



TEST REPORT

Report Number. : 13171837-E1V3

Applicant : Samsung Electronics Co., Ltd.
129 Samsung-Ro, Yeongtong-Gu,
Suwon-Si, Gyeonggi-Do, 16677, Korea

Model : SM-A515U, SM-A515U1, SM-A515W, and SM-S515DL

FCC ID : A3LSMA515U

IC : 649E-SMA515W

EUT Description : GSM/CDMA/WCDMA/LTE PHABLET WITH BT/BLE,DTS/UNII
a/b/g/n/ac, NFC AND ANT+

Test Standard(s) : FCC CFR47 PART 22H, 24E, 27, 90S AND 90R
ISED RSS-130 ISSUE 2, RSS-132 ISSUE 3, RSS-133 ISSUE 6,
RSS-139 ISSUE 3, RSS-140 ISSUE 1, RSS-195 ISSUE 2, AND
RSS-199 ISSUE 3

Date Of Issue:
MARCH 06, 2020

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Revision History

<u>Rev.</u>	<u>Issue Date</u>	<u>Revisions</u>	<u>Revised By</u>
V1	2/3/2020	Initial Review	--
V2	2/28/2020	Updated Section 1, 5.2, 7.1, 7.2, 7.3, and removed Part 15B Appendix	Steven Tran
V3	3/6/2020	Updated Section 5.5	Dan Coronia

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1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	SAMSUNG ELECTRONICS CO., LTD. 129 SAMSUNG-RO, YEONGTONG-GU, SUWON-SI, GYEONGGI-DO, 16677, KOREA
Model	SM-A515U, SM-A515U1, SM-A515W, AND SM-S515DL
FCC ID	A3LSMA515U
IC	649E-SMA515W
EUT Description	GSM/CDMA/WCDMA/LTE PHABLET WITH BT/BLE,DTS/UNII a/b/g/n/ac, NFC AND ANT+
Serial Number	CONDUCTED: 353327110230406, 353327110209269 RADIATED: IMEI 353327110220894, 353327110231552, SN R38MC0AMTHP
Date Tested	DECEMBER 27, 2019 TO JANUARY 30, 2020 , AND FEBRUARY 27, 2020
Applicable Standards	FCC PART 22H, 24E, 27, 90S, 90R AND FCC CFR47 PART 15 SUBPART B ISED RSS-130 ISSUE 2, RSS-132 ISSUE 3, RSS-133 ISSUE 6, RSS-139 ISSUE 3, RSS-140 ISSUE 1, RSS-199 ISSUE 3 AND ICES-006 ISSUE 3
Test Results	COMPLIES

UL Verification Services Inc. 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 Verification Services Inc. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by UL Verification Services Inc. 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 NVLAP, NIST, any agency of the Federal Government, or any agency of the U.S. government.

Approved & Released By:	Reviewed By:	Prepared By:
		
Dan Corona Operations Leader UL Verification Services Inc.	Steven Tran Project Engineer UL Verification Services Inc.	Rolly Alegre Test Engineer UL Verification Services Inc.

2. 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 24E, Part 27, Part 90S, and Part 90R
- [FCC KDB 971168 D01 v03r01](#): Power Meas License Digital Systems
- [FCC KDB 971168 D02 v02r01](#): Misc Rev Approv License Devices
- [FCC KDB 412172 D01 v01r01](#): Determining ERP and EIRP

ISED RSS-130 Issue 2, RSS-132 Issue 3, RSS-133 Issue 6, RSS-139 Issue 3, RSS-140 Issue 1, and RSS-199 Issue 3

3. FACILITIES AND ACCREDITATION

The test sites and measurement facilities used to collect data are located at 47173 and 47266 Benicia Street, and 47658 Kato Road, Fremont, California, USA. The following table identifies which facilities were utilized for radiated emission measurements documented in this report. Specific facilities are also identified in the test results sections.

