TEST REPORT

Report Number: 14040866-E10V4

Applicant	:	APPLE, INC 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	:	A2651
Brand	:	APPLE
FCC ID	:	BCG-E8141A
EUT Description	:	SMARTPHONE
Test Standard(s)	:	FCC CFR 47 Part 2, Part 22, Part 27 and Part 96

Date Of Issue:
AUGUST 15, 2022

Prepared by:
UL LLC
47173 Benicia Street
Fremont, CA 94538, U.S.A.
TEL: (510) 319-4000
FAX: (510) 661-0888

ACCREDITED
CERT #0751.05

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	7/17/2022	Initial Review	Mengistu Mekuria
V2	8/1/2022	Revised TCB questions on Section 5.4 and 6.2	Binod Sitaula
V3	8/9/2022	Updated Section 6.2	Binod Sitaula
V4	8/15/2022	Updated Section 9.5.3 and 9.5.4	Binod Sitaula

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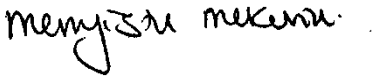
1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE, INC 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	A2651
Brand	APPLE
FCC ID	BCG-E8141A
EUT Description	SMARTPHONE
Serial Number	CT656X3X0G, C2V3Q7Q7D5 (CONDUCTED) & JXM6L16XM3, H7VFKXH4D1(RADIATED)
Sample Receipt Date	APRIL 15, 2022
Date Tested	APRIL 15, 2022 to JULY 05, 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:
	
Mengistu Mekuria Staff Engineer UL LLC	Binod Sitaula Laboratory 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 27 and Part 96
- FCC KDB 971168 D01 v03r01: Power Meas License Digital Systems
- 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: 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.

The maximum output for L-Ch and H-Ch of LTE B48 CA 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

RSS 132	
ERP Limit (W)	7.00
Antenna Gain (dBi)_(Ant1)	-5.00

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	25.56	18.41	0.069	7316	7M32G7W
	16QAM			25.70	18.55	0.072	7478	7M48D7W
5+3	QPSK	826.5	847.5	25.70	18.55	0.072	7389	7M39G7W
	16QAM			25.70	18.55	0.072	7381	7M38D7W
5+10	QPSK	826.5	844.0	25.46	18.31	0.068	13849	13M8G7W
	16QAM			24.46	17.31	0.054	13845	13M8D7W
10+5	QPSK	829.0	846.5	25.47	18.32	0.068	13854	13M9G7W
	16QAM			24.44	17.29	0.054	13854	13M9D7W
10+10	QPSK	829.0	844.0	25.70	18.55	0.072	18728	18M7G7W
	16QAM			24.69	17.54	0.057	18778	18M8D7W

OUTPUT POWER FOR LTE BAND 7

Part 27 / RSS 199	
EIRP Limit (W)	2.00
Antenna Gain (dBi)_(Ant3)	-0.50

Bandwidth (MHz)	Modulation		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	24.50	0.282	27844	27M8G7W
	16QAM			24.08	23.58	0.228	27745	27M7D7W
20+10	QPSK	2510.0	2564.5	25.00	24.50	0.282	27920	27M9G7W
	16QAM			24.09	23.59	0.229	27844	27M8D7W
15+15	QPSK	2507.5	2562.5	25.00	24.50	0.282	28386	28M4G7W
	16QAM			24.07	23.57	0.228	28412	28M4D7W
15+20	QPSK	2507.8	2560.0	25.00	24.50	0.282	32617	32M6G7W
	16QAM			24.09	23.59	0.229	32464	32M5D7W
20+15	QPSK	2510.0	2562.2	25.00	24.50	0.282	32990	33M0G7W
	16QAM			24.07	23.57	0.228	32364	32M4D7W
20+20	QPSK	2510.0	2560.0	25.00	24.50	0.282	37414	37M4G7W
	16QAM			24.08	23.58	0.228	37373	37M4D7W

OUTPUT POWER FOR LTE BAND 41

Part 27	
EIRP Limit (W)	2.00
Antenna Gain (dBi)_(Ant3)	-0.10

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	27.90	0.617	23056	23M1G7W
	16QAM			26.55	26.45	0.442	23066	23M1D7W
20+5	QPSK	2506.0	2686.7	28.00	27.90	0.617	23055	23M1G7W
	16QAM			26.52	26.42	0.439	23015	23M0D7W
10+20	QPSK	2501.5	2680.0	28.00	27.90	0.617	27660	27M7G7W
	16QAM			26.58	26.48	0.445	27697	27M7D7W
20+10	QPSK	2506.0	2684.5	28.00	27.90	0.617	27749	27M7G7W
	16QAM			26.58	26.48	0.445	27835	27M8D7W
15+15	QPSK	2503.5	2682.5	28.00	27.90	0.617	28417	28M4G7W
	16QAM			26.55	26.45	0.442	28306	28M3D7W
15+20	QPSK	2503.8	2680.0	28.00	27.90	0.617	32542	32M5G7W
	16QAM			26.51	26.41	0.438	32387	32M4D7W
20+15	QPSK	2506.0	2682.2	28.00	27.90	0.617	32607	32M6G7W
	16QAM			26.54	26.44	0.441	32588	32M6D7W
20+20	QPSK	2506.0	2680.0	28.00	27.90	0.617	37413	37M4G7W
	16QAM			26.55	26.45	0.442	37430	37M4D7W

OUTPUT POWER FOR LTE BAND 48

LOW CHANNEL

Part 96	
EIRP Limit (W)/ 10MHz	0.20
Antenna Gain (dBi)_(Ant4)	-2.20

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	20.09	17.89	0.062	22994	23M0G7W
	16QAM			19.96	17.76	0.060	22924	22M9D7W
20+5	QPSK	3560.0	3696.7	20.00	17.80	0.060	23155	23M2G7W
	16QAM			19.95	17.75	0.060	23082	23M1D7W
10+20	QPSK	3555.5	3690.0	19.50	17.30	0.054	27808	27M8G7W
	16QAM			19.57	17.37	0.055	27877	27M9D7W
20+10	QPSK	3560.0	3694.5	19.49	17.29	0.054	27951	28M0G7W
	16QAM			19.59	17.39	0.055	27874	27M9D7W
15+20	QPSK	3557.8	3690.0	19.47	17.27	0.053	32720	32M7G7W
	16QAM			19.47	17.27	0.053	32688	32M7D7W
20+15	QPSK	3560.0	3692.2	19.27	17.07	0.051	32449	32M4G7W
	16QAM			19.25	17.05	0.051	32482	32M5D7W
20+20	QPSK	3560.0	3690.0	21.09	18.89	0.077	37436	37M4G7W
	16QAM			20.97	18.77	0.075	37403	37M4D7W

MIDDLE CHANNEL

Part 96	
EIRP Limit (W)/ 10MHz	0.20
Antenna Gain (dBi)_(Ant4)	-2.10

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	23.50	21.40	0.138	22994	23M0G7W
	16QAM			23.50	21.40	0.138	22924	22M9D7W
20+5	QPSK	3560.0	3696.7	23.50	21.40	0.138	23155	23M2G7W
	16QAM			23.50	21.40	0.138	23082	23M1D7W
10+20	QPSK	3555.5	3690.0	24.00	21.90	0.155	27808	27M8G7W
	16QAM			24.00	21.90	0.155	27877	27M9D7W
20+10	QPSK	3560.0	3694.5	23.98	21.88	0.154	27951	28M0G7W
	16QAM			24.00	21.90	0.155	27874	27M9D7W
15+20	QPSK	3557.8	3690.0	24.37	22.27	0.169	32720	32M7G7W
	16QAM			24.40	22.30	0.170	32688	32M7D7W
20+15	QPSK	3560.0	3692.2	24.40	22.30	0.170	32449	32M4G7W
	16QAM			24.40	22.30	0.170	32482	32M5D7W
20+20	QPSK	3560.0	3690.0	24.40	22.30	0.170	37436	37M4G7W
	16QAM			24.40	22.30	0.170	37403	37M4D7W

HIGH CHANNEL

Part 96	
EIRP Limit (W)/ 10MHz	0.20
Antenna Gain (dBi)_(Ant4)	-2.00

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	19.99	17.99	0.063	22994	23M0G7W
	16QAM			19.91	17.91	0.062	22924	22M9D7W
20+5	QPSK	3560.0	3696.7	19.99	17.99	0.063	23155	23M2G7W
	16QAM			19.91	17.91	0.062	23082	23M1D7W
10+20	QPSK	3555.5	3690.0	19.40	17.40	0.055	27808	27M8G7W
	16QAM			19.48	17.48	0.056	27877	27M9D7W
20+10	QPSK	3560.0	3694.5	19.49	17.49	0.056	27951	28M0G7W
	16QAM			19.40	17.40	0.055	27874	27M9D7W
15+20	QPSK	3557.8	3690.0	19.46	17.46	0.056	32720	32M7G7W
	16QAM			19.42	17.42	0.055	32688	32M7D7W
20+15	QPSK	3560.0	3692.2	19.24	17.24	0.053	32449	32M4G7W
	16QAM			19.21	17.21	0.053	32482	32M5D7W
20+20	QPSK	3560.0	3690.0	20.97	18.97	0.079	37436	37M4G7W
	16QAM			20.92	18.92	0.078	37403	37M4D7W

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(s) 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	-5.0	-6.2					
LTE Band 7	2500 – 2570	-2.4	-3.0	-0.5	-2.2			
LTE Band 41	2496 – 2690	-2.4	-2.9	-0.1	-2.2			
LTE Band 48 (Low)	3550 – 3600				-2.2	-3.0	-2.8	-6.5
LTE Band 48 (Mid)	3600 – 3650				-2.1	-2.9	-3.0	-6.6
LTE Band 48 (High)	3650 – 3700				-2.0	-4.6	-3.7	-6.5

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	Ant 1
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	Z	Z	N/A	N/A	N/A	N/A	N/A
2300 – 2700 MHz	Y	X	Y	Y	N/A	N/A	N/A
3300 – 3980 MHz	N/A	N/A	N/A	Y	Y	X	X

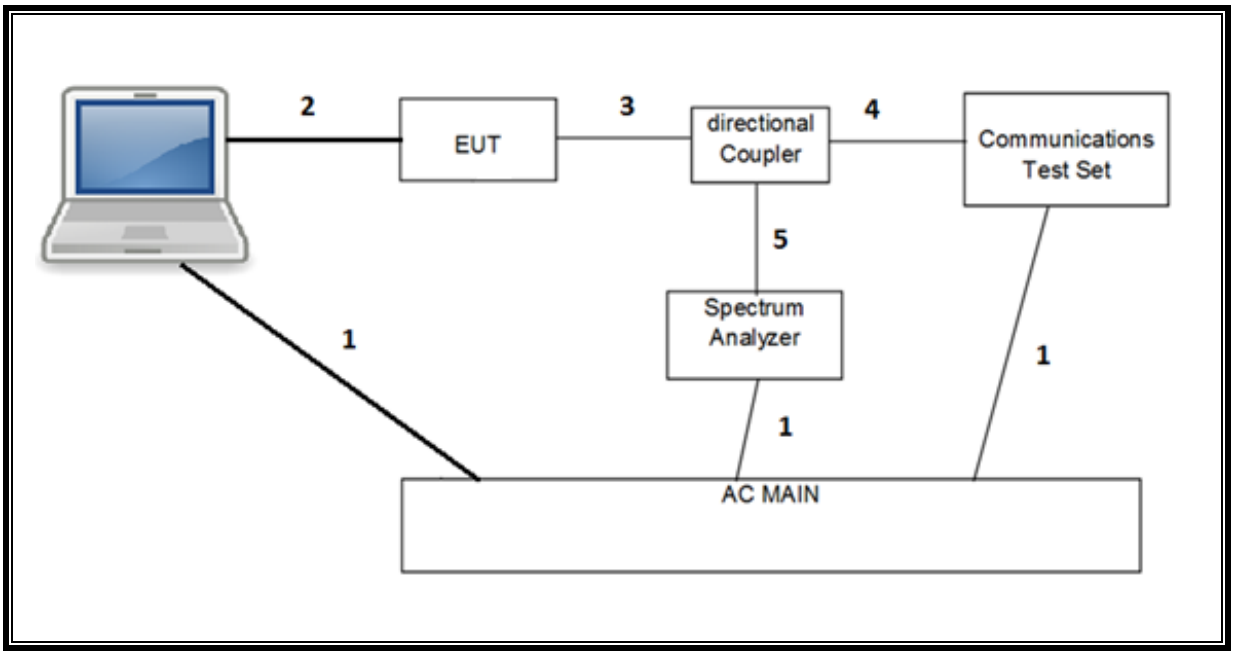
Radiated spurious emissions were investigated from 9kHz to 30MHz, 30MHz-1GHz and above 1GHz. There were no emissions found with less than 20dB of margin from 9kHz to 1GHz.

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.

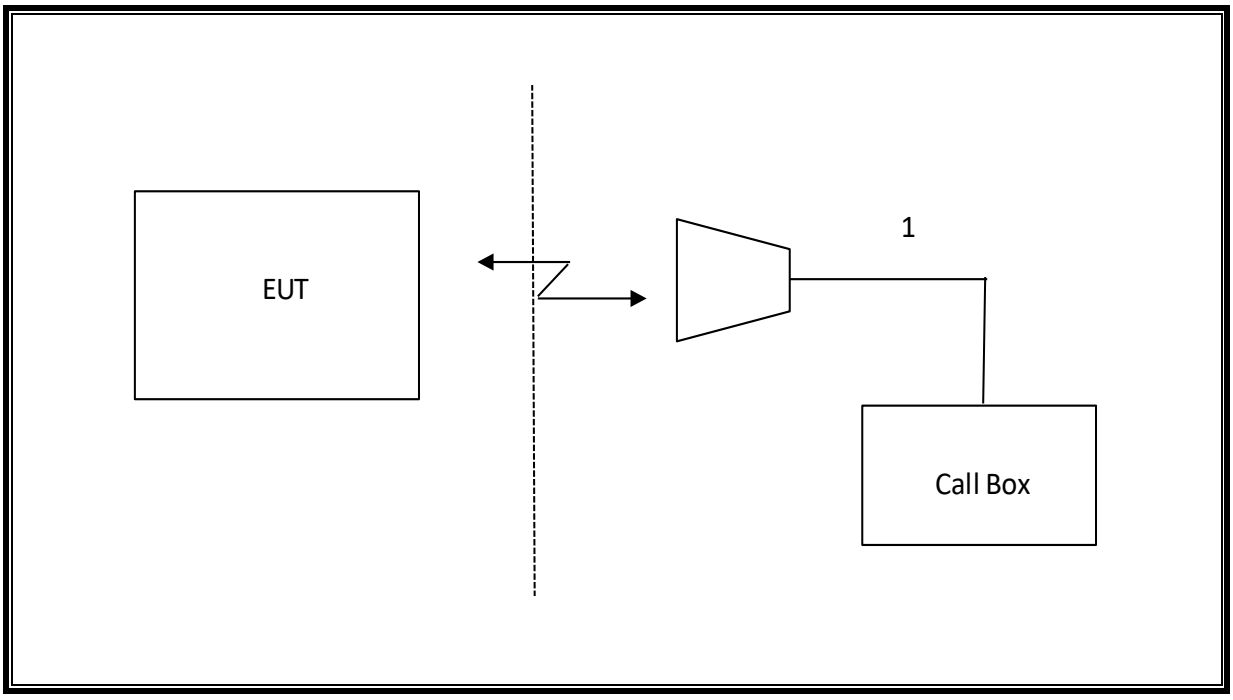
6.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description		**Manufacturer**	**Model**	**Serial Number**		**FCC ID/ DoC**
Laptop		Apple	MacBook Pro	HRP082673		BCGA1708
AC/DC adapter		Apple	A1718	C4H64450HH3GN8RA6		--
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	80402	6/14/2022
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences Corp.	JB3	85151	3/21/2023
*RF Amplifier, 1-18GHz	T1165	AFS42-00101800-25-S-42	T1165	6/12/2022
*Amplifier, 1 to 18GHz	Miteq	AFS42-00101800-25-S-42	T1165	6/12/2022
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85212	1/30/2023
Wideband Communication Test Set, Call Box	Rohde & Schwarz	CMW500	85827	connection purpose only
Antenna, Horn 1-18GHz	ETS Lindgren	3117	80403	5/26/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	125178	1/24/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	80105	connection purpose only
Antenna, Broadband Hybrid, 30MHz to 3GHz	Sunol Sciences Corp.	JB3	203089	1/31/2023
Amplifier, 9KHz to 1GHz, 32dB	SONOMA INSTRUMENT	310	170649	7/07/2022
Directional Coupler	KRYTAR	152613	T1536	9/23/2022
Directional Coupler	KRYTAR	152613	T1537	9/23/2022
Power Meter, P-series single channel	Keysight	N1911A	82174	1/24/2023
Power Sensor, P - series, 50MHz to 18GHz, Wideband	Keysight	N1921A	90388	1/24/2023
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	2/1/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85201	2/1/2023
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	85214	2/2/2023
Spectrum Analyzer, PXA, 3Hz to 50GHz w/Ext. Mixer	Keysight	N9030A	80400	2/1/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85806	2/22/2023
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	85943	2/20/2023
Wireless Test Platform, UXM 5G	Keysight	E7515B	207269	1/24/2023
Environmental Chamber	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	82472	6/15/2022
Antenna, Active Loop 100KHz to 30MHz	ELECTRO-METRICS	EM-6872	219911	05/10/2023
Antenna, Active Loop 30Hz to 1MHz	ELECTRO-METRICS	EM-6871	219909	05/10/2023
UL AUTOMATION SOFTWARE				
CLT Software	UL	UL RF	Ver 3.7.6, Match 1, 2022	
Power Measurement Software	UL	UL RF	Ver 3.4.9, April 29, 2022	
Radiated test software	UL	UL RF	Ver 9.5 June 15, 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:

8.1.1. LTE BAND 5

Test Engineer ID:	12482	Test Date:	4/22/2022

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	25.33	25.69	**24.65**	23.43	24.24	24.43	22.32	21.22
			15	0	25	0	**25.56**	25.49	22.83	23.45	**24.48**	24.25	22.16	21.14
	834.0	837.9	1	14	1	0	25.32	**25.70**	24.60	**23.47**	24.21	**24.70**	**22.60**	21.48
			15	0	25	0	25.54	25.53	24.50	23.46	24.44	24.55	22.54	**21.54**
	842.5	846.5	1	14	1	0	25.27	25.21	24.16	23.03	24.43	23.83	21.86	20.78
			15	0	25	0	25.48	25.30	24.24	23.23	24.46	23.89	21.86	20.82

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	**25.70**	25.69	23.28	**24.66**	24.15	24.66	**22.63**	21.33
			25	0	15	0	**25.70**	25.31	23.27	24.49	**24.29**	24.17	22.59	21.04
	835.0	838.9	1	24	1	0	25.05	**25.70**	**24.47**	23.56	24.13	**24.70**	22.50	**21.35**
			25	0	15	0	25.19	25.23	24.21	23.18	24.26	24.33	22.30	21.27
	843.6	847.5	1	24	1	0	25.02	24.76	23.60	22.57	24.06	23.60	21.59	20.45
			25	0	15	0	25.13	24.77	23.76	22.78	24.24	23.56	21.52	20.52

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	25.43	24.40	23.40	20.42	**24.63**	23.58	22.62	19.62
			25	0	50	0	23.87	22.80	22.86	20.82	22.77	21.74	21.75	19.69
	831.6	838.8	1	24	1	0	**25.46**	**24.46**	**23.44**	20.37	24.59	23.50	22.54	19.58
			25	0	50	0	23.83	22.76	22.78	**20.82**	23.83	22.82	**22.81**	**20.74**
	836.8	844.0	1	24	1	0	25.37	24.27	23.29	20.33	24.62	**23.59**	22.56	19.53
			25	0	50	0	23.83	22.75	22.82	20.78	22.71	21.66	21.63	19.64

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	**25.47**	**24.44**	23.42	20.43	**24.67**	**23.62**	22.60	19.61
			50	0	25	0	23.86	22.83	22.84	**20.76**	22.75	21.71	21.66	19.72
	834.3	841.5	1	49	1	0	25.40	24.38	23.33	20.31	24.62	23.55	**22.61**	19.60
			50	0	25	0	23.84	22.76	22.78	20.76	22.74	21.69	21.71	**19.73**
	839.3	846.5	1	49	1	0	25.46	24.43	**23.45**	20.41	24.65	23.62	22.59	19.58
			50	0	25	0	23.82	22.77	22.82	20.76	22.74	21.71	21.70	19.66

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	**25.70**	**24.69**	**23.63**	20.63	**24.73**	**23.73**	**22.69**	**19.72**
			1	0	1	49	15.23	15.16	15.18	15.20	14.23	14.22	14.20	14.23
			50	0	50	0	23.73	22.67	22.71	20.65	22.66	21.64	21.62	19.64
	831.5	841.4	1	49	1	0	25.63	24.57	23.63	20.61	24.71	23.69	22.61	19.66
			1	0	1	49	15.24	15.24	15.17	15.20	14.26	14.21	14.19	14.26
			50	0	50	0	23.74	22.73	22.73	20.65	22.66	21.61	21.61	19.62
	834.1	844.0	1	49	1	0	25.61	24.56	23.53	20.55	24.66	23.57	22.56	19.60
			1	0	1	49	15.30	15.21	15.24	15.27	14.28	14.19	14.19	14.24
			50	0	50	0	23.74	22.65	22.65	**20.72**	22.64	21.60	21.55	19.62

8.1.2. LTE BAND 7

Test Engineer ID:	12482	Test Date:	2/4/2022

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	24.75	**23.75**	20.79	23.65	22.73	21.71	18.78	24.91	24.06	23.03	20.07	**23.20**	22.22	21.26	18.28
			50	0	100	0	23.72	22.71	22.77	**20.79**	21.77	20.77	20.71	**18.80**	23.05	22.05	22.06	20.04	21.26	20.27	20.27	18.22
	2525.6	2540.0	1	49	1	0	25.64	24.72	23.71	20.71	23.57	**22.80**	**21.78**	18.74	24.94	**24.08**	**23.08**	20.08	23.16	**22.28**	**21.29**	**18.36**
			50	0	100	0	23.76	22.78	22.74	20.75	21.70	20.75	20.79	18.77	23.05	22.07	22.07	**20.09**	21.35	20.38	20.39	18.33
	2545.6	2560.0	1	49	1	0	**25.70**	**24.79**	23.75	20.74	**23.70**	22.70	21.74	18.72	**25.00**	24.05	23.04	20.04	23.03	22.22	21.23	18.27
			50	0	100	0	23.75	22.78	22.79	20.78	21.73	20.70	20.70	18.75	23.08	22.02	22.03	20.09	21.29	20.32	20.33	18.30

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			
20MHz / 10MHz	2510.0	2524.4	1	99	1	0	**25.70**	24.73	23.78	20.77	23.59	22.73	21.76	18.75	24.98	24.03	23.07	20.03	23.19	22.24	21.24	18.21
			100	0	50	0	23.72	22.70	22.73	20.77	21.80	20.74	20.89	**18.77**	23.08	22.09	22.01	20.07	21.29	20.28	20.21	18.23
	2530.1	2544.5	1	99	1	0	25.70	24.75	**23.78**	20.76	**23.70**	22.72	21.70	18.77	24.97	24.02	**23.09**	20.05	23.16	**22.29**	21.26	18.23
			100	0	50	0	23.78	22.74	22.75	20.78	21.72	20.71	20.76	18.75	23.04	22.01	22.01	20.02	21.29	20.34	20.33	**18.31**
	2550.1	2564.5	1	99	1	0	25.70	**24.80**	23.74	20.76	23.51	**22.77**	**21.77**	18.71	**25.00**	**24.09**	23.00	**20.08**	**23.20**	22.29	**21.33**	18.28
			100	0	50	0	23.75	22.74	22.73	**20.80**	21.70	20.78	20.79	18.75	23.01	22.09	22.03	20.06	21.29	20.30	20.30	18.26

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**	24.77	23.76	20.71	23.67	22.78	21.77	18.74	25.00	**24.07**	23.03	20.02	23.19	22.28	21.20	18.21
			75	0	75	0	23.80	22.72	22.77	20.76	21.77	20.79	20.90	**18.79**	23.03	22.07	22.09	20.01	21.28	20.25	20.40	18.30
	2527.5	2542.5	1	74	1	0	25.64	**24.78**	**23.80**	20.76	23.68	**22.79**	**21.78**	18.78	**25.00**	24.01	**23.06**	**20.09**	**23.20**	22.28	21.26	18.29
			75	0	75	0	23.72	22.77	22.74	20.74	21.79	20.78	20.79	18.70	23.06	22.08	22.04	20.06	21.25	20.23	20.24	**18.30**
	2547.5	2562.5	1	74	1	0	25.64	24.76	23.70	**20.78**	**23.70**	22.79	21.54	18.79	24.94	24.02	23.01	20.04	22.99	**22.28**	**21.27**	18.24
			75	0	75	0	23.76	22.72	22.80	20.75	21.80	20.71	20.72	18.77	23.05	22.01	22.01	20.02	21.22	20.29	20.30	18.25

