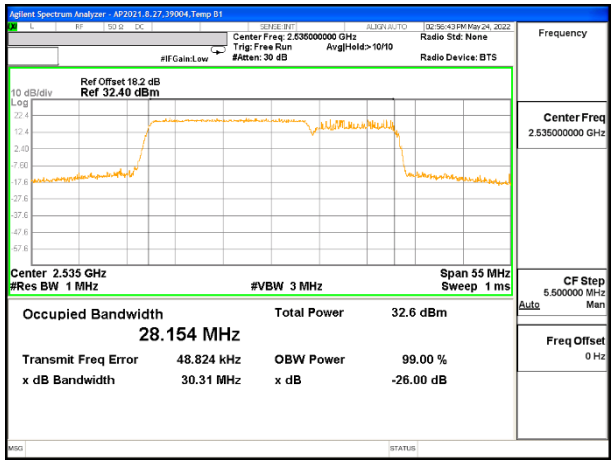
LTE B5 10MHz + 10MHz QPSK RB50-0 + RB50-0

Intentionally Blank

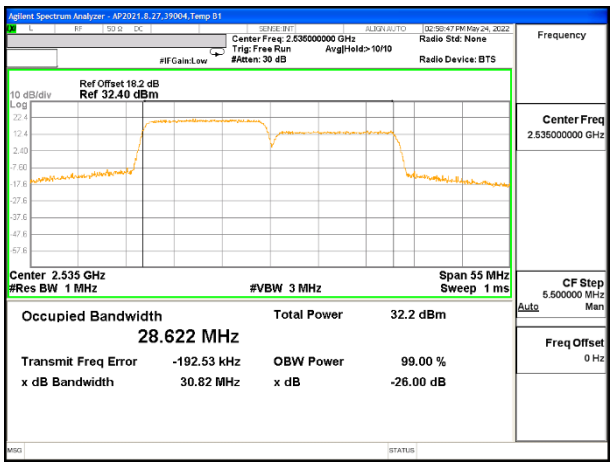
9.1.2. LTE BAND 7



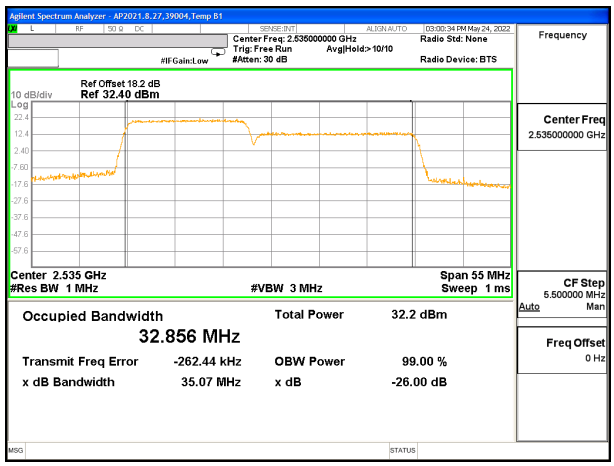
LTE B7 10MHz + 20MHz QPSK RB50-0 + RB100-0



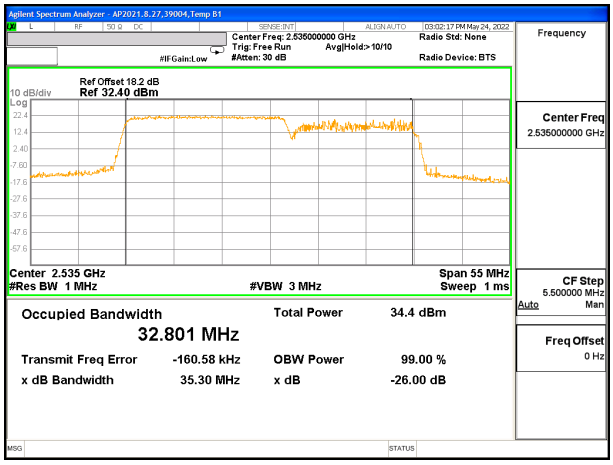
LTE B7 20MHz + 10MHz QPSK RB100-0 + RB50-0



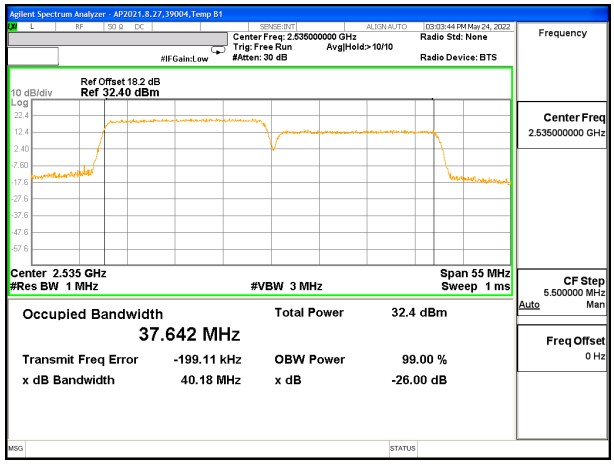
LTE B7 15MHz + 15MHz QPSK RB75-0 + RB75-0



LTE B7 15MHz + 20MHz QPSK RB75-0 + RB100-0

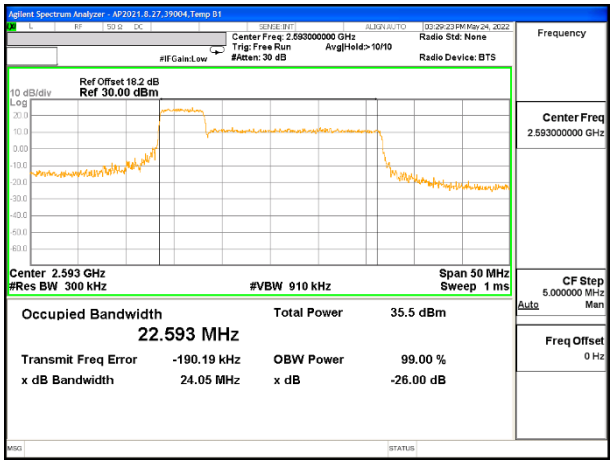


LTE B7 20MHz + 15MHz QPSK RB100-0 + RB75-0

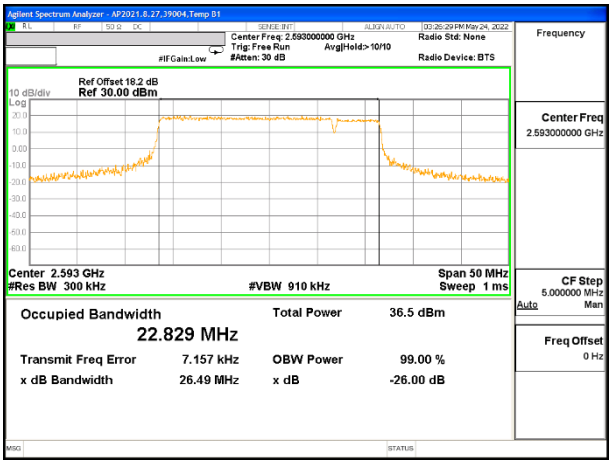


LTE B7 20MHz + 20MHz QPSK RB100-0 + RB100-0

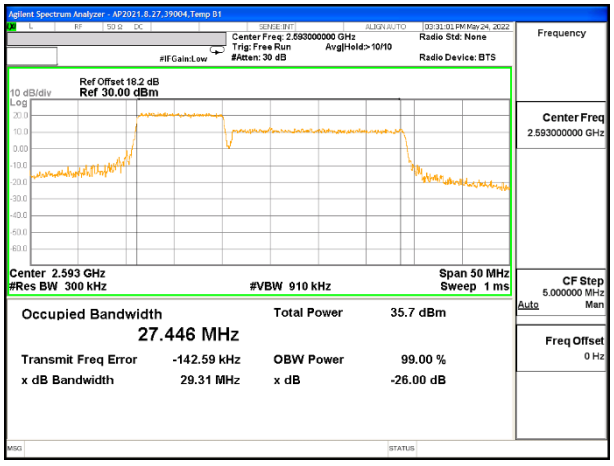
9.1.3. LTE BAND 41



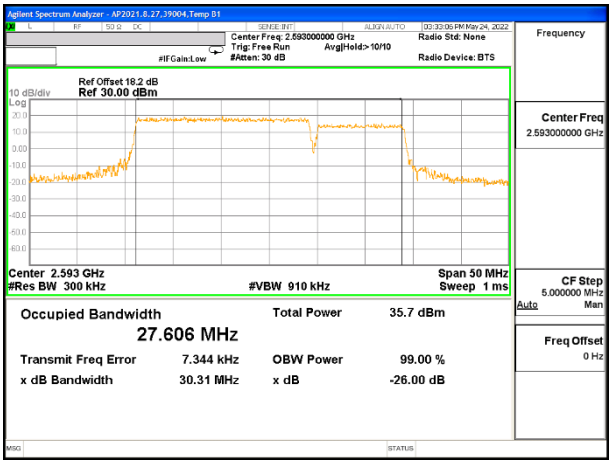
LTE B41 5MHz + 20MHz QPSK RB25-0 + RB100-0



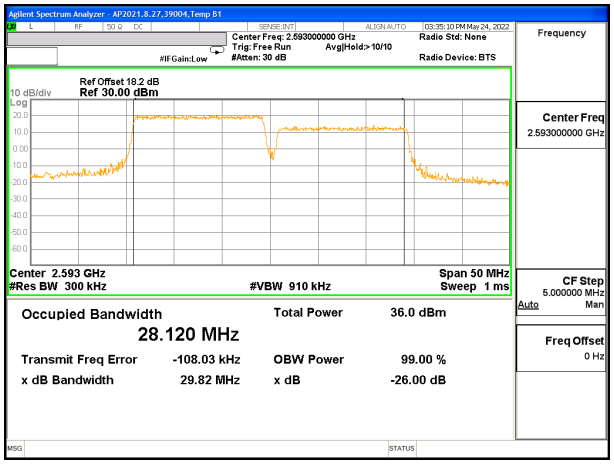
LTE B41 20MHz + 5MHz QPSK RB100-0 + RB25-0



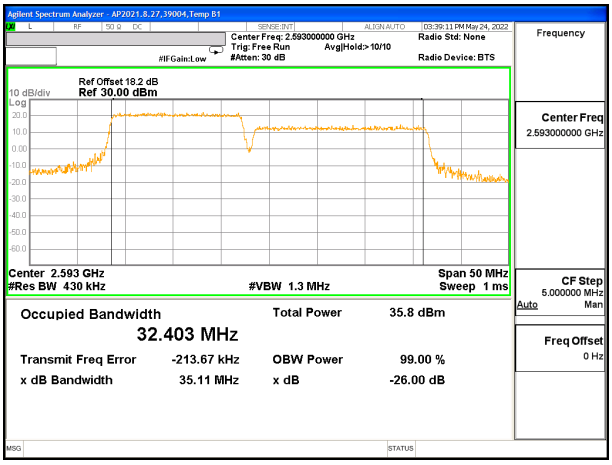
LTE B41 10MHz + 20MHz QPSK RB50-0 + RB100-0



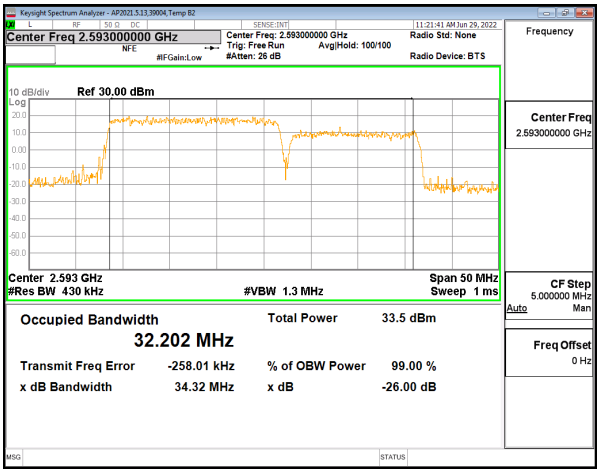
LTE B41 20MHz + 10MHz QPSK RB100-0 + RB50-0



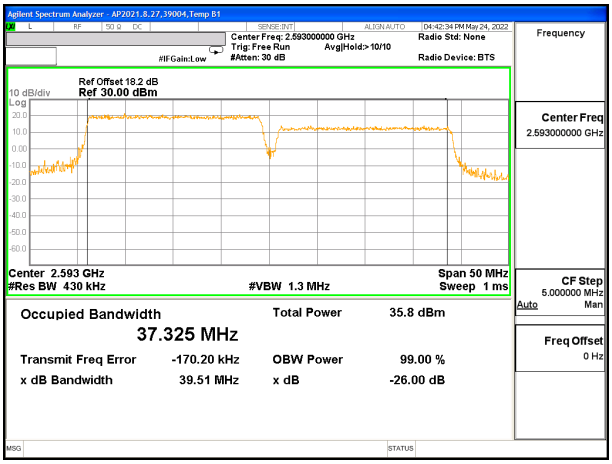
LTE B41 15MHz + 15MHz QPSK RB75-0 + RB75-0



LTE B41 15MHz + 20MHz QPSK RB75-0 + RB100-0

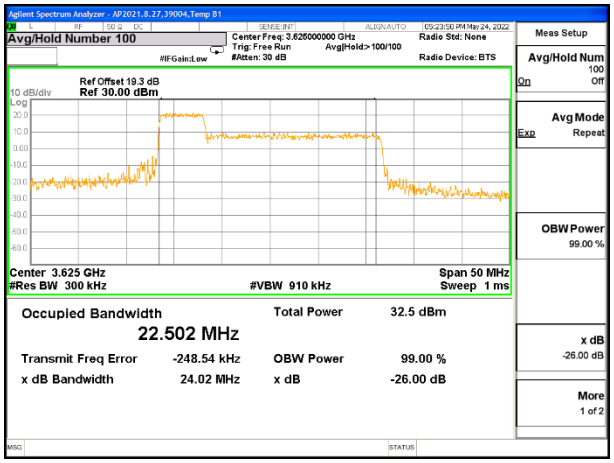


LTE B41 20MHz + 15MHz QPSK RB100-0 + RB75-0

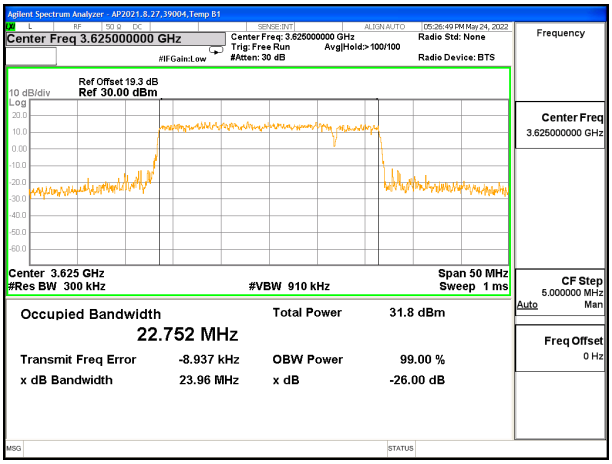


LTE B41 20MHz + 20MHz QPSK RB100-0 + RB100-0

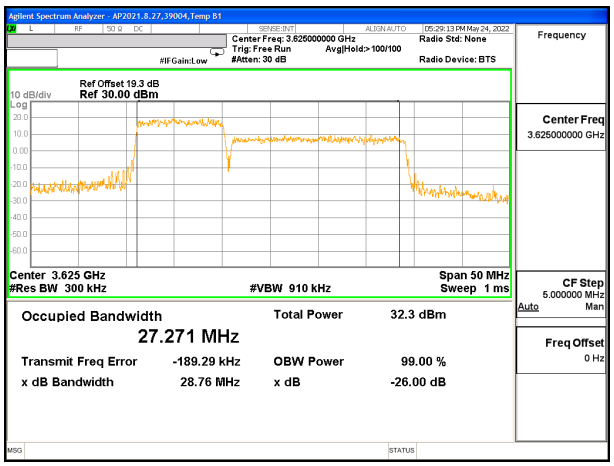
9.1.4. LTE BAND 48



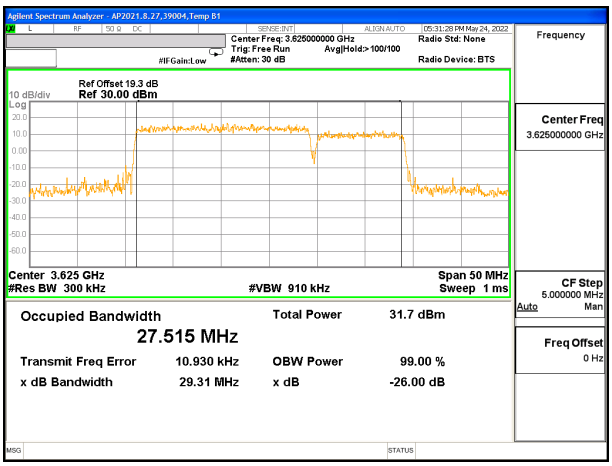
LTE B48 5MHz + 20MHz QPSK RB25-0 + RB100-0



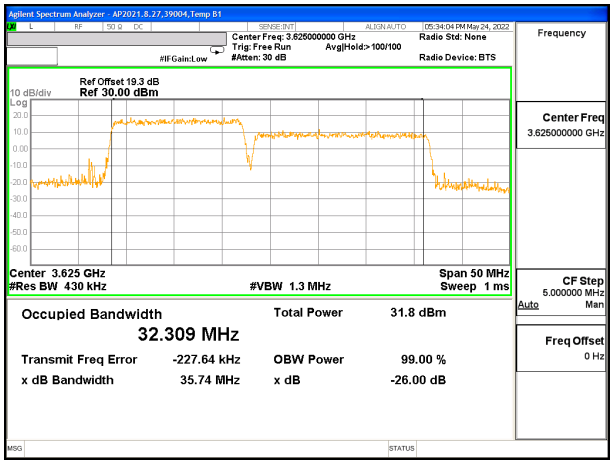
LTE B48 20MHz + 5MHz QPSK RB100-0 + RB25-0



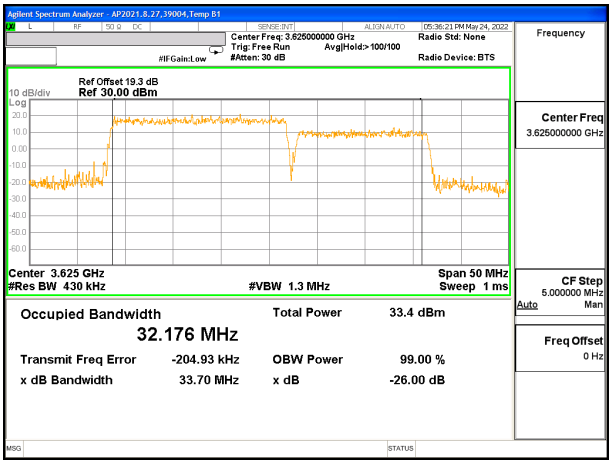
LTE B48 10MHz + 20MHz QPSK RB50-0 + RB100-0



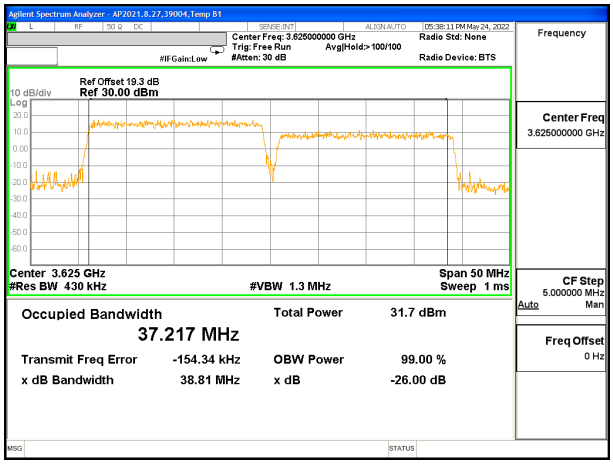
LTE B48 20MHz + 10MHz QPSK RB100-0 + RB50-0



LTE B48 15MHz + 20MHz QPSK RB75-0 + RB100-0



LTE B48 20MHz + 15MHz QPSK RB100-0 + RB75-0



LTE B48 20MHz + 20MHz QPSK RB100-0 + RB100-0

Intentionally Blank

9.2. BAND EDGE AND EMISSION MASK AND ADJACENT CHANNEL POWER

TEST PROCEDURE

The transmitter output was connected to a R&S CMW500 Test Set and configured to operate at maximum power. The band edge emissions were measured at the required operating frequencies in each band on the Spectrum Analyzer.