47173 Benicia Street	47266 Benicia Street	47658 Kato Road
<input type="checkbox"/> Chamber A	<input type="checkbox"/> Chamber D	<input checked="" type="checkbox"/> Chamber I
<input type="checkbox"/> Chamber B	<input type="checkbox"/> Chamber E	<input checked="" type="checkbox"/> Chamber J
<input type="checkbox"/> Chamber C	<input type="checkbox"/> Chamber F	<input type="checkbox"/> Chamber K
	<input type="checkbox"/> Chamber G	<input type="checkbox"/> Chamber L
	<input type="checkbox"/> Chamber H	<input type="checkbox"/> Chamber M

The above test sites and facilities are covered under FCC Test Firm Registration # 208313. Chambers above are covered under Industry Canada company address and respective code: 2324A.

UL Verification Services Inc. is accredited by NVLAP, Laboratory Code 200065-0

4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

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

4.2. SAMPLE CALCULATION

RADIATED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Field Strength (dBuV/m)} = \text{Measured Voltage (dBuV)} + \text{Antenna Factor (dB/m)} + \text{Cable Loss (dB)} - \text{Preamp Gain (dB)}$$
$$36.5 \text{ dBuV} + 18.7 \text{ dB/m} + 0.6 \text{ dB} - 26.9 \text{ dB} = 28.9 \text{ dBuV/m}$$

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:

$$\text{Final Voltage (dBuV)} = \text{Measured Voltage (dBuV)} + \text{Cable Loss (dB)} + \text{Limiter Factor (dB)} + \text{LISN Insertion Loss.}$$
$$36.5 \text{ dBuV} + 0 \text{ dB} + 10.1 \text{ dB} + 0 \text{ dB} = 46.6 \text{ dBuV}$$

4.3. MEASUREMENT UNCERTAINTY

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

PARAMETER	UNCERTAINTY
Conducted Disturbance, 9KHz to 0.15 MHz	3.39 dB
Conducted Disturbance, 0.15 to 30 MHz	3.07 dB
Radiated Disturbance, 9KHz to 30 MHz	2.52 dB
Radiated Disturbance, 30 to 1000 MHz	4.88 dB
Radiated Disturbance, 1000 to 18000 MHz	4.24 dB
Radiated Disturbance, 18000 to 26000 MHz	4.37 dB
Radiated Disturbance, 26000 to 40000 MHz	5.17 dB
Occupied Channel Bandwidth	±0.39 %
Temperature	±0.9 °C
Supply voltages	±0.45 %
Time	±0.02 %

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

5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

The EUT is a GSM/CDMA/WCDMA/LTE Phablet with BT/BLE,DTS/UNII a/b/g/n/ac, NFC and ANT+. The model SM-A515U was used for final testing and is representative of the test results in this report.

5.2. MAXIMUM OUTPUT POWER

ERP/EIRP LIMIT

FCC: §2.1046, §22.913, §24.232, §27.50, §90.635, §90.541
RSS130§4.6, RSS132§5.4; RSS133§6.4, RSS139§6.5, RSS140§4.3, RSS199§4.4.

EIRP/ERP TEST PROCEDURE

ANSI C63.26:2015 Sub-Clause 5.2.7/ TIA-603-E Clause 2.2.17
KDB 971168 D01 Section 5.8
KDB 412172 D01

$$\text{ERP/EIRP} = \text{PMeas} + \text{GT} - \text{LC}$$

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.

The transmitter has a maximum average radiated ERP / EIRP output powers as follows:

GSM MODES

Part 22 / RSS 132 850MHz					
Frequency range (MHz)	Modulation	Radiated ERP		99% BW (kHz)	Emission Designator
		Average (dBm)	Average (W)		
824.2-848.8	GPRS	27.47	0.5585	244.80	245KGXW
	EGPRS	22.32	0.1706	240.10	240KG7W
Part 24 / RSS 133 1900MHz					
Frequency range (MHz)	Modulation	Radiated EIRP		99% BW (kHz)	Emission Designator
		Average (dBm)	Average (W)		
1850.2-1909.8	GPRS	27.19	0.5236	242.90	243KGXW
	EGPRS	23.43	0.2203	239.50	240KG7W