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	25.67	24.78	**23.80**	20.73	23.64	**22.77**	21.71	18.70	**25.00**	**24.09**	23.06	20.05	**23.20**	22.25	**21.26**	18.22
			75	0	100	0	23.76	22.79	22.77	**20.80**	21.73	20.79	20.78	18.78	23.00	22.03	22.05	20.06	21.26	20.22	20.28	18.23
	2525.3	2542.4	1	74	1	0	25.62	**24.80**	23.72	20.71	23.62	22.73	21.77	**18.80**	24.95	24.08	**23.08**	**20.09**	22.98	**22.30**	21.25	18.25
			75	0	100	0	23.79	22.77	22.77	20.74	21.78	20.76	20.72	18.72	23.03	22.06	22.06	20.07	21.38	20.29	20.29	**18.37**
	2542.9	2560.0	1	74	1	0	**25.70**	24.75	23.78	20.70	**23.70**	22.71	**21.77**	18.79	24.97	24.01	23.06	20.01	23.00	22.26	21.23	18.27
			75	0	100	0	23.79	22.77	22.77	20.74	21.75	20.78	20.71	18.76	23.02	22.09	22.08	20.07	21.34	20.35	20.35	18.32

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	25.69	**24.79**	**23.78**	20.72	23.68	22.75	**21.78**	18.71	24.99	24.02	23.07	20.04	23.20	**22.29**	21.30	**18.29**
			100	0	75	0	23.76	22.74	22.71	20.74	21.74	20.77	20.72	18.70	23.07	22.01	22.07	20.05	21.27	20.28	20.29	18.26
	2527.6	2544.7	1	99	1	0	**25.70**	24.72	23.73	20.74	**23.70**	**22.78**	21.76	18.73	**25.00**	**24.07**	**23.09**	20.01	23.17	22.28	21.27	18.24
			100	0	75	0	23.73	22.71	22.78	20.71	21.72	20.75	20.76	18.75	23.06	22.00	22.08	20.00	21.24	20.20	20.27	18.26
	2545.1	2562.2	1	99	1	0	25.62	24.74	23.72	**20.79**	23.70	22.76	21.71	**18.80**	24.97	24.05	23.05	20.02	**23.20**	22.25	**21.38**	18.23
			100	0	75	0	23.72	22.79	22.72	20.71	21.74	20.73	20.79	18.79	23.05	22.08	22.02	**20.08**	21.25	20.30	20.25	18.26

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	25.65	24.72	23.75	20.70	23.67	22.70	21.58	18.77	24.95	24.06	23.03	20.01	23.17	22.22	21.04	18.27
			1	0	1	99	17.24	17.26	17.26	17.29	15.28	15.26	15.30	15.23	16.60	16.57	16.52	16.59	14.73	14.74	14.70	14.73
			100	0	100	0	23.80	22.74	22.75	20.78	21.80	20.72	20.72	18.70	23.08	22.03	22.03	20.05	21.29	20.20	20.28	18.28
	2525.1	2544.9	1	99	1	0	**25.70**	**24.75**	23.73	**20.78**	**23.70**	22.77	**21.77**	18.72	**25.00**	24.03	**23.10**	20.03	**23.20**	22.27	21.21	18.37
			1	0	1	99	17.23	17.27	17.26	17.25	15.08	15.22	15.20	15.27	16.57	16.52	16.70	16.57	14.70	14.78	14.76	14.70
			100	0	100	0	23.76	22.80	22.72	20.73	21.75	20.74	20.79	18.78	23.08	22.05	22.08	**20.09**	21.40	20.30	20.39	**18.39**
	2540.2	2560.0	1	99	1	0	**25.70**	24.71	**23.76**	20.73	23.69	**22.80**	21.74	18.75	24.94	**24.08**	23.06	20.02	23.04	**22.29**	**21.26**	18.37
			1	0	1	99	17.28	17.27	17.27	17.22	15.09	15.32	15.21	15.30	16.58	16.58	16.57	16.40	14.71	14.71	14.80	14.72
			100	0	100	0	23.79	22.73	22.72	20.72	21.71	20.74	20.72	**18.78**	23.09	22.09	22.09	20.03	21.34	20.33	20.35	18.30

8.1.3. LTE BAND 41

Test Engineer ID:	12482	Test Date:	6/20/2022

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	23.45	23.41	23.42	23.43	23.78	23.72	23.78	23.75	21.98	21.92	21.94	21.92	22.01	22.08	22.08	22.01
			25	0	100	0	23.46	23.41	23.44	23.44	23.73	23.77	23.77	23.79	22.00	22.00	21.94	21.98	22.04	22.08	22.01	22.02
	2583.8	2595.5	1	24	1	0	**28.70**	**27.23**	**26.70**	23.76	**28.70**	**27.25**	**26.77**	23.78	**28.00**	**26.46**	**26.01**	22.99	**27.70**	**26.26**	**25.77**	**22.79**
			25	0	100	0	26.76	25.76	25.71	**23.78**	26.71	25.74	25.75	23.76	26.09	25.01	25.02	**23.02**	25.75	24.79	24.73	22.73
	2668.3	2680.0	1	24	1	0	28.49	26.92	26.41	23.47	28.68	27.21	26.75	**23.79**	27.73	26.29	25.74	22.79	27.01	25.59	25.09	22.07
			25	0	100	0	26.42	25.45	25.42	23.43	26.70	25.77	25.71	23.76	25.76	24.73	24.79	22.78	25.02	24.00	24.03	22.06

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	27.44	26.95	**26.96**	23.45	27.78	27.25	**27.29**	23.77	26.00	25.42	25.23	21.95	26.09	25.54	25.58	22.03
			100	0	25	0	23.47	23.42	23.46	23.43	23.80	23.74	23.71	23.78	21.98	21.96	21.91	21.94	22.07	22.06	22.01	22.07
	2590.5	2602.2	1	99	1	0	**28.70**	**27.28**	26.75	**23.77**	28.70	27.24	26.75	23.76	**28.00**	**26.46**	**26.00**	23.03	**27.70**	**26.25**	**25.77**	22.70
			100	0	25	0	26.72	25.71	25.79	23.74	26.71	25.73	25.71	**23.80**	26.03	25.01	25.09	**23.08**	25.71	24.75	24.80	**22.79**
	2675.0	2686.7	1	99	1	0	28.42	26.90	26.43	23.42	**28.70**	**27.25**	26.70	23.76	27.71	26.21	25.73	22.79	27.08	25.60	25.10	22.01
			100	0	25	0	26.49	25.42	25.46	23.43	26.76	25.77	25.72	23.80	25.73	24.77	24.71	22.74	25.04	24.09	24.00	22.02

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	23.42	23.44	23.45	23.42	23.79	23.80	23.71	23.71	21.92	21.99	21.93	21.91	22.06	22.09	22.06	22.08
			50	0	100	0	23.49	23.42	23.48	23.48	23.71	23.80	23.73	23.71	21.93	21.92	21.94	22.00	22.07	22.03	22.02	22.09
	2583.6	2598.0	1	49	1	0	**28.70**	**27.30**	**26.77**	23.78	**28.80**	27.20	**26.74**	23.71	**28.00**	**26.56**	**26.07**	23.01	**27.70**	**26.21**	**25.71**	**22.79**
			50	0	100	0	26.76	25.80	25.72	**23.78**	26.75	25.73	25.71	**23.73**	26.06	25.07	25.08	**23.05**	25.70	24.79	24.78	22.76
	2665.6	2680.0	1	49	1	0	28.44	26.99	26.47	23.45	28.72	**27.21**	26.74	23.72	27.71	26.20	25.85	22.78	27.05	25.58	25.07	22.00
			50	0	100	0	26.44	25.48	25.43	23.43	26.75	25.71	25.71	23.71	25.75	24.73	24.73	22.72	25.05	24.03	24.06	22.04

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	27.46	26.97	**26.95**	23.40	27.80	27.25	**27.24**	23.76	25.90	25.41	25.47	21.98	26.07	25.50	25.51	22.05
			100	0	50	0	23.46	23.43	23.32	23.46	23.79	23.72	23.71	23.73	21.96	21.95	21.96	21.98	22.04	22.01	22.06	22.01
	2588.1	2602.5	1	99	1	0	**28.79**	**27.21**	26.71	23.75	**28.75**	27.24	26.78	**23.79**	**28.00**	**26.51**	**26.01**	22.94	**27.70**	**26.28**	**25.74**	**22.78**
			100	0	50	0	26.79	25.72	25.75	**23.77**	26.78	25.70	25.75	23.74	26.10	25.09	25.02	**23.05**	25.79	24.80	24.71	22.78
	2670.1	2684.5	1	99	1	0	28.41	26.96	26.44	23.45	28.58	**27.27**	26.74	23.79	27.77	26.21	25.89	22.78	27.08	25.54	25.05	22.04
			100	0	50	0	26.49	25.50	25.41	23.48	26.77	25.74	25.77	23.77	25.71	24.71	24.77	22.73	25.03	24.07	24.04	22.04

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	28.42	26.92	26.47	23.48	28.65	27.20	**26.86**	23.71	26.96	25.46	24.93	21.95	27.09	25.54	25.08	22.09
			75	0	75	0	23.47	23.44	23.45	23.49	23.74	23.76	23.73	23.70	21.90	21.95	21.96	21.98	22.04	22.08	22.01	22.03
	2585.5	2600.5	1	74	1	0	**28.70**	**27.27**	**26.72**	**23.79**	28.69	27.21	26.79	23.72	**28.00**	**26.46**	**25.95**	22.99	**27.70**	**26.27**	**25.76**	**22.73**
			75	0	75	0	26.74	25.76	25.72	23.76	26.71	25.76	25.71	23.76	26.01	25.03	25.10	**23.04**	25.72	24.76	24.75	22.71
	2667.5	2682.5	1	74	1	0	28.48	26.94	26.42	23.43	**28.70**	**27.24**	26.72	23.76	27.76	26.23	25.85	22.74	27.08	25.56	25.07	22.09
			75	0	75	0	26.44	25.42	25.43	23.41	26.73	25.74	25.70	**23.79**	25.76	24.74	24.70	22.76	25.04	24.09	24.01	22.03

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	28.41	27.00	26.50	23.43	28.61	27.22	26.69	**23.79**	26.95	25.43	24.96	22.00	27.05	25.53	24.95	22.00
			75	0	100	0	23.42	23.49	23.49	23.42	23.59	23.73	23.79	23.78	21.92	21.92	21.96	21.99	22.06	22.07	22.09	22.10
	2583.3	2600.4	1	74	1	0	**28.70**	**27.21**	**26.78**	**23.75**	28.58	27.21	**26.77**	23.72	**28.00**	**26.45**	**25.97**	22.96	**27.70**	**26.25**	**25.77**	22.77
			75	0	100	0	26.73	25.76	25.71	23.72	26.72	25.78	25.75	23.75	26.01	25.10	25.08	**23.02**	25.74	24.78	24.72	**22.80**
	2662.9	2680.0	1	74	1	0	28.42	26.93	26.48	23.48	**28.70**	**27.24**	26.73	23.76	27.73	26.21	25.69	22.72	27.00	25.55	25.02	22.04
			75	0	100	0	26.42	25.43	25.47	23.46	26.71	25.74	25.74	23.78	25.77	24.72	24.73	22.73	25.04	24.04	24.04	22.09

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	28.40	26.90	26.41	23.46	28.63	27.21	**26.76**	23.78	27.00	25.46	24.94	21.93	27.03	25.57	25.03	22.02
			100	0	75	0	23.41	23.46	23.44	23.44	23.76	23.72	23.72	**23.78**	21.97	21.91	21.97	21.97	22.09	22.06	22.03	22.07
	2585.6	2602.7	1	99	1	0	**28.70**	**27.26**	**26.79**	**23.77**	28.66	27.24	26.73	23.76	**28.00**	**26.54**	**26.04**	23.02	**27.70**	**26.20**	**25.73**	**22.74**
			100	0	75	0	26.73	25.75	25.72	23.75	26.76	25.75	25.72	23.75	26.08	25.06	25.02	**23.03**	25.72	24.77	24.78	22.71
	2665.1	2682.2	1	99	1	0	28.48	26.93	26.49	23.48	**28.70**	**27.25**	26.75	23.74	27.73	26.21	25.84	22.76	27.03	25.53	25.02	22.04
			100	0	75	0	26.48	25.49	25.40	23.43	26.80	25.77	25.73	23.75	25.79	24.74	24.78	22.80	25.03	24.06	24.10	22.01

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	28.49	26.95	26.47	23.47	28.70	**27.29**	26.75	**23.79**	26.94	25.42	24.90	22.04	27.02	25.53	25.00	22.03
			1	0	1	99	15.47	15.48	15.42	15.41	15.78	15.70	15.72	15.78	13.94	13.92	13.98	13.93	14.08	14.01	14.04	14.05
			100	0	100	0	23.50	23.50	23.42	23.41	23.76	23.73	23.78	23.79	21.91	21.98	21.98	21.91	22.09	22.02	22.08	22.05
	2583.1	2602.9	1	99	1	0	**28.70**	**27.22**	**26.77**	**23.75**	**28.70**	27.29	26.72	23.73	**28.00**	**26.48**	**25.99**	22.97	**27.70**	**26.22**	**25.77**	22.74
			1	0	1	99	20.30	20.21	20.29	20.26	20.25	20.22	20.23	20.21	19.51	19.57	19.59	19.53	19.27	19.21	19.21	19.30
			100	0	100	0	26.74	25.76	25.73	23.75	26.73	25.74	25.78	23.74	26.10	25.03	25.07	**23.03**	25.75	24.76	24.73	**22.75**
	2660.2	2680.0	1	99	1	0	28.46	26.92	26.48	23.44	28.65	27.22	**26.79**	23.73	27.77	26.28	25.77	22.72	27.00	25.57	25.02	22.02
			1	0	1	99	19.96	19.97	19.95	19.99	20.22	20.26	20.25	20.28	19.26	19.29	19.20	19.29	18.54	18.60	18.51	18.55
			100	0	100	0	26.44	25.46	25.48	23.46	26.76	25.72	25.76	23.72	25.80	24.75	24.78	22.74	25.08	24.02	24.06	22.07

8.1.4. LTE BAND 48

Test Engineer ID:	12482	Test Date:	4/3/2022

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	**20.48**	**20.43**	**20.49**	**20.44**	**20.40**	**20.46**	**20.48**	**20.47**	**20.45**	**20.47**	**20.43**	**20.49**	**20.09**	**19.96**	**19.98**	**19.96**
			25	0	100	0	13.91	13.90	14.00	13.94	13.95	13.98	13.99	13.98	14.00	13.98	13.91	13.95	13.46	13.58	13.46	13.49
	3615.8	3627.5	1	24	1	0	**24.00**	**23.91**	**23.97**	21.02	**24.00**	**23.99**	**23.97**	21.01	**24.00**	**24.00**	**23.94**	**21.09**	**23.50**	**23.50**	**23.50**	20.51
			25	0	100	0	22.01	22.04	22.08	**21.10**	22.09	22.08	22.10	**21.08**	22.01	22.05	22.09	21.09	21.52	21.59	21.54	**20.53**
	3678.3	3690.0	1	24	1	0	**20.48**	**20.42**	**20.43**	**20.45**	**20.41**	**20.42**	**20.48**	**20.44**	**20.41**	**20.50**	**20.50**	**20.45**	**19.99**	**19.91**	**19.97**	**20.00**
			25	0	100	0	13.98	13.97	14.00	13.99	13.98	13.98	13.92	13.96	13.95	13.90	13.99	13.98	13.42	13.41	13.43	13.42

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	**20.47**	**20.44**	**20.43**	**20.45**	**20.46**	**20.49**	**20.47**	**20.44**	**20.46**	**20.44**	**20.45**	**20.44**	**20.00**	**19.95**	**19.95**	**19.92**
			100	0	25	0	13.94	13.99	13.98	13.98	13.94	13.98	14.00	13.95	13.96	13.95	13.98	13.97	13.46	13.45	13.53	13.52
	3622.5	3634.2	1	99	1	0	**24.00**	**24.00**	**23.93**	21.03	**24.00**	**24.00**	**24.00**	21.02	**24.00**	**24.00**	**24.00**	21.05	**23.50**	**23.50**	**23.50**	20.53
			100	0	25	0	22.02	22.07	22.08	**21.05**	22.09	22.04	22.03	**21.07**	22.07	22.09	22.05	**21.06**	21.52	21.60	21.51	**20.57**
	3685.0	3696.7	1	99	1	0	**20.45**	**20.44**	**20.42**	**20.50**	**20.41**	**20.49**	**20.45**	**20.45**	**20.45**	**20.47**	**20.42**	**20.46**	**19.99**	**19.91**	**19.95**	**19.94**
			100	0	25	0	13.97	13.91	13.97	13.92	13.91	13.91	13.98	13.95	13.91	13.97	13.95	13.96	13.47	13.46	13.46	13.46

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	**19.96**	**19.92**	**19.97**	**19.95**	**19.95**	**19.98**	**19.92**	**19.92**	**19.95**	**19.99**	**19.98**	**19.91**	**19.50**	**19.57**	**19.37**	**19.55**
			50	0	100	0	14.98	14.92	14.94	14.92	14.99	14.91	14.90	14.92	14.96	14.94	14.98	14.98	14.49	14.56	14.53	14.55
	3615.6	3630.0	1	49	1	0	**24.50**	**24.50**	**24.02**	**21.06**	**24.50**	**24.50**	**24.04**	**21.07**	**24.30**	**24.30**	**23.81**	20.84	**24.00**	**24.00**	**23.58**	20.52
			50	0	100	0	21.56	21.51	21.52	21.04	21.58	21.51	21.51	21.02	21.52	21.53	21.55	**21.09**	21.08	21.04	21.06	**20.60**
	3675.6	3690.0	1	49	1	0	**20.00**	**19.92**	**19.97**	**19.95**	**19.98**	**19.94**	**19.94**	**19.96**	**19.92**	**19.93**	**19.96**	**19.92**	**19.40**	**19.48**	**19.44**	**19.43**
			50	0	100	0	14.94	14.97	14.93	14.91	14.97	14.91	14.96	14.99	14.90	14.93	14.95	14.94	14.46	14.40	14.47	14.45

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	**19.92**	**19.93**	**19.95**	**19.97**	**19.92**	**19.94**	**19.91**	**19.94**	**19.95**	**19.94**	**19.95**	**19.92**	**19.49**	**19.59**	**19.60**	**19.49**
			100	0	50	0	14.94	14.94	14.91	14.95	15.00	14.96	14.97	14.95	14.92	14.98	14.99	14.95	14.43	14.49	14.56	14.57
	3620.1	3634.5	1	99	1	0	**24.50**	**24.55**	**24.07**	21.01	**24.59**	**24.53**	**24.05**	**21.07**	**24.25**	**24.30**	**23.79**	20.80	**23.98**	**24.00**	**23.47**	20.41
			100	0	50	0	21.50	21.59	21.57	**21.02**	21.54	21.54	21.53	21.07	21.56	21.58	21.52	**21.02**	21.08	21.10	21.09	**20.58**
	3680.1	3694.5	1	99	1	0	**19.93**	**19.90**	**19.97**	**19.95**	**19.98**	**19.95**	**19.93**	**19.92**	**19.94**	**19.98**	**19.90**	**19.99**	**19.49**	**19.40**	**19.43**	**19.42**
			100	0	50	0	14.98	14.97	14.93	14.99	14.98	14.96	14.98	14.93	14.96	14.91	14.92	14.97	14.42	14.46	14.49	14.49

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	**19.98**	**19.98**	**19.96**	**19.92**	**19.99**	**19.99**	**19.98**	**20.00**	**19.98**	**19.90**	**19.96**	**19.91**	**19.47**	**19.47**	**19.49**	**19.52**
			75	0	100	0	14.96	14.99	14.98	14.93	14.94	14.98	15.00	14.91	15.00	14.95	14.95	14.99	14.50	14.59	14.58	14.58
	3615.3	3632.4	1	74	1	0	**25.00**	**25.00**	**24.02**	21.08	**25.00**	**25.00**	**24.07**	21.02	**24.30**	**24.30**	**23.33**	20.37	**24.37**	**24.40**	**23.39**	20.45
			75	0	100	0	21.50	21.52	21.50	**21.08**	21.51	21.58	21.60	**21.04**	21.59	21.58	21.57	**21.04**	21.04	21.04	21.08	**20.55**
	3672.9	3690.0	1	74	1	0	**19.97**	**19.99**	**19.92**	**19.92**	**19.94**	**19.95**	**19.96**	**19.92**	**19.95**	**19.94**	**19.91**	**19.93**	**19.46**	**19.42**	**19.40**	**19.41**
			75	0	100	0	14.96	14.93	14.97	14.92	14.94	15.00	14.90	14.99	14.99	14.92	14.94	14.94	14.42	14.44	14.43	14.43

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	**19.75**	**19.72**	**19.80**	**19.76**	**19.75**	**19.72**	**19.75**	**19.80**	**19.71**	**19.79**	**19.77**	**19.71**	**19.27**	**19.25**	**19.37**	**19.20**
			100	0	75	0	14.78	14.72	14.77	14.75	14.77	14.77	14.73	14.70	14.78	14.78	14.72	14.75	14.23	14.29	14.37	14.37
	3617.6	3634.7	1	99	1	0	**24.70**	**24.70**	**23.71**	20.78	**24.70**	**24.70**	**23.73**	**20.77**	**24.30**	**24.30**	**23.38**	20.34	**24.40**	**24.40**	**23.49**	**20.42**
			100	0	75	0	21.24	21.22	21.25	**20.79**	21.27	21.23	21.30	20.72	21.29	21.20	21.22	**20.78**	20.75	20.76	20.78	20.29
	3675.1	3692.2	1	99	1	0	**19.79**	**19.75**	**19.76**	**19.78**	**19.71**	**19.74**	**19.72**	**19.73**	**19.77**	**19.72**	**19.75**	**19.71**	**19.24**	**19.21**	**19.29**	**19.24**
			100	0	75	0	14.77	14.77	14.74	14.71	14.78	14.72	14.72	14.73	14.78	14.73	14.72	14.74	14.29	14.27	14.28	14.27

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	**21.43**	**21.44**	**21.46**	**20.90**	**21.44**	**21.41**	**21.41**	**20.92**	**21.45**	**21.42**	**21.50**	**20.99**	**21.09**	**20.97**	**21.07**	**20.46**
			1	0	1	99	7.95	7.97	7.94	7.98	7.95	7.97	7.90	7.97	7.92	7.96	7.97	7.91	7.43	7.45	7.45	7.48
			100	0	100	0	14.92	15.00	14.94	14.97	14.93	14.94	14.96	14.97	14.94	14.97	14.95	14.95	14.42	14.50	14.40	14.58
	3615.1	3634.9	1	99	1	0	**25.00**	**25.00**	**24.00**	21.00	**25.00**	**25.00**	**24.04**	21.01	**24.30**	**24.31**	**23.35**	20.35	**24.40**	**24.40**	**23.43**	20.47
			1	0	1	99	14.58	14.53	14.55	14.54	14.59	14.50	14.51	14.53	14.52	14.51	14.59	14.58	14.01	14.06	14.07	14.02
			100	0	100	0	21.50	21.57	21.56	**21.00**	21.59	21.58	21.51	**21.06**	21.60	21.54	21.56	**21.04**	21.01	21.05	21.01	**20.55**
	3670.2	3690.0	1	99	1	0	**21.41**	**21.43**	**21.42**	**20.91**	**21.46**	**21.45**	**21.48**	**20.97**	**21.48**	**21.49**	**21.49**	**20.94**	**20.97**	**20.92**	**20.98**	**20.44**
			1	0	1	99	7.91	7.96	7.93	8.00	7.91	7.97	7.92	7.98	7.97	7.98	7.96	7.95	7.40	7.43	7.47	7.42
			100	0	100	0	14.92	14.99	14.92	14.94	14.95	15.00	14.90	14.95	14.98	14.94	14.99	14.99	14.48	14.49	14.41	14.46

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	7.316	7.88
	3MHz + 5MHz BAND 16QAM			7.478	7.97
	5MHz + 3MHz BAND QPSK	25/0 + 15/0		7.389	8.02
	5MHz + 3MHz BAND 16QAM			7.381	8.06
	5MHz + 10MHz BAND QPSK	25/0 + 50/0		13.849	14.43
	5MHz + 10MHz BAND 16QAM			13.845	14.42
	10MHz + 5MHz BAND QPSK	50/0 + 25/0		13.854	14.38
	10MHz + 5MHz BAND 16QAM			13.854	14.47
	10MHz + 10MHz BAND QPSK	50/0 + 50/0		18.728	19.74
	10MHz + 10MHz BAND 16QAM			18.778	19.66