For each band edge measurement:

- Set the spectrum analyzer span to include the block edge frequency.
- Set a marker to point the corresponding band edge frequency in each test case.
- Set display line at -13 dBm
- Set resolution bandwidth to at least 1% of emission bandwidth.

TEST PROCEDURE FOR FCC PART 27

(m)(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed; for mobile digital stations, in the 1 megahertz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least two percent may be employed, except when the 1 megahertz band is 2495-2496 MHz, in which case a resolution bandwidth of at least one percent may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 megahertz or 1 percent of emission bandwidth, as specified; or 1 megahertz or 2 percent for mobile digital stations, except in the band 2495-2496 MHz). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power. With respect to television operations, measurements must be made of the separate visual and aural operating powers at sufficiently frequent intervals to ensure compliance with the rules.

TEST PROCEDURE FOR FCC PART 96

(3)Measurement procedure.
(i) Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 megahertz bands immediately outside and adjacent to the licensee's authorized frequency channel, a resolution bandwidth of no less than one percent of the fundamental emission bandwidth may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full reference bandwidth (i.e.,1 MHz or 1 percent of emission bandwidth, as specified). The fundamental emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

(ii) When measuring unwanted emissions to demonstrate compliance with the limits, the CBSD and End User Device nominal carrier frequency/channel shall be adjusted as close to the licensee's authorized frequency block edges, both upper and lower, as the design permits.

(iii) Compliance with emission limits shall be demonstrated using either average (RMS)-detected or peak-detected power measurement techniques.

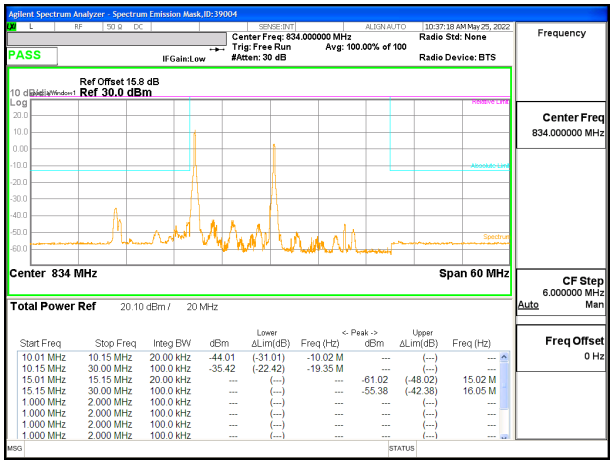
RESULTS

Both maximum + maximum bandwidth combinations of QPSK and 16QAM modes are tested, QPSK results are reported as worst case.

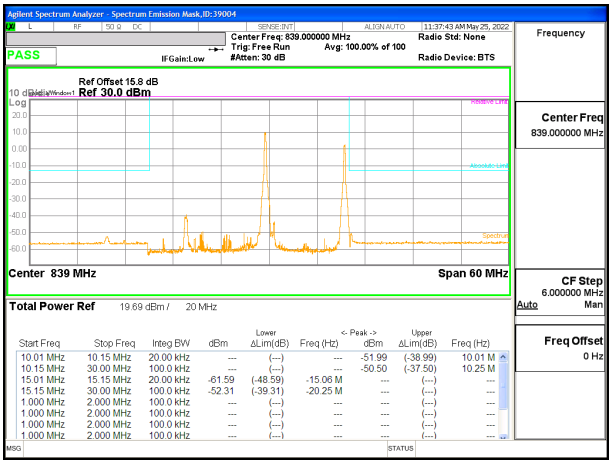
9.2.1. LTE BAND 5

LIMITS

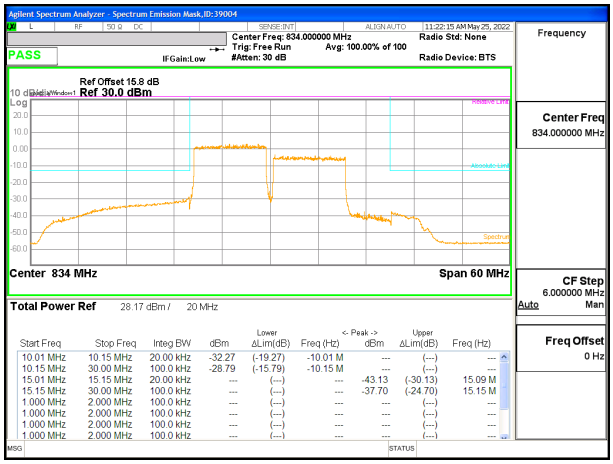
FCC: §22.917
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.



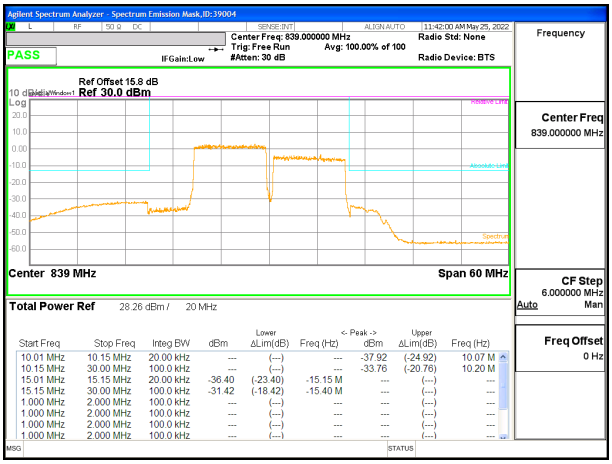
LTE B5 10MHz + 10MHz QPSK Low Ch RB1-0 + RB1-0



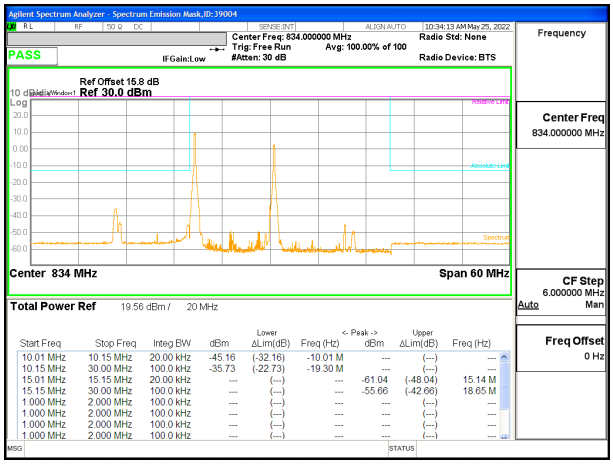
LTE B5 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-49



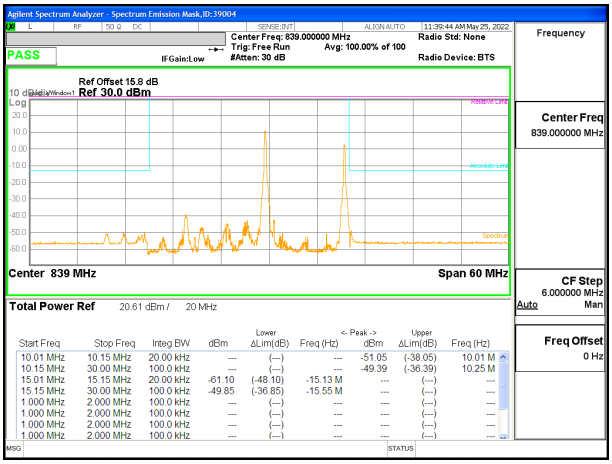
LTE B5 10MHz + 10MHz QPSK Low Ch RB50-0 + RB50-0



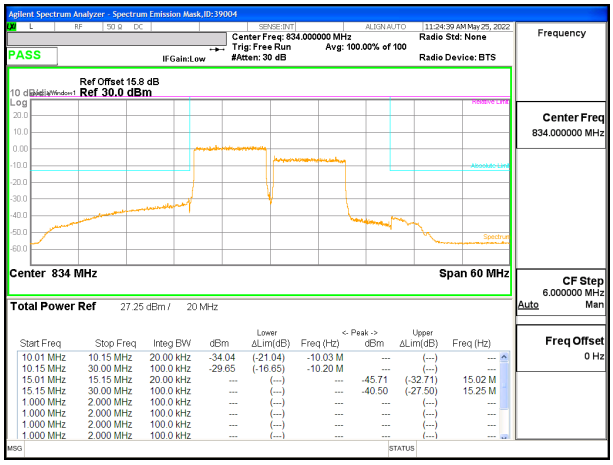
LTE B5 10MHz + 10MHz QPSK High Ch RB50-0 + RB50-0



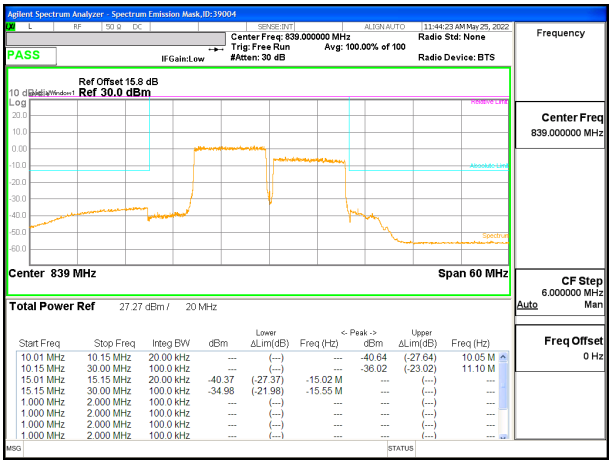
LTE B5 10MHz + 10MHz 16QAM Low Ch RB1-0 + RB1-0



LTE B5 10MHz + 10MHz 16QAM High Ch RB1-49 + RB1-49



LTE B5 10MHz + 10MHz 16QAM Low Ch RB50-0 + RB50-0

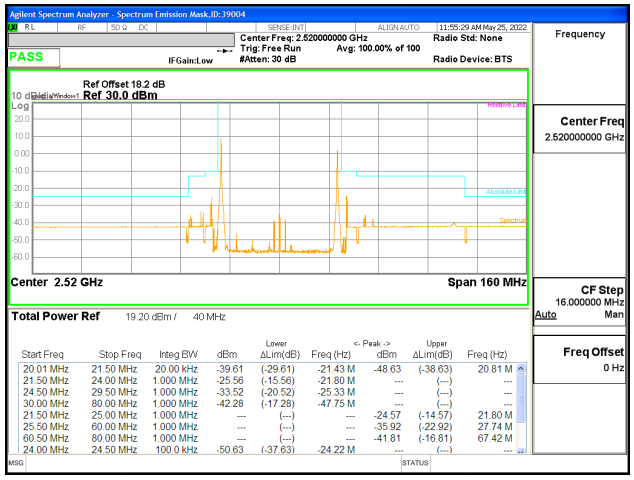


LTE B5 10MHz + 10MHz 16QAM High Ch RB50-0 + RB50-0

9.2.2. LTE BAND 7

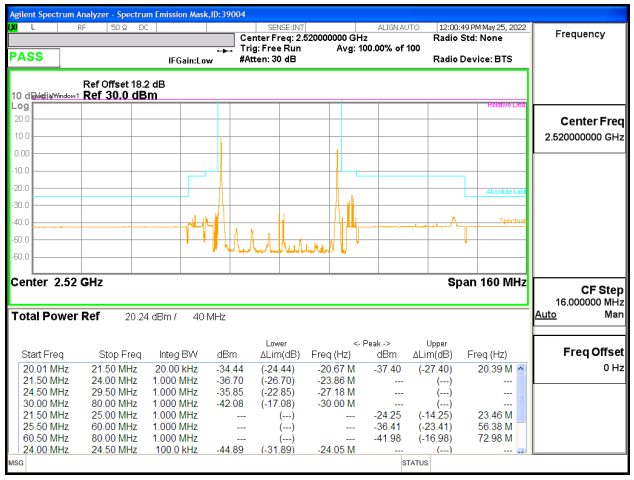
LIMITS

FCC: §27.53(m)(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.



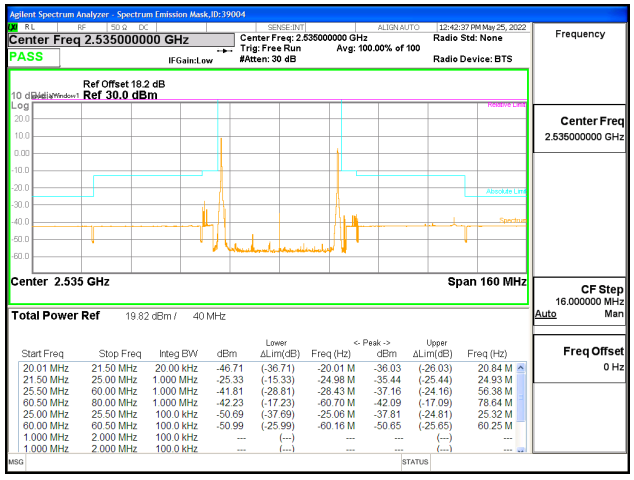
LTE B7 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99

Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
20.01 MHz	21.50 MHz	20.00 kHz	-39.61	(-29.61)	-21.43 M	-48.63	(-38.63)	20.81 M
21.50 MHz	24.00 MHz	1.000 MHz	-25.56	(-15.56)	-21.80 M	---	(---)	---
24.50 MHz	29.50 MHz	1.000 MHz	-33.52	(-20.52)	-25.33 M	---	(---)	---
30.00 MHz	80.00 MHz	1.000 MHz	-42.28	(-17.28)	-47.75 M	---	(---)	---
21.50 MHz	25.00 MHz	1.000 MHz	---	(---)	---	-24.57	(-14.57)	21.80 M
25.50 MHz	60.00 MHz	1.000 MHz	---	(---)	---	-35.92	(-22.92)	27.74 M
60.50 MHz	80.00 MHz	1.000 MHz	---	(---)	---	-41.81	(-16.81)	67.42 M
24.00 MHz	24.50 MHz	100.0 kHz	-50.63	(-37.63)	-24.22 M	---	(---)	---



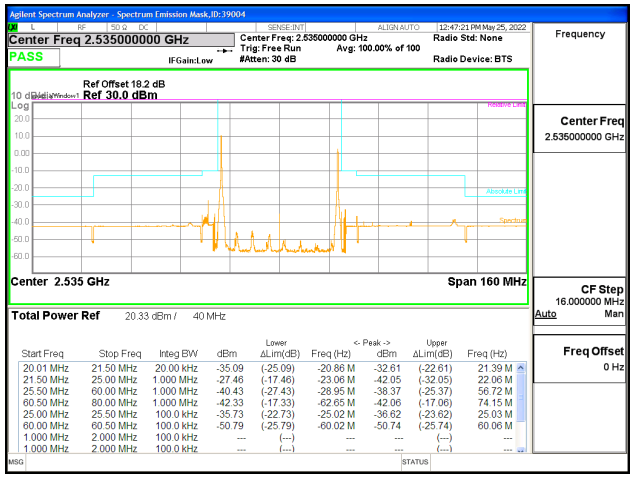
LTE B7 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99

Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
20.01 MHz	21.50 MHz	20.00 kHz	-34.44	(-24.44)	-20.67 M	-37.40	(-27.40)	20.39 M
21.50 MHz	24.00 MHz	1.000 MHz	-36.70	(-26.70)	-23.86 M	---	(---)	---
24.50 MHz	29.50 MHz	1.000 MHz	-35.85	(-22.85)	-27.18 M	---	(---)	---
30.00 MHz	80.00 MHz	1.000 MHz	-42.08	(-17.08)	-30.00 M	---	(---)	---
21.50 MHz	25.00 MHz	1.000 MHz	---	(---)	---	-24.25	(-14.25)	23.46 M
25.50 MHz	60.00 MHz	1.000 MHz	---	(---)	---	-36.41	(-23.41)	56.38 M
60.50 MHz	80.00 MHz	1.000 MHz	---	(---)	---	-41.98	(-16.98)	72.98 M
24.00 MHz	24.50 MHz	100.0 kHz	-44.89	(-31.89)	-24.05 M	---	(---)	---



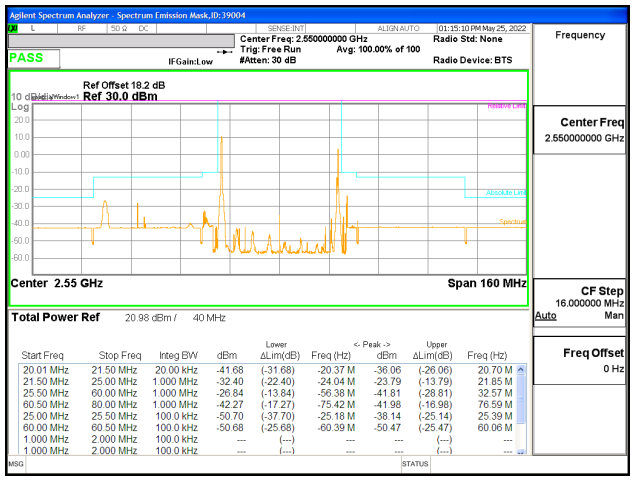
LTE B7 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99

Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
20.01 MHz	21.50 MHz	20.00 kHz	-46.71	(-36.71)	-20.01 M	-36.03	(-26.03)	20.84 M
21.50 MHz	25.00 MHz	1.000 MHz	-25.33	(-15.33)	-24.98 M	-35.44	(-25.44)	24.93 M
25.50 MHz	60.00 MHz	1.000 MHz	-41.81	(-28.81)	-28.43 M	-37.16	(-24.16)	56.38 M
60.50 MHz	80.00 MHz	1.000 MHz	-42.23	(-17.23)	-60.70 M	-42.09	(-17.09)	78.64 M
25.00 MHz	25.50 MHz	100.0 kHz	-50.69	(-37.69)	-25.06 M	-37.81	(-24.81)	25.32 M
60.00 MHz	60.50 MHz	100.0 kHz	-50.99	(-25.99)	-60.16 M	-50.65	(-25.65)	60.25 M
1.000 MHz	2.000 MHz	100.0 kHz	---	(---)	---	---	(---)	---
1.000 MHz	2.000 MHz	100.0 kHz	---	(---)	---	---	(---)	---