CDMA MODES

Part 90 BC10					
Frequency range (MHz)	Modulation	Conducted Power		99% BW (kHz)	Emission Designator
		Average (dBm)	Average (W)		
817.25-822.75	1xRTT	24.40	0.2754	1440	1M44F9W
	EVDO	24.40	0.2754	1350	1M35F9W
Part 22 / RSS 132 BC0					
Frequency range (MHz)	Modulation	Radiated ERP		99% BW (kHz)	Emission Designator
		Average (dBm)	Average (W)		
824.7-848.31	1xRTT	19.82	0.0959	1290	1M29F9W
	EVDO	20.00	0.1000	1280	1M28F9W
Part 24 / RSS 133 BC1					
Frequency range (MHz)	Modulation	Radiated EIRP		99% BW (kHz)	Emission Designator
		Average (dBm)	Average (W)		
1851.25-1908.75	1xRTT	22.79	0.1901	1290	1M29F9W
	EVDO	22.67	0.1849	1280	1M28F9W

WCDMA MODES

Part 22 / RSS 132 Band 5					
Frequency range (MHz)	Modulation	Radiated ERP		99% BW (kHz)	Emission Designator
		Average (dBm)	Average (W)		
826.4-846.6	REL 99	19.30	0.0851	4130	4M13F9W
	HSDPA	17.93	0.0621	4140	4M14F9W
Part 24 / RSS 133 Band 2					
Frequency range (MHz)	Modulation	Radiated EIRP		99% BW (kHz)	Emission Designator
		Average (dBm)	Average (W)		
1852.4-1907.6	REL 99	21.48	0.1406	4120	4M12F9W
	HSDPA	20.41	0.1099	4140	4M14F9W
Part 27 / RSS 139 Band 4					
Frequency range (MHz)	Modulation	Radiated EIRP		99% BW (kHz)	Emission Designator
		Average (dBm)	Average (W)		
1712.4-1752.6	REL 99	22.37	0.1726	4130	4M13F9W
	HSDPA	21.18	0.1312	4130	4M13F9W

LTE BAND 5

Part 22H / RSS 132							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated ERP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
1.4	QPSK	824.7	848.3	19.42	0.0875	1090	1M09G7W
	16QAM			18.33	0.0681	1090	1M09D7W
3.0	QPSK	825.5	847.5	19.70	0.0933	2710	2M71G7W
	16QAM			18.83	0.0764	2710	2M71D7W
5.0	QPSK	826.5	846.5	20.09	0.1021	4510	4M51G7W
	16QAM			18.97	0.0789	4510	4M51D7W
10.0	QPSK	829.0	844.0	19.44	0.0879	8980	8M98G7W
	16QAM			18.50	0.0708	8950	8M95D7W

LTE BAND 7

Part 27 / RSS 199							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated EIRP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
5.0	QPSK	2502.5	2567.5	23.00	0.1995	4510	4M51G7W
	16QAM			21.85	0.1531	4500	4M50D7W
10.0	QPSK	2505.0	2565.0	23.27	0.2123	8960	8M96G7W
	16QAM			22.24	0.1675	8970	8M97D7W
15.0	QPSK	2507.5	2562.5	23.85	0.2427	13430	13M4G7W
	16QAM			22.89	0.1945	13370	13M4D7W
20.0	QPSK	2510.0	2560.0	23.93	0.2472	17790	17M8G7W
	16QAM			22.80	0.1905	17870	17M9D7W

LTE BAND 12

Part 27 / RSS 130							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated ERP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
1.4	QPSK	699.7	715.3	18.63	0.0729	1090	1M09G7W
	16QAM			17.52	0.0565	1090	1M09D7W
3.0	QPSK	700.5	714.5	19.00	0.0794	2710	2M71G7W
	16QAM			17.95	0.0624	2700	2M70D7W
5.0	QPSK	701.5	713.5	19.09	0.0811	4500	4M50G7W
	16QAM			17.85	0.0610	4500	4M50D7W
10.0	QPSK	704.0	711.0	19.09	0.0811	8970	8M97G7W
	16QAM			18.12	0.0649	9010	9M01D7W