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	27.844	29.83
	10MHz + 20MHz BAND 16QAM			27.745	29.75
	20MHz + 10MHz BAND QPSK	100/0 + 50/0		27.920	30.01
	20MHz + 10MHz BAND 16QAM			27.844	30.07
	15MHz + 15MHz BAND QPSK	75/0 + 75/0		28.386	30.66
	15MHz + 15MHz BAND 16QAM			28.412	30.49
	15MHz + 20MHz BAND QPSK	75/0 + 100/0		32.617	34.79
	15MHz + 20MHz BAND 16QAM			32.464	34.90
	20MHz + 15MHz BAND QPSK	100/0 + 75/0		32.990	35.33
	20MHz + 15MHz BAND 16QAM			32.364	34.75
	20MHz + 20MHz BAND QPSK	100/0 + 100/0		37.414	39.79
	20MHz + 20MHz BAND 16QAM			37.373	39.93

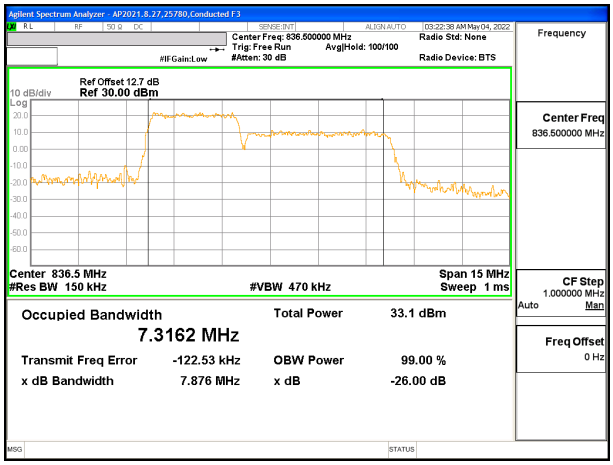
LTE BAND 41

Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 41	5MHz + 20MHz BAND QPSK	25/0 + 100/0	2593	23.056	24.80
	5MHz + 20MHz BAND 16QAM			23.066	24.61
	20MHz + 5MHz BAND QPSK	100/0 + 25/0		23.055	26.89
	20MHz + 5MHz BAND 16QAM			23.015	25.29
	10MHz + 20MHz BAND QPSK	50/0 + 100/0		27.660	29.92
	10MHz + 20MHz BAND 16QAM			27.697	29.74
	20MHz + 10MHz BAND QPSK	100/0 + 50/0		27.749	31.67
	20MHz + 10MHz BAND 16QAM			27.835	30.42
	15MHz + 15MHz BAND QPSK	75/0 + 75/0		28.417	30.60
	15MHz + 15MHz BAND 16QAM			28.306	30.24
	15MHz + 20MHz BAND QPSK	75/0 + 100/0		32.542	34.72
	15MHz + 20MHz BAND 16QAM			32.387	35.51
	20MHz + 15MHz BAND QPSK	100/0 + 75/0		32.607	34.64
	20MHz + 15MHz BAND 16QAM			32.588	34.91
	20MHz + 20MHz BAND QPSK	100/0 + 100/0		37.413	40.58
	20MHz + 20MHz BAND 16QAM			37.430	41.08

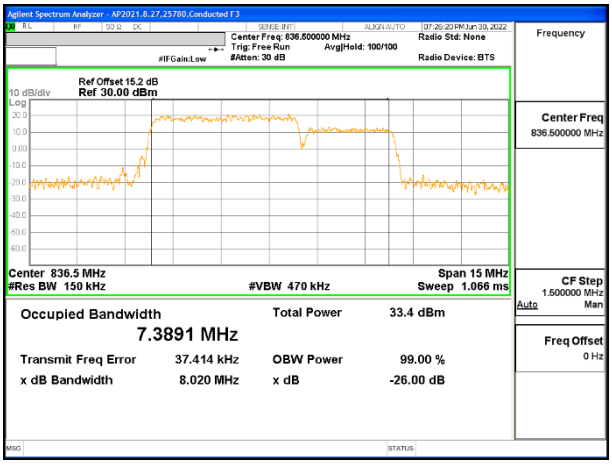
LTE BAND 48

Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 48	5MHz + 20MHz BAND QPSK	25/0 + 100/0	3625	22.994	25.11
	5MHz + 20MHz BAND 16QAM			22.924	24.76
	20MHz + 5MHz BAND QPSK	100/0 + 25/0		23.155	26.85
	20MHz + 5MHz BAND 16QAM			23.082	25.07
	10MHz + 20MHz BAND QPSK	50/0 + 100/0		27.808	29.76
	10MHz + 20MHz BAND 16QAM			27.877	29.73
	20MHz + 10MHz BAND QPSK	100/0 + 50/0		27.951	32.22
	20MHz + 10MHz BAND 16QAM			27.874	29.99
	15MHz + 20MHz BAND QPSK	75/0 + 100/0		32.720	34.89
	15MHz + 20MHz BAND 16QAM			32.688	34.75
	20MHz + 15MHz BAND QPSK	100/0 + 75/0		32.449	34.85
	20MHz + 15MHz BAND 16QAM			32.482	35.02
	20MHz + 20MHz BAND QPSK	100/0 + 100/0		37.436	40.22
	20MHz + 20MHz BAND 16QAM			37.403	39.48

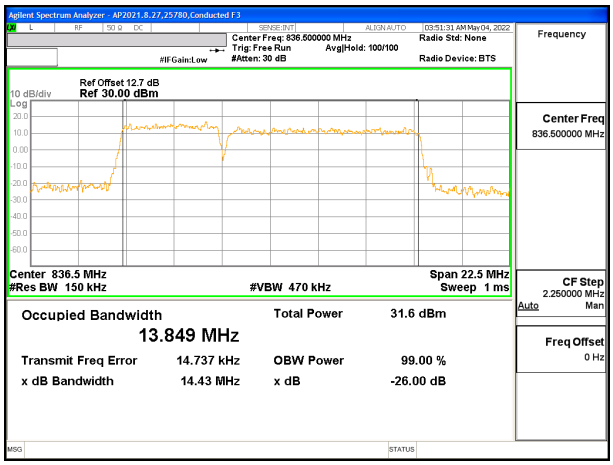
9.1.1. LTE BAND 5



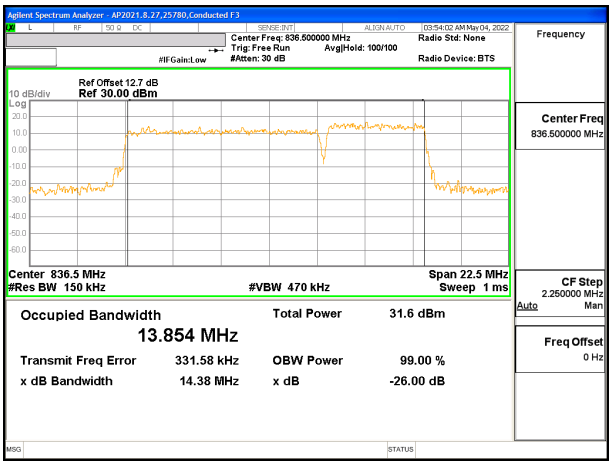
LTE B5 3MHz + 5MHz QPSK RB15-0 + RB25-0



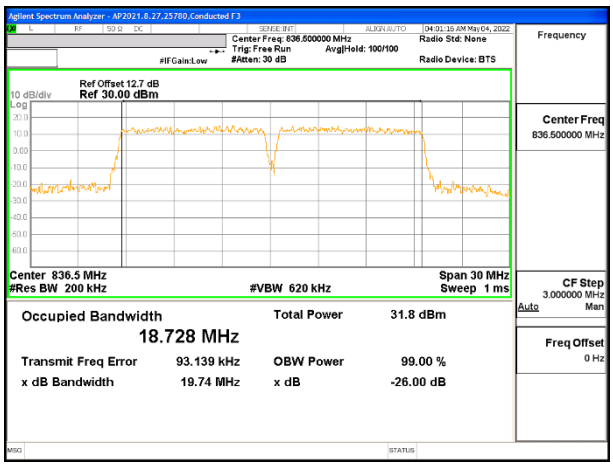
LTE B5 5MHz + 3MHz QPSK RB25-0 + RB15-0



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

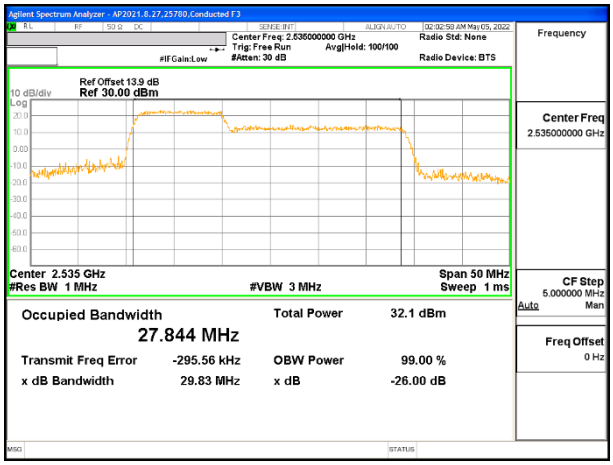


LTE B5 10MHz + 5MHz QPSK RB50-0 + RB25-0

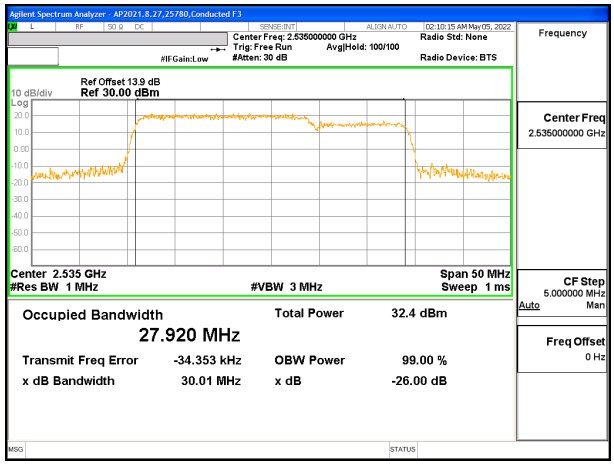


LTE B5 10MHz + 10MHz QPSK RB50-0 + RB50-0

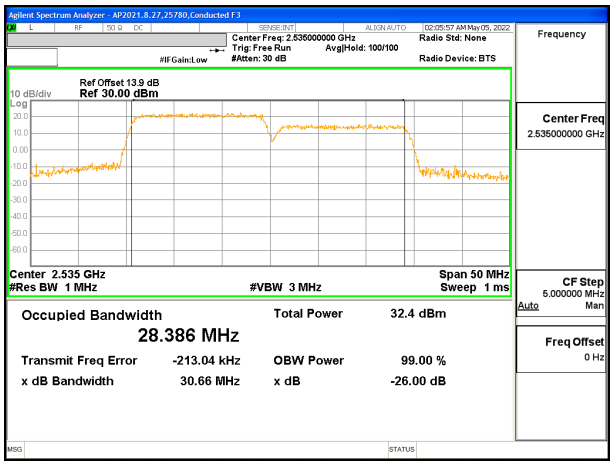
9.1.2. LTE BAND 7



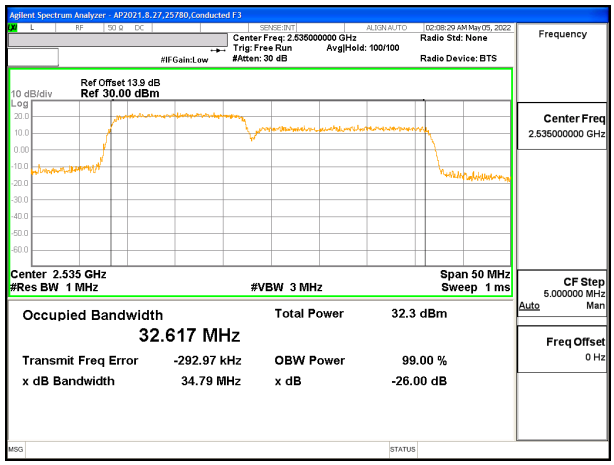
LTE B7 10MHz + 20MHz QPSK RB50-0 + RB100-0



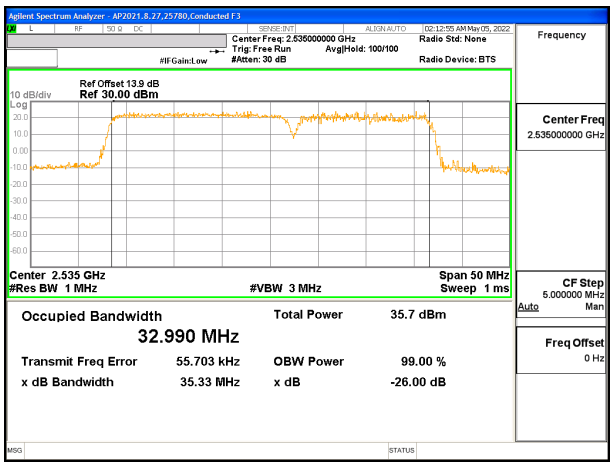
LTE B7 20MHz + 10MHz QPSK RB100-0 + RB50-0



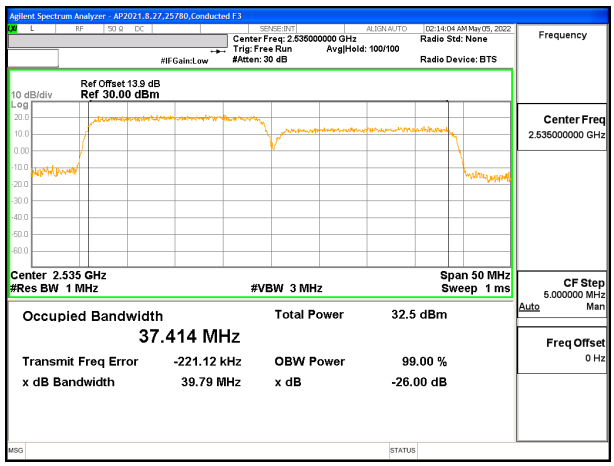
LTE B7 15MHz + 15MHz QPSK RB75-0 + RB75-0



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

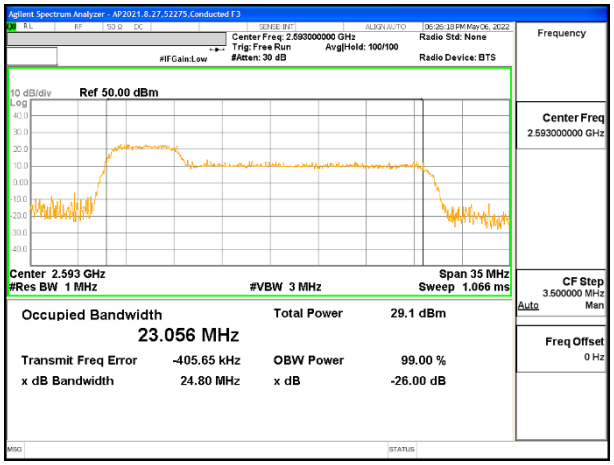


LTE B7 20MHz + 15MHz QPSK RB100-0 + RB75-0

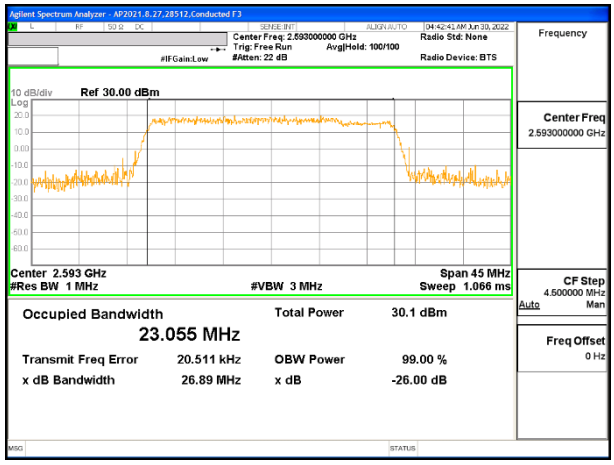


LTE B7 20MHz + 20MHz QPSK RB100-0 + RB100-0

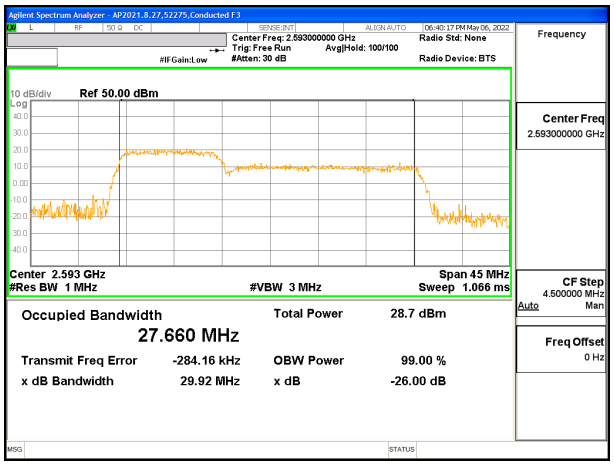
9.1.3. LTE BAND 41



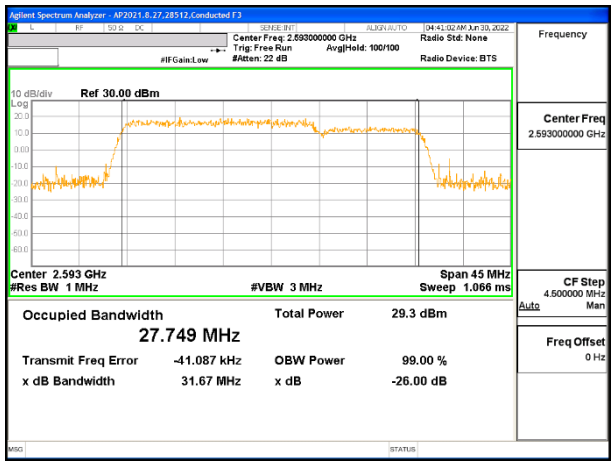
LTE B41 5MHz + 20MHz QPSK RB25-0 + RB100-0



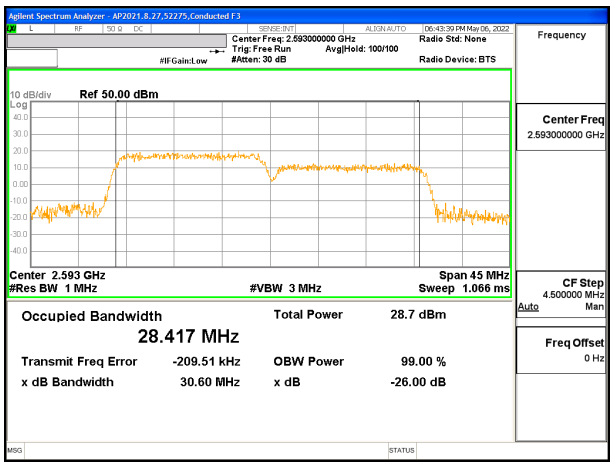
LTE B41 20MHz + 5MHz QPSK RB100-0 + RB25-0



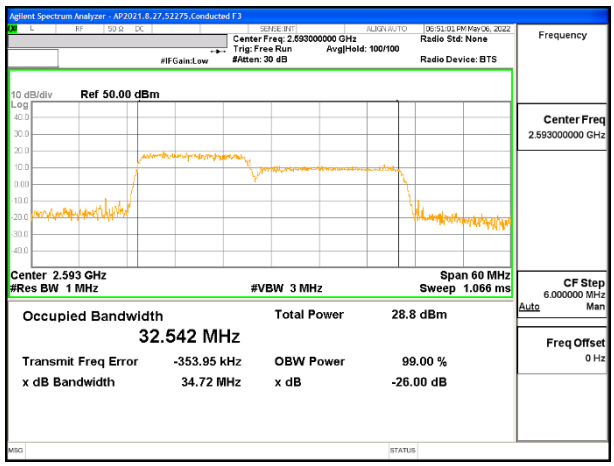
LTE B41 10MHz + 20MHz QPSK RB50-0 + RB100-0



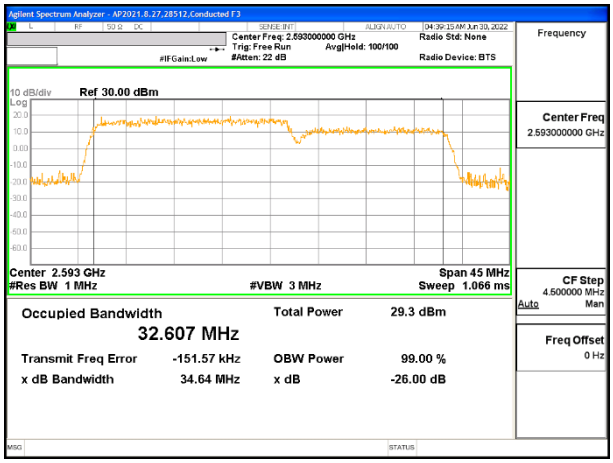
LTE B41 20MHz + 10MHz QPSK RB100-0 + RB50-0



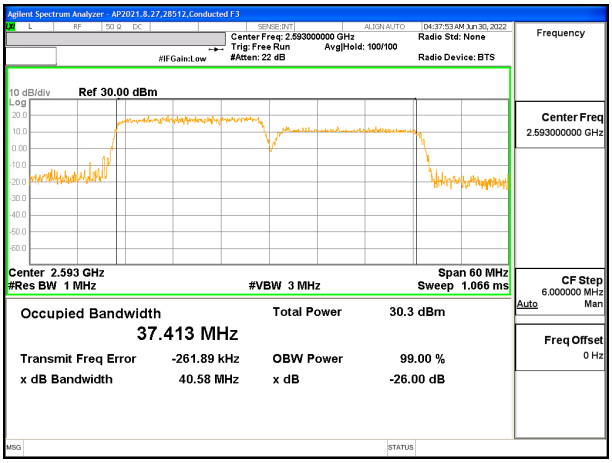
LTE B41 15MHz + 15MHz QPSK RB75-0 + RB75-0



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

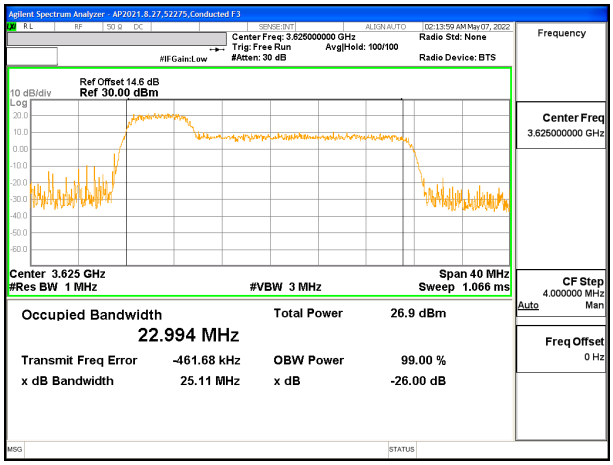


LTE B41 20MHz + 15MHz QPSK RB100-0 + RB75-0

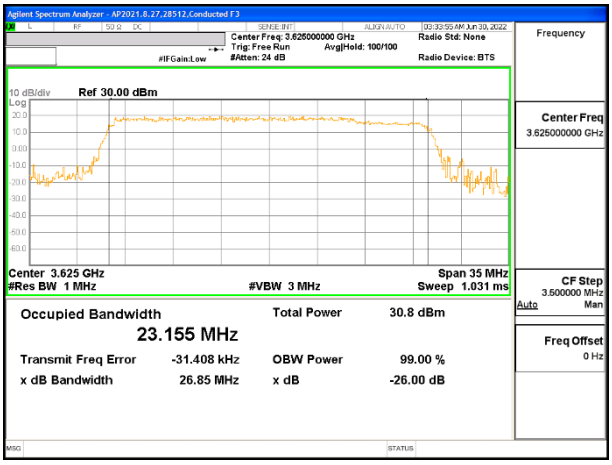


LTE B41 20MHz + 20MHz QPSK RB100-0 + RB100-0

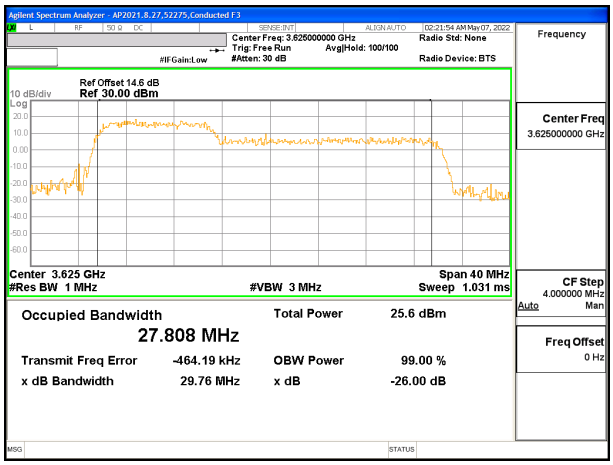
9.1.4. LTE BAND 48



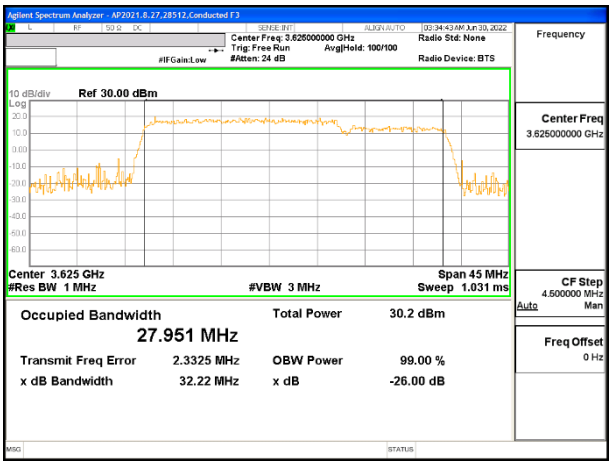
LTE B48 5MHz + 20MHz QPSK RB25-0 + RB100-0