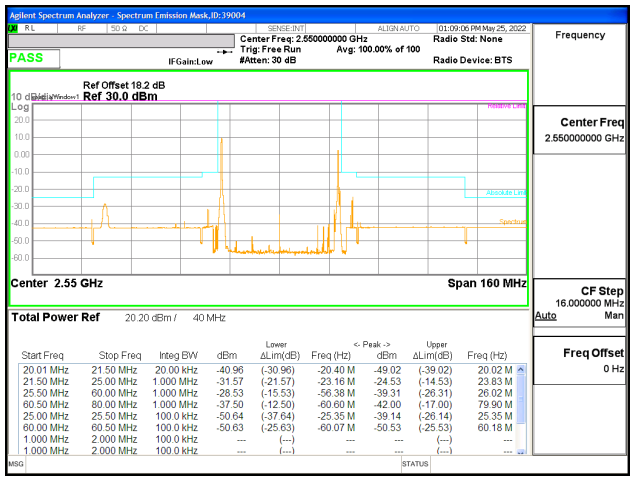
LTE B7 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99

Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
20.01 MHz	21.50 MHz	20.00 kHz	-35.09	(-25.09)	-20.86 M	-32.61	(-22.61)	21.39 M
21.50 MHz	25.00 MHz	1.000 MHz	-27.46	(-17.46)	-23.06 M	-42.05	(-32.05)	22.06 M
25.50 MHz	60.00 MHz	1.000 MHz	-40.43	(-27.43)	-28.95 M	-38.37	(-25.37)	56.72 M
60.50 MHz	80.00 MHz	1.000 MHz	-42.33	(-17.33)	-62.65 M	-42.06	(-17.06)	74.15 M
25.00 MHz	25.50 MHz	100.0 kHz	-35.73	(-22.73)	-25.02 M	-36.62	(-23.62)	25.03 M
60.00 MHz	60.50 MHz	100.0 kHz	-50.79	(-25.79)	-60.02 M	-50.74	(-25.74)	60.06 M
1.000 MHz	2.000 MHz	100.0 kHz	---	(---)	---	---	(---)	---
1.000 MHz	2.000 MHz	100.0 kHz	---	(---)	---	---	(---)	---



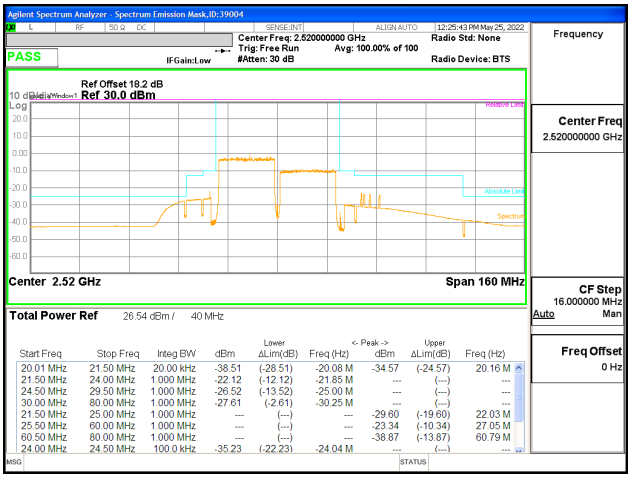
LTE B7 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99

Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
20.01 MHz	21.50 MHz	20.00 kHz	-41.68	(-31.68)	-20.37 M	-36.06	(-26.06)	20.70 M
21.50 MHz	25.00 MHz	1.000 MHz	-32.40	(-22.40)	-24.04 M	-23.79	(-13.79)	21.85 M
25.50 MHz	60.00 MHz	1.000 MHz	-26.84	(-13.84)	-56.38 M	-41.81	(-28.81)	32.57 M
60.50 MHz	80.00 MHz	1.000 MHz	-42.27	(-17.27)	-75.42 M	-41.98	(-16.98)	76.59 M
25.00 MHz	25.50 MHz	100.0 kHz	-50.70	(-37.70)	-25.18 M	-38.14	(-25.14)	25.39 M
60.00 MHz	60.50 MHz	100.0 kHz	-50.68	(-25.68)	-60.39 M	-50.47	(-25.47)	60.06 M
1.000 MHz	2.000 MHz	100.0 kHz	---	(---)	---	---	(---)	---
1.000 MHz	2.000 MHz	100.0 kHz	---	(---)	---	---	(---)	---

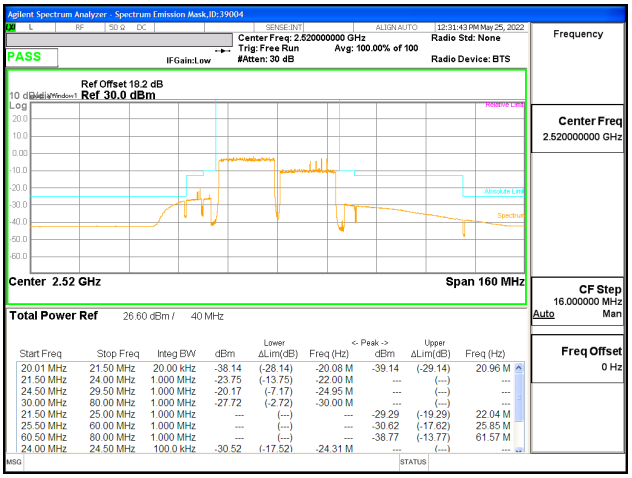


LTE B7 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99

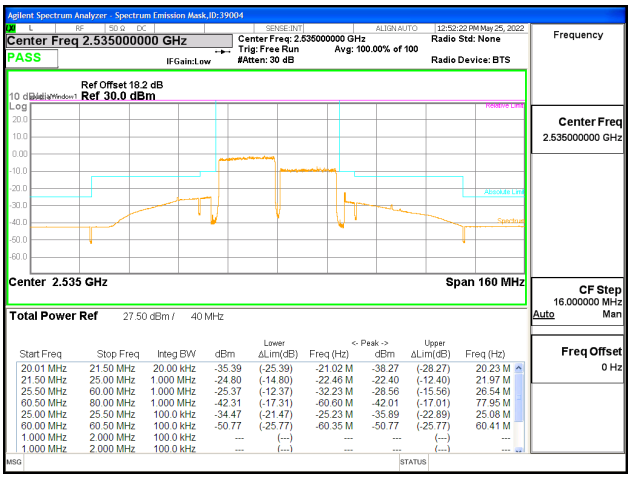
Start Freq	Stop Freq	Integ BW	dBm	Lower ΔLim(dB)	Lower Freq (Hz)	<- Peak -> dBm	Upper ΔLim(dB)	Upper Freq (Hz)
20.01 MHz	21.50 MHz	20.00 kHz	-40.96	(-30.96)	-20.40 M	-49.02	(-39.02)	20.02 M
21.50 MHz	25.00 MHz	1.000 MHz	-31.57	(-21.57)	-23.16 M	-24.53	(-14.53)	23.83 M
25.50 MHz	60.00 MHz	1.000 MHz	-28.53	(-15.53)	-56.38 M	-39.31	(-26.31)	26.02 M
60.50 MHz	80.00 MHz	1.000 MHz	-37.50	(-12.50)	-60.60 M	-42.00	(-17.00)	79.90 M
25.00 MHz	25.50 MHz	100.0 kHz	-50.64	(-37.64)	-25.35 M	-39.14	(-26.14)	25.35 M
60.00 MHz	60.50 MHz	100.0 kHz	-50.63	(-25.63)	-60.07 M	-50.53	(-25.53)	60.18 M
1.000 MHz	2.000 MHz	100.0 kHz	---	(---)	---	---	(---)	---
1.000 MHz	2.000 MHz	100.0 kHz	---	(---)	---	---	(---)	---



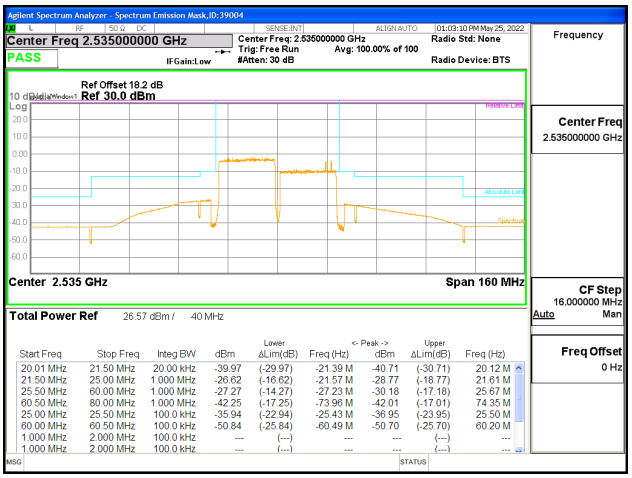
LTE B7 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



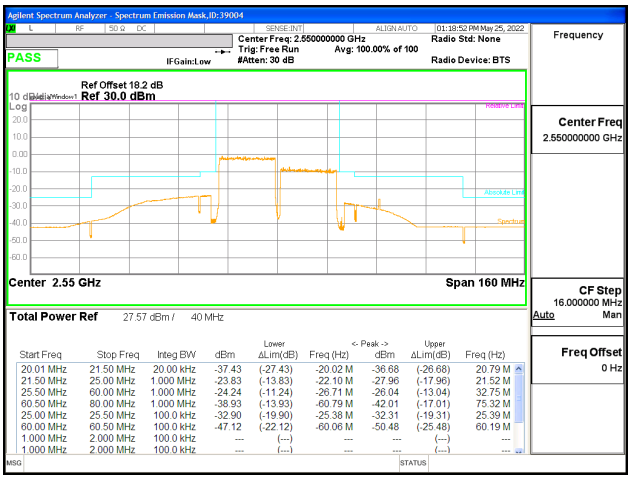
LTE B7 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



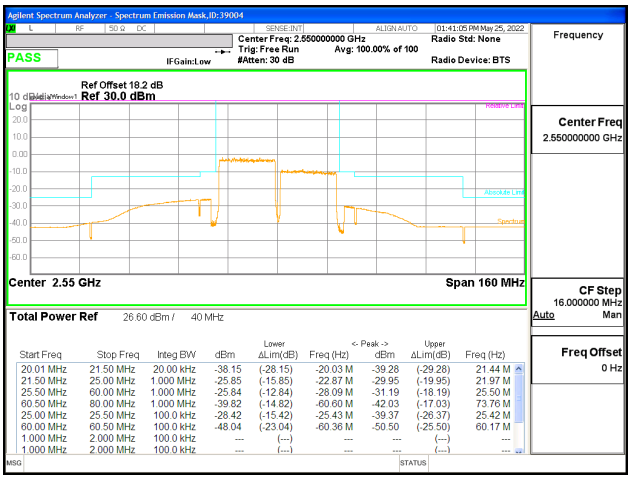
LTE B7 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



LTE B7 20MHz + 20MHz 16QAM Mid Ch RB100-0 + RB100-0



LTE B7 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0

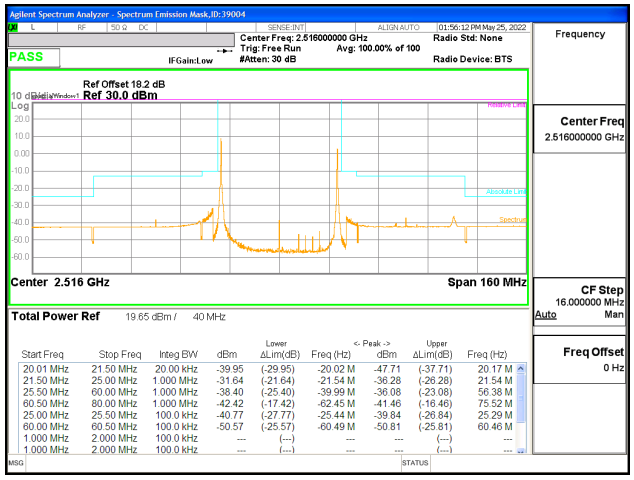


LTE B7 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

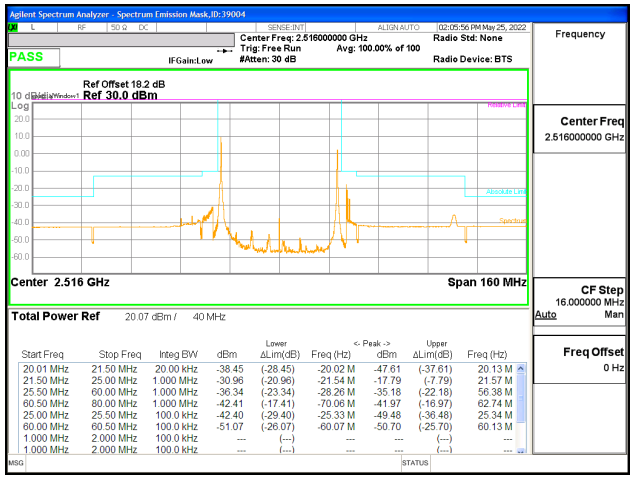
9.2.3. LTE BAND 41

LIMITS

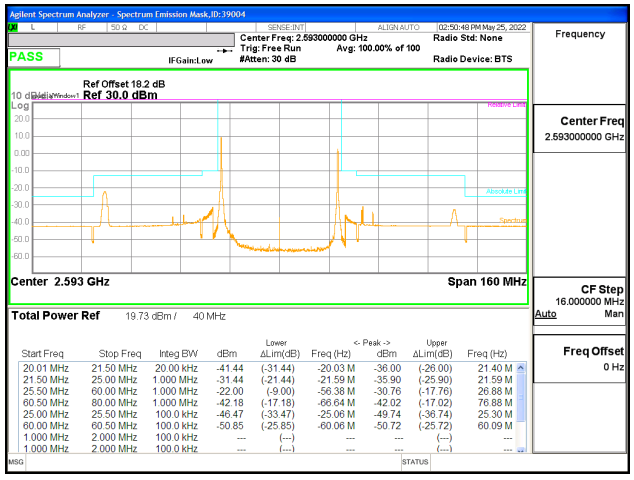
FCC: §27.53(m)(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section. In addition, the attenuation factor shall not be less that 43 + 10 log (P) dB on all frequencies between 2490.5 MHz and 2496 MHz and 55 + 10 log (P) dB at or below 2490.5 MHz. Mobile Satellite Service licensees operating on frequencies below 2495 MHz may also submit a documented interference complaint against BRS licensees operating on channel BRS Channel 1 on the same terms and conditions as adjacent channel BRS or EBS licensees.



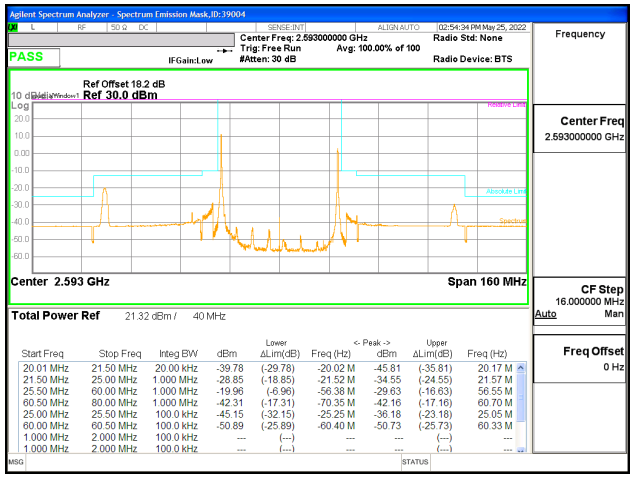
LTE B41 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



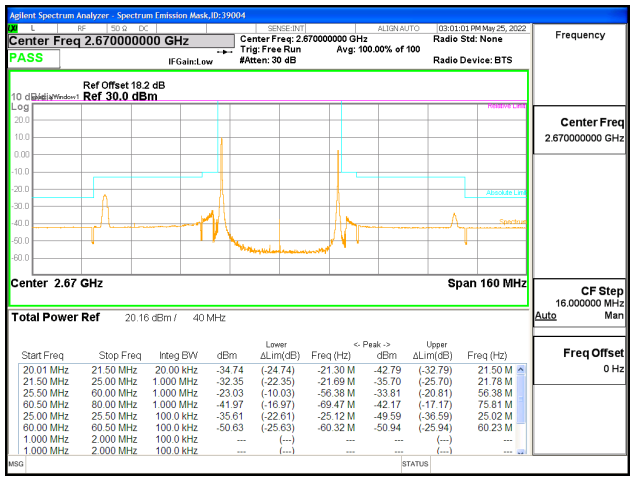
LTE B41 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



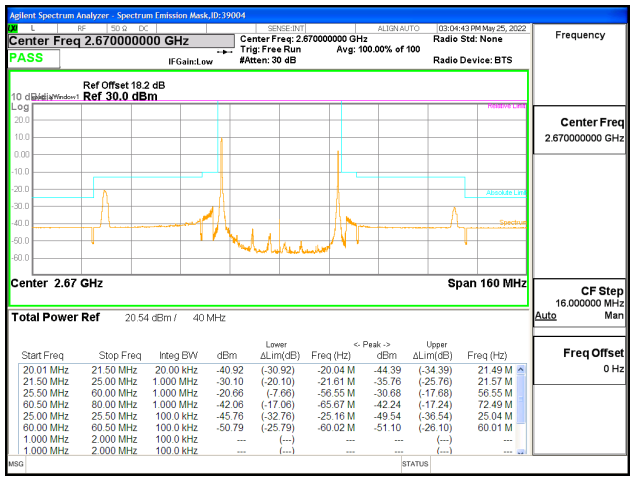
LTE B41 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



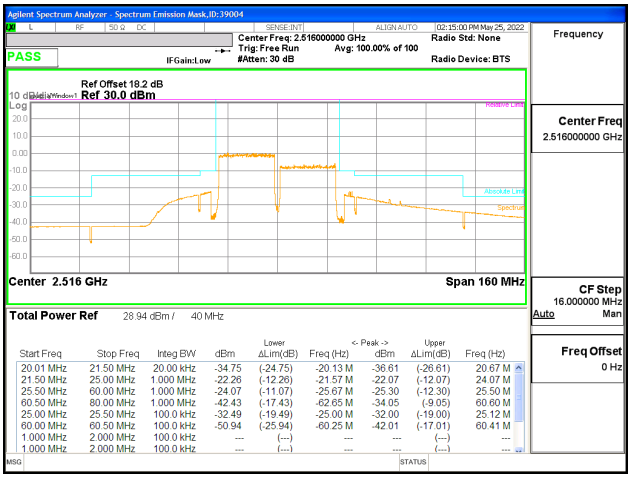
LTE B41 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



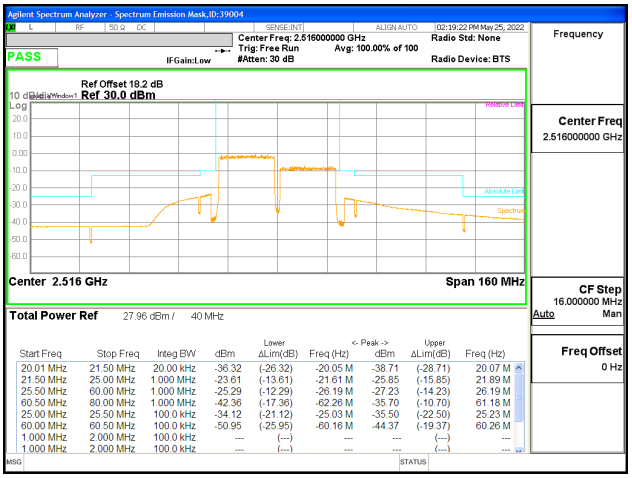
LTE B41 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