LTE BAND 13

Part 27 / RSS 130							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated ERP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
5.0	QPSK	779.5	784.5	17.08	0.0511	4500	4M50G7W
	16QAM			15.70	0.0372	4510	4M51D7W
10.0	QPSK	782.0	782.0	16.99	0.0500	8970	8M97G7W
	16QAM			15.78	0.0378	8970	8M97D7W

LTE BAND 14

Part 90R / RSS 140							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated ERP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
5.0	QPSK	790.5	795.5	18.26	0.0670	4500	4M50G7W
	16QAM			16.90	0.0490	4500	4M50D7W
10.0	QPSK	793.0	793.0	17.96	0.0625	8950	8M95G7W
	16QAM			16.63	0.0460	8950	8M95D7W

LTE BAND 25

Part 24 / RSS 133							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated EIRP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
1.4	QPSK	1850.7	1914.3	22.02	0.1592	1080	1M08G7W
	16QAM			20.92	0.1236	1090	1M09D7W
3.0	QPSK	1851.5	1913.5	21.92	0.1556	2710	2M71G7W
	16QAM			20.42	0.1102	2700	2M70D7W
5.0	QPSK	1852.5	1912.5	22.22	0.1667	4510	4M51G7W
	16QAM			20.82	0.1208	4500	4M50D7W
10.0	QPSK	1855.0	1910.0	20.32	0.1076	9000	9M00G7W
	16QAM			20.02	0.1005	8990	8M99D7W
15.0	QPSK	1857.5	1907.5	21.12	0.1294	13420	13M4G7W
	16QAM			19.82	0.0959	13400	13M4D7W
20.0	QPSK	1860.0	1905.0	19.52	0.0895	17890	17M9G7W
	16QAM			19.42	0.0875	17850	17M9D7W

LTE BAND 26 (FCC Part 90S)

Part 90S							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Power		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
1.4	QPSK	814.7	823.3	24.20	0.2630	1090	1M09G7W
	16QAM			23.20	0.2089	1090	1M09D7W
3.0	QPSK	815.5	822.5	24.10	0.2570	2700	2M70G7W
	16QAM			23.10	0.2042	2710	2M71D7W
5.0	QPSK	816.5	821.5	24.10	0.2570	4500	4M50G7W
	16QAM			23.10	0.2042	4510	4M51D7W
10.0	QPSK	819.0	819.0	24.20	0.2630	8980	8M98G7W
	16QAM			23.20	0.2089	8990	8M99D7W
15.0	QPSK	821.5	821.5	24.20	0.2630	13400	13M4G7W
	16QAM			22.90	0.1950	13420	13M4D7W

LTE BAND 26 (FCC Part 22)

Part 22							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated ERP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
1.4	QPSK	824.7	848.3	18.85	0.0767	1090	1M09G7W
	16QAM			17.81	0.0604	1090	1M09D7W
3.0	QPSK	825.5	847.5	19.17	0.0826	2690	2M69G7W
	16QAM			18.20	0.0661	2700	2M70D7W
5.0	QPSK	826.5	846.5	19.30	0.0851	4490	4M49G7W
	16QAM			18.04	0.0637	4520	4M52D7W
10.0	QPSK	829.0	844.0	18.87	0.0771	8950	8M95G7W
	16QAM			17.94	0.0622	8950	8M95D7W
15.0	QPSK	831.5	841.5	18.71	0.0743	13400	13M4G7W
	16QAM			17.91	0.0618	13410	13M4D7W

LTE BAND 30

Part 27 / RSS 195							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated EIRP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
5.0	QPSK	2307.5	2312.5	20.72	0.1180	4510	4M51G7W
	16QAM			19.76	0.0946	4500	4M50D7W
10.0	QPSK	2310.0	2310.0	20.77	0.1194	8950	8M95G7W
	16QAM			19.66	0.0925	8950	8M95D7W