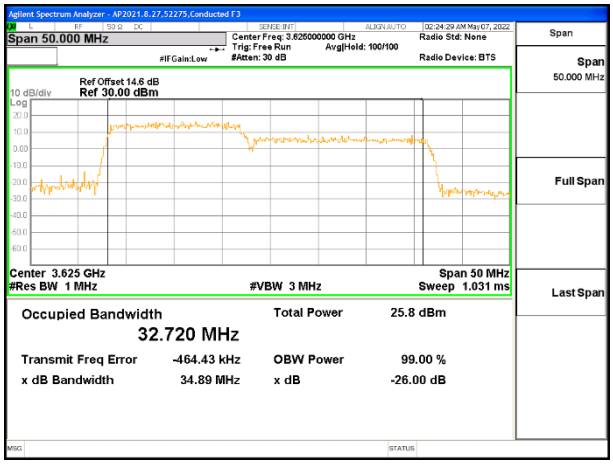
LTE B48 20MHz + 5MHz QPSK RB100-0 + RB25-0



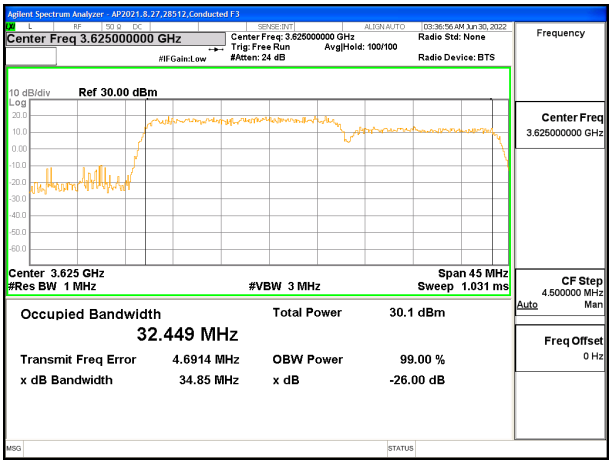
LTE B48 10MHz + 20MHz QPSK RB50-0 + RB100-0



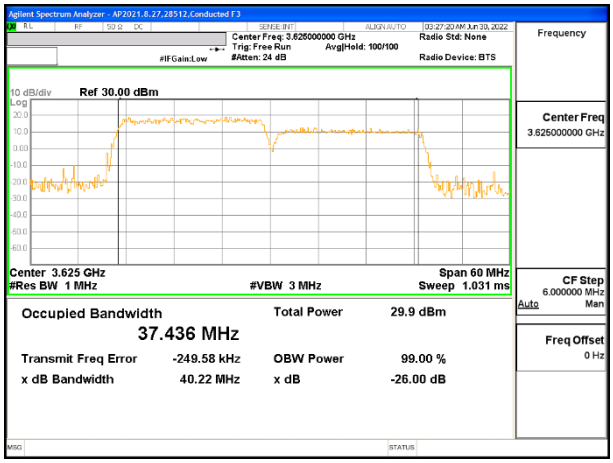
LTE B48 20MHz + 10MHz QPSK RB100-0 + RB50-0



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

9.2. 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.

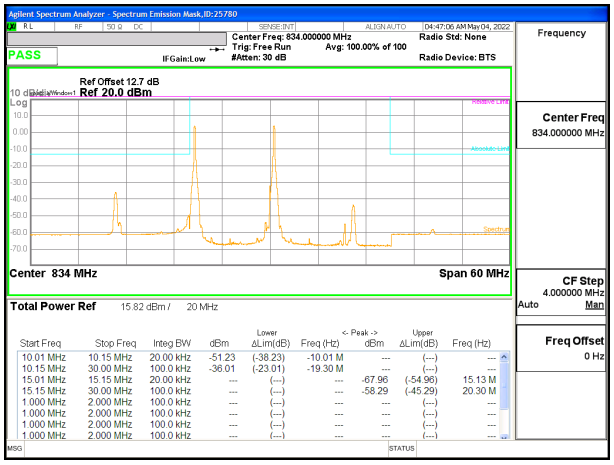
RESULTS

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

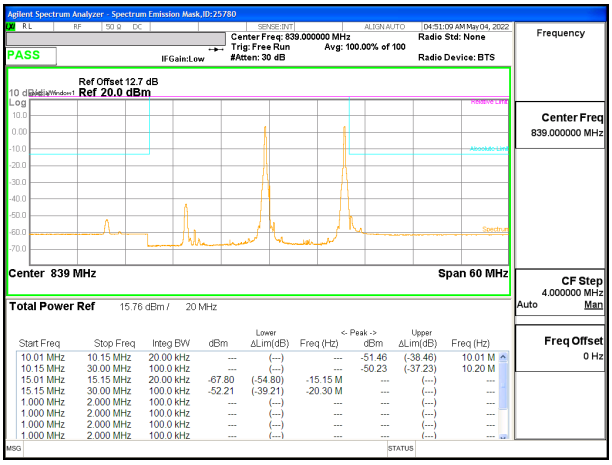
9.2.1. LTE BAND 5 EMISSION MASK

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.

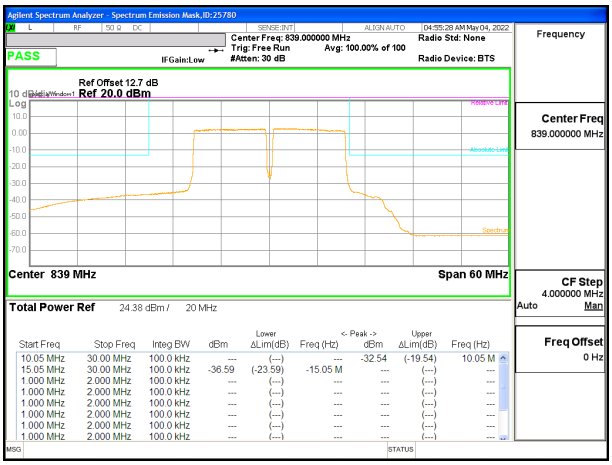


LTE B5 10MHz + 10MHz QPSK Low Ch RB1-0 + RB1-0

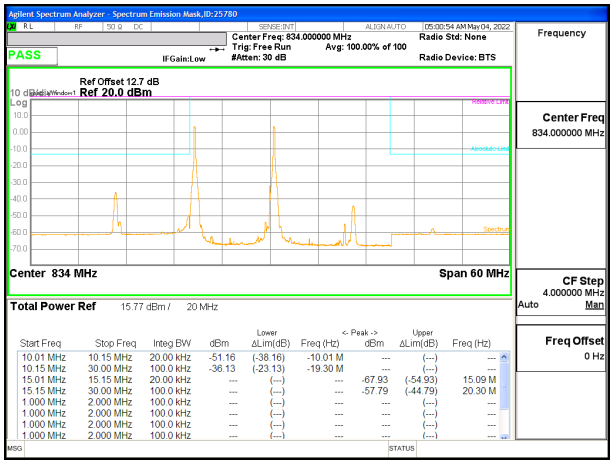


LTE B5 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-49

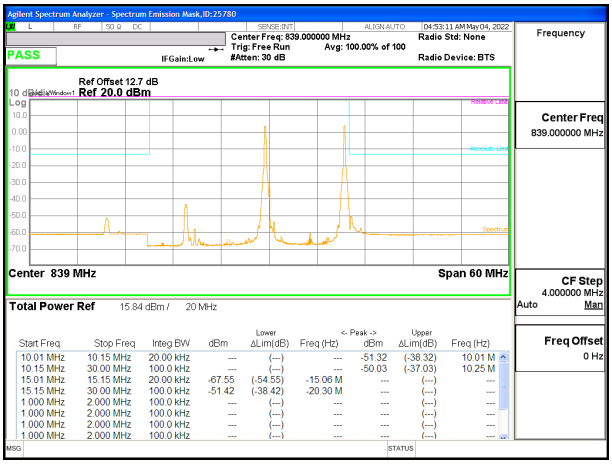
LTE B5 10MHz + 10MHz QPSK Low Ch RB50-0 + RB50-0



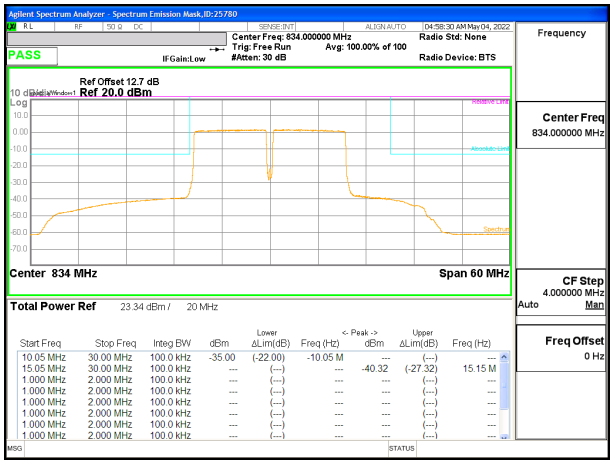
LTE B5 10MHz + 10MHz QPSK High Ch RB50-0 + RB50-0



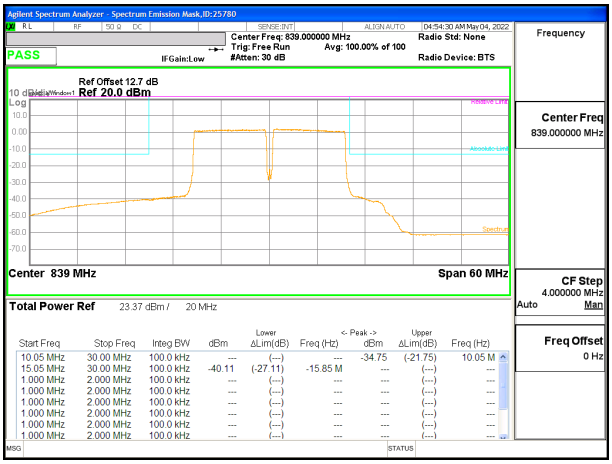
LTE B5 10MHz + 10MHz 16QAM Low Ch RB1-0 + RB1-0



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



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

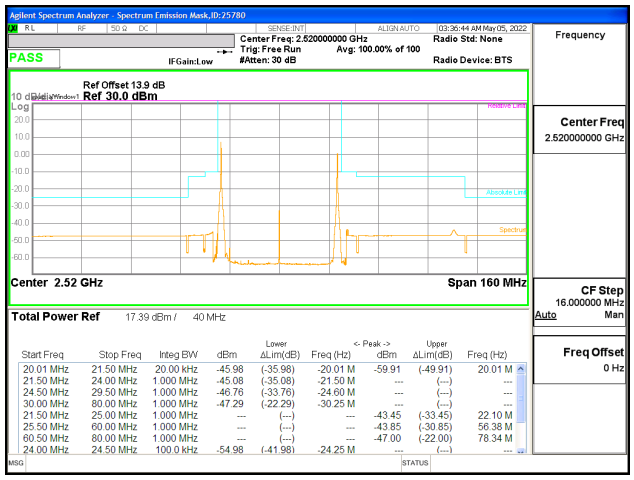


LTE B5 10MHz + 10MHz 16QAM High Ch RB50-0 + RB50-0

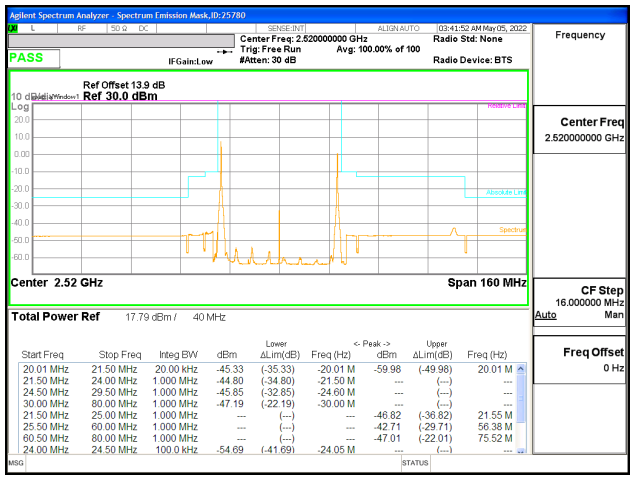
9.2.2. LTE BAND 7 EMISSION MASK

LIMITS

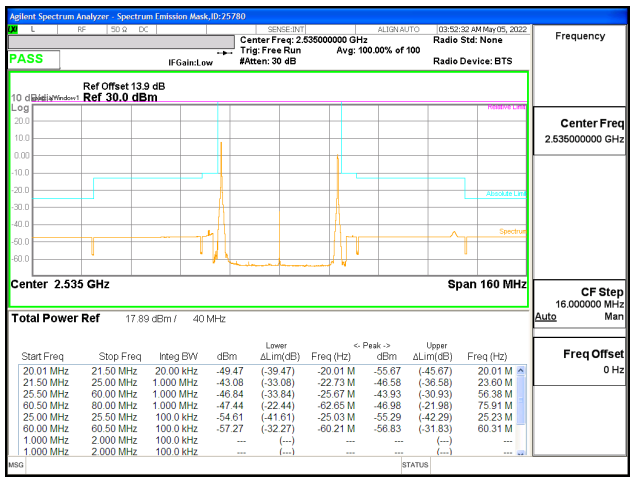
FCC: §27.53(m)(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 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.



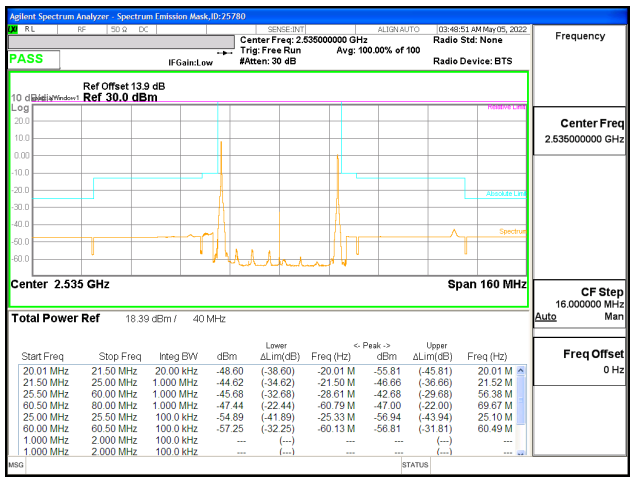
LTE B7 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



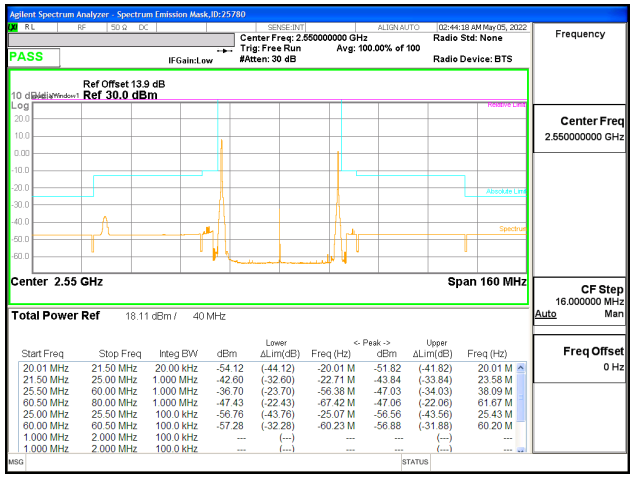
LTE B7 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



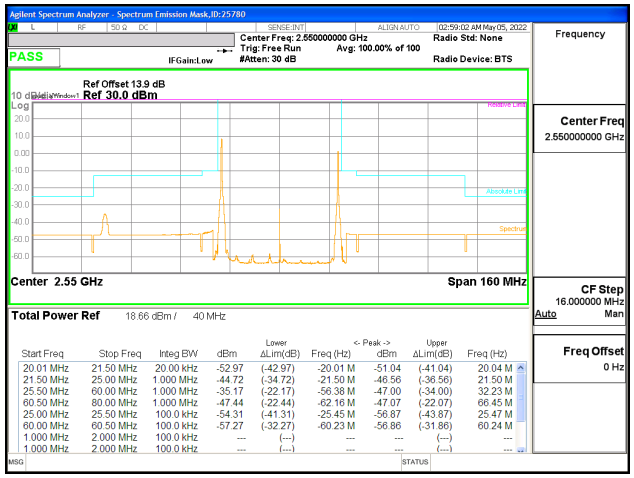
LTE B7 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



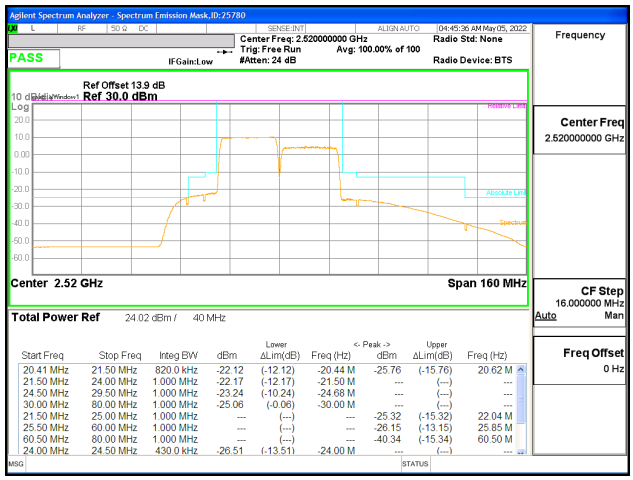
LTE B7 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



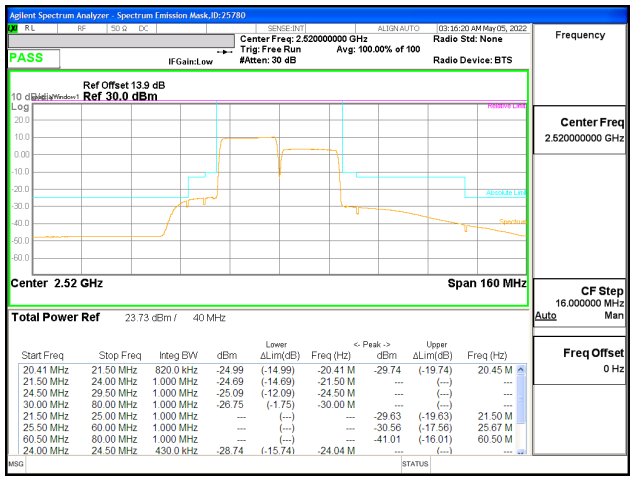
LTE B7 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



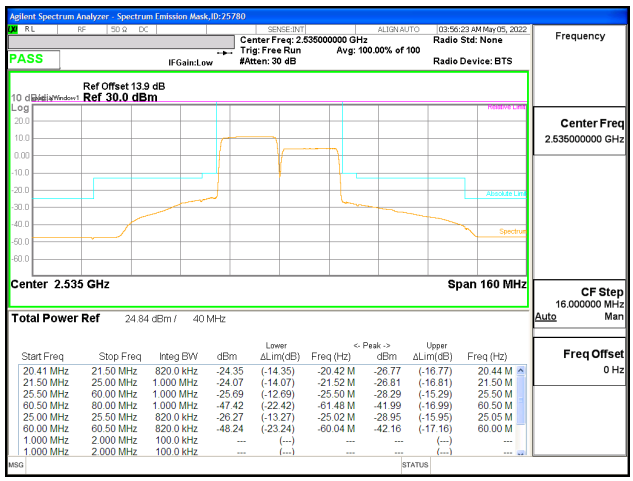
LTE B7 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



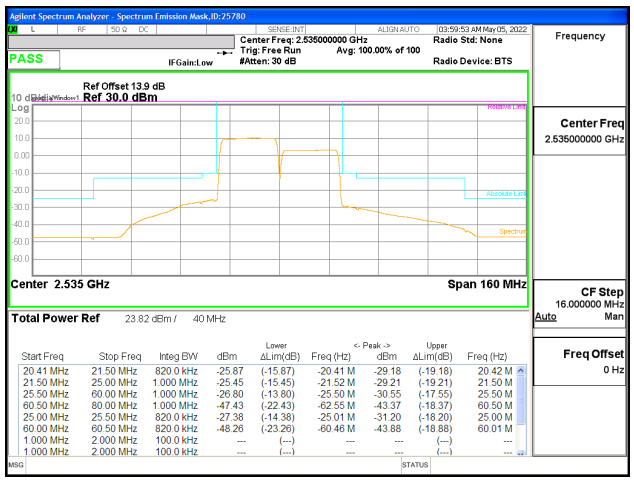
LTE B7 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



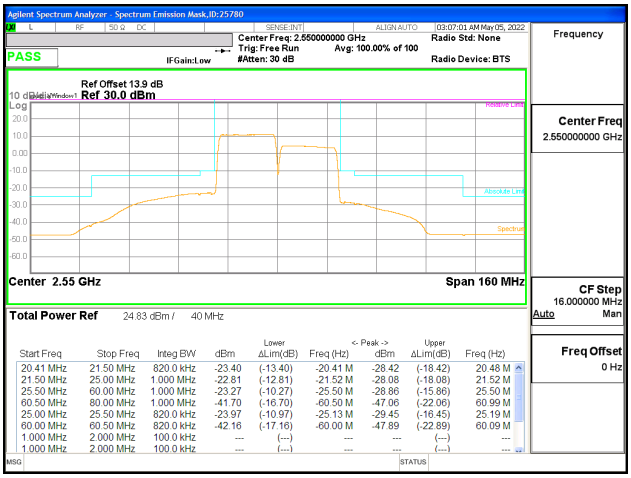
LTE B7 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



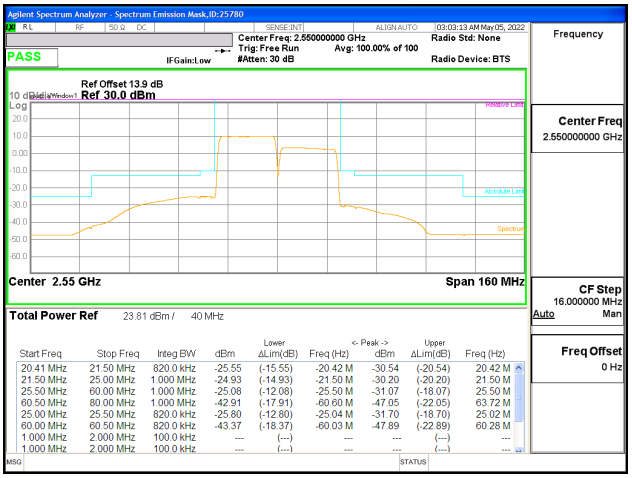
LTE B7 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



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



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

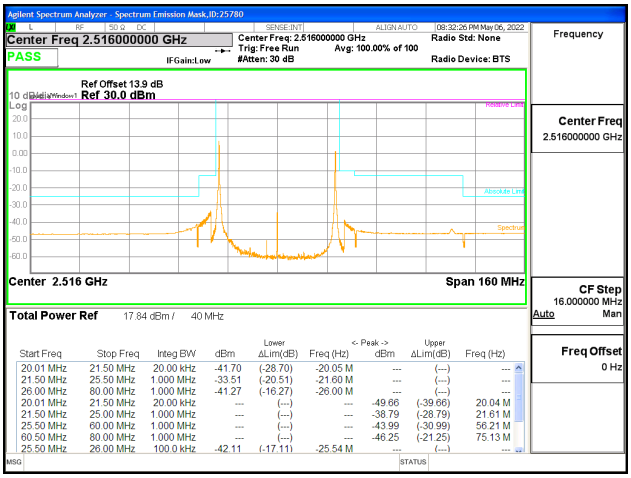


LTE B7 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

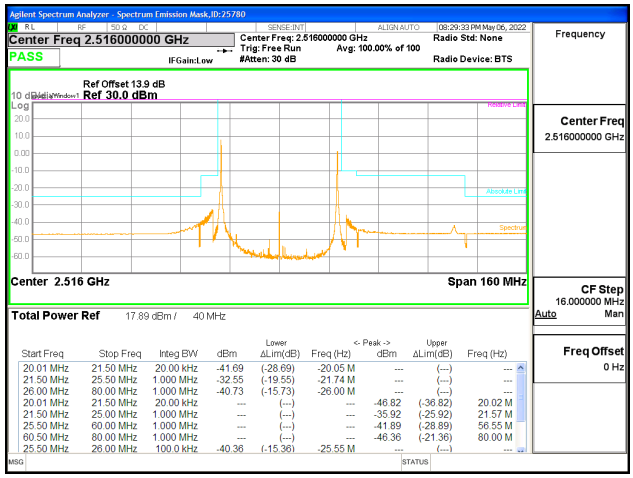
9.2.3. LTE BAND 41 EMISSION MASK

LIMITS

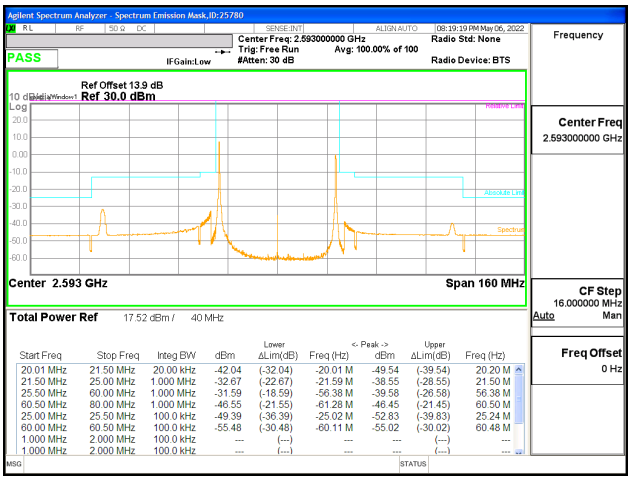
FCC: §27.53(m)(4) For mobile digital stations, the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 megahertz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 megahertz and X megahertz from the channel edge, and 55 + 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.