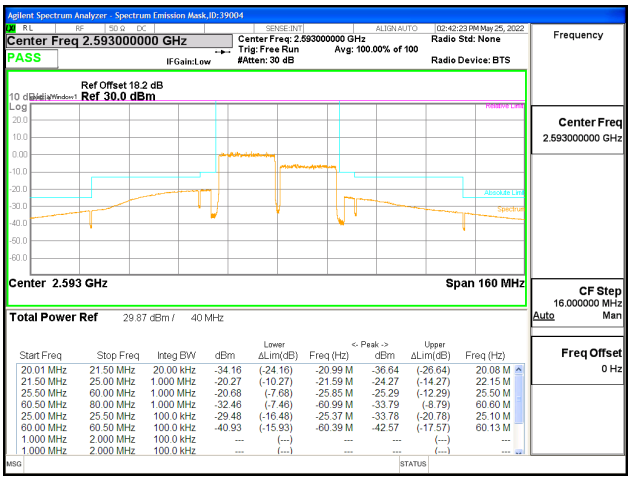
LTE B41 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



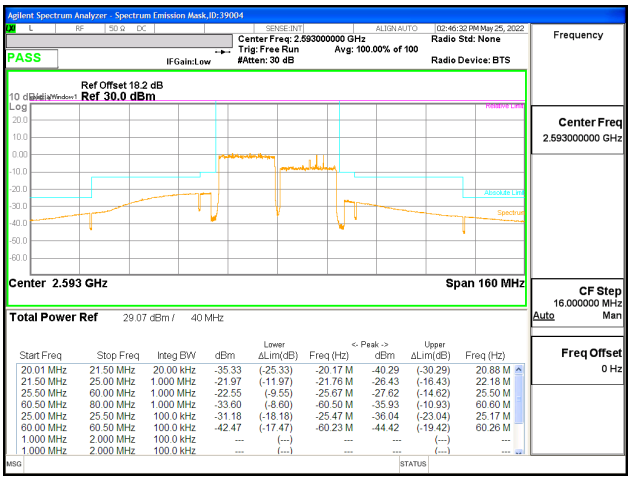
LTE B41 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



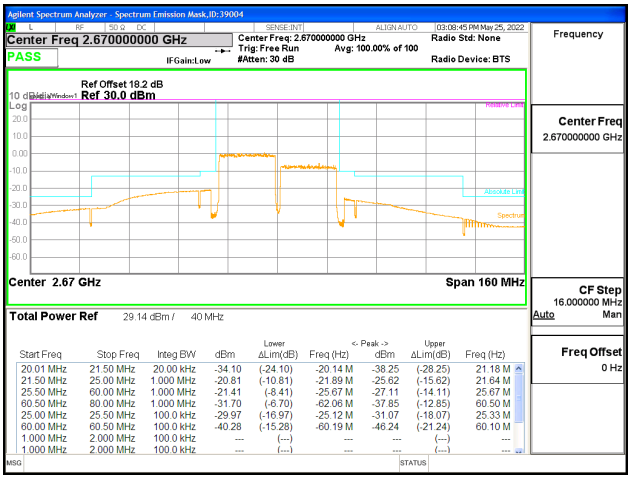
LTE B41 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



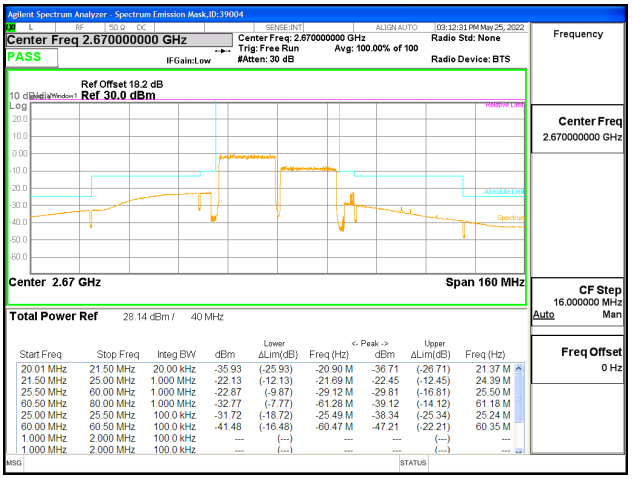
LTE B41 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



LTE B41 20MHz + 20MHz 16QAM Mid Ch RB100-0 + RB100-0



LTE B41 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0



LTE B41 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

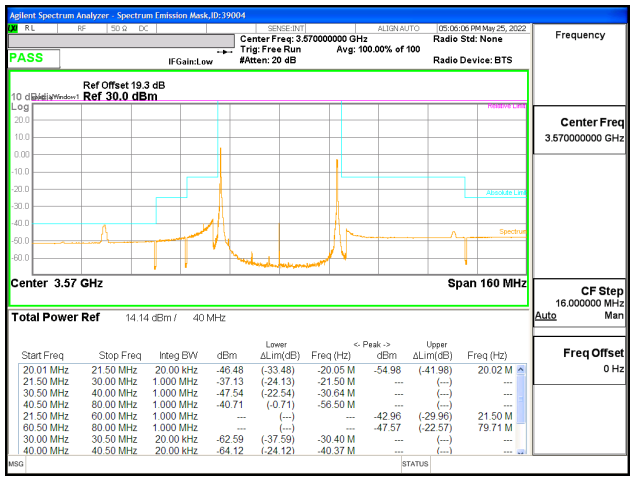
9.2.4. LTE BAND 48 EMISSION MASK AND ADJACENT CHANNEL POWER

LIMITS

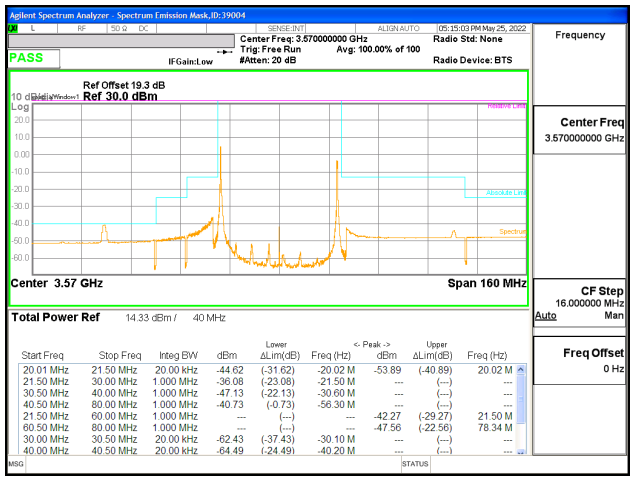
FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(1) General protection levels
(ii) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental emission (whether in or outside of the authorized band) shall not exceed −13 dBm/MHz within 0 to B megahertz (where B is the bandwidth in megahertz of the assigned channel or multiple contiguous channels of the End User Device) above the upper CBSD-assigned channel edge and within 0 to B megahertz below the lower CBSD-assigned channel edge. At all frequencies greater than B megahertz above the upper CBSD assigned channel edge and less than B megahertz below the lower CBSD-assigned channel edge, the conducted power of any End User Device emission shall not exceed −25 dBm/MHz. Notwithstanding the emission limits in this paragraph, the Adjacent Channel Leakage Ratio for End User Devices shall be at least 30 dB.

(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.
licensees.

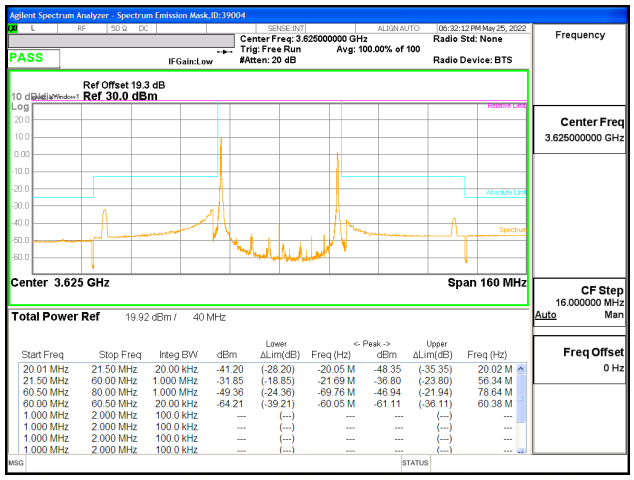
LTE BAND 48 EMISSION MASK



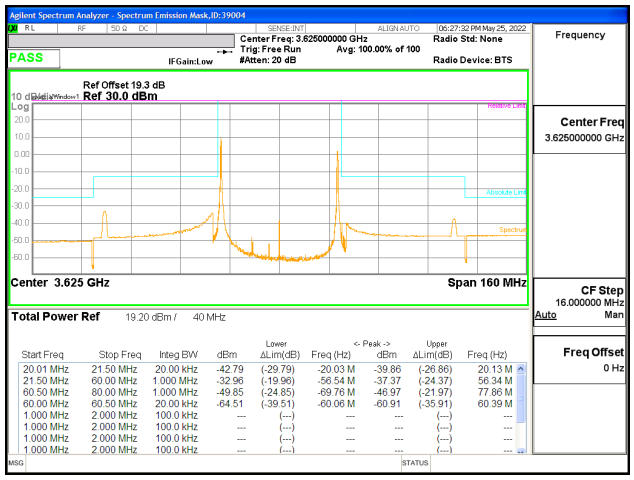
LTE B48 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



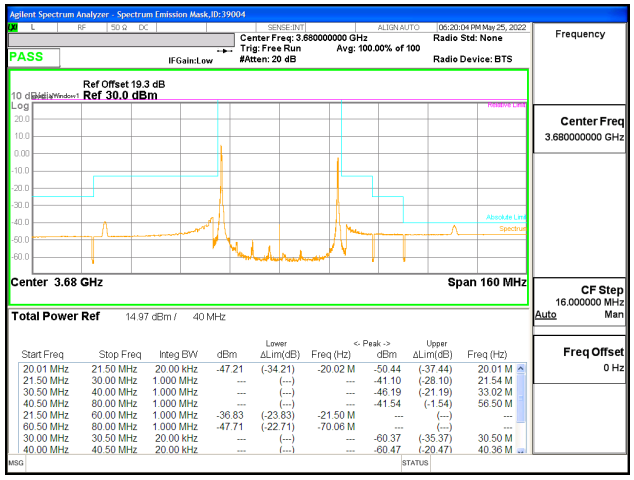
LTE B48 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



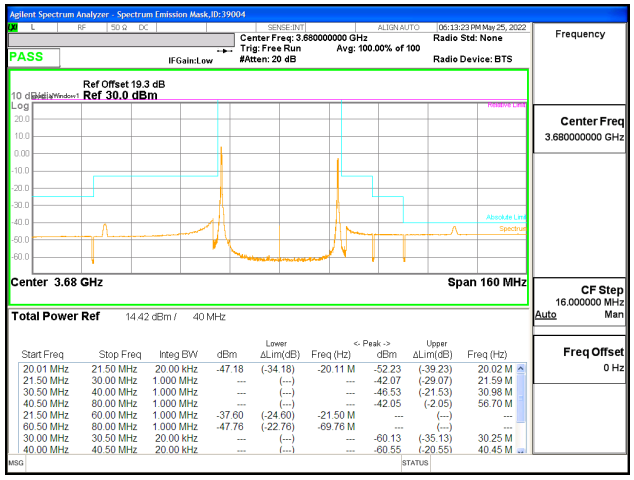
LTE B48 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



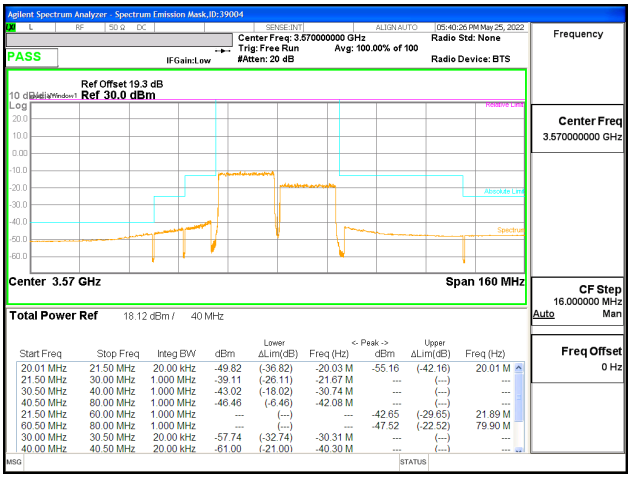
LTE B48 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



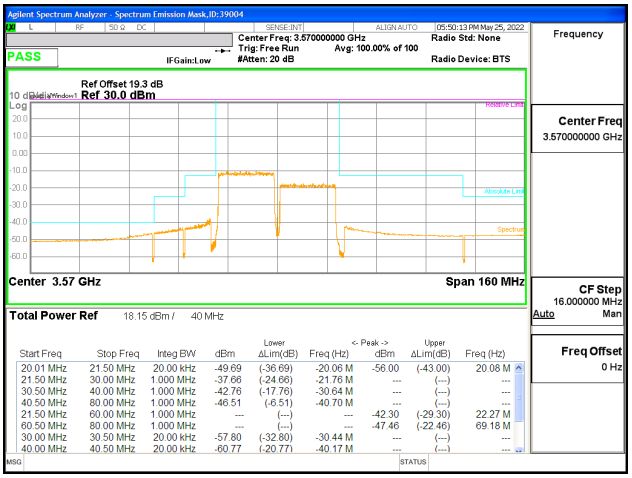
LTE B48 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



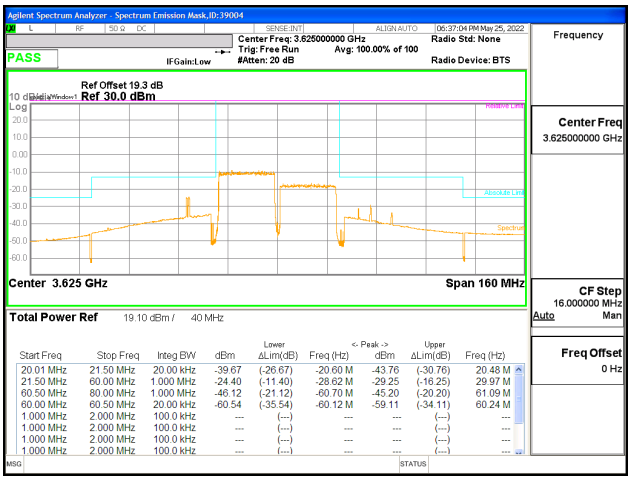
LTE B48 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



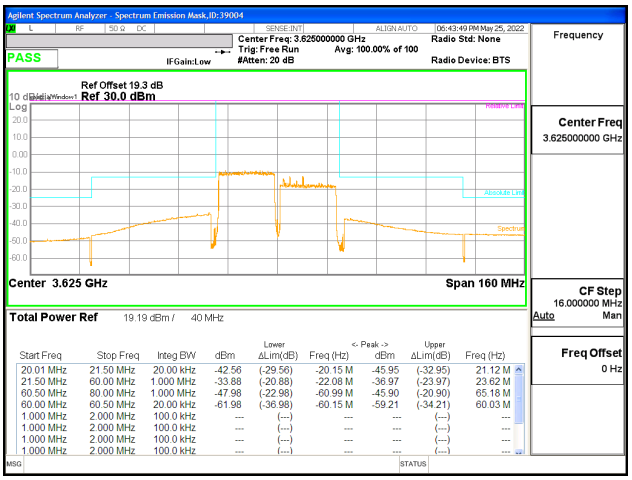
LTE B48 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



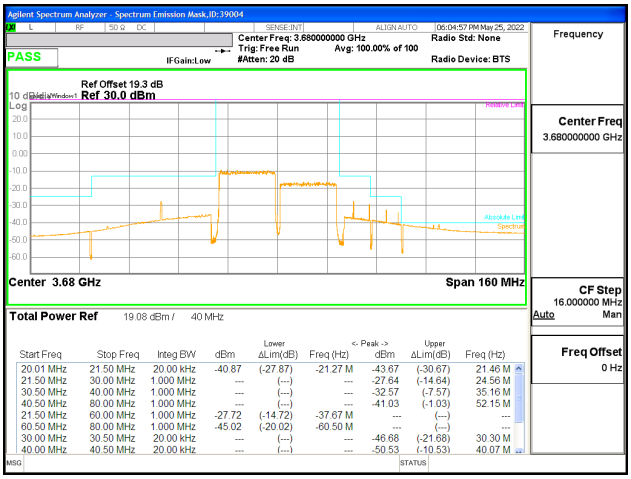
LTE B48 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



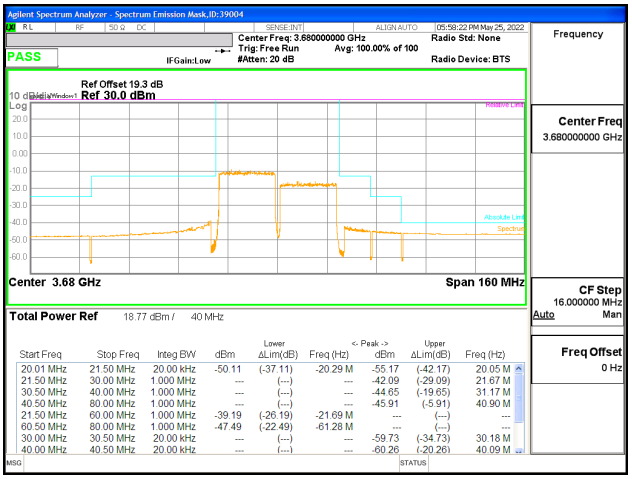
LTE B48 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