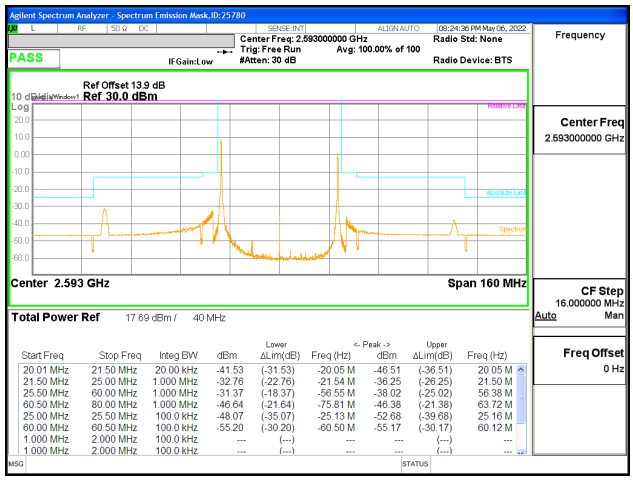
LTE B41 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



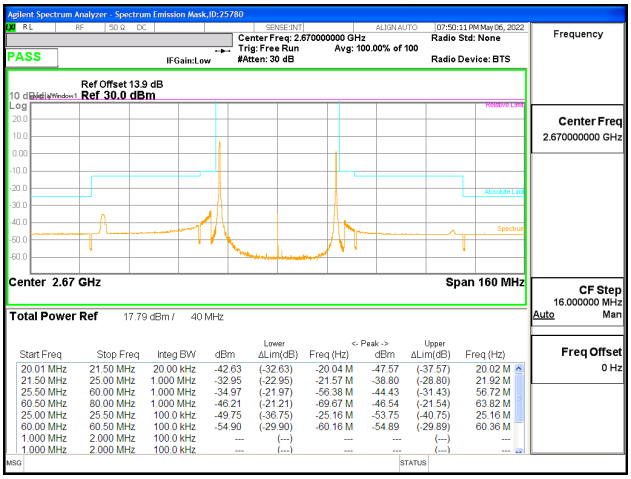
LTE B41 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



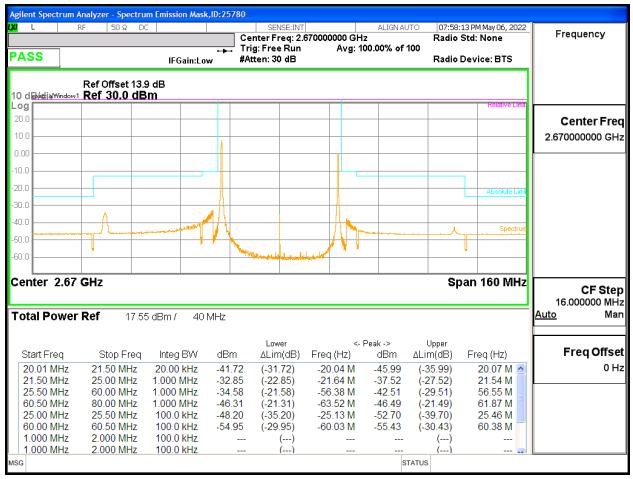
LTE B41 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



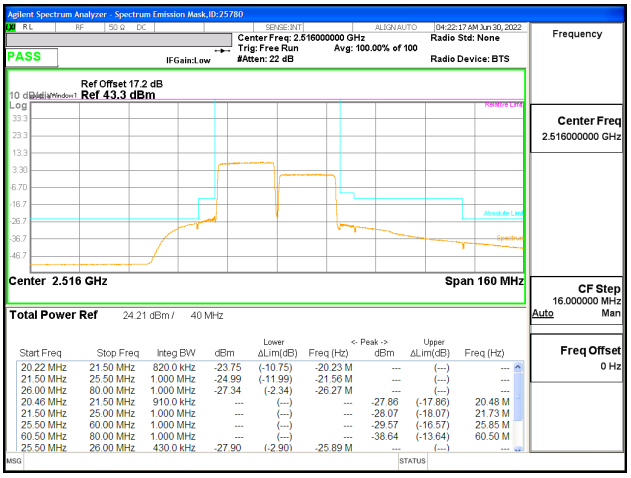
LTE B41 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



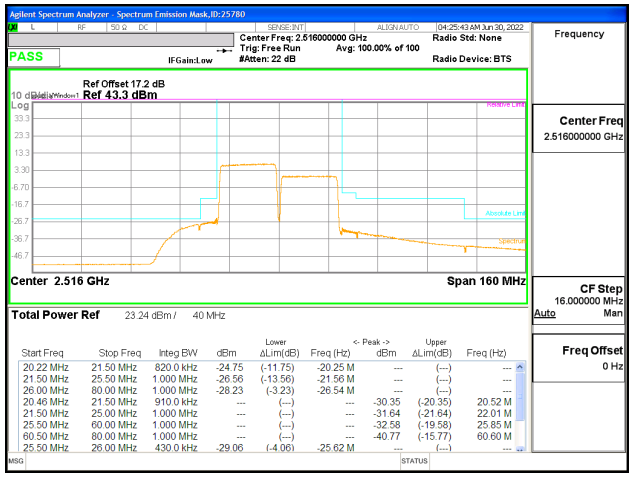
LTE B41 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



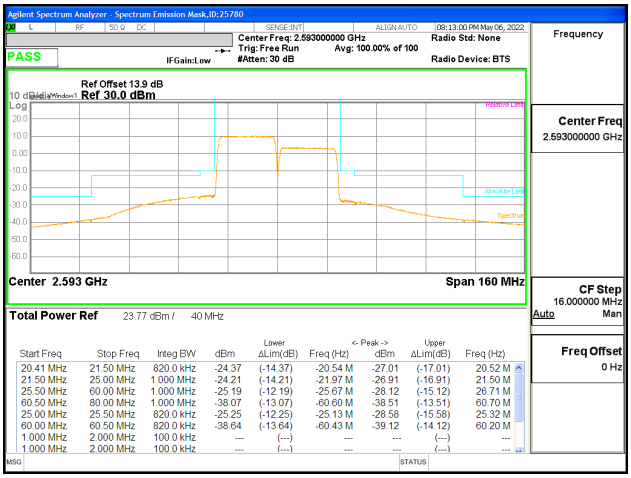
LTE B41 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



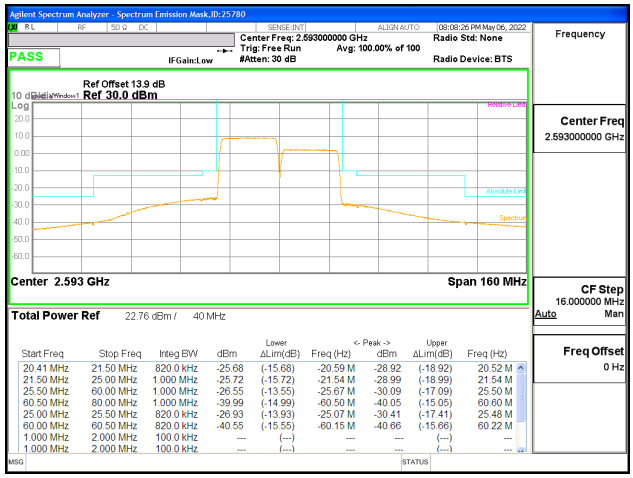
LTE B41 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



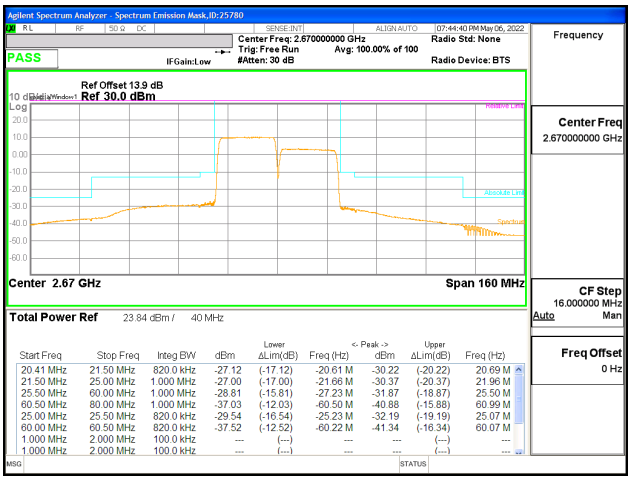
LTE B41 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



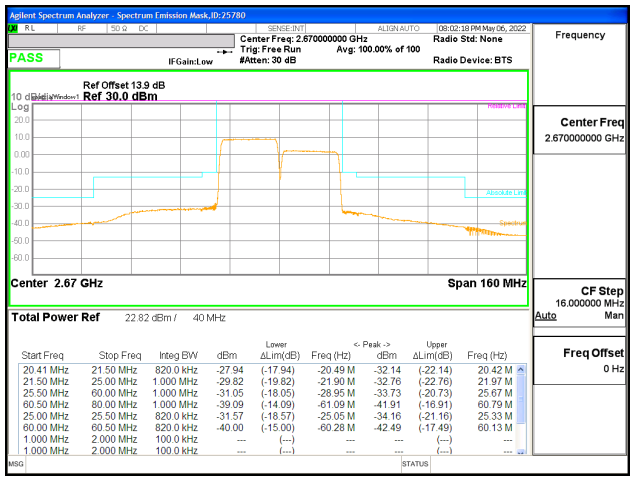
LTE B41 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



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

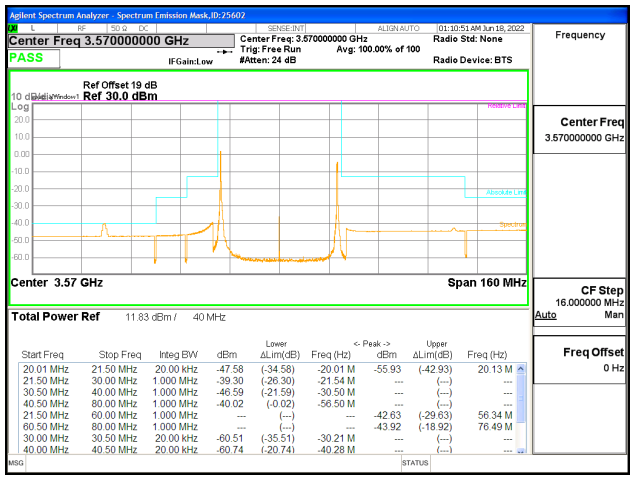
9.2.4. LTE BAND 48 EMISSION MASK AND ADJACENT CHANNEL POWER

LIMITS

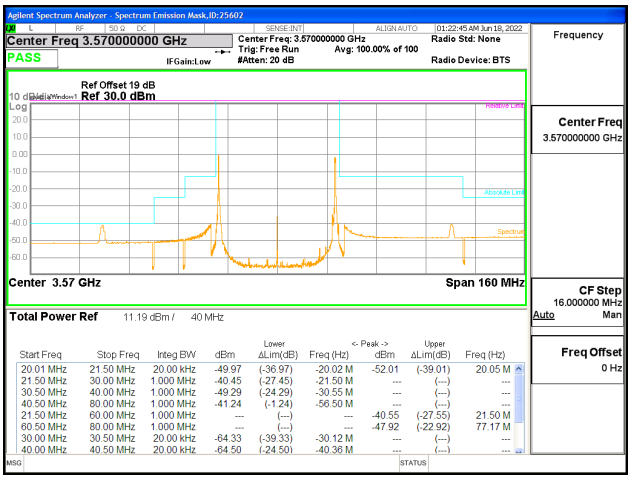
FCC: §96.41
(e) 3.5 GHz Emissions and Interference Limits—
(1) General protection levels
(ii) Except as otherwise specified in paragraph (e)(2) of this section, for channel and frequency assignments made by a CBSD to End User Devices, the conducted power of any End User Device emission outside the fundamental 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.

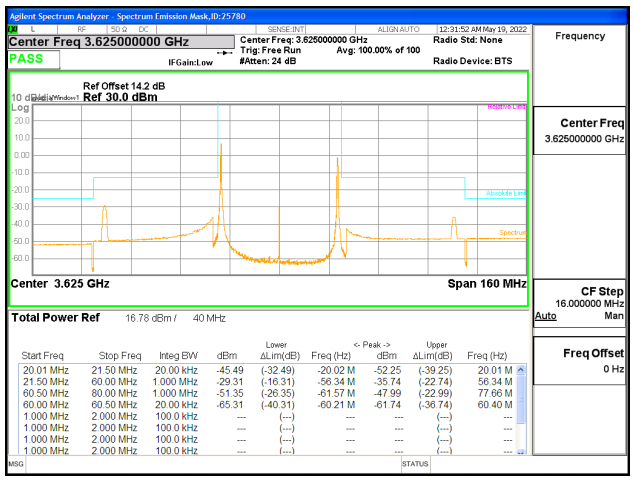
LTE BAND 48EMISSION MASK



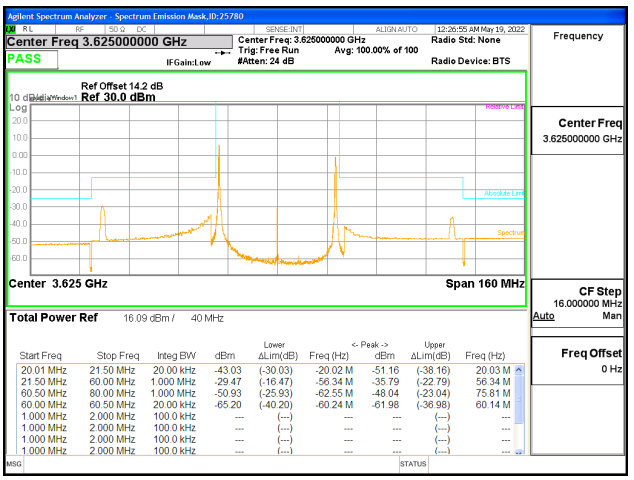
LTE B48 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



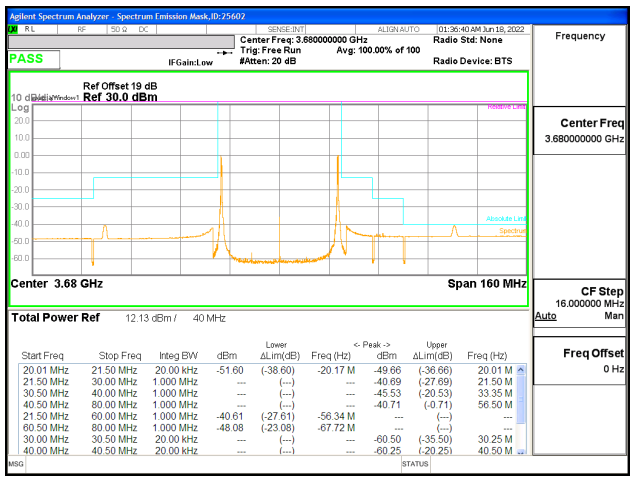
LTE B48 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



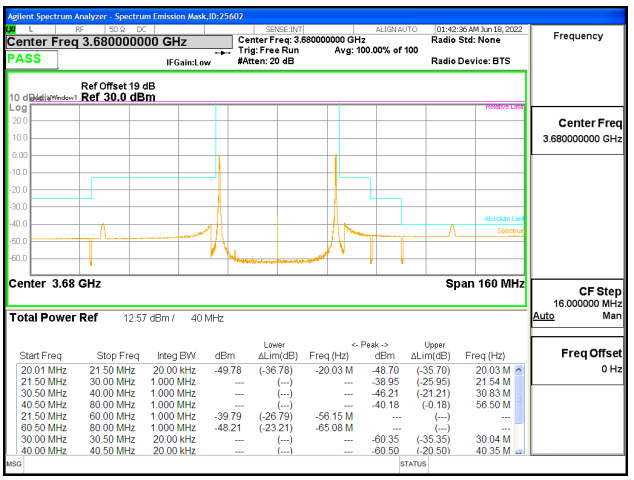
LTE B48 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



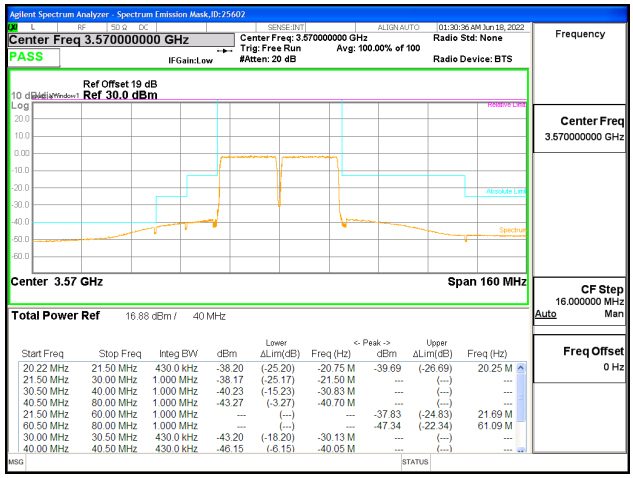
LTE B48 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



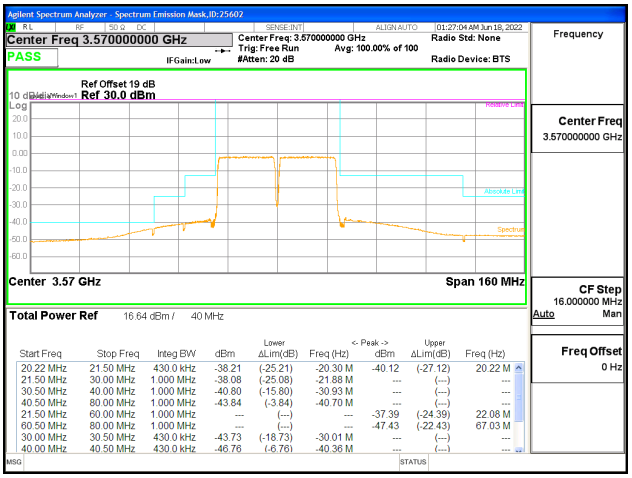
LTE B48 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



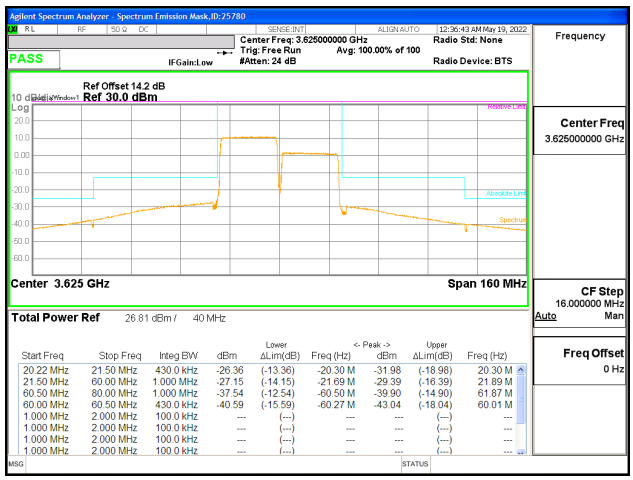
LTE B48 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



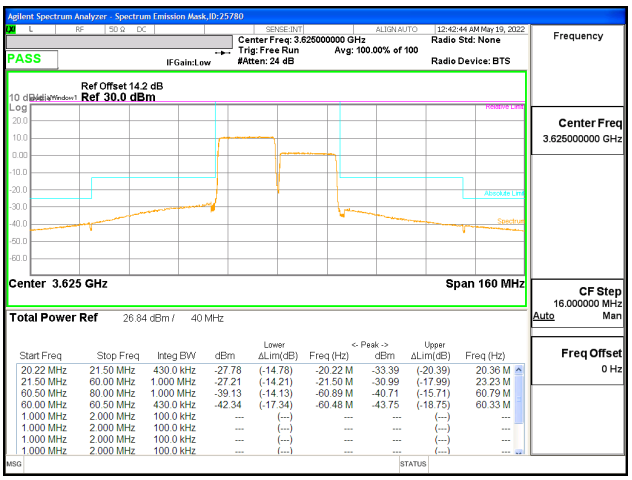
LTE B48 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



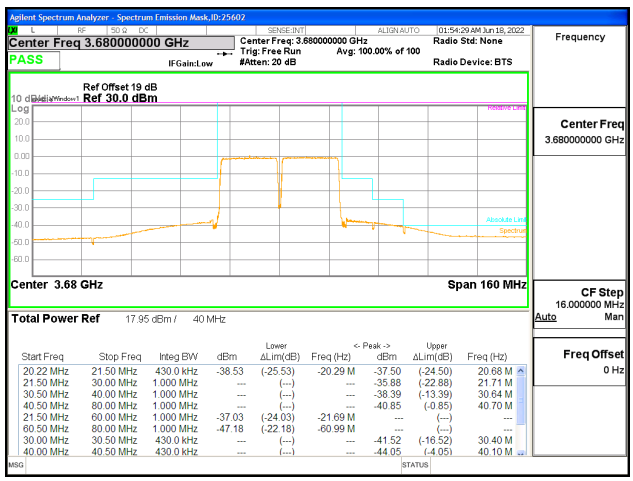
LTE B48 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



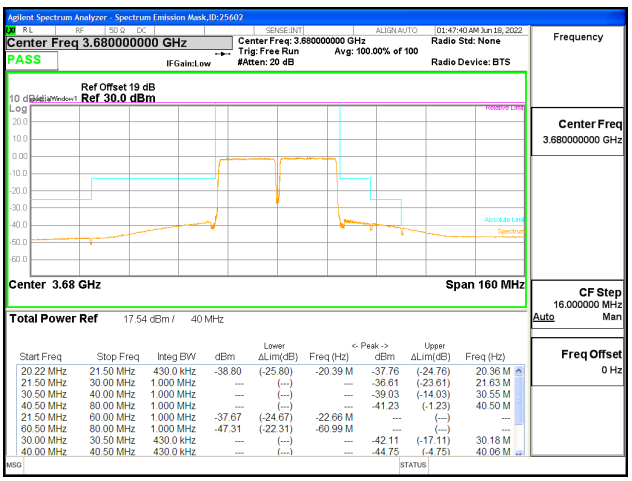
LTE B48 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



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

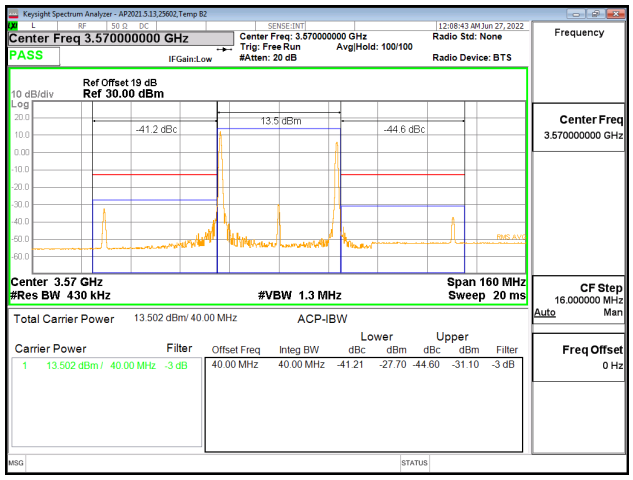


LTE B48 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0

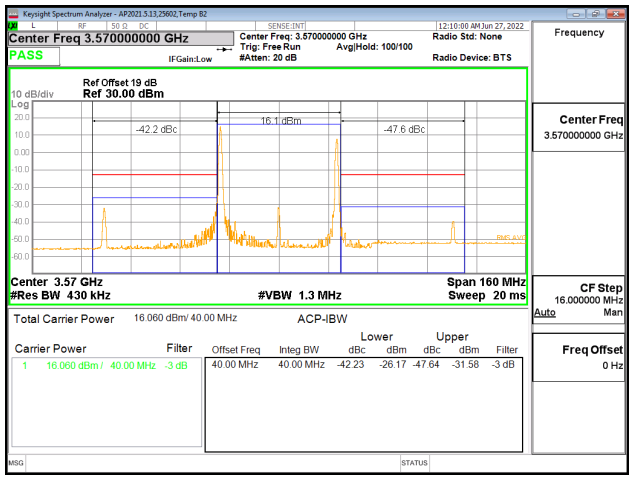


LTE B48 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

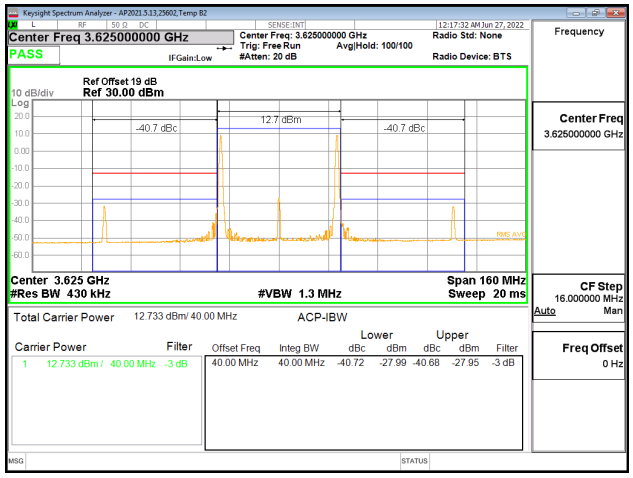
LTE BAND 48 ADJACENT CHANNEL POWER



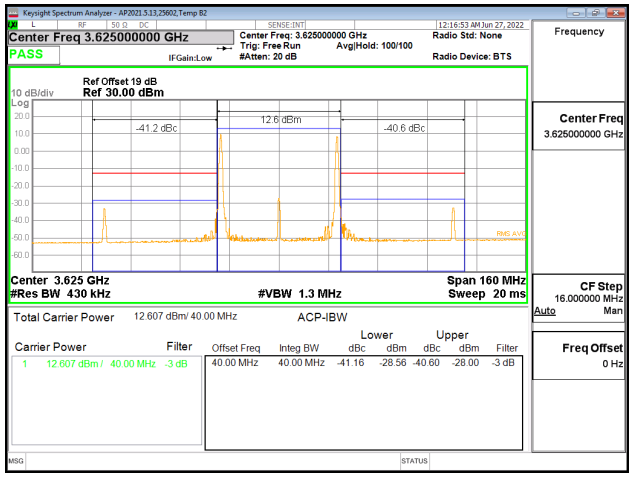
LTE B48 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



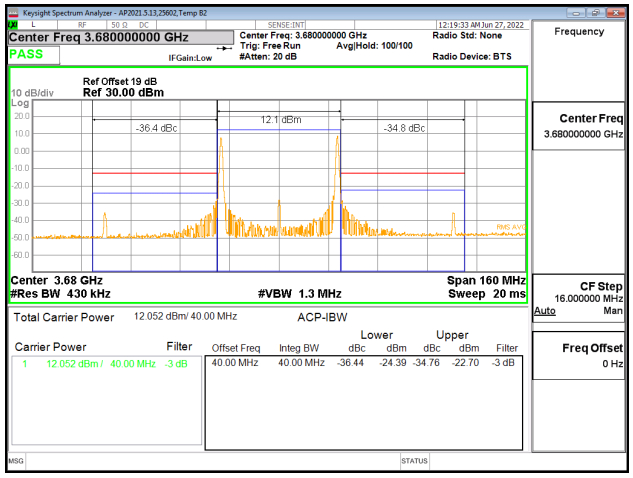
LTE B48 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



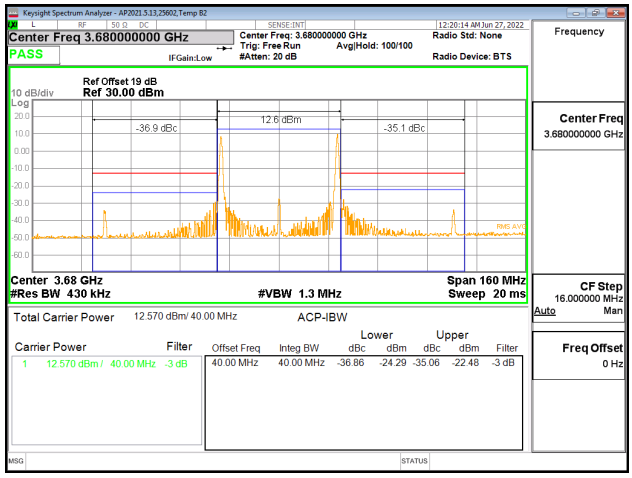
LTE B48 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



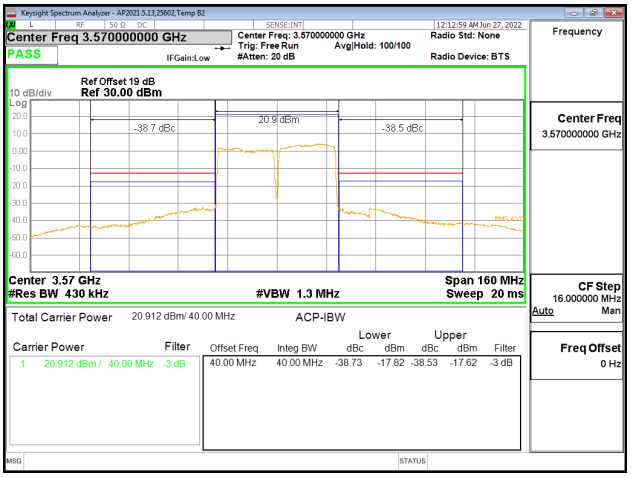
LTE B48 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



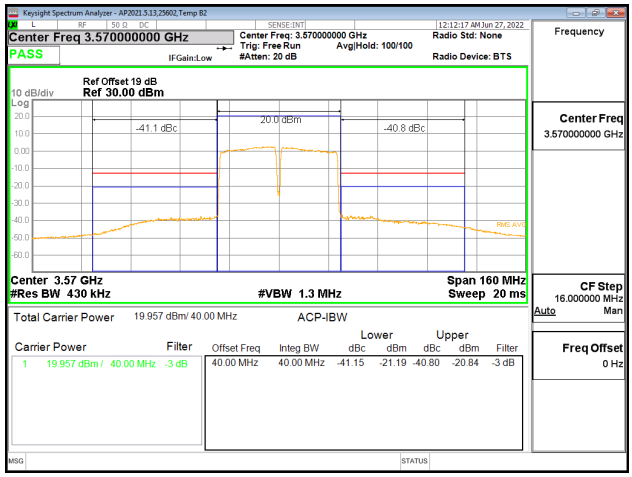
LTE B48 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



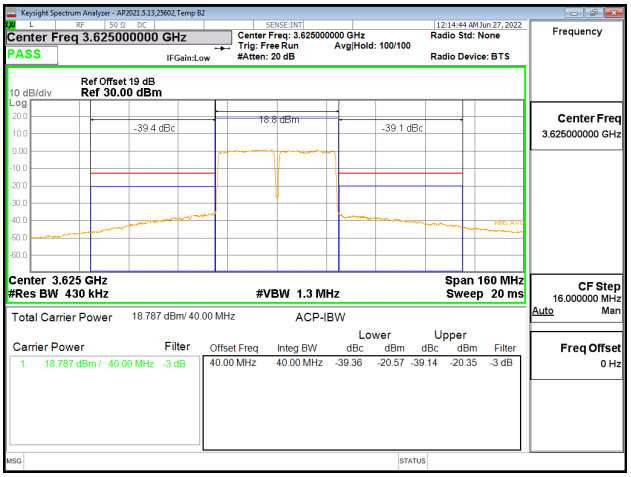
LTE B48 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



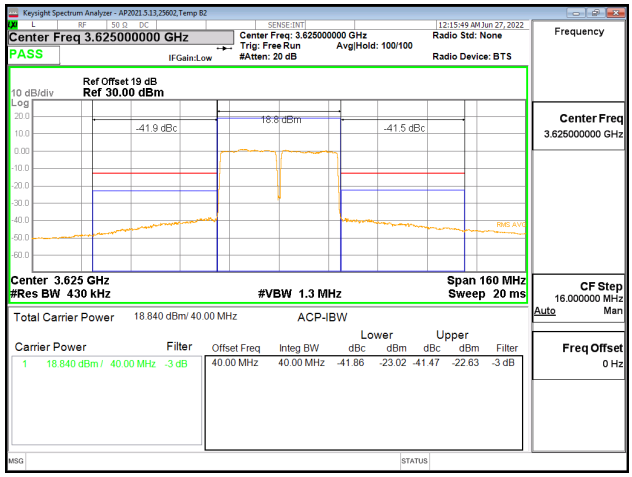
LTE B48 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



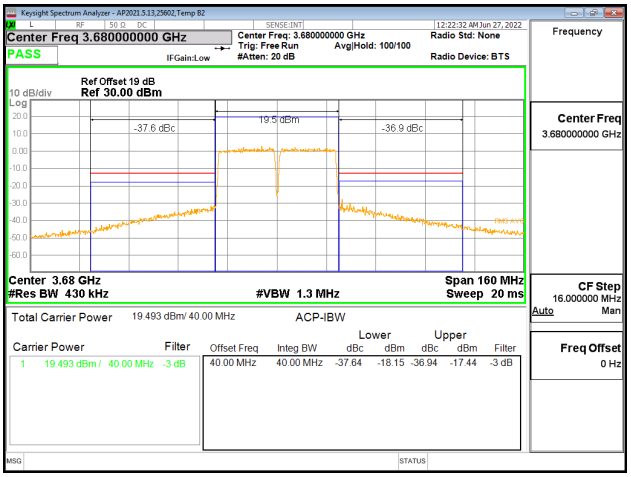
LTE B48 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



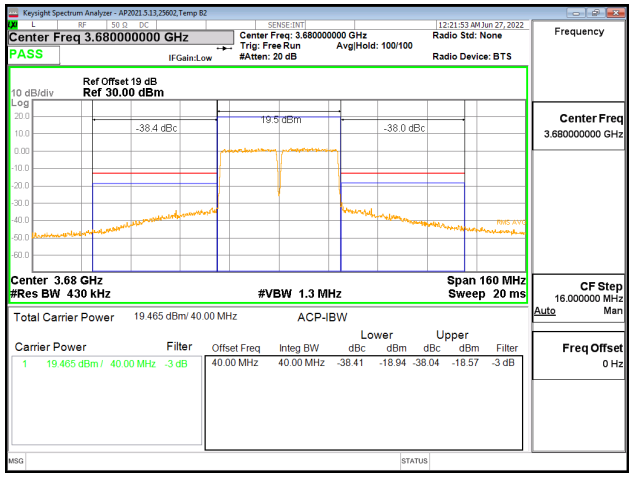
LTE B48 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



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:

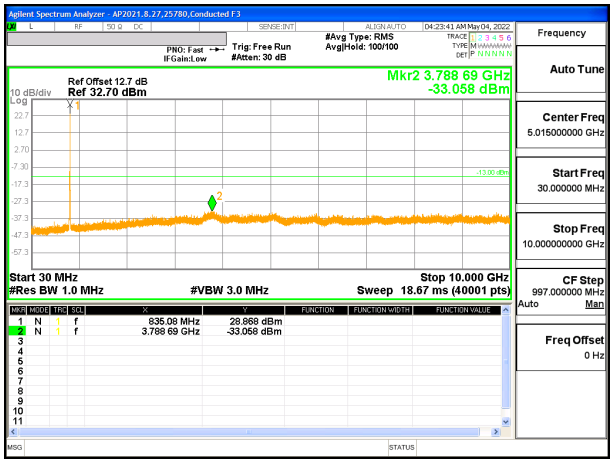
- Set display line at -13 dBm to band 5 and -25 dBm to band 7 and 41
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz. (NOTE: Worst case set RBW/VBW to 1MHz/3MHz)

RESULTS

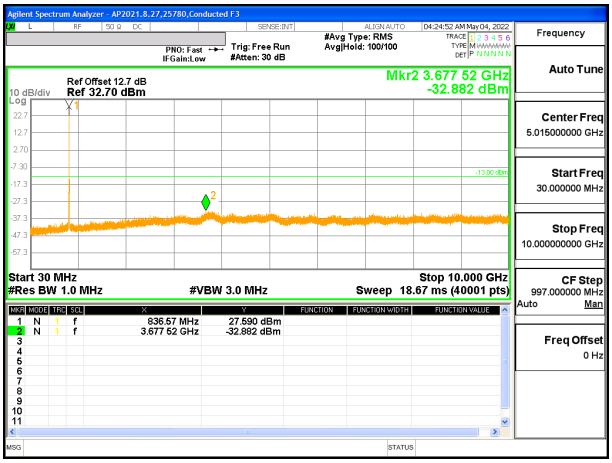
9.3.1. LTE BAND 5

LIMITS

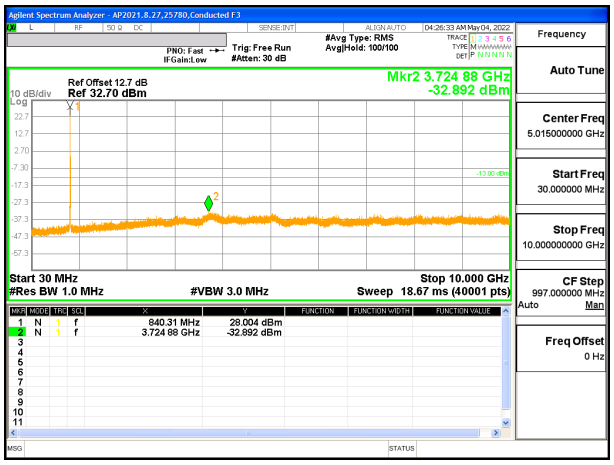
FCC: §22.917
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



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



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

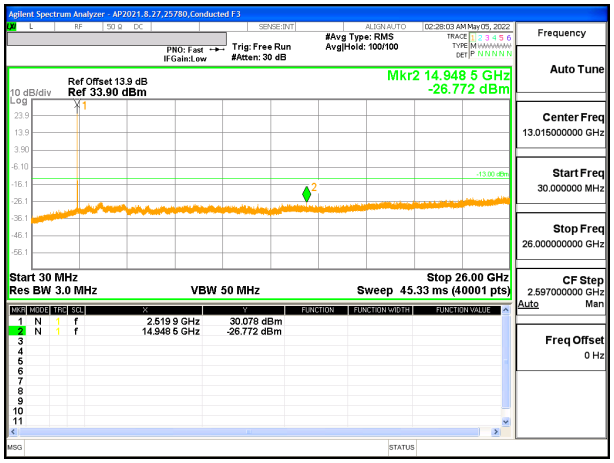


LTE B5 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-0

9.3.2. LTE BAND 7

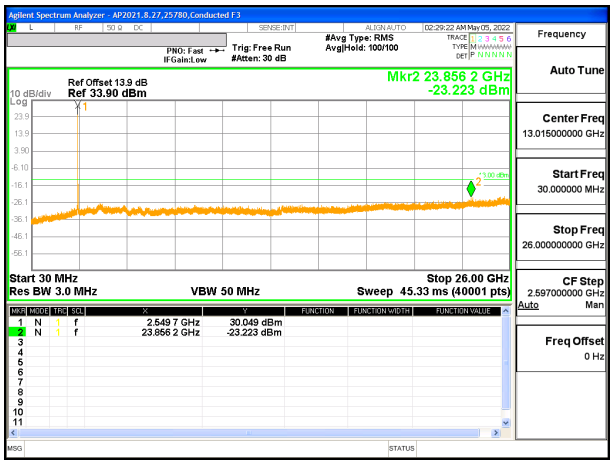
LIMITS

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

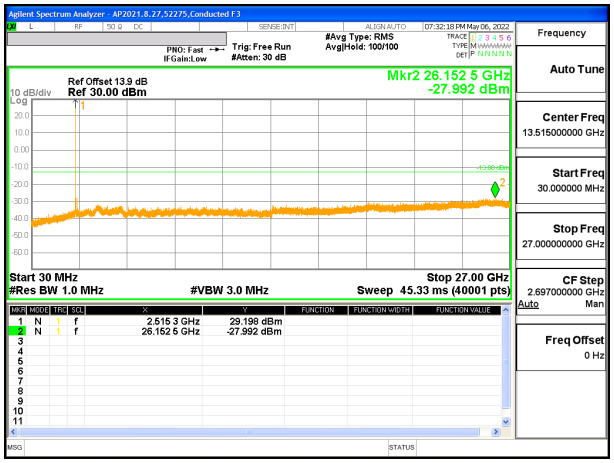


LTE B7 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

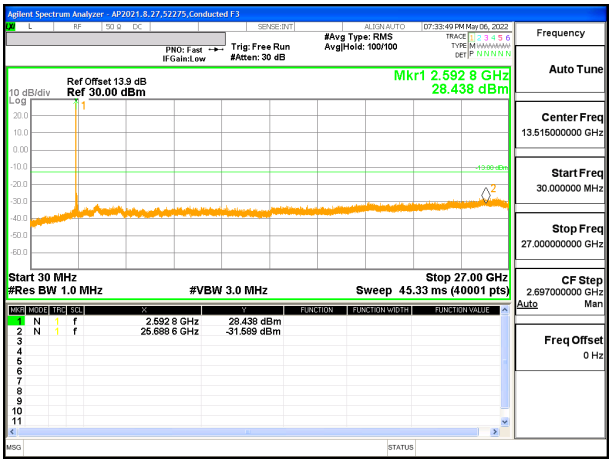
9.3.3. LTE BAND 41

LIMITS

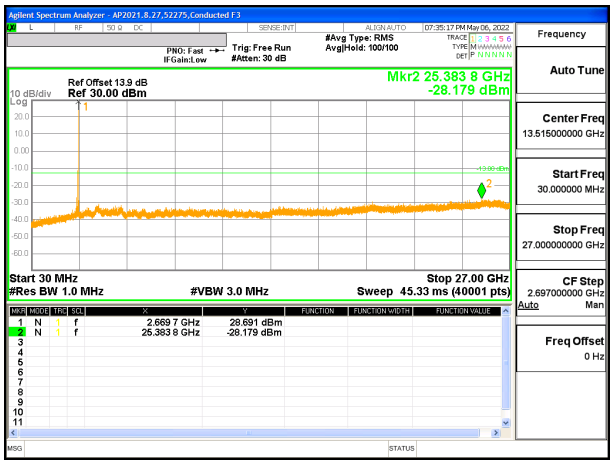
FCC: §27.53 (m)
The minimum permissible attenuation level of any spurious emissions is 55 + 10 log (P) dB where transmitting power (P) in Watts.



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

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

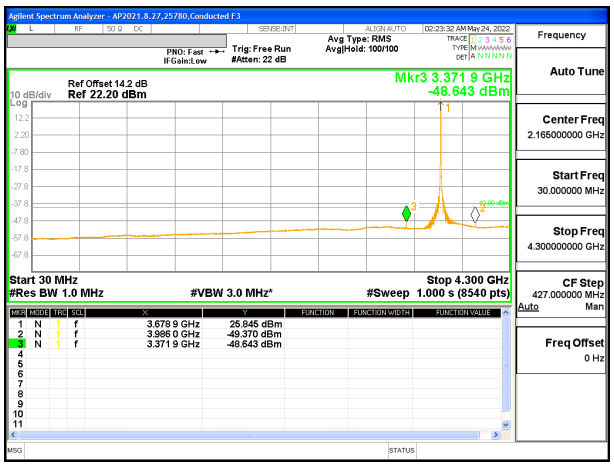
(4.5GHz to 40GHz)

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

(30MHz to 4.5GHz)

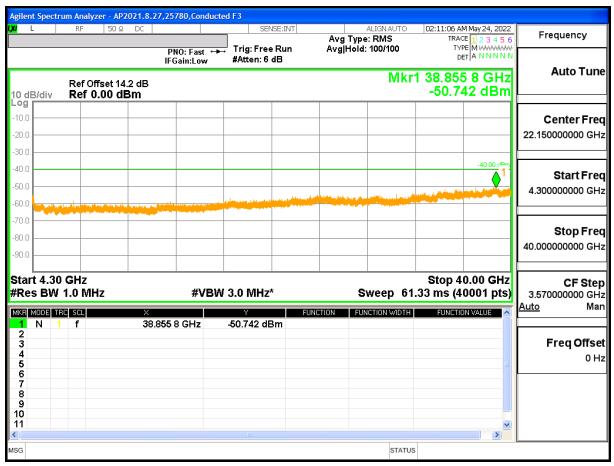
LTE B48 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0

(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, 3.2VDC.

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:	28774	Test Date:	6/23/2022

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	824.5805	848.4487			
Extreme (50°C)		824.5806	848.4488	42.7	0.051	Yes
Extreme (40°C)		824.5806	848.4488	38.6	0.046	Yes
Extreme (30°C)		824.5806	848.4488	33.4	0.040	Yes
Extreme (10°C)		824.5805	848.4487	7.5	0.009	Yes
Extreme (0°C)		824.5805	848.4487	4.9	0.006	Yes
Extreme (-10°C)		824.5805	848.4487	-19.7	-0.024	Yes
Extreme (-20°C)		824.5805	848.4487	-20.5	-0.025	Yes
Extreme (-30°C)		824.5805	848.4487	-25.2	-0.030	Yes
20°C	15%	824.5806	848.4488	22.9	0.027	Yes
	-15%	824.5806	848.4488	24.8	0.030	Yes
	End Point Voltage	824.5806	848.4488	25.4	0.030	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:	28774	Test Date:	6/23/2022

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	2501.1507	2568.8940			
Extreme (50°C)		2501.1508	2568.8941	85.4	0.034	Yes
Extreme (40°C)		2501.1507	2568.8941	76.4	0.030	Yes
Extreme (30°C)		2501.1507	2568.8941	65.0	0.026	Yes
Extreme (10°C)		2501.1507	2568.8941	11.4	0.004	Yes
Extreme (0°C)		2501.1506	2568.8940	-22.1	-0.009	Yes
Extreme (-10°C)		2501.1506	2568.8940	-40.3	-0.016	Yes
Extreme (-20°C)		2501.1506	2568.8940	-42.5	-0.017	Yes
Extreme (-30°C)		2501.1506	2568.8940	-55.5	-0.022	Yes
20°C	15%	2501.1507	2568.8941	61.3	0.024	Yes
	-15%	2501.1507	2568.8941	53.5	0.021	Yes
	End Point Voltage	2501.1507	2568.8941	54.4	0.021	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:	28774	Test Date:	6/23/2022

QPSK (20MHz + 20MHz BANDWIDTH)

Band	41	Frequency Range		Frequency Error Reading (Hz)	Limit	
Condition		2496	2690			
		Freq Reading @ Low End (MHz)	Freq Reading @ High End (MHz)		Frequency Stability (ppm)	Within Authorized Frequency Block (Hz)
Temperature	Voltage					
Normal (20°C)	Normal	2496.9367	2689.3308			
Extreme (50°C)		2496.9368	2689.3309	82.8	0.032	Yes
Extreme (40°C)		2496.9367	2689.3309	72	0.028	Yes
Extreme (30°C)		2496.9367	2689.3309	44.1	0.017	Yes
Extreme (10°C)		2496.9367	2689.3309	8.6	0.003	Yes
Extreme (0°C)		2496.9367	2689.3308	-10.2	-0.004	Yes
Extreme (-10°C)		2496.9367	2689.3309	45.7	0.018	Yes
Extreme (-20°C)		2496.9367	2689.3308	-9.8	-0.004	Yes
Extreme (-30°C)		2496.9367	2689.3308	-11.6	-0.004	Yes
20°C	15%	2496.9367	2689.3309	57.3	0.022	Yes
	-15%	2496.9367	2689.3309	56.1	0.022	Yes
	End Point Voltage	2496.9367	2689.3309	58	0.022	Yes

9.4.4. LTE BAND 48

Test Engineer ID:	28774	Test Date:	5/8/2022

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)		3551.1349	3699.3159			
Extreme (50°C)		3551.1350	3699.3160	81.9	0.023	Yes
Extreme (40°C)		3551.1350	3699.3160	68.7	0.019	Yes
Extreme (30°C)		3551.1349	3699.3159	47.9	0.013	Yes
Extreme (10°C)	Normal	3551.1349	3699.3159	-19.9	-0.005	Yes
Extreme (0°C)		3551.1349	3699.3158	-36.9	-0.010	Yes
Extreme (-10°C)		3551.1348	3699.3158	-45.7	-0.013	Yes
Extreme (-20°C)		3551.1348	3699.3158	-40.0	-0.011	Yes
Extreme (-30°C)		3551.1349	3699.3159	-24.2	-0.007	Yes
20°C	15%	3551.1350	3699.3160	82.1	0.023	Yes
	-15%	3551.1350	3699.3160	81.6	0.023	Yes
	End Point Voltage	3551.1350	3699.3160	81.7	0.023	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:	25780	Test Date:	6/1/2022