LTE B48 20MHz + 20MHz 16QAM Mid Ch RB100-0 + RB100-0

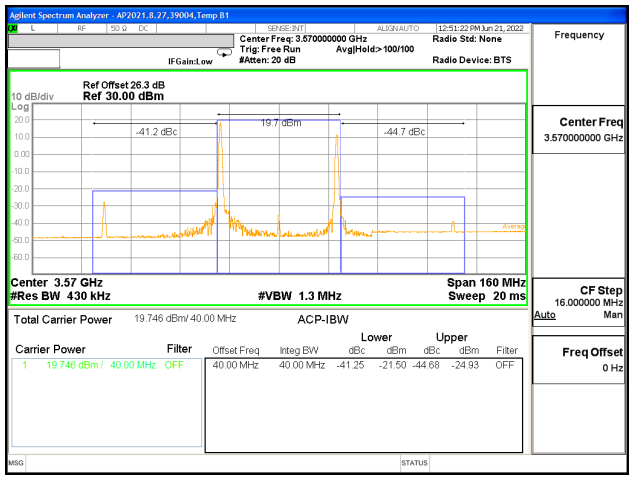


LTE B48 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0

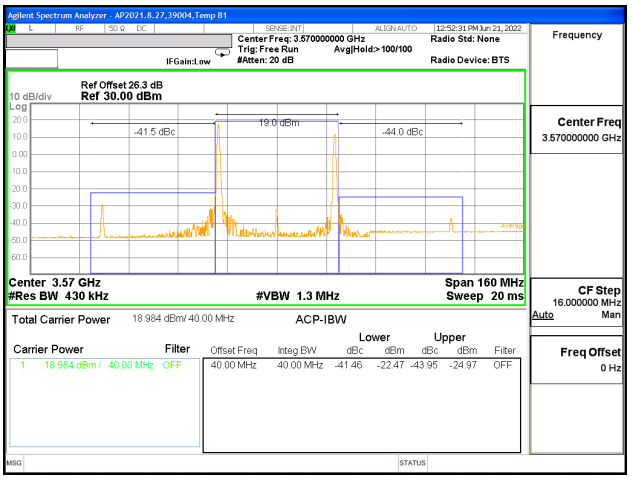


LTE B48 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

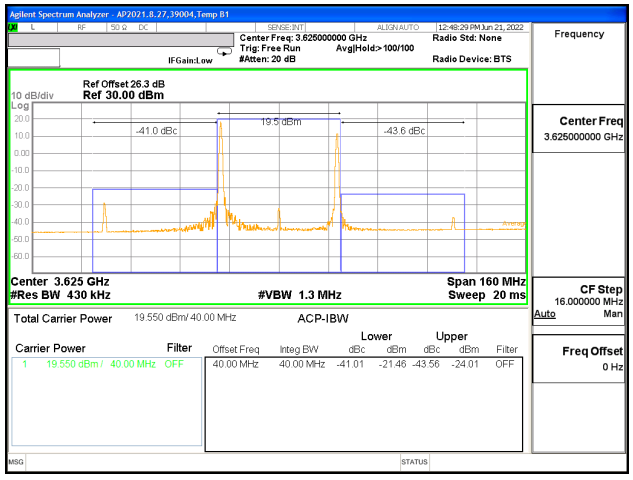
LTE BAND 48 ADJACENT CHANNEL POWER



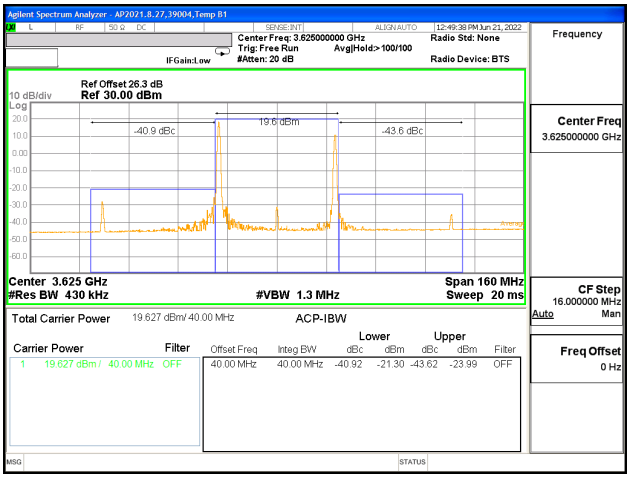
LTE B48 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



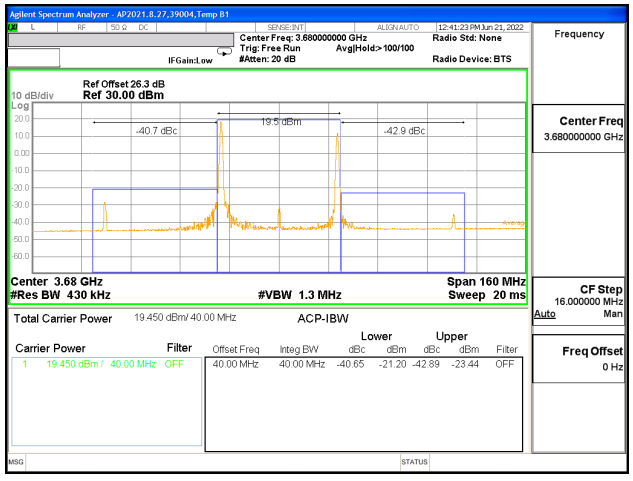
LTE B48 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



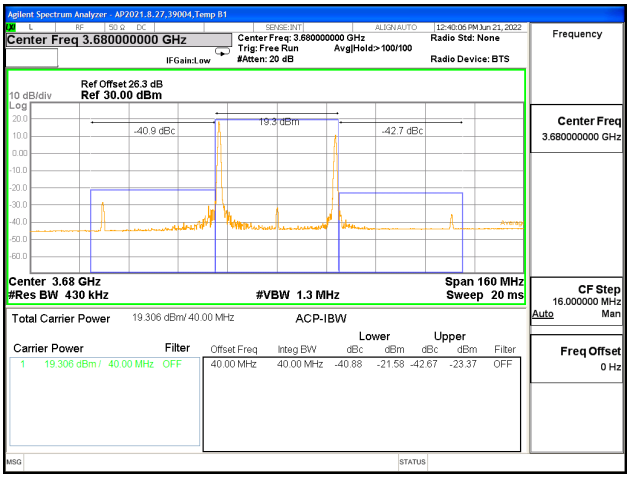
LTE B48 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



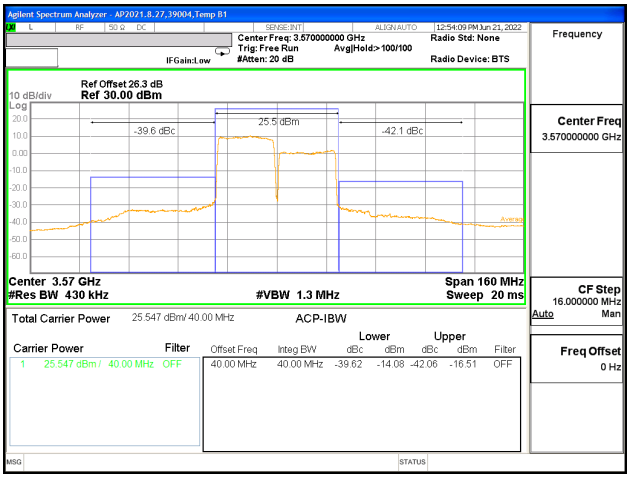
LTE B48 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



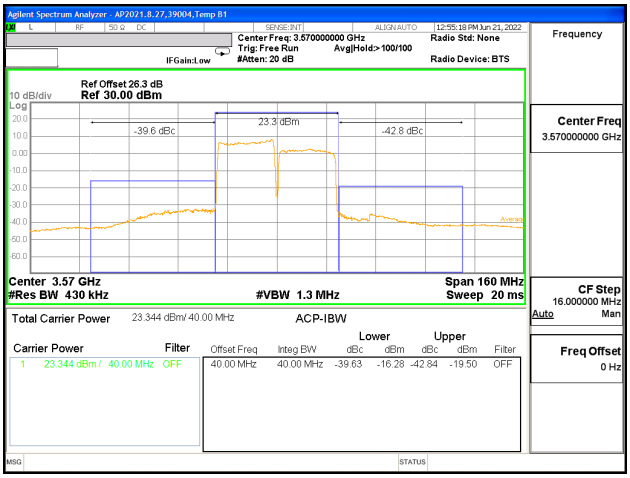
LTE B48 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



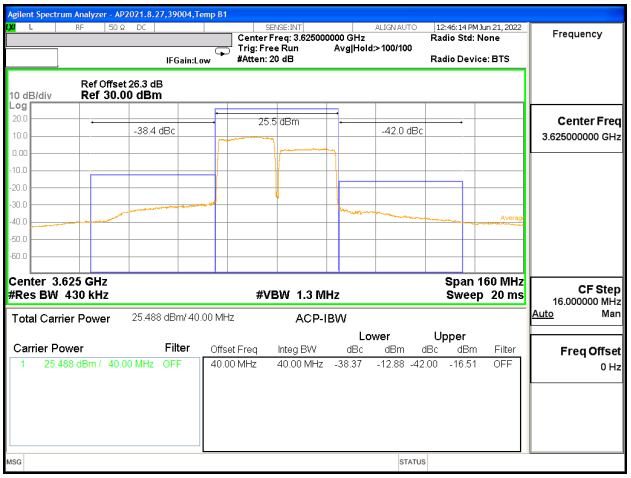
LTE B48 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



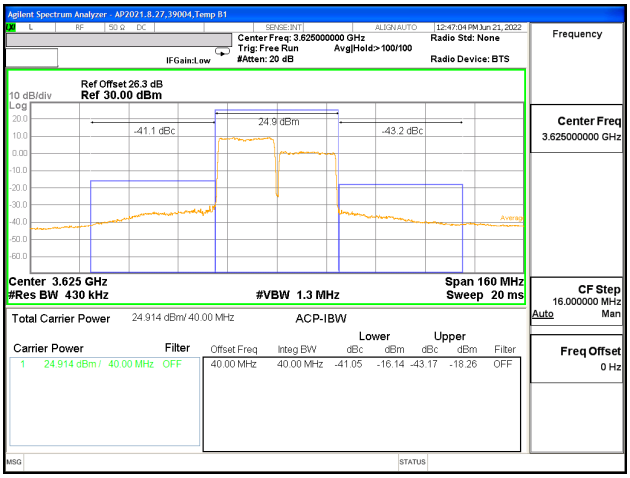
LTE B48 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



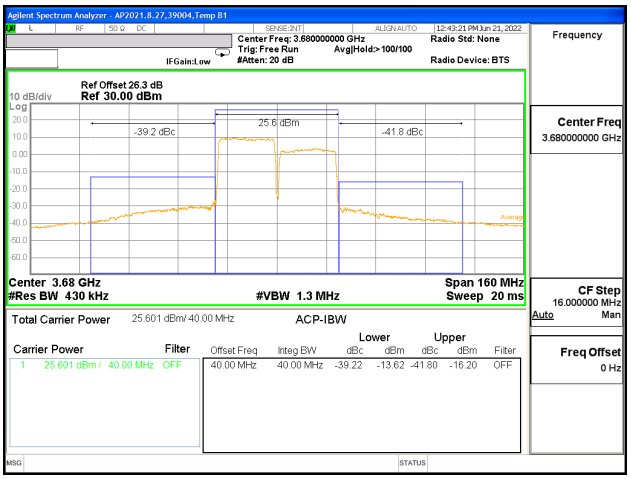
LTE B48 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



LTE B48 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



LTE B48 20MHz + 20MHz 16QAM Mid Ch RB100-0 + RB100-0



LTE B48 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0

LTE B48 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

9.3. OUT OF BAND EMISSIONS

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

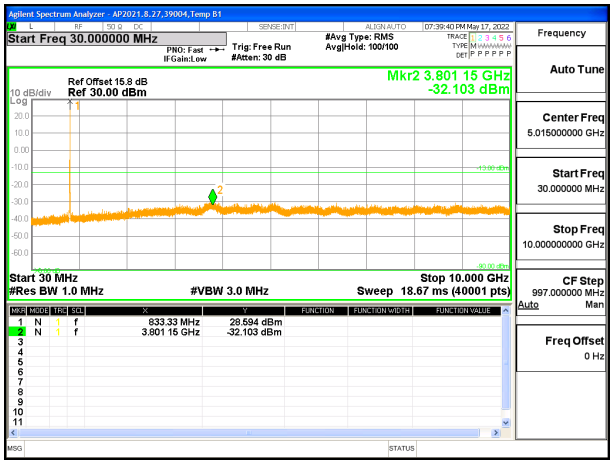
- Set display line at -13 dBm to band 5 and -25 dBm to band 7 and 41
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz. (NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

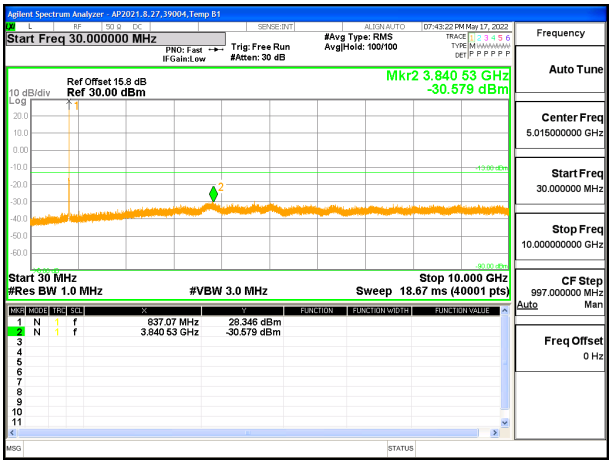
9.3.1. LTE BAND 5

LIMITS

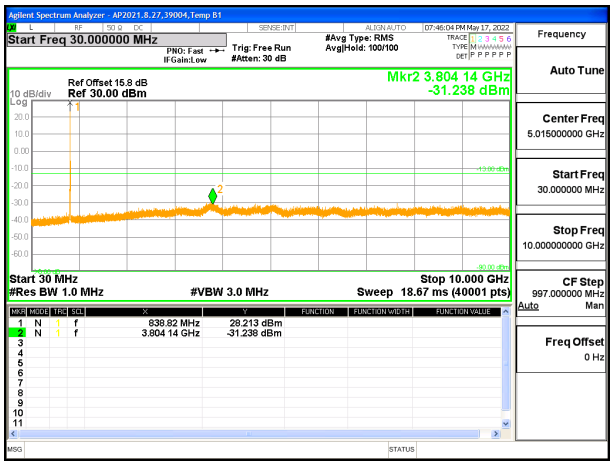
FCC: §22.917
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



LTE B5 10MHz + 10MHz QPSK Low Ch RB1-49 + RB1-0



LTE B5 10MHz + 10MHz QPSK Middle Ch RB1-49 + RB1-0



LTE B5 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-0

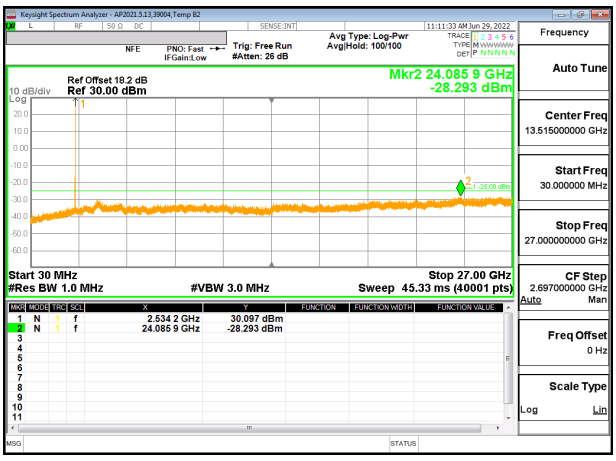
Intentionally Blank

9.3.2. LTE BAND 7

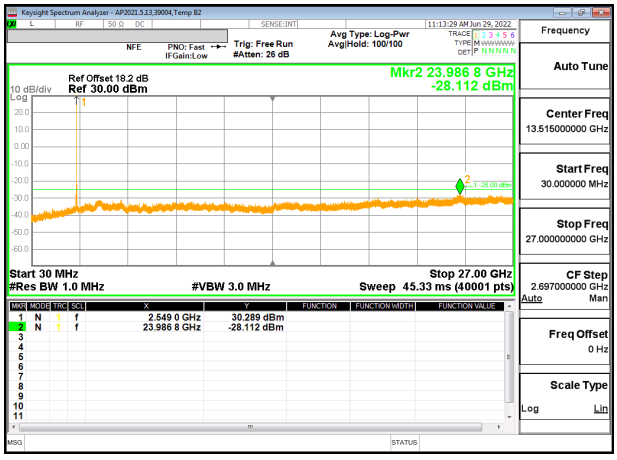
LIMITS

FCC: §27.53 (m)
The minimum permissible attenuation level of any spurious emissions is 55 + 10 log (P) dB where transmitting power (P) in Watts.

LTE B7 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0



LTE B7 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0



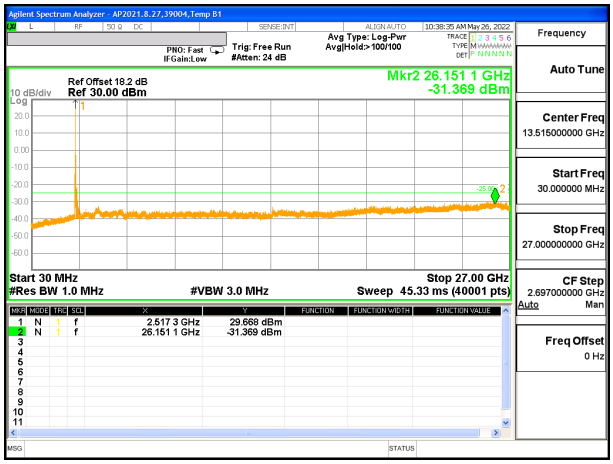
LTE B7 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

Intentionally Blank

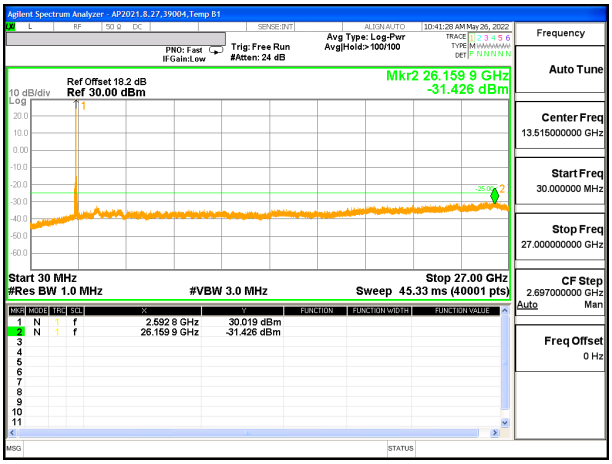
9.3.3. LTE BAND 41

LIMITS

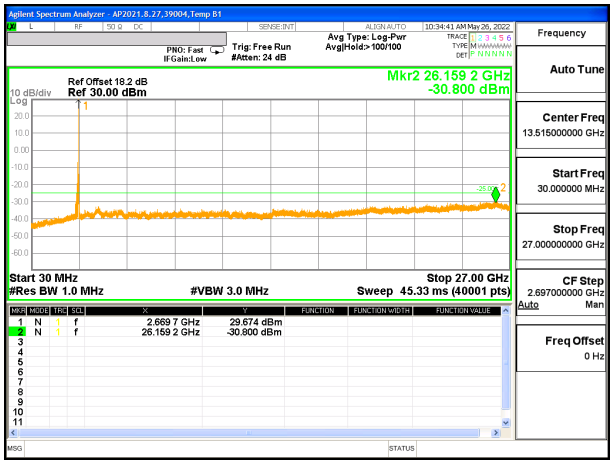
FCC: §27.53 (m)
The minimum permissible attenuation level of any spurious emissions is 55 + 10 log (P) dB where transmitting power (P) in Watts.