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	33.22	26.55	6.67
				16QAM	33.22	26.52	6.70
	5 MHz / 3MHz	835.0	838.9	QPSK	33.25	26.46	6.79
				16QAM	33.35	26.51	6.84
	5MHz / 10MHz	831.6	838.8	QPSK	31.01	23.67	7.34
				16QAM	30.73	23.69	7.04
	10MHz / 5MHz	834.3	841.5	QPSK	31.05	24.66	6.39
				16QAM	31.01	23.67	7.34
	10MHz / 10MHz	831.5	841.4	QPSK	31.10	24.71	6.39
				16QAM	31.11	23.71	7.40
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:	25780	Test Date:	6/22/2022

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	31.08	24.97	6.11
				16QAM	33.74	24.67	9.07
	20MHz / 10MHz	2530.1	2544.5	QPSK	31.07	24.96	6.11
				16QAM	31.10	23.98	7.12
	15 MHz / 15MHz	2527.5	2542.5	QPSK	31.12	24.96	6.16
				16QAM	31.12	24.96	6.16
	15MHz / 20MHz	2525.3	2542.4	QPSK	31.17	24.97	6.20
				16QAM	31.15	23.97	7.18
	20MHz / 15MHz	2527.6	2544.7	QPSK	32.87	26.68	6.19
				16QAM	33.38	26.36	7.02
	20MHz / 20MHz	2525.1	2544.9	QPSK	31.20	24.94	6.26
				16QAM	31.17	23.96	7.21
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:	28774	Test Date:	6/22/2022

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 41	5MHz / 20MHz	2583.8	2595.5	QPSK	34.33	20.01	7.33
				16QAM	34.27	19.01	8.27
	20MHz / 5MHz	2590.5	2602.2	QPSK	34.03	20.04	7.00
				16QAM	34.12	19.01	8.12
	10MHz / 20MHz	2583.6	2598.0	QPSK	34.27	20.02	7.26
				16QAM	34.34	19.03	8.32
	20MHz / 10MHz	2588.1	2602.5	QPSK	34.21	20.01	7.21
				16QAM	34.17	19.01	8.17
	15MHz / 15MHz	2585.5	2600.5	QPSK	34.17	20.00	7.18
				16QAM	34.25	19.03	8.23
	15MHz / 20MHz	2583.3	2600.4	QPSK	34.29	20.01	7.29
				16QAM	34.33	19.03	8.31
	20MHz / 15MHz	2585.6	2602.7	QPSK	34.22	20.01	7.22
				16QAM	34.25	19.02	8.24
	20MHz / 20MHz	2583.1	2602.9	QPSK	34.27	20.00	7.28
				16QAM	34.33	19.03	8.31
Duty Cycle Correction Factor (dB) =			6.99				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9.5.4. LTE BAND 48

Test Engineer ID:	25780	Test Date:	6/19/2022

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 48	5MHz / 20MHz	3615.8	3627.5	QPSK	30.26	17.67	5.60
				16QAM	31.31	17.73	6.59
	20MHz / 5MHz	3622.5	3634.2	QPSK	31.32	18.85	5.48
				16QAM	32.45	18.86	6.60
	10MHz / 20MHz	3615.6	3630.0	QPSK	31.38	18.94	5.45
				16QAM	32.45	18.97	6.49
	20MHz / 10MHz	3620.1	3634.5	QPSK	31.39	18.90	5.50
				16QAM	32.46	18.91	6.56
	15MHz / 20MHz	3615.3	3632.4	QPSK	31.38	18.92	5.47
				16QAM	32.44	18.97	6.48
	20MHz / 15MHz	3617.6	3634.7	QPSK	31.39	18.89	5.51
				16QAM	32.47	18.93	6.55
	20MHz / 20MHz	3615.1	3634.9	QPSK	31.41	18.89	5.53
				16QAM	32.54	18.94	6.61
Duty Cycle Correction Factor (dB) =			6.99				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

10. RADIATED TEST RESULTS

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.

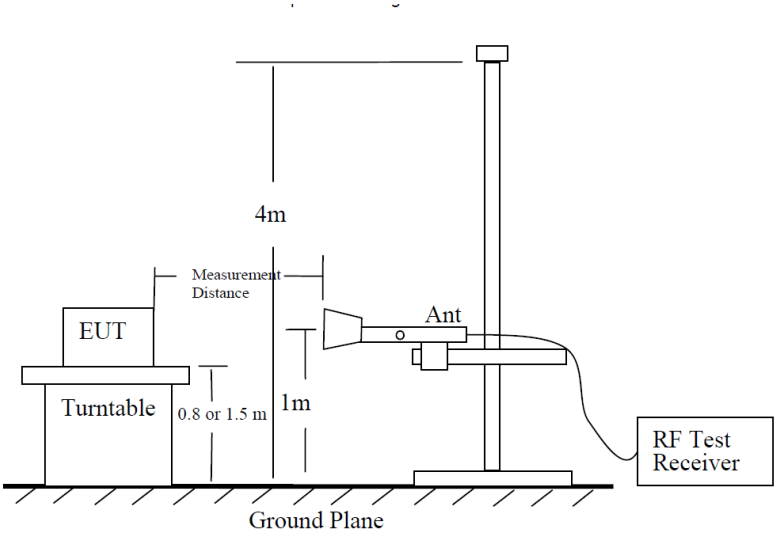


Figure 6—Test site-up for radiated ERP and/or EIRP measurements

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.

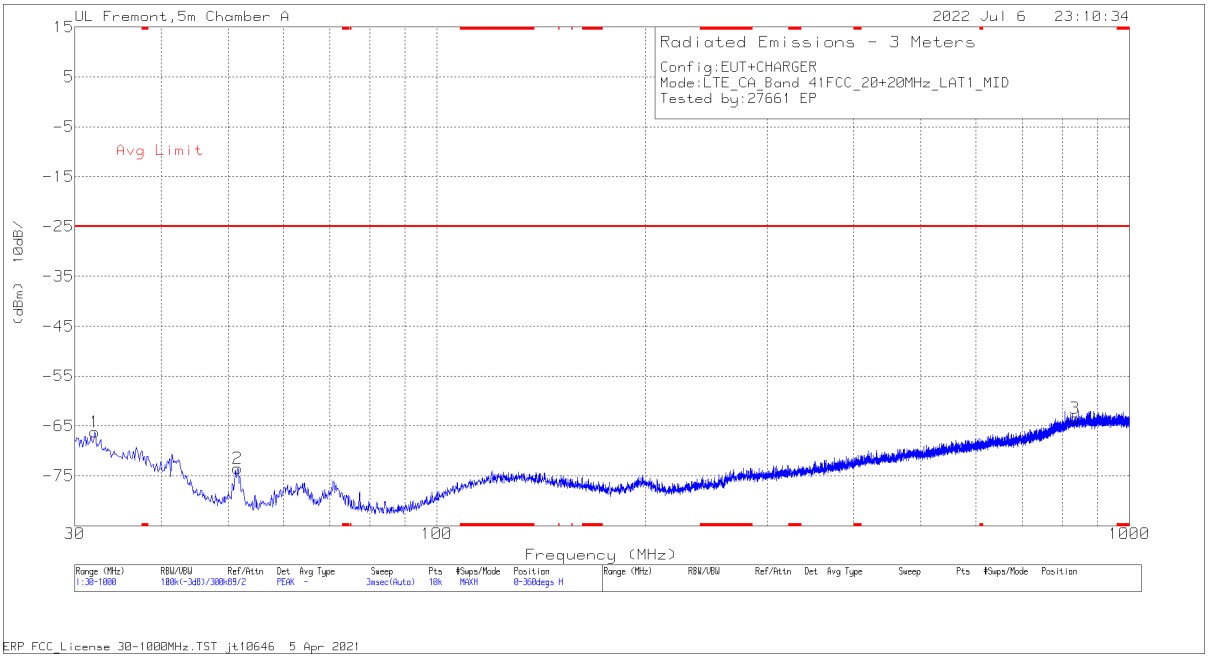
So, from d)

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

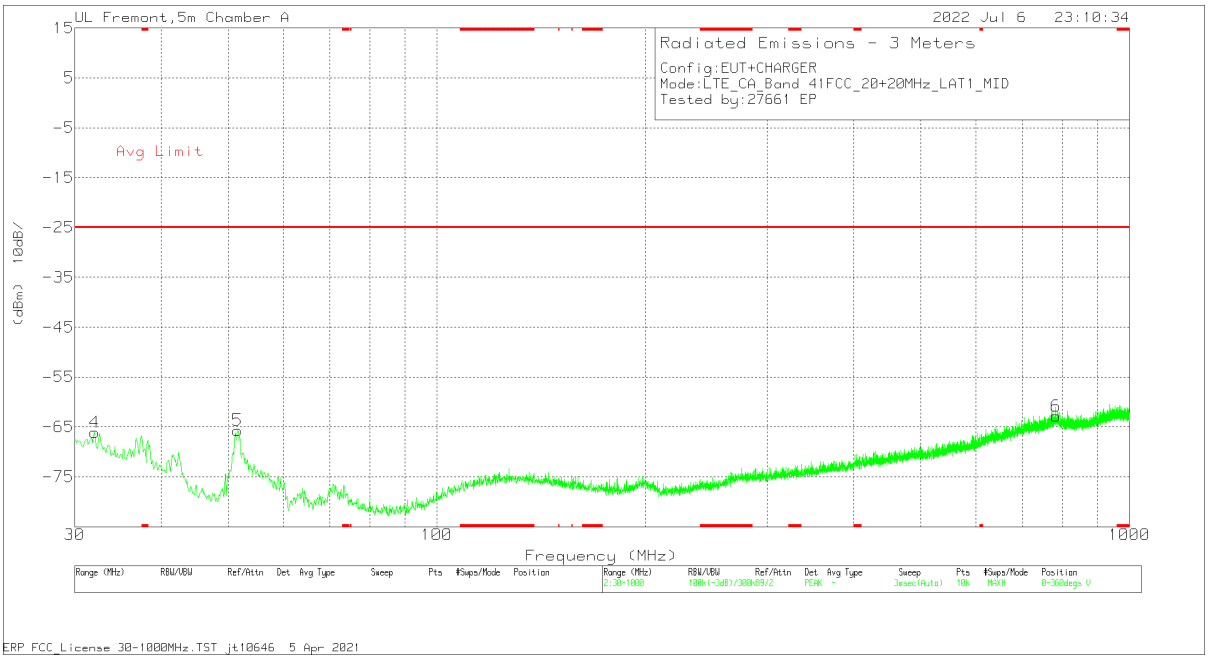
Then, EIRP (dBm) = E (dBμV/m) + 9.5424 − 104.8 = E (dBμV/m) – 95.2576

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

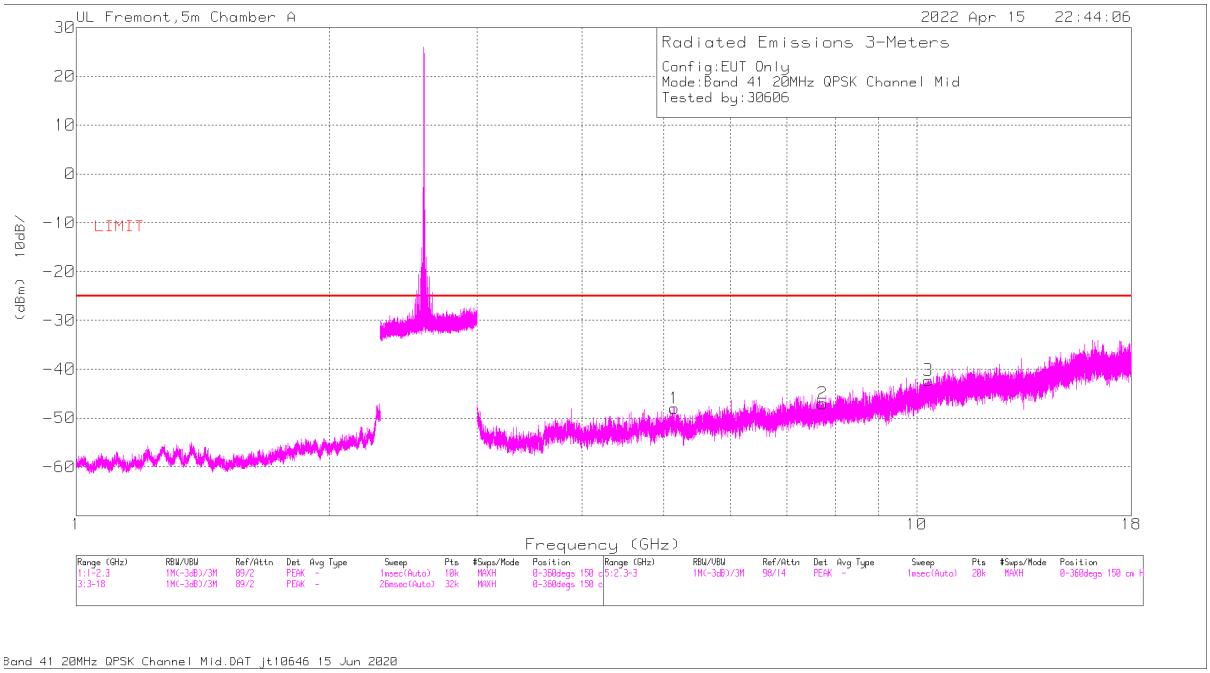


Vertical Polarity

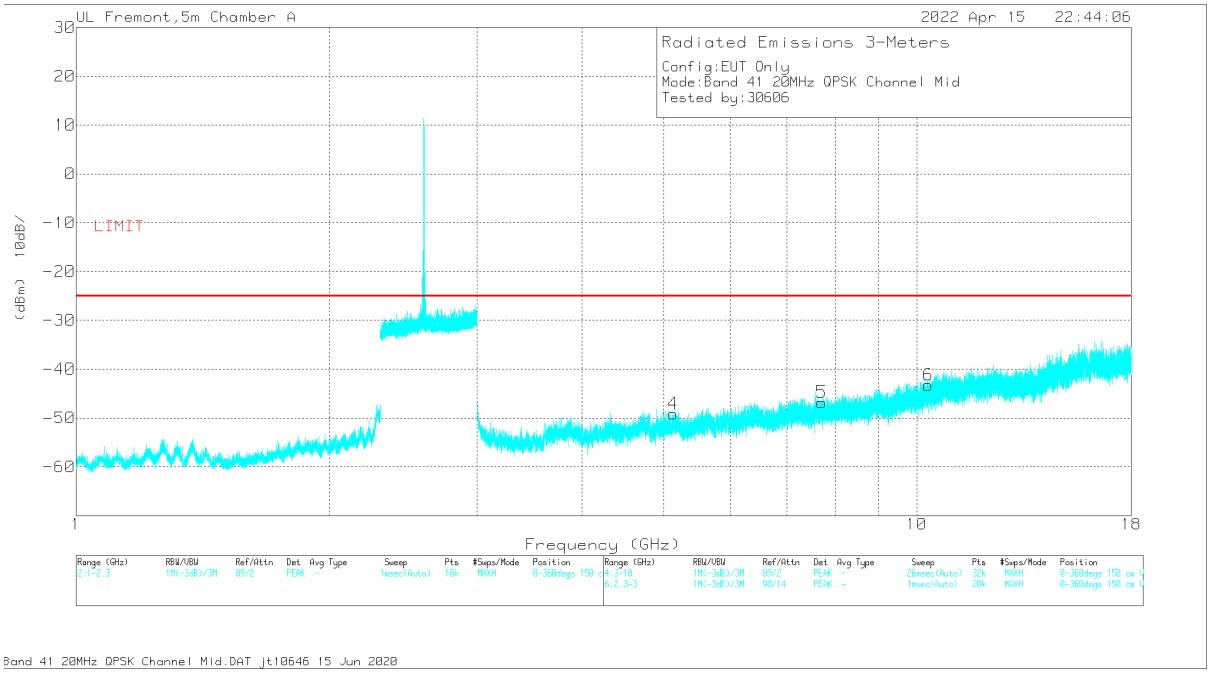
Trace Markers

Marker	Frequency (MHz)	Meter Reading (dBuV)	Det	85151 ACF (dB)_3m	Amp/Cbl (dB/m)	EIRP CF	Corrected Reading (dBm)	Avg Limit	Margin (dB)	Polarity
1	32.037	29.82	Pk	26.4	-27.2	-95.2	-66.18	-25	-41.18	H
4	32.037	29.93	Pk	26.4	-27.2	-95.2	-66.07	-25	-41.07	V
2	51.534	34.15	Pk	14.4	-26.9	-95.2	-73.55	-25	-48.55	H
5	51.534	42.04	Pk	14.4	-26.9	-95.2	-65.66	-25	-40.66	V
6	783.787	28.22	Pk	27.7	-23.6	-95.2	-62.88	-25	-37.88	V
3	834.712	26.74	Pk	28.2	-23.2	-95.2	-63.46	-25	-38.46	H

Example Plot Above 1GHz



Horizontal Polarity



Vertical Polarity

Trace Markers

Marker	Frequency (GHz)	Meter Reading (dBuV)	Det	AF 80402 (dB/m)	Amp/Cbl (dB)	BRF 2495-2690MHz T1790 1-18GHz	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
4	5.131406	34.77	Pk	34.4	-23.9	.8	-95.2	-49.13	-25	-24.13	V
1	5.146406	36.1	Pk	34.3	-24	.8	-95.2	-48.00	-25	-23.00	H
5	7.709063	31.9	Pk	35.7	-19.6	.4	-95.2	-46.80	-25	-21.80	V
2	7.7325	31.9	Pk	35.7	-19.7	.3	-95.2	-47.00	-25	-22.00	H
3	10.317188	32	Pk	37.4	-17.1	.6	-95.2	-42.30	-25	-17.30	H
6	10.318594	31.04	Pk	37.4	-17.1	.6	-95.2	-43.26	-25	-18.26	V

Pk - Peak detector

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 #:	14040866
Date:	04/18/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	LTE Band 5 QPSK 10MHz + 10MHz
Chamber #:	Chamber A

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										
1.647822	38.6	Pk	28.5	-29.4	.7	-95.2	-56.80	-13	-43.80	V
1.649289	43.23	Pk	28.5	-29.4	.8	-95.2	-52.07	-13	-39.07	H
2.473556	44.61	Pk	32.2	-28.1	.5	-95.2	-45.99	-13	-32.99	V
2.474045	37.64	Pk	32.2	-28.1	.5	-95.2	-52.96	-13	-39.96	H
3.302223	36.08	Pk	32.6	-26.4	.7	-95.2	-52.22	-13	-39.22	H
3.311512	36.07	Pk	32.5	-26.6	.6	-95.2	-52.63	-13	-39.63	V
Mid Channel, 831.6MHz + 841.5MHz										
1.654178	40.59	Pk	28.5	-29.4	.8	-95.2	-54.71	-13	-41.71	H
1.655645	37.93	Pk	28.5	-29.4	.8	-95.2	-57.37	-13	-44.37	V
2.481378	38.49	Pk	32.2	-28.1	.5	-95.2	-52.11	-13	-39.11	H
2.481378	43.52	Pk	32.2	-28.1	.5	-95.2	-47.08	-13	-34.08	V
3.311023	36.57	Pk	32.5	-26.6	.7	-95.2	-52.03	-13	-39.03	V
3.313467	36.26	Pk	32.5	-26.6	.6	-95.2	-52.44	-13	-39.44	H
High Channel, 834.1MHz + 844MHz										
1.659067	38.06	Pk	28.5	-29.4	.8	-95.2	-57.24	-13	-44.24	V
1.659556	39.93	Pk	28.5	-29.4	.8	-95.2	-55.37	-13	-42.37	H
2.4892	42.88	Pk	32.2	-28	.6	-95.2	-47.52	-13	-34.52	H
2.4892	45.83	Pk	32.2	-28	.6	-95.2	-44.57	-13	-31.57	V
3.3384	36.4	Pk	32.6	-26.6	.5	-95.2	-52.30	-13	-39.30	V
3.346223	35.76	Pk	32.7	-26.5	.5	-95.2	-52.74	-13	-39.74	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 #:	14040866
Date:	04/16/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	LTE Band 7 QPSK 20MHz + 20MHz
Chamber #:	Chamber A

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										
5.032031	34.2	Pk	34.4	-24.2	.7	-95.2	-50.10	-25	-25.10	V
5.041875	35.46	Pk	34.4	-24.1	.6	-95.2	-48.84	-25	-23.84	H
7.515938	32.16	Pk	35.6	-20.1	.3	-95.2	-47.24	-25	-22.24	V
7.528125	32.22	Pk	35.6	-20.2	.3	-95.2	-47.28	-25	-22.28	H
10.03875	31.61	Pk	37.1	-17.8	.7	-95.2	-43.59	-25	-18.59	H
10.060313	30.85	Pk	37.2	-17.8	.7	-95.2	-44.25	-25	-19.25	V
Mid Channel, 2525.1MHz + 2544.9MHz										
5.015156	34.68	Pk	34.3	-24.3	.8	-95.2	-49.72	-25	-24.72	V
5.030156	36.53	Pk	34.3	-24.2	.7	-95.2	-47.87	-25	-22.87	H
7.573594	32.59	Pk	35.7	-19.8	.4	-95.2	-46.31	-25	-21.31	H
7.573594	33.04	Pk	35.7	-19.8	.4	-95.2	-45.86	-25	-20.86	V
10.108125	32.31	Pk	37.2	-17.8	.7	-95.2	-42.79	-25	-17.79	V
10.117031	32.26	Pk	37.2	-17.8	.7	-95.2	-42.84	-25	-17.84	H
High Channel, 2540.2MHz + 2560MHz										
5.08125	35.71	Pk	34.4	-23.7	.8	-95.2	-47.99	-25	-22.99	V
5.081719	35.73	Pk	34.4	-23.7	.8	-95.2	-47.97	-25	-22.97	H
7.632188	32.36	Pk	35.7	-19.7	.4	-95.2	-46.44	-25	-21.44	H
7.635938	32.75	Pk	35.7	-19.6	.4	-95.2	-45.95	-25	-20.95	V
10.178906	31.75	Pk	37.4	-17.5	.6	-95.2	-42.95	-25	-17.95	H
10.206094	31.44	Pk	37.4	-17.6	.8	-95.2	-43.16	-25	-18.16	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 #:	14040866
Date:	04/15/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	Band 41 QPSK 20MHz + 20MHz
Chamber #:	Chamber A

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										
5.164219	35.36	Pk	34.3	-24.1	.7	-95.2	-48.94	-25	-23.94	V
5.181563	35.23	Pk	34.4	-23.7	.7	-95.2	-48.57	-25	-23.57	H
7.659375	32.61	Pk	35.7	-19.8	.3	-95.2	-46.39	-25	-21.39	V
7.66875	32.73	Pk	35.7	-19.7	.3	-95.2	-46.17	-25	-21.17	H
10.223906	32.58	Pk	37.4	-17.4	.9	-95.2	-41.72	-25	-16.72	H
10.232344	31.56	Pk	37.4	-17.3	.8	-95.2	-42.74	-25	-17.74	V
Mid Channel, 2583.1MHz + 2602.9MHz										
5.131406	34.77	Pk	34.4	-23.9	.8	-95.2	-49.13	-25	-24.13	V
5.146406	36.1	Pk	34.3	-24	.8	-95.2	-48.00	-25	-23.00	H
7.709063	31.9	Pk	35.7	-19.6	.4	-95.2	-46.80	-25	-21.80	V
7.7325	31.9	Pk	35.7	-19.7	.3	-95.2	-47.00	-25	-22.00	H
10.317188	32	Pk	37.4	-17.1	.6	-95.2	-42.3	-25	-17.3	H
10.318594	31.04	Pk	37.4	-17.1	.6	-95.2	-43.26	-25	-18.26	V
High Channel, 2660.2MHz + 2680MHz										
5.293125	34.58	Pk	34.4	-24.4	.4	-95.2	-50.22	-25	-25.22	V
5.31375	34.55	Pk	34.5	-24.2	.8	-95.2	-49.55	-25	-24.55	H
7.982344	32.06	Pk	35.7	-19.5	.3	-95.2	-46.64	-25	-21.64	V
7.988906	32.73	Pk	35.7	-19.5	.3	-95.2	-45.97	-25	-20.97	H
10.613438	31.23	Pk	37.8	-16.8	.7	-95.2	-42.27	-25	-17.27	V
10.630781	32.53	Pk	37.8	-16.9	.5	-95.2	-41.27	-25	-16.27	H

10.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT2

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 #:	14040866
Date:	04/18/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	LTE Band 5 QPSK 10MHz + 10MHz
Chamber #:	Chamber A

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										
1.669822	38.34	Pk	28.5	-29.3	.7	-95.2	-56.96	-13	-43.96	V
1.6708	37.86	Pk	28.5	-29.3	.7	-95.2	-57.44	-13	-44.44	H
2.473556	40.55	Pk	32.2	-28.1	.5	-95.2	-50.05	-13	-37.05	H
2.473556	48.61	Pk	32.2	-28.1	.5	-95.2	-41.99	-13	-28.99	V
3.315423	36.38	Pk	32.5	-26.6	.6	-95.2	-52.32	-13	-39.32	H
3.315423	36.21	Pk	32.5	-26.6	.6	-95.2	-52.49	-13	-39.49	V
Mid Channel, 831.6MHz + 841.5MHz										
1.664445	38.55	Pk	28.5	-29.4	.8	-95.2	-56.75	-13	-43.75	H
1.667378	38.53	Pk	28.5	-29.4	.7	-95.2	-56.87	-13	-43.87	V
2.481378	42.36	Pk	32.2	-28.1	.5	-95.2	-48.24	-13	-35.24	H
2.481378	46.68	Pk	32.2	-28.1	.5	-95.2	-43.92	-13	-30.92	V
3.336445	36.52	Pk	32.6	-26.6	.5	-95.2	-52.18	-13	-39.18	H
3.345734	35.86	Pk	32.6	-26.5	.5	-95.2	-52.74	-13	-39.74	V
High Channel, 834.1MHz + 844MHz										
1.664445	38.55	Pk	28.5	-29.4	.8	-95.2	-56.75	-13	-43.75	H
1.667378	38.53	Pk	28.5	-29.4	.7	-95.2	-56.87	-13	-43.87	V
2.481378	42.36	Pk	32.2	-28.1	.5	-95.2	-48.24	-13	-35.24	H
2.481378	46.68	Pk	32.2	-28.1	.5	-95.2	-43.92	-13	-30.92	V
3.336445	36.52	Pk	32.6	-26.6	.5	-95.2	-52.18	-13	-39.18	H
3.337423	35.93	Pk	32.6	-26.6	.5	-95.2	-52.77	-13	-39.77	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 #:	14040866
Date:	04/19/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	LTE Band 7 QPSK 20MHz + 20MHz
Chamber #:	Chamber A

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										
5.020781	34.82	Pk	34.2	-24.2	.7	-95.2	-49.68	-25	-24.68	V
5.02875	34.94	Pk	34.3	-24.2	.7	-95.2	-49.46	-25	-24.46	H
7.528594	32.02	Pk	35.6	-20.2	.3	-95.2	-47.48	-25	-22.48	V
7.543594	32.98	Pk	35.6	-20.3	.3	-95.2	-46.62	-25	-21.62	H
10.04625	32.65	Pk	37.1	-17.8	.7	-95.2	-42.55	-25	-17.55	V
10.052813	31.59	Pk	37.2	-17.8	.7	-95.2	-43.51	-25	-18.51	H
Mid Channel, 2525.1MHz + 2544.9MHz										
5.063438	34.35	Pk	34.4	-23.8	.6	-95.2	-49.65	-25	-24.65	V
5.068594	35.05	Pk	34.4	-23.7	.7	-95.2	-48.75	-25	-23.75	H
7.595625	33.76	Pk	35.7	-20	.5	-95.2	-45.24	-25	-20.24	H
7.607813	32.18	Pk	35.7	-20	.4	-95.2	-46.92	-25	-21.92	V
10.120781	32.25	Pk	37.2	-17.8	.7	-95.2	-42.85	-25	-17.85	V
10.131094	32.06	Pk	37.3	-17.7	.7	-95.2	-42.84	-25	-17.84	H
High Channel, 2540.2MHz + 2560MHz										
5.080781	35.1	Pk	34.4	-23.7	.7	-95.2	-48.70	-25	-23.70	H
5.083594	35.5	Pk	34.4	-23.7	.8	-95.2	-48.20	-25	-23.20	V
7.615781	33.31	Pk	35.7	-19.9	.4	-95.2	-45.69	-25	-20.69	V
7.6425	32.57	Pk	35.7	-19.6	.4	-95.2	-46.13	-25	-21.13	H
10.158281	31.58	Pk	37.3	-17.7	.6	-95.2	-43.42	-25	-18.42	V
10.15875	31.84	Pk	37.3	-17.6	.6	-95.2	-43.06	-25	-18.06	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 #:	14040866
Date:	04/23/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	Band 41 QPSK 20MHz + 20MHz
Chamber #:	Chamber A

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										
5.023125	35.8	Pk	34.2	-24.2	.7	-95.2	-48.70	-25	-23.70	V
5.0325	35.2	Pk	34.3	-24.2	.7	-95.2	-49.20	-25	-24.20	H
7.493906	32.25	Pk	35.6	-20.3	.3	-95.2	-47.35	-25	-22.35	V
7.507031	32.37	Pk	35.6	-20.1	.3	-95.2	-47.03	-25	-22.03	H
9.991406	31.52	Pk	37.2	-17.6	.5	-95.2	-43.58	-25	-18.58	V
10.013438	31.53	Pk	37.2	-17.6	.6	-95.2	-43.47	-25	-18.47	H
Mid Channel, 2583.1MHz + 2602.9MHz										
5.140781	35.06	Pk	34.3	-23.9	.8	-95.2	-48.94	-25	-23.94	V
5.151094	34.65	Pk	34.4	-24	.8	-95.2	-49.35	-25	-24.35	H
7.712813	31.67	Pk	35.8	-19.6	.4	-95.2	-46.93	-25	-21.93	V
7.731094	33.93	Pk	35.7	-19.7	.3	-95.2	-44.97	-25	-19.97	H
10.326094	31.65	Pk	37.4	-17.2	.6	-95.2	-42.75	-25	-17.75	V
10.340625	31.87	Pk	37.5	-17.1	.7	-95.2	-42.23	-25	-17.23	H
High Channel, 2660.2MHz + 2680MHz										
5.31	33.99	Pk	34.5	-24.2	.7	-95.2	-50.21	-25	-25.21	V
5.319844	33.94	Pk	34.5	-24.2	.8	-95.2	-50.16	-25	-25.16	H
7.977188	31.61	Pk	35.7	-19.6	.3	-95.2	-47.19	-25	-22.19	V
7.987031	32.96	Pk	35.7	-19.5	.3	-95.2	-45.74	-25	-20.74	H
10.642031	31.63	Pk	37.9	-16.8	.5	-95.2	-41.97	-25	-16.97	H
10.649531	32.76	Pk	37.9	-16.8	.5	-95.2	-40.84	-25	-15.84	V

10.3. FIELD STRENGTH OF SPURIOUS RADIATION, ANT3

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 #:	14040866
Date:	04/24/2022
Test Engineer:	27661
Configuration:	EUT only
Mode	LTE Band 7 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										
5.027344	36.21	Pk	34.3	-24.2	.7	-95.2	-48.19	-25	-23.19	H
5.02875	36.41	Pk	34.3	-24.2	.7	-95.2	-47.99	-25	-22.99	V
7.550625	32.72	Pk	35.6	-20.2	.3	-95.2	-46.78	-25	-21.78	V
7.554844	33.29	Pk	35.6	-20.1	.3	-95.2	-46.11	-25	-21.11	H
10.035	32.01	Pk	37.2	-17.8	.7	-95.2	-43.09	-25	-18.09	H
10.045313	30.84	Pk	37.2	-17.8	.7	-95.2	-44.26	-25	-19.26	V
Mid Channel, 2525.1MHz + 2544.9MHz										
5.058281	34.17	Pk	34.4	-23.9	.6	-95.2	-49.93	-25	-24.93	V
5.072813	34.81	Pk	34.4	-23.7	.7	-95.2	-48.99	-25	-23.99	H
7.59375	33.75	Pk	35.7	-20	.5	-95.2	-45.25	-25	-20.25	H
7.601719	33.06	Pk	35.7	-20	.4	-95.2	-46.04	-25	-21.04	V
10.090781	31.09	Pk	37.2	-17.9	.6	-95.2	-44.21	-25	-19.21	V
10.104844	31.87	Pk	37.2	-17.9	.7	-95.2	-43.33	-25	-18.33	H
High Channel, 2540.2MHz + 2560MHz										
5.082188	35.27	Pk	34.4	-23.7	.8	-95.2	-48.43	-25	-23.43	H
5.085469	34.97	Pk	34.4	-23.8	.8	-95.2	-48.83	-25	-23.83	V
7.609219	34.38	Pk	35.7	-20	.4	-95.2	-44.72	-25	-19.72	V
7.629844	32.62	Pk	35.7	-19.7	.4	-95.2	-46.18	-25	-21.18	H
10.153125	33.15	Pk	37.3	-17.7	.6	-95.2	-41.85	-25	-16.85	V
10.159219	32.62	Pk	37.3	-17.6	.6	-95.2	-42.28	-25	-17.28	H

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 #:	14040866
Date:	04/19/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	Band 41 QPSK 20MHz + 20MHz
Chamber #:	Chamber A

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										
5.016563	34.73	Pk	34.3	-24.2	.8	-95.2	-49.57	-25	-24.57	V
5.031094	35.81	Pk	34.3	-24.2	.7	-95.2	-48.59	-25	-23.59	H
7.498125	33.29	Pk	35.7	-20.3	.4	-95.2	-46.11	-25	-21.11	V
7.517813	33.14	Pk	35.6	-20.1	.3	-95.2	-46.26	-25	-21.26	H
10.002656	32.64	Pk	37.2	-17.6	.5	-95.2	-42.46	-25	-17.46	V
10.010625	33.15	Pk	37.1	-17.6	.6	-95.2	-41.95	-25	-16.95	H
Mid Channel, 2583.1MHz + 2602.9MHz										
5.044219	34.95	Pk	34.4	-24.1	.6	-95.2	-49.35	-25	-24.35	V
5.064844	36.14	Pk	34.4	-23.8	.6	-95.2	-47.86	-25	-22.86	H
7.744219	32.02	Pk	35.7	-19.6	.3	-95.2	-46.78	-25	-21.78	H
7.757813	32.2	Pk	35.8	-19.7	.3	-95.2	-46.60	-25	-21.60	V
10.30125	32.53	Pk	37.4	-17	.6	-95.2	-41.67	-25	-16.67	V
10.320938	32.2	Pk	37.4	-17.2	.6	-95.2	-42.2	-25	-17.2	H
High Channel, 2660.2MHz + 2680MHz										
5.304375	34.34	Pk	34.4	-24.2	.6	-95.2	-50.06	-25	-25.06	V
5.31	35.94	Pk	34.5	-24.2	.7	-95.2	-48.26	-25	-23.26	H
7.98	32.39	Pk	35.7	-19.5	.3	-95.2	-46.31	-25	-21.31	H
7.99875	32.35	Pk	35.7	-19.6	.3	-95.2	-46.45	-25	-21.45	V
10.6275	33.29	Pk	37.8	-16.9	.6	-95.2	-40.41	-25	-15.41	V
10.658906	32.01	Pk	37.8	-16.9	.5	-95.2	-41.79	-25	-16.79	H

10.4. FIELD STRENGTH OF SPURIOUS RADIATION, ANT4

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 #:	14040866
Date:	04/20/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	LTE Band 7 QPSK 20MHz + 20MHz
Chamber #:	Chamber A

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										
5.017031	35.43	Pk	34.2	-24.2	.8	-95.2	-48.97	-25	-23.97	V
5.04	35.77	Pk	34.3	-24.2	.6	-95.2	-48.73	-25	-23.73	H
7.53375	32.6	Pk	35.6	-20.2	.3	-95.2	-46.90	-25	-21.90	V
7.544531	33.24	Pk	35.6	-20.3	.3	-95.2	-46.36	-25	-21.36	H
10.056563	31.36	Pk	37.2	-17.8	.7	-95.2	-43.74	-25	-18.74	V
10.065938	31.41	Pk	37.2	-17.8	.7	-95.2	-43.69	-25	-18.69	H
Mid Channel, 2525.1MHz + 2544.9MHz										
5.042344	35.03	Pk	34.4	-24.1	.6	-95.2	-49.27	-25	-24.27	H
5.05125	36.16	Pk	34.4	-24	.6	-95.2	-48.04	-25	-23.04	V
7.567969	32.26	Pk	35.6	-19.9	.4	-95.2	-46.84	-25	-21.84	V
7.572656	32.4	Pk	35.6	-19.8	.4	-95.2	-46.60	-25	-21.60	H
10.085625	32.5	Pk	37.2	-17.8	.6	-95.2	-42.70	-25	-17.70	V
10.101563	31.87	Pk	37.2	-17.9	.7	-95.2	-43.33	-25	-18.33	H
High Channel, 2540.2MHz + 2560MHz										
5.059219	35.19	Pk	34.4	-23.9	.6	-95.2	-48.91	-25	-23.91	V
5.061094	35.69	Pk	34.4	-23.9	.6	-95.2	-48.41	-25	-23.41	H
7.600781	32.61	Pk	35.7	-20.1	.4	-95.2	-46.59	-25	-21.59	V
7.615781	33.81	Pk	35.7	-19.9	.4	-95.2	-45.19	-25	-20.19	H
10.13625	31.3	Pk	37.3	-17.7	.7	-95.2	-43.60	-25	-18.60	V
10.139531	32.01	Pk	37.3	-17.7	.7	-95.2	-42.89	-25	-17.89	H

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 #:	14040866
Date:	04/20/2022
Test Engineer:	30606
Configuration:	EUT only
Mode	Band 41 QPSK 20MHz + 20MHz
Chamber #:	Chamber A

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										
5.015156	35.72	Pk	34.3	-24.3	.8	-95.2	-48.68	-25	-23.68	V
5.020313	34.95	Pk	34.2	-24.2	.8	-95.2	-49.45	-25	-24.45	H
7.5225	33.44	Pk	35.6	-20.1	.3	-95.2	-45.96	-25	-20.96	V
7.527188	32.53	Pk	35.6	-20.2	.3	-95.2	-46.97	-25	-21.97	H
9.99375	30.92	Pk	37.2	-17.6	.5	-95.2	-44.18	-25	-19.18	V
10.002188	31.24	Pk	37.2	-17.6	.5	-95.2	-43.86	-25	-18.86	H
Mid Channel, 2583.1MHz + 2602.9MHz										
5.140781	35.26	Pk	34.3	-23.9	.8	-95.2	-48.74	-25	-23.74	V
5.159063	34.97	Pk	34.3	-24.1	.8	-95.2	-49.23	-25	-24.23	H
7.741406	33.17	Pk	35.7	-19.6	.3	-95.2	-45.63	-25	-20.63	H
7.757344	32.68	Pk	35.8	-19.7	.3	-95.2	-46.12	-25	-21.12	V
10.306406	33.66	Pk	37.4	-17	.6	-95.2	-40.54	-25	-15.54	H
10.312031	32.31	Pk	37.4	-17.1	.6	-95.2	-41.99	-25	-16.99	V
High Channel, 2660.2MHz + 2680MHz										
5.295	33.39	Pk	34.4	-24.4	.5	-95.2	-51.31	-25	-26.31	V
5.302031	34.91	Pk	34.4	-24.3	.6	-95.2	-49.59	-25	-24.59	H
7.978594	32.32	Pk	35.7	-19.5	.3	-95.2	-46.38	-25	-21.38	V
7.979531	31.99	Pk	35.7	-19.5	.3	-95.2	-46.71	-25	-21.71	H
10.614375	31.7	Pk	37.8	-16.8	.7	-95.2	-41.8	-25	-16.8	V
10.630781	31.81	Pk	37.8	-16.9	.5	-95.2	-41.99	-25	-16.99	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 #:	14040866
Date:	06/05/2022
Test Engineer:	27661
Configuration:	EUT only
Mode	Band 48 QPSK 20MHz + 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	T1792 3400-3800MHz BRF	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.127138	33.27	RMS	35.9	-27	.5	-95.2	-52.53	-40	-12.53	V
7.141238	33.7	RMS	36	-27	.6	-95.2	-51.90	-40	-11.90	H
10.678134	31.7	RMS	37.7	-24.2	.6	-95.2	-49.40	-40	-9.40	V
10.690472	32.57	RMS	37.7	-24.3	.6	-95.2	-48.63	-40	-8.63	H
14.339728	30.02	RMS	39.5	-19.6	.8	-95.2	-44.48	-40	-4.48	H
14.366166	29.84	RMS	39.5	-19.8	.9	-95.2	-44.76	-40	-4.76	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.260206	32.61	RMS	35.7	-26.8	.6	-95.2	-53.09	-40	-13.09	H
7.295016	33.02	RMS	35.7	-26.4	.6	-95.2	-52.28	-40	-12.28	V
10.840284	30.93	RMS	37.8	-23.7	.6	-95.2	-49.57	-40	-9.57	V
10.848656	32	RMS	37.8	-23.6	.5	-95.2	-48.50	-40	-8.50	H
14.52435	29.84	RMS	39.8	-19.8	.8	-95.2	-44.56	-40	-4.56	H
14.557838	30.5	RMS	39.8	-20.3	.8	-95.2	-44.40	-40	-4.40	V
High Channel, 3670.2MHz + 3690MHz										
7.344806	33.29	RMS	35.7	-26.7	.6	-95.2	-52.31	-40	-12.31	H
7.358466	33.37	RMS	35.7	-26.7	.7	-95.2	-52.13	-40	-12.13	V
11.016534	31.77	RMS	37.9	-23.4	.6	-95.2	-48.33	-40	-8.33	H
11.029313	31.17	RMS	37.9	-23.3	.6	-95.2	-48.83	-40	-8.83	V
14.795334	30.17	RMS	39.9	-19.9	1	-95.2	-44.03	-40	-4.03	H
14.801063	29.72	RMS	39.9	-20	1	-95.2	-44.58	-40	-4.58	V

10.5. FIELD STRENGTH OF SPURIOUS RADIATION, ANT7

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 #:	14040866
Date:	05/25/2022
Test Engineer:	27661
Configuration:	EUT only
Mode	Band 48 QPSK 20MHz + 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	T1792 3400-3800MHz BRF	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.091447	33.37	RMS	35.9	-26.8	.5	-95.2	-52.23	-40	-12.23	V
7.107309	33.52	RMS	35.9	-26.8	.5	-95.2	-52.08	-40	-12.08	H
10.665356	31.5	RMS	37.7	-24	.6	-95.2	-49.40	-40	-9.40	V
10.667559	32.41	RMS	37.7	-24	.6	-95.2	-48.49	-40	-8.49	H
14.205338	30.09	RMS	39.4	-19.9	.7	-95.2	-44.91	-40	-4.91	V
14.211947	29.96	RMS	39.4	-19.8	.8	-95.2	-44.84	-40	-4.84	H
Mid Channel, 3615.1MHz + 3634.9MHz										
7.238616	33.69	RMS	35.8	-26.6	.5	-95.2	-51.81	-40	-11.81	H
7.24875	33.72	RMS	35.7	-26.7	.6	-95.2	-51.88	-40	-11.88	V
10.764938	31.56	RMS	37.7	-23.9	.6	-95.2	-49.24	-40	-9.24	V
10.841166	30.94	RMS	37.8	-23.5	.6	-95.2	-49.36	-40	-9.36	H
14.400534	28.56	RMS	39.6	-18.8	.8	-95.2	-45.04	-40	-5.04	V
14.402297	29.59	RMS	39.6	-18.9	.8	-95.2	-44.11	-40	-4.11	H
High Channel, 3670.2MHz + 3690MHz										
7.310438	32.89	RMS	35.7	-26.5	.6	-95.2	-52.51	-40	-12.51	V
7.328944	33.4	RMS	35.6	-26.8	.5	-95.2	-52.50	-40	-12.50	H
10.984369	31.36	RMS	38	-23.4	.6	-95.2	-48.64	-40	-8.64	V
11.019178	31.7	RMS	37.9	-23.4	.6	-95.2	-48.40	-40	-8.40	H
14.483372	30.29	RMS	39.7	-19.8	.7	-95.2	-44.31	-40	-4.31	V
14.505403	30.58	RMS	39.7	-20	.8	-95.2	-44.12	-40	-4.12	H

10.6. FIELD STRENGTH OF SPURIOUS RADIATION, ANT8

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.

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

Project #:	14040866
Date:	06/04/2022
Test Engineer:	27661
Configuration:	EUT only
Mode	Band 48 QPSK 20MHz + 20MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	T1792 3400-3800MHz BRF	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.130222	33.47	RMS	35.9	-27	.5	-95.2	-52.33	-40	-12.33	H
7.146084	32.98	RMS	36	-27	.6	-95.2	-52.62	-40	-12.62	V
10.678575	32	RMS	37.7	-24.2	.6	-95.2	-49.10	-40	-9.10	H
10.684303	32.52	RMS	37.7	-24.3	.6	-95.2	-48.68	-40	-8.68	V
14.162156	30.49	RMS	39.4	-19.8	.7	-95.2	-44.41	-40	-4.41	H
14.170528	30.29	RMS	39.4	-20.1	.7	-95.2	-44.91	-40	-4.91	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.211738	33.86	RMS	35.8	-26.9	.6	-95.2	-51.84	-40	-11.84	H
7.219228	33.84	RMS	35.8	-26.8	.5	-95.2	-51.86	-40	-11.86	V
10.857909	32.11	RMS	37.8	-23.7	.4	-95.2	-48.59	-40	-8.59	H
10.912547	31.39	RMS	37.9	-23.7	.6	-95.2	-49.01	-40	-9.01	V
14.594409	30.05	RMS	39.7	-19.5	.9	-95.2	-44.05	-40	-4.05	H
14.623491	29.68	RMS	39.7	-19.8	.9	-95.2	-44.72	-40	-4.72	V
High Channel, 3670.2MHz + 3690MHz										
7.341722	32.88	RMS	35.7	-26.7	.6	-95.2	-52.72	-40	-12.72	H
7.344806	32.64	RMS	35.7	-26.7	.6	-95.2	-52.96	-40	-12.96	V
10.996706	31.31	RMS	37.9	-23.5	.7	-95.2	-48.79	-40	-8.79	H
11.009925	31.09	RMS	37.9	-23.5	.7	-95.2	-49.01	-40	-9.01	V
14.604984	29.76	RMS	39.7	-19.7	.9	-95.2	-44.54	-40	-4.54	H
14.652131	29.18	RMS	39.7	-19	.9	-95.2	-44.42	-40	-4.42	V

10.7. FIELD STRENGTH OF SPURIOUS RADIATION, ANT9

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 #:	14040866
Date:	06/04/2022
Test Engineer:	27661
Configuration:	EUT only
Mode	Band 48 QPSK 20MHz + 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T962 (dB/m)	Amp/Cbl (dB)	T1792 3400-3800MHz BRF	EIRP CF	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 3560MHz + 3579.8MHz										
7.129781	33.28	RMS	35.9	-27	.5	-95.2	-52.52	-40	-12.52	V
7.137272	33.02	RMS	36	-27	.6	-95.2	-52.58	-40	-12.58	H
10.670203	31.77	RMS	37.7	-24.1	.6	-95.2	-49.23	-40	-9.23	H
10.671966	31.37	RMS	37.7	-24.1	.6	-95.2	-49.63	-40	-9.63	V
14.267906	30.36	RMS	39.5	-19.9	.8	-95.2	-44.44	-40	-4.44	H
14.268347	29.82	RMS	39.5	-19.9	.8	-95.2	-44.98	-40	-4.98	V
Mid Channel, 3615.1MHz + 3634.9MHz										
7.263291	33.49	RMS	35.7	-26.8	.6	-95.2	-52.21	-40	-12.21	H
7.285763	33.24	RMS	35.7	-26.5	.5	-95.2	-52.26	-40	-12.26	V
10.856147	30.97	RMS	37.8	-23.7	.5	-95.2	-49.63	-40	-9.63	V
10.857469	33.52	RMS	37.8	-23.7	.5	-95.2	-47.08	-40	-7.08	H
14.469272	29.43	RMS	39.7	-19.3	.7	-95.2	-44.67	-40	-4.67	H
14.487778	29.83	RMS	39.7	-19.9	.7	-95.2	-44.87	-40	-4.87	V
High Channel, 3670.2MHz + 3690MHz										
7.394597	34.75	RMS	35.8	-26.8	.6	-95.2	-50.85	-40	-10.85	V
7.399884	33.53	RMS	35.8	-26.8	.6	-95.2	-52.07	-40	-12.07	H
11.116116	31.13	RMS	37.8	-23.2	.7	-95.2	-48.77	-40	-8.77	V
11.118759	31.65	RMS	37.8	-23.2	.7	-95.2	-48.25	-40	-8.25	H
14.552109	30.33	RMS	39.8	-20.3	.8	-95.2	-44.57	-40	-4.57	V
14.560041	30.13	RMS	39.8	-20.2	.8	-95.2	-44.67	-40	-4.67	H

11. SETUP PHOTOS

Please refer to 14040863-EP1V1 for setup photos.

END OF REPORT