LTE B41 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0



LTE B41 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0



LTE B41 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

Intentionally Blank

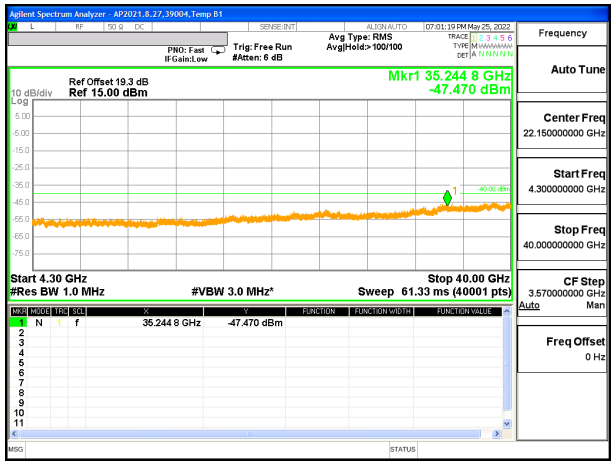
9.3.4. LTE BAND 48

LIMITS

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (e)(1) of this section, for CBSDs and End User Devices, the conducted power of emissions below 3540 MHz or above 3710 MHz shall not exceed −25 dBm/MHz, and the conducted power of emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

LTE B48 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0

(30MHz to 4.5GHz)

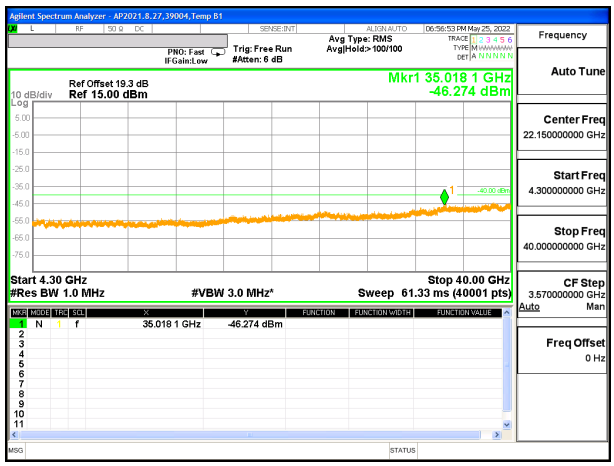


LTE B48 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0

(4.5GHz to 40GHz)

LTE B48 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0

(30MHz to 4.5GHz)

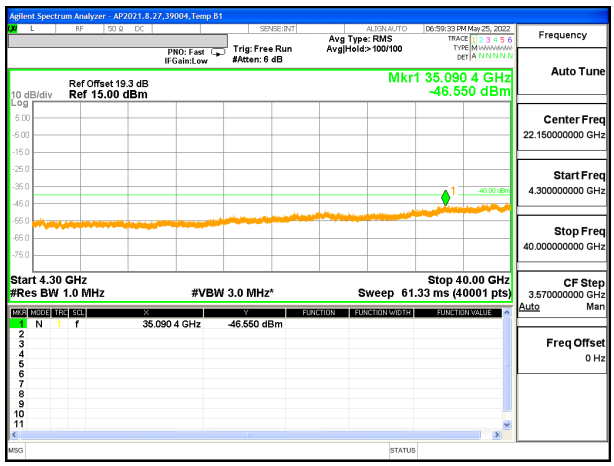


LTE B48 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0

(4.5GHz to 40GHz)

LTE B48 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

(30MHz to 4.5GHz)



LTE B48 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

(4.5GHz to 40GHz)

9.4. FREQUENCY STABILITY

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30°C to +50°C
- Voltage = (85% - 115%)

  Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
  End Voltage, 3.00VDC.

Frequency Stability vs Temperature:
The EUT is place inside a temperature chamber. The temperature is set to 20ºC and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50ºC is reached.

Frequency Stability vs Voltage:
The peak frequency error is recorded (worst-case).

RESULTS

See the following pages.

9.4.1. LTE BAND 5

LIMITS

FCC §22.355
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

Test Engineer ID:	27979	Test Date:	7/1/2022

QPSK (10MHz + 10MHz BANDWIDTH)

Band	5	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		824	849		2.5	
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)	Normal	824.5675	848.4480			
Extreme (50°C)		824.5676	848.4480	16.21	0.019	Yes
Extreme (40°C)		824.5676	848.4480	19.01	0.023	Yes
Extreme (30°C)		824.5676	848.4480	13.7	0.016	Yes
Extreme (10°C)		824.5675	848.4480	-1.36	-0.002	Yes
Extreme (0°C)		824.5675	848.4480	-16.71	-0.020	Yes
Extreme (-10°C)		824.5675	848.4480	-24.16	-0.029	Yes
Extreme (-20°C)		824.5675	848.4480	-28.04	-0.034	Yes
Extreme (-30°C)		824.5675	848.4480	-20.96	-0.025	Yes
20°C	15%	824.5676	848.4480	11.94	0.014	Yes
	-15%	824.5675	848.4480	9.11	0.011	Yes
	End Point Voltage	824.5675	848.4480	8.01	0.010	Yes

9.4.2. LTE BAND 7

LIMITS

FCC: §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Engineer ID:	27979	Test Date:	7/1/2022

QPSK (20MHz + 20MHz BANDWIDTH)

Band	7	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2500	2570			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	2501.0703	2568.9260			
Extreme (50°C)		2501.0704	2568.9260	30.62	0.012	Yes
Extreme (40°C)		2501.0704	2568.9260	28.84	0.011	Yes
Extreme (30°C)		2501.0704	2568.9260	29.28	0.012	Yes
Extreme (10°C)		2501.0704	2568.9260	36.31	0.014	Yes
Extreme (0°C)		2501.0704	2568.9260	40.35	0.016	Yes
Extreme (-10°C)		2501.0703	2568.9260	-4.33	-0.002	Yes
Extreme (-20°C)		2501.0704	2568.9260	4.61	0.002	Yes
Extreme (-30°C)		2501.0704	2568.9260	45.29	0.018	Yes
20°C	15%	2501.0704	2568.9260	11.10	0.004	Yes
	-15%	2501.0703	2568.9259	-11.22	-0.004	Yes
	End Point Voltage	2501.0704	2568.9260	43.21	0.017	Yes

9.4.3. LTE BAND 41

LIMITS

FCC: §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

Test Engineer ID:	27979	Test Date:	7/1/2022

QPSK (20MHz + 20MHz BANDWIDTH)

Band	41	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690			
Temperature	Voltage	Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Normal (20°C)		2496.4250	2689.4147			
Extreme (50°C)		2496.4250	2689.4146	-39.83	-0.015	Yes
Extreme (40°C)		2496.4250	2689.4146	-37.94	-0.015	Yes
Extreme (30°C)		2496.4250	2689.4146	-32.99	-0.013	Yes
Extreme (10°C)	Normal	2496.4250	2689.4147	-10.3	-0.004	Yes
Extreme (0°C)		2496.4250	2689.4146	-34.66	-0.013	Yes
Extreme (-10°C)		2496.4250	2689.4146	-51.16	-0.020	Yes
Extreme (-20°C)		2496.4250	2689.4146	-53.77	-0.021	Yes
Extreme (-30°C)		2496.4250	2689.4146	-47.85	-0.018	Yes
20°C	15%	2496.4250	2689.4147	-13.18	-0.005	Yes
	-15%	2496.4250	2689.4147	-14.26	-0.005	Yes
	End Point Voltage	2496.4250	2689.4147	-16.26	-0.006	Yes

9.4.4. LTE BAND 48

Test Engineer ID:	27979	Test Date:	7/1/2022

QPSK (20MHz + 20MHz BANDWIDTH)

Band	48	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		3550	3700			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	3550.5215	3699.2533			
Extreme (50°C)		3550.5215	3699.2533	34.2	0.009	Yes
Extreme (40°C)		3550.5215	3699.2533	40.58	0.011	Yes
Extreme (30°C)		3550.5215	3699.2533	31.53	0.009	Yes
Extreme (10°C)		3550.5215	3699.2533	-15.21	-0.004	Yes
Extreme (0°C)		3550.5214	3699.2532	-39.44	-0.011	Yes
Extreme (-10°C)		3550.5214	3699.2532	-53.07	-0.015	Yes
Extreme (-20°C)		3550.5214	3699.2532	-51.68	-0.014	Yes
Extreme (-30°C)		3550.5214	3699.2532	-42.72	-0.012	Yes
20°C	15%	3550.5215	3699.2533	12.66	0.003	Yes
	-15%	3550.5215	3699.2533	9.34	0.003	Yes
	End Point Voltage	3550.5215	3699.2533	9.74	0.003	Yes

9.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

Test was performed on Antenna 1; full resource block (FRB) for each bandwidth was used to measure as the worst case. The results from all CCDF measurements are passed with 13dB peak-to-average ratio criteria.

9.5.1. LTE BAND 5

Test Engineer ID:	39004	Test Date:	5/27/2022

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 5	3MHz / 5MHz	834.0	837.9	QPSK	30.23	24.63	5.60
				16QAM	30.92	24.41	6.51
	5 MHz / 3MHz	835.0	838.9	QPSK	30.34	24.62	5.72
				16QAM	30.98	24.35	6.63
	5MHz / 10MHz	831.6	838.8	QPSK	30.48	24.68	5.80
				16QAM	30.45	23.76	6.69
	10MHz / 5MHz	834.3	841.5	QPSK	30.77	24.55	6.22
				16QAM	30.70	23.62	7.08
	10MHz / 10MHz	831.5	841.4	QPSK	30.82	24.58	6.24
				16QAM	30.76	23.59	7.17
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9.5.2. LTE BAND 7

Test Engineer ID:	39004	Test Date:	5/27/2022

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 7	10MHz / 20MHz	2525.6	2540.0	QPSK	30.43	24.61	5.82
				16QAM	30.37	23.63	6.74
	20MHz / 10MHz	2530.1	2544.5	QPSK	30.39	24.56	5.83
				16QAM	30.50	23.64	6.86
	15 MHz / 15MHz	2527.5	2542.5	QPSK	30.36	24.53	5.83
				16QAM	30.43	23.64	6.79
	15MHz / 20MHz	2525.3	2542.4	QPSK	30.43	24.51	5.92
				16QAM	30.43	23.63	6.80
	20MHz / 15MHz	2527.6	2544.7	QPSK	30.56	24.65	5.91
				16QAM	30.43	23.64	6.79
	20MHz / 20MHz	2525.1	2544.9	QPSK	30.54	24.59	5.95
				16QAM	30.48	23.61	6.87
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9.5.3. LTE BAND 41

Test Engineer ID:	39004	Test Date:	5/27/2022

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 41 (FCC)	5MHz / 20MHz	2583.8	2595.5	QPSK	34.38	21.54	5.84
				16QAM	34.23	20.54	6.69
	20MHz / 5MHz	2590.5	2602.2	QPSK	34.30	21.52	5.78
				16QAM	34.25	20.55	6.70
	10MHz / 20MHz	2583.6	2598.0	QPSK	34.29	21.54	5.75
				16QAM	34.30	20.55	6.75
	20MHz / 10MHz	2588.1	2602.5	QPSK	34.32	21.54	5.78
				16QAM	34.31	20.52	6.79
	15MHz / 15MHz	2585.5	2600.5	QPSK	34.36	21.55	5.81
				16QAM	34.34	20.55	6.79
	15MHz / 20MHz	2583.3	2600.4	QPSK	34.37	21.56	5.81
				16QAM	34.37	20.58	6.79
	20MHz / 15MHz	2585.6	2602.7	QPSK	35.64	22.90	5.74
				16QAM	35.69	22.02	6.67
	20MHz / 20MHz	2583.1	2602.9	QPSK	34.39	21.53	5.86
				16QAM	34.33	20.52	6.81
Duty Cycle Correction Factor (dB) =			7.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9.5.4. LTE BAND 48

Test Engineer ID:	39004	Test Date:	5/27/2022

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 48 (FCC)	5MHz / 20MHz	3615.8	3627.5	QPSK	30.46	18.10	5.36
				16QAM	30.46	17.10	6.36
	20MHz / 5MHz	3622.5	3634.2	QPSK	30.50	18.07	5.43
				16QAM	30.49	17.07	6.42
	10MHz / 20MHz	3615.6	3630.0	QPSK	30.52	18.12	5.40
				16QAM	30.48	17.12	6.36
	20MHz / 10MHz	3620.1	3634.5	QPSK	30.53	18.09	5.44
				16QAM	30.43	17.1	6.33
	15MHz / 20MHz	3615.3	3632.4	QPSK	30.58	18.12	5.46
				16QAM	30.55	17.14	6.41
	20MHz / 15MHz	3617.6	3634.7	QPSK	32.30	19.82	5.48
				16QAM	33.29	19.85	6.44
	20MHz / 20MHz	3615.1	3634.9	QPSK	30.63	18.1	5.53
				16QAM	30.56	17.11	6.45
Duty Cycle Correction Factor (dB) =			7.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

10. RADIATED TEST RESULTS

Radiated measurement using the Field Strength Method

Using the test configuration shown in Figure 6 below, We measure the radiated emissions directly from the EUT and convert the measured field strength or received power to ERP or EIRP, as required, for comparison to the applicable limits. As stated in 5.5.1 of ANSI C63.26-2015, the field strength measurement method using a test site validated to the requirements of ANSI C63.4 is an alternative to the substitution measurement method.

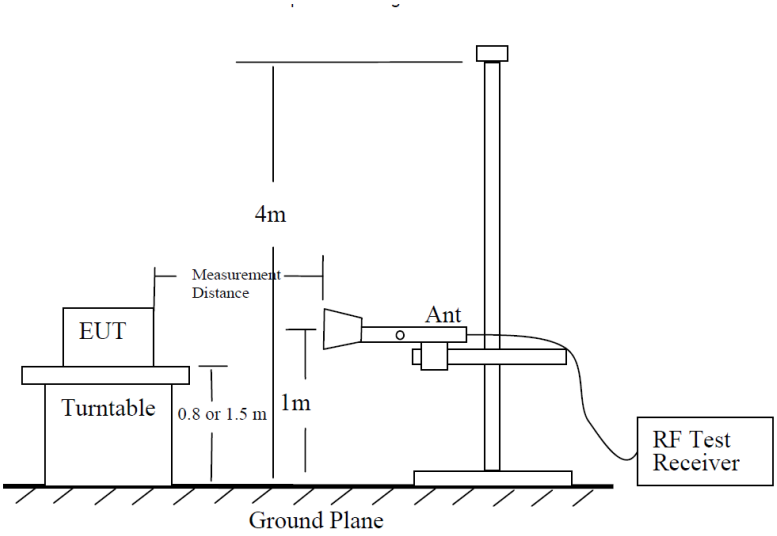


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

Radiated Power Measurement Calculation According to ANSI C63.26-2015

a) E (dBμV/m) = Measured amplitude level (dBμV) + Cable Loss (dB) + Antenna Factor (dB/m).

b) E (dBμV/m) = Measured amplitude level (dBm) + 107 + Cable Loss (dB) + Antenna Factor (dB/m).

c) E (dBμV/m) = EIRP (dBm) − 20log(D) + 104.8; where D is the measurement distance (in the far field region) in m.

d) EIRP (dBm) = E (dBμV/m) + 20log(D) − 104.8; where D is the measurement distance (in the far field region) in m.

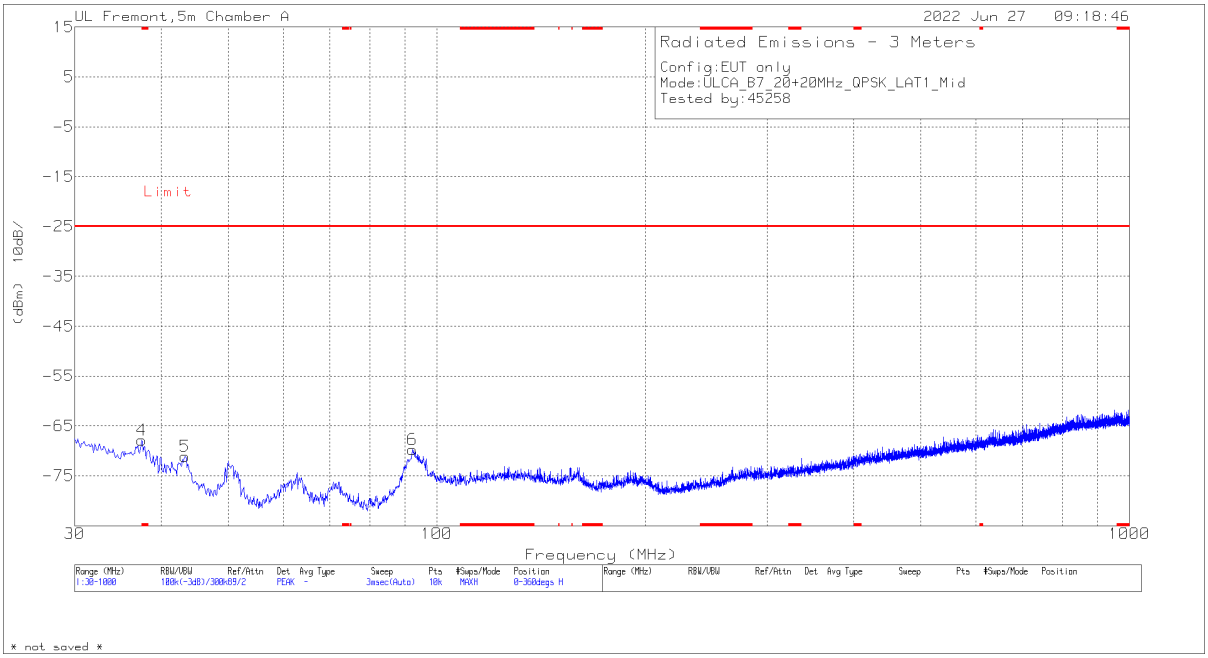
So, from d)

The measuring distance is usually at 3m, then 20*Log(3)=9.5424

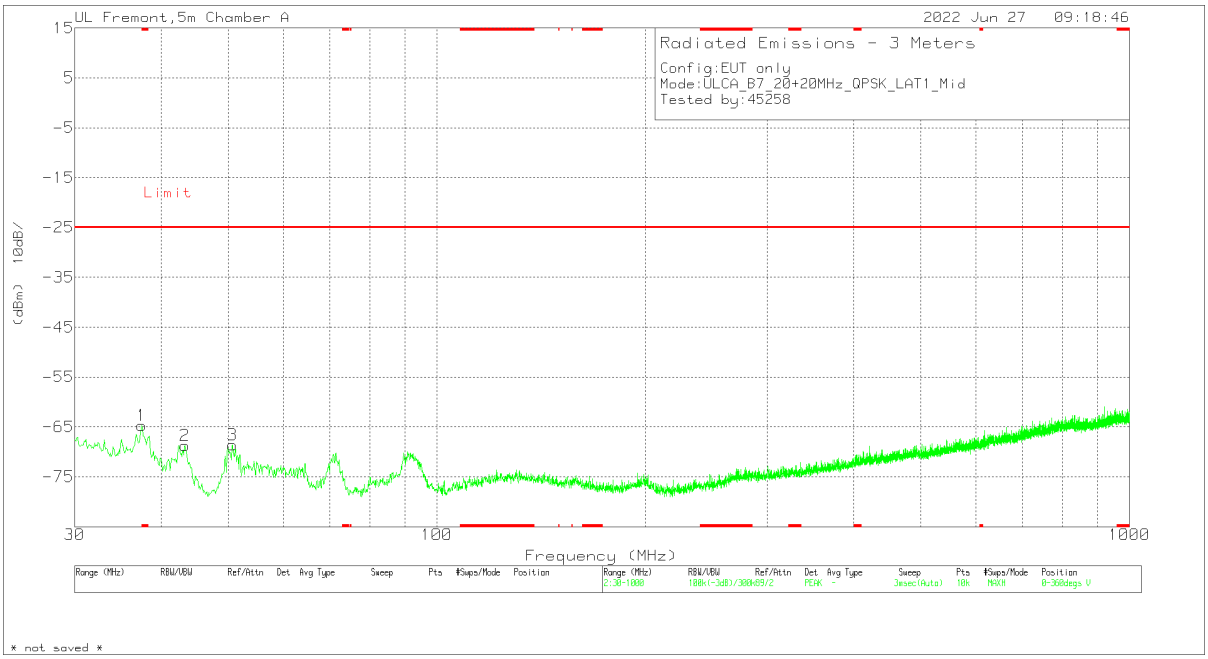
Then, EIRP (dBm) = E (dBμV/m) + 9.5424 − 104.8 = E (dBμV/m) – 95.2576

Note: Confidence check of each chamber is performed daily to see if any degradation from expected/normal reading reference data. Ambient check of each chamber is performed monthly.

Example Plot Below 1GHz



Horizontal Polarity

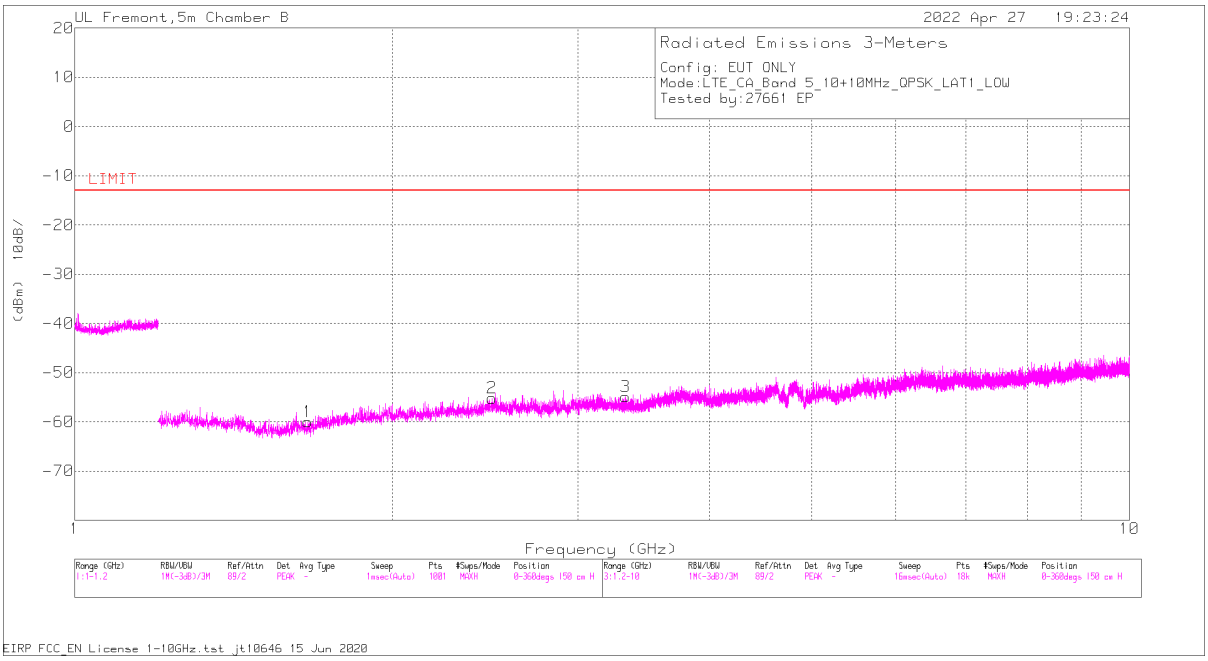


Vertical Polarity

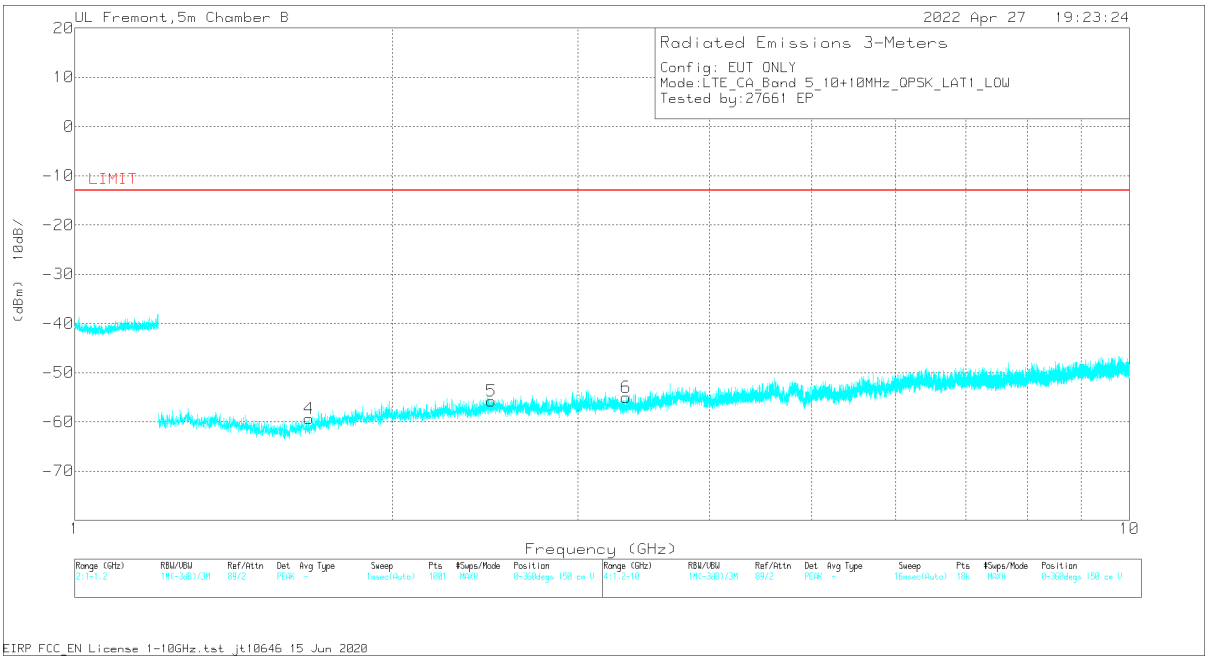
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	85151 ACF (dB)_3m	Amp/Cbl (dB/m)	EIRP CF	Corrected Reading (dBm)	Limit	Margin (dB)	Polarity
4	37.469	31.71	Pk	22.8	-27.2	-95.2	-67.89	-25	-42.89	H
1	37.469	34.9	Pk	22.8	-27.2	-95.2	-64.7	-25	-39.7	V
5	43.289	32.45	Pk	18.6	-27	-95.2	-71.15	-25	-46.15	H
2	43.289	34.85	Pk	18.6	-27	-95.2	-68.75	-25	-43.75	V
3	50.661	38.94	Pk	14.6	-26.9	-95.2	-68.56	-25	-43.56	V
6	92.274	37.41	Pk	14.4	-26.4	-95.2	-69.79	-25	-44.79	H

Example Plot Above 1GHz



Horizontal Polarity



Vertical Polarity

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF T962 (dB/m)	Amp/Cbl/Fltr/Pad (dB)	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
1.662978	41.25	Pk	28.2	-34.9	.7	-95.2	-59.95	-13	-46.95	H
1.666889	41.69	Pk	28.3	-34.9	.7	-95.2	-59.41	-13	-46.41	V
2.484800	41.04	Pk	32.6	-34.7	.5	-95.2	-55.76	-13	-42.76	V
2.486267	41.59	Pk	32.7	-34.8	.5	-95.2	-55.21	-13	-42.21	H
3.330578	40.93	Pk	32.6	-33.7	.5	-95.2	-54.87	-13	-41.87	H
3.334978	40.82	Pk	32.6	-33.7	.5	-95.2	-54.98	-13	-41.98	V

10.1. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 1

TEST PROCEDURE

KDB 971168 D01/D02 v02r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

10.1.1. LTE BAND 5

LIMIT

FCC: §22.917(a)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 5 (10.0MHZ + 10.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/27/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE5 QPSK 10MHz+10MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	HPF 1.2GHz T1737 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 829MHz + 838.9MHz										
1.662978	41.25	Pk	28.2	-34.9	.7	-95.2	-59.95	-13	-46.95	H
1.666889	41.69	Pk	28.3	-34.9	.7	-95.2	-59.41	-13	-46.41	V
2.4848	41.04	Pk	32.6	-34.7	.5	-95.2	-55.76	-13	-42.76	V
2.486267	41.59	Pk	32.7	-34.8	.5	-95.2	-55.21	-13	-42.21	H
3.330578	40.93	Pk	32.6	-33.7	.5	-95.2	-54.87	-13	-41.87	H
3.334978	40.82	Pk	32.6	-33.7	.5	-95.2	-54.98	-13	-41.98	V
Mid Channel, 831.6MHz + 841.5MHz										
1.6752	41.68	Pk	28.4	-34.9	.7	-95.2	-59.32	-13	-46.32	V
1.678133	42.12	Pk	28.5	-34.9	.7	-95.2	-58.78	-13	-45.78	H
2.507289	42.09	Pk	32.7	-34.7	.5	-95.2	-54.61	-13	-41.61	H
2.509245	41.47	Pk	32.7	-34.7	.5	-95.2	-55.23	-13	-42.23	V
3.317378	40.9	Pk	32.6	-33.7	.5	-95.2	-54.9	-13	-41.9	H
3.322756	40.87	Pk	32.6	-33.8	.5	-95.2	-55.03	-13	-42.03	V
High Channel, 834.1MHz + 844MHz										
1.6796	41.36	Pk	28.6	-34.9	.7	-95.2	-59.44	-13	-46.44	V
1.689867	40.74	Pk	28.7	-34.9	.7	-95.2	-59.96	-13	-46.96	H
2.494089	41.26	Pk	32.8	-34.8	.5	-95.2	-55.44	-13	-42.44	V
2.504356	41.05	Pk	32.7	-34.8	.5	-95.2	-55.75	-13	-42.75	H
3.326178	40.44	Pk	32.6	-33.7	.5	-95.2	-55.36	-13	-42.36	V
3.3428	40.39	Pk	32.5	-33.7	.4	-95.2	-55.61	-13	-42.61	H

10.1.2. LTE BAND 7

LIMIT

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 7 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/27/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE7 QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz										
5.037188	38.69	Pk	33.9	-30.7	.6	-95.2	-52.71	-25	-27.71	H
5.049375	38.96	Pk	34.1	-30.7	.6	-95.2	-52.24	-25	-27.24	V
7.523906	36.1	Pk	35.8	-27	.3	-95.2	-50	-25	-25	H
7.552031	35.01	Pk	35.8	-26.9	.3	-95.2	-50.99	-25	-25.99	V
10.055156	34.27	Pk	37.1	-25	.7	-95.2	-48.13	-25	-23.13	H
10.070625	34.56	Pk	37.2	-25	.7	-95.2	-47.74	-25	-22.74	V
Mid Channel, 2525.1MHz + 2544.9MHz										
5.045625	39.19	Pk	34	-30.7	.6	-95.2	-52.11	-25	-27.11	H
5.051719	38.93	Pk	34.1	-30.6	.6	-95.2	-52.17	-25	-27.17	V
7.568438	36.29	Pk	35.8	-27	.4	-95.2	-49.71	-25	-24.71	H
7.574063	35.78	Pk	35.8	-27	.4	-95.2	-50.22	-25	-25.22	V
10.116094	35.39	Pk	37.2	-25	.7	-95.2	-46.91	-25	-21.91	H
10.152656	34.64	Pk	37.2	-24.8	.6	-95.2	-47.56	-25	-22.56	V
High Channel, 2540.2MHz + 2560.0MHz										
5.063438	38.73	Pk	34.1	-30.6	.6	-95.2	-52.37	-25	-27.37	H
5.077031	37.72	Pk	34.1	-30.6	.7	-95.2	-53.28	-25	-28.28	V
7.59375	35.61	Pk	35.8	-27	.5	-95.2	-50.29	-25	-25.29	V
7.596563	35.15	Pk	35.8	-27	.4	-95.2	-50.85	-25	-25.85	H
10.145156	34.87	Pk	37.2	-24.8	.6	-95.2	-47.33	-25	-22.33	H
10.170938	33.74	Pk	37.3	-24.9	.6	-95.2	-48.46	-25	-23.46	V

10.1.3. LTE BAND 41

LIMIT

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/25/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE41FCC QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz										
5.039531	38.17	Pk	33.9	-30.7	.6	-95.2	-53.23	-25	-28.23	V
5.055	38.22	Pk	34.1	-30.6	.6	-95.2	-52.88	-25	-27.88	H
7.568438	34.74	Pk	35.8	-27	.4	-95.2	-51.26	-25	-26.26	V
7.596563	35.01	Pk	35.8	-27	.4	-95.2	-50.99	-25	-25.99	H
10.111406	33.94	Pk	37.2	-25	.7	-95.2	-48.36	-25	-23.36	V
10.12125	35.2	Pk	37.2	-25	.7	-95.2	-47.1	-25	-22.1	H
Mid Channel, 2583.1MHz + 2602.9MHz										
5.153906	36.84	Pk	34.3	-30.5	.8	-95.2	-53.76	-25	-28.76	V
5.159063	38.65	Pk	34.3	-30.5	.8	-95.2	-51.95	-25	-26.95	H
7.739063	35.08	Pk	35.9	-26.8	.3	-95.2	-50.72	-25	-25.72	V
7.754531	36.3	Pk	35.9	-26.9	.3	-95.2	-49.6	-25	-24.6	H
10.340625	34.66	Pk	37.5	-24.8	.7	-95.2	-47.14	-25	-22.14	H
10.350938	34.88	Pk	37.5	-24.8	.7	-95.2	-46.92	-25	-21.92	V
High Channel, 2660.2MHz + 2680.0MHz										
5.306719	37.89	Pk	34.4	-30.3	.7	-95.2	-52.51	-25	-27.51	H
5.320781	36.96	Pk	34.4	-30.4	.8	-95.2	-53.44	-25	-28.44	V
7.965938	35.86	Pk	35.8	-26.6	.3	-95.2	-49.84	-25	-24.84	V
7.989844	35.33	Pk	35.8	-26.6	.3	-95.2	-50.37	-25	-25.37	H
10.64625	33.8	Pk	37.9	-24.1	.5	-95.2	-47.1	-25	-22.1	V
10.651875	34.35	Pk	37.9	-24.1	.5	-95.2	-46.55	-25	-21.55	H

10.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 2

TEST PROCEDURE

KDB 971168 D01/D02 v02r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

10.2.1. LTE BAND 5

LIMIT

FCC: §22.917(a)
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least 43 + 10 log (P) dB.

QPSK LTE BAND 5 (10.0MHZ + 10.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/26/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE5 QPSK 10MHz+10MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	HPF 1.2GHz T1737 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 829MHz + 838.9MHz										
1.651733	41.78	Pk	28.4	-34.9	.7	-95.2	-59.22	-13	-46.22	V
1.654667	41.49	Pk	28.3	-34.9	.7	-95.2	-59.61	-13	-46.61	H
2.483334	41.77	Pk	32.6	-34.7	.5	-95.2	-55.03	-13	-42.03	V
2.486267	42.27	Pk	32.7	-34.8	.5	-95.2	-54.53	-13	-41.53	H
3.312978	40.88	Pk	32.6	-33.8	.5	-95.2	-55.02	-13	-42.02	V
3.318356	41.66	Pk	32.6	-33.7	.5	-95.2	-54.14	-13	-41.14	H
Mid Channel, 831.6MHz + 841.5MHz										
1.672267	41.99	Pk	28.4	-34.9	.7	-95.2	-59.01	-13	-46.01	H
1.673245	41.85	Pk	28.4	-34.9	.7	-95.2	-59.15	-13	-46.15	V
2.497023	42.66	Pk	32.8	-34.8	.5	-95.2	-54.04	-13	-41.04	H
2.508267	45.03	Pk	32.7	-34.7	.5	-95.2	-51.67	-13	-38.67	V
3.315912	41.59	Pk	32.6	-33.8	.5	-95.2	-54.31	-13	-41.31	H
3.322756	40.69	Pk	32.6	-33.8	.5	-95.2	-55.21	-13	-42.21	V
High Channel, 834.1MHz + 844MHz										
1.6708	41.37	Pk	28.4	-34.9	.7	-95.2	-59.63	-13	-46.63	H
1.671289	40.94	Pk	28.4	-34.9	.7	-95.2	-60.06	-13	-47.06	V
2.506311	41.75	Pk	32.7	-34.8	.5	-95.2	-55.05	-13	-42.05	V
2.513645	42.04	Pk	32.7	-34.7	.5	-95.2	-54.66	-13	-41.66	H
3.339867	40.63	Pk	32.6	-33.7	.5	-95.2	-55.17	-13	-42.17	H
3.354534	40.63	Pk	32.5	-33.7	.4	-95.2	-55.37	-13	-42.37	V

10.2.2. LTE BAND 7

LIMIT

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 7 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/27/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE7 QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz										
5.007656	38.19	Pk	34.1	-30.8	.8	-95.2	-52.91	-25	-27.91	V
5.008594	38.63	Pk	34.1	-30.8	.8	-95.2	-52.47	-25	-27.47	H
7.537031	35.38	Pk	35.8	-27	.3	-95.2	-50.72	-25	-25.72	H
7.545469	35.36	Pk	35.8	-26.9	.3	-95.2	-50.64	-25	-25.64	V
10.02375	35.11	Pk	37.1	-24.8	.6	-95.2	-47.19	-25	-22.19	H
10.033594	33.49	Pk	37.1	-24.8	.7	-95.2	-48.71	-25	-23.71	V
Mid Channel, 2525.1MHz + 2544.9MHz										
5.050781	39.16	Pk	34.1	-30.7	.6	-95.2	-52.04	-25	-27.04	H
5.054531	38.09	Pk	34.1	-30.6	.6	-95.2	-53.01	-25	-28.01	V
7.573594	34.74	Pk	35.8	-27	.4	-95.2	-51.26	-25	-26.26	V
7.576406	35.36	Pk	35.8	-27	.4	-95.2	-50.64	-25	-25.64	H
10.104844	35.86	Pk	37.2	-24.9	.7	-95.2	-46.34	-25	-21.34	H
10.140938	35.49	Pk	37.2	-24.8	.6	-95.2	-46.71	-25	-21.71	V
High Channel, 2540.2MHz + 2560.0MHz										
5.089688	38.18	Pk	34.2	-30.5	.8	-95.2	-52.52	-25	-27.52	V
5.099531	38.65	Pk	34.2	-30.4	.8	-95.2	-51.95	-25	-26.95	H
7.645313	35.82	Pk	35.9	-26.9	.4	-95.2	-49.98	-25	-24.98	H
7.652813	35.07	Pk	35.8	-26.9	.3	-95.2	-50.93	-25	-25.93	V
10.149375	33.8	Pk	37.3	-24.8	.6	-95.2	-48.3	-25	-23.3	V
10.163438	35.19	Pk	37.2	-24.9	.5	-95.2	-47.21	-25	-22.21	H

10.2.3. LTE BAND 41

LIMIT

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/28/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE41FCC QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz										
5.022656	38.25	Pk	34	-30.8	.7	-95.2	-53.05	-25	-28.05	H
5.035313	39.41	Pk	34	-30.6	.7	-95.2	-51.69	-25	-26.69	V
7.506563	35.06	Pk	35.7	-26.9	.3	-95.2	-51.04	-25	-26.04	V
7.523438	35.74	Pk	35.8	-27	.3	-95.2	-50.36	-25	-25.36	H
10.071094	33.95	Pk	37.2	-25	.7	-95.2	-48.35	-25	-23.35	H
10.086094	34.58	Pk	37.2	-24.8	.6	-95.2	-47.62	-25	-22.62	V
Mid Channel, 2583.1MHz + 2602.9MHz										
5.14875	39.15	Pk	34.2	-30.5	.8	-95.2	-51.55	-25	-26.55	V
5.158594	37.96	Pk	34.3	-30.5	.8	-95.2	-52.64	-25	-27.64	H
7.730156	35.47	Pk	35.8	-26.8	.3	-95.2	-50.43	-25	-25.43	V
7.739531	35.61	Pk	35.9	-26.8	.3	-95.2	-50.19	-25	-25.19	H
10.333125	35.21	Pk	37.5	-24.8	.6	-95.2	-46.69	-25	-21.69	H
10.342969	34.94	Pk	37.5	-24.8	.7	-95.2	-46.86	-25	-21.86	V
High Channel, 2660.2MHz + 2680.0MHz										
5.315625	37.44	Pk	34.4	-30.4	.8	-95.2	-52.96	-25	-27.96	H
5.3175	38.09	Pk	34.4	-30.4	.8	-95.2	-52.31	-25	-27.31	V
7.994063	36.4	Pk	35.8	-26.6	.3	-95.2	-49.3	-25	-24.3	H
8.006719	36.93	Pk	35.9	-26.5	.3	-95.2	-48.57	-25	-23.57	V
10.648594	34.74	Pk	37.9	-24.1	.5	-95.2	-46.16	-25	-21.16	H
10.649063	35.05	Pk	37.9	-24.1	.5	-95.2	-45.85	-25	-20.85	V

10.3. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 3

TEST PROCEDURE

KDB 971168 D01/D02 v02r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

10.3.1. LTE BAND 7

LIMIT

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 7 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/28/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE7 QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz										
5.02875	38.26	Pk	34.1	-30.7	.7	-95.2	-52.84	-25	-27.84	H
5.032969	38.04	Pk	34	-30.7	.7	-95.2	-53.16	-25	-28.16	V
7.501875	35.76	Pk	35.8	-26.9	.4	-95.2	-50.14	-25	-25.14	V
7.514063	35.52	Pk	35.7	-27	.3	-95.2	-50.68	-25	-25.68	H
10.021406	35.58	Pk	37.1	-24.8	.6	-95.2	-46.72	-25	-21.72	V
10.024219	34.51	Pk	37.2	-24.8	.6	-95.2	-47.69	-25	-22.69	H
Mid Channel, 2525.1MHz + 2544.9MHz										
5.068594	38.01	Pk	34.1	-30.7	.7	-95.2	-53.09	-25	-28.09	H
5.076094	37.83	Pk	34.1	-30.6	.7	-95.2	-53.17	-25	-28.17	V
7.565156	35.47	Pk	35.8	-27	.4	-95.2	-50.53	-25	-25.53	H
7.568906	34.83	Pk	35.8	-27	.4	-95.2	-51.17	-25	-26.17	V
10.084688	35.94	Pk	37.1	-24.9	.6	-95.2	-46.46	-25	-21.46	H
10.146563	35.02	Pk	37.3	-24.7	.6	-95.2	-46.98	-25	-21.98	V
High Channel, 2540.2MHz + 2560.0MHz										
5.097188	38.53	Pk	34.2	-30.4	.8	-95.2	-52.07	-25	-27.07	H
5.108906	38.42	Pk	34.1	-30.5	.8	-95.2	-52.38	-25	-27.38	V
7.639219	35.37	Pk	35.9	-26.9	.4	-95.2	-50.43	-25	-25.43	H
7.640625	34.29	Pk	35.9	-26.9	.4	-95.2	-51.51	-25	-26.51	V
10.148438	34.42	Pk	37.2	-24.7	.6	-95.2	-47.68	-25	-22.68	H
10.195313	34.2	Pk	37.3	-24.9	.7	-95.2	-47.9	-25	-22.9	V

10.3.2. LTE BAND 41

LIMIT

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/27/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE41FCC QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz										
5.001094	38	Pk	34	-30.8	.8	-95.2	-53.2	-25	-28.2	V
5.035781	37.85	Pk	34	-30.6	.7	-95.2	-53.25	-25	-28.25	H
7.493438	36.22	Pk	35.8	-26.8	.3	-95.2	-49.68	-25	-24.68	V
7.53375	36.16	Pk	35.8	-27	.3	-95.2	-49.94	-25	-24.94	H
10.001719	34.34	Pk	37.1	-24.9	.5	-95.2	-48.16	-25	-23.16	V
10.013438	34.4	Pk	37.1	-24.8	.6	-95.2	-47.9	-25	-22.9	H
Mid Channel, 2583.1MHz + 2602.9MHz										
5.128125	38.11	Pk	34.2	-30.7	.8	-95.2	-52.79	-25	-27.79	V
5.149688	38.27	Pk	34.2	-30.5	.8	-95.2	-52.43	-25	-27.43	H
7.744688	35.67	Pk	35.9	-26.8	.3	-95.2	-50.13	-25	-25.13	H
7.754531	35.04	Pk	35.9	-26.9	.3	-95.2	-50.86	-25	-25.86	V
10.354688	35.07	Pk	37.6	-24.8	.8	-95.2	-46.53	-25	-21.53	H
10.379063	33.95	Pk	37.6	-24.8	.8	-95.2	-47.65	-25	-22.65	V
High Channel, 2660.2MHz + 2680.0MHz										
5.316563	37.58	Pk	34.4	-30.4	.8	-95.2	-52.82	-25	-27.82	V
5.339063	37.37	Pk	34.4	-30.2	.6	-95.2	-53.03	-25	-28.03	H
7.960313	36.96	Pk	35.9	-26.6	.3	-95.2	-48.64	-25	-23.64	H
7.973906	35.24	Pk	35.8	-26.6	.3	-95.2	-50.46	-25	-25.46	V
10.652344	33.92	Pk	37.9	-24.1	.5	-95.2	-46.98	-25	-21.98	H
10.670625	33.64	Pk	37.9	-24.1	.5	-95.2	-47.26	-25	-22.26	V

10.4. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 4

TEST PROCEDURE

KDB 971168 D01/D02 v02r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

10.4.1. LTE BAND 7

LIMIT

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 7 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/28/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE7 QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz										
5.043281	38.98	Pk	34	-30.7	.6	-95.2	-52.32	-25	-27.32	H
5.04375	39.61	Pk	34	-30.7	.6	-95.2	-51.69	-25	-26.69	V
7.526719	36.29	Pk	35.8	-27	.3	-95.2	-49.81	-25	-24.81	H
7.532344	34.75	Pk	35.8	-27	.3	-95.2	-51.35	-25	-26.35	V
10.050938	34.78	Pk	37.1	-24.9	.7	-95.2	-47.52	-25	-22.52	H
10.063125	34.48	Pk	37.2	-25	.7	-95.2	-47.82	-25	-22.82	V
Mid Channel, 2525.1MHz + 2544.9MHz										
5.044219	39.21	Pk	34	-30.7	.6	-95.2	-52.09	-25	-27.09	H
5.045625	39.26	Pk	34	-30.7	.6	-95.2	-52.04	-25	-27.04	V
7.575	35.28	Pk	35.8	-27	.4	-95.2	-50.72	-25	-25.72	H
7.593281	35.35	Pk	35.8	-27	.5	-95.2	-50.55	-25	-25.55	V
10.078594	33.74	Pk	37.1	-24.9	.6	-95.2	-48.66	-25	-23.66	V
10.093594	33.93	Pk	37.2	-24.8	.6	-95.2	-48.27	-25	-23.27	H
High Channel, 2540.2MHz + 2560.0MHz										
5.070938	37.35	Pk	34.1	-30.6	.7	-95.2	-53.65	-25	-28.65	V
5.098125	38.53	Pk	34.2	-30.4	.8	-95.2	-52.07	-25	-27.07	H
7.614375	35.72	Pk	35.8	-26.9	.4	-95.2	-50.18	-25	-25.18	H
7.626563	35.11	Pk	35.8	-26.9	.4	-95.2	-50.79	-25	-25.79	V
10.152656	35.67	Pk	37.2	-24.8	.6	-95.2	-46.53	-25	-21.53	H
10.160156	34.74	Pk	37.2	-24.8	.5	-95.2	-47.56	-25	-22.56	V

10.4.2. LTE BAND 41

LIMIT

FCC: §27.53 (m)
At least 55 + 10 log (P) dB on all frequencies more than X megahertz from the channel edge, where X is the greater of 6 megahertz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.

QPSK LTE BAND 41 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	4/28/2022
Test Engineer:	27661
Configuration:	EUT Only
Mode	LTE41FCC QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz										
5.012813	37.39	Pk	34.1	-30.8	.8	-95.2	-53.71	-25	-28.71	V
5.028281	37.71	Pk	34.1	-30.7	.7	-95.2	-53.39	-25	-28.39	H
7.483125	34.95	Pk	35.7	-26.8	.3	-95.2	-51.05	-25	-26.05	V
7.489688	36.01	Pk	35.7	-26.8	.3	-95.2	-49.99	-25	-24.99	H
10.054219	34.38	Pk	37.1	-25	.7	-95.2	-48.02	-25	-23.02	H
10.063594	33.53	Pk	37.2	-25	.7	-95.2	-48.77	-25	-23.77	V
Mid Channel, 2583.1MHz + 2602.9MHz										
5.174531	38.07	Pk	34.2	-30.6	.7	-95.2	-52.83	-25	-27.83	H
5.17875	38.04	Pk	34.2	-30.6	.7	-95.2	-52.86	-25	-27.86	V
7.75125	35.94	Pk	35.9	-26.9	.3	-95.2	-49.96	-25	-24.96	V
7.768594	37.08	Pk	35.8	-26.9	.3	-95.2	-48.92	-25	-23.92	H
10.348125	34.53	Pk	37.5	-24.8	.7	-95.2	-47.27	-25	-22.27	H
10.3725	35.03	Pk	37.6	-24.9	.8	-95.2	-46.67	-25	-21.67	V
High Channel, 2660.2MHz + 2680.0MHz										
5.305313	37.66	Pk	34.3	-30.3	.6	-95.2	-52.94	-25	-27.94	H
5.310469	37.28	Pk	34.4	-30.4	.7	-95.2	-53.22	-25	-28.22	V
7.982813	35.43	Pk	35.8	-26.6	.3	-95.2	-50.27	-25	-25.27	H
7.987031	34.81	Pk	35.8	-26.6	.3	-95.2	-50.89	-25	-25.89	V
10.62	34.26	Pk	37.9	-24.4	.6	-95.2	-46.84	-25	-21.84	V
10.630781	34.55	Pk	37.9	-24.4	.5	-95.2	-46.65	-25	-21.65	H

10.4.3. LTE BAND 48

LIMIT

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	6/9/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode	LTE48 QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl (dB)	T1792 3400-3800MHz BRF	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.139475	26.77	RMS	35.6	-20.6	.6	-95.2	-52.83	-40	-12.83	H
7.139475	26.6	RMS	35.6	-20.6	.6	-95.2	-53	-40	-13	V
10.709859	25.38	RMS	37.9	-17.1	.5	-95.2	-48.52	-40	-8.52	H
10.709859	23.68	RMS	37.9	-17.1	.5	-95.2	-50.22	-40	-10.22	V
14.279363	24.35	RMS	39.2	-15.9	.7	-95.2	-46.85	-40	-6.85	H
14.279363	24.56	RMS	39.2	-15.9	.7	-95.2	-46.64	-40	-6.64	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.250072	28.62	RMS	35.5	-20.5	.6	-95.2	-50.98	-40	-10.98	H
7.250072	26.77	RMS	35.5	-20.5	.6	-95.2	-52.83	-40	-12.83	V
10.875094	25.49	RMS	37.8	-16.7	.5	-95.2	-48.11	-40	-8.11	H
10.875094	25.72	RMS	37.8	-16.7	.5	-95.2	-47.88	-40	-7.88	V
14.500116	25.1	RMS	39.7	-16.5	.8	-95.2	-46.1	-40	-6.1	V
14.500556	26.01	RMS	39.7	-16.5	.8	-95.2	-45.19	-40	-5.19	H
High Channel, 3670.2MHz + 3690.0MHz										
7.359788	26.35	RMS	35.6	-20.3	.7	-95.2	-52.85	-40	-12.85	H
7.359788	27.4	RMS	35.6	-20.3	.7	-95.2	-51.8	-40	-11.8	V
11.040769	24.25	RMS	37.8	-16.4	.6	-95.2	-48.95	-40	-8.95	H
11.040769	24.35	RMS	37.8	-16.4	.6	-95.2	-48.85	-40	-8.85	V
14.719988	24.19	RMS	39.9	-15.7	.9	-95.2	-45.91	-40	-5.91	H
14.719988	23.97	RMS	39.9	-15.7	.9	-95.2	-46.13	-40	-6.13	V

10.5. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 7

TEST PROCEDURE

KDB 971168 D01/D02 v02r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

10.5.1. LTE BAND 48

LIMIT

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	6/9/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode	LTE48 QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl (dB)	T1792 3400-3800MHz BRF	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.139916	27.08	RMS	35.6	-20.6	.6	-95.2	-52.52	-40	-12.52	H
7.139916	27.68	RMS	35.6	-20.6	.6	-95.2	-51.92	-40	-11.92	V
10.7103	24.62	RMS	37.9	-17.1	.5	-95.2	-49.28	-40	-9.28	H
10.7103	25.58	RMS	37.9	-17.1	.5	-95.2	-48.32	-40	-8.32	V
14.279363	24.4	RMS	39.2	-15.9	.7	-95.2	-46.8	-40	-6.8	H
14.279363	25.01	RMS	39.2	-15.9	.7	-95.2	-46.19	-40	-6.19	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.250513	29.02	RMS	35.5	-20.5	.6	-95.2	-50.58	-40	-10.58	H
7.250513	28.2	RMS	35.5	-20.5	.6	-95.2	-51.4	-40	-11.4	V
10.875534	24.42	RMS	37.8	-16.7	.5	-95.2	-49.18	-40	-9.18	H
10.875534	24.98	RMS	37.8	-16.7	.5	-95.2	-48.62	-40	-8.62	V
14.500997	26.2	RMS	39.7	-16.5	.8	-95.2	-45	-40	-5	H
14.500997	25.02	RMS	39.7	-16.5	.8	-95.2	-46.18	-40	-6.18	V
High Channel, 3670.2MHz + 3690.0MHz										
7.360228	27.66	RMS	35.6	-20.3	.7	-95.2	-51.54	-40	-11.54	H
7.360228	27.91	RMS	35.6	-20.3	.7	-95.2	-51.29	-40	-11.29	V
11.040328	24.26	RMS	37.8	-16.4	.6	-95.2	-48.94	-40	-8.94	H
11.040328	25.5	RMS	37.8	-16.4	.6	-95.2	-47.7	-40	-7.7	V
14.721309	25.63	RMS	39.8	-15.7	.9	-95.2	-44.57	-40	-4.57	H
14.721309	25.3	RMS	39.8	-15.7	.9	-95.2	-44.9	-40	-4.9	V

10.6. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 8

TEST PROCEDURE

KDB 971168 D01/D02 v02r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

10.6.1. LTE BAND 48

LIMIT

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	6/9/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode	LTE48 QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl (dB)	T1792 3400-3800MHz BRF	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.139475	27.37	RMS	35.6	-20.6	.6	-95.2	-52.23	-40	-12.23	H
7.139475	26.29	RMS	35.6	-20.6	.6	-95.2	-53.31	-40	-13.31	V
10.709859	25.56	RMS	37.9	-17.1	.5	-95.2	-48.34	-40	-8.34	H
10.709859	24.9	RMS	37.9	-17.1	.5	-95.2	-49	-40	-9	V
14.297428	25.29	RMS	39.2	-15.9	.6	-95.2	-46.01	-40	-6.01	H
14.297428	24.87	RMS	39.2	-15.9	.6	-95.2	-46.43	-40	-6.43	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.250513	29.37	RMS	35.5	-20.5	.6	-95.2	-50.23	-40	-10.23	H
7.250513	27.22	RMS	35.5	-20.5	.6	-95.2	-52.38	-40	-12.38	V
10.875534	25.05	RMS	37.8	-16.7	.5	-95.2	-48.55	-40	-8.55	H
10.875975	23.46	RMS	37.8	-16.7	.5	-95.2	-50.14	-40	-10.14	V
14.501438	25.39	RMS	39.7	-16.5	.8	-95.2	-45.81	-40	-5.81	H
14.501438	26.22	RMS	39.7	-16.5	.8	-95.2	-44.98	-40	-4.98	V
High Channel, 3670.2MHz + 3690.0MHz										
7.360669	28.98	RMS	35.6	-20.3	.7	-95.2	-50.22	-40	-10.22	H
7.360669	24.84	RMS	35.6	-20.3	.7	-95.2	-54.36	-40	-14.36	V
11.039888	24.9	RMS	37.8	-16.4	.6	-95.2	-48.3	-40	-8.3	H
11.039888	25.26	RMS	37.8	-16.4	.6	-95.2	-47.94	-40	-7.94	V
14.721309	25.29	RMS	39.8	-15.7	.9	-95.2	-44.91	-40	-4.91	V
14.72175	25.28	RMS	39.9	-15.7	.9	-95.2	-44.82	-40	-4.82	H

10.7. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 9

TEST PROCEDURE

KDB 971168 D01/D02 v02r01

All tests above 1GHz were done with a Resolution Bandwidth of 1MHz, and a Video Bandwidth of 3MHz.

RESULTS

10.7.1. LTE BAND 48

LIMIT

FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(2) Additional protection levels. Notwithstanding paragraph (d)(1) of this section, the conducted power of any emissions below 3530 MHz or above 3720 MHz shall not exceed −40dBm/MHz.

QPSK LTE BAND 48 (20.0MHZ + 20.0MHZ BANDWIDTH)

Project #:	14040868
Date:	6/9/2022
Test Engineer:	45258
Configuration:	EUT Only
Mode	LTE48 QPSK 20MHz+20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl (dB)	T1792 3400-3800MHz BRF	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.140797	25.67	RMS	35.6	-20.6	.6	-95.2	-53.93	-40	-13.93	H
7.140797	27.3	RMS	35.6	-20.6	.6	-95.2	-52.3	-40	-12.3	V
10.709859	25.78	RMS	37.9	-17.1	.5	-95.2	-48.12	-40	-8.12	H
10.709859	24.26	RMS	37.9	-17.1	.5	-95.2	-49.64	-40	-9.64	V
14.279803	25.03	RMS	39.2	-15.9	.7	-95.2	-46.17	-40	-6.17	H
14.279803	26.01	RMS	39.2	-15.9	.7	-95.2	-45.19	-40	-5.19	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.250072	27.76	RMS	35.5	-20.5	.6	-95.2	-51.84	-40	-11.84	H
7.250072	27.82	RMS	35.5	-20.5	.6	-95.2	-51.78	-40	-11.78	V
10.875534	25.42	RMS	37.8	-16.7	.5	-95.2	-48.18	-40	-8.18	H
10.875534	25.32	RMS	37.8	-16.7	.5	-95.2	-48.28	-40	-8.28	V
14.500556	25.01	RMS	39.7	-16.5	.8	-95.2	-46.19	-40	-6.19	H
14.500556	26.16	RMS	39.7	-16.5	.8	-95.2	-45.04	-40	-5.04	V
High Channel, 3670.2MHz + 3690.0MHz										
7.360669	28.66	RMS	35.6	-20.3	.7	-95.2	-50.54	-40	-10.54	H
7.360669	27.24	RMS	35.6	-20.3	.7	-95.2	-51.96	-40	-11.96	V
11.039888	24.8	RMS	37.8	-16.4	.6	-95.2	-48.4	-40	-8.4	H
11.039888	25.01	RMS	37.8	-16.4	.6	-95.2	-48.19	-40	-8.19	V
14.720428	22.84	RMS	39.9	-15.7	.9	-95.2	-47.26	-40	-7.26	H
14.720428	24.34	RMS	39.9	-15.7	.9	-95.2	-45.76	-40	-5.76	V

11. SETUP PHOTOS

Please refer to 14040868-EP1V1 for setup photos.

END OF REPORT