LTE BAND 38 (IC)

RSS 199							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated EIRP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
5.0	QPSK	2572.5	2617.5	20.38	0.1091	4510	4M51G7W
	16QAM			19.25	0.0841	4500	4M50D7W
10.0	QPSK	2575.0	2615.0	20.41	0.1099	8960	8M96G7W
	16QAM			19.35	0.0861	8980	8M98D7W
15.0	QPSK	2577.5	2612.5	20.39	0.1094	13400	13M4G7W
	16QAM			19.29	0.0849	13390	13M4D7W
20.0	QPSK	2580.0	2610.0	20.62	0.1153	17760	17M8G7W
	16QAM			19.52	0.0895	17820	17M8D7W

LTE BAND 41 (FCC) HPU

Part 27							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated EIRP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
5.0	QPSK	2498.5	2687.5	23.24	0.2109	4510	4M51G7W
	16QAM			21.84	0.1528	4510	4M51D7W
10.0	QPSK	2501.0	2685.0	23.79	0.2393	8980	8M98G7W
	16QAM			22.62	0.1828	8990	8M99D7W
15.0	QPSK	2503.5	2682.5	24.02	0.2523	13440	13M4G7W
	16QAM			22.72	0.1871	13450	13M5D7W
20.0	QPSK	2506.0	2680.0	24.27	0.2673	17890	17M9G7W
	16QAM			23.42	0.2198	17860	17M9D7W

LTE BAND 41 (IC)

RSS 199							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated EIRP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
5.0	QPSK	2502.5	2687.5	23.22	0.2099	4510	4M51G7W
	16QAM			22.14	0.1637	4510	4M51D7W
10.0	QPSK	2505.0	2685.0	23.83	0.2415	8970	8M97G7W
	16QAM			22.83	0.1919	8970	8M97D7W
15.0	QPSK	2507.5	2682.5	23.93	0.2472	13420	13M4G7W
	16QAM			23.05	0.2018	13420	13M4D7W
20.0	QPSK	2510.0	2680.0	24.36	0.2729	17870	17M9G7W
	16QAM			23.54	0.2259	17860	17M9D7W

LTE BAND 66

Part 27 / RSS 139							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated EIRP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
1.4	QPSK	1710.7	1779.3	23.33	0.2153	1090	1M09G7W
	16QAM			22.83	0.1919	1090	1M09D7W
3.0	QPSK	1711.5	1778.5	23.11	0.2046	2710	2M71G7W
	16QAM			22.11	0.1626	2700	2M70D7W
5.0	QPSK	1712.5	1777.5	20.61	0.1151	4510	4M51G7W
	16QAM			19.31	0.0853	4510	4M51D7W
10.0	QPSK	1715.0	1775.0	21.31	0.1352	8980	8M98G7W
	16QAM			19.91	0.0979	8990	8M99D7W
15.0	QPSK	1717.5	1772.5	23.33	0.2153	13460	13M5G7W
	16QAM			22.13	0.1633	13450	13M5D7W
20.0	QPSK	1720.0	1770.0	22.71	0.1866	17860	17M9G7W
	16QAM			21.31	0.1352	17870	17M9D7W

LTE BAND 71

Part 27 / RSS 130							
Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Radiated ERP		99% BW (kHz)	Emission Designator
				Average (dBm)	Average (W)		
5.0	QPSK	665.5	695.5	19.14	0.0820	4510	4M51G7W
	16QAM			17.95	0.0624	4500	4M50D7W
10.0	QPSK	668.0	693.0	19.47	0.0885	8960	8M96G7W
	16QAM			18.09	0.0644	8980	8M98D7W
15.0	QPSK	670.5	690.5	19.31	0.0853	13410	13M4G7W
	16QAM			18.12	0.0649	13420	13M4D7W
20.0	QPSK	673.0	688.0	19.43	0.0877	17800	17M8G7W
	16QAM			18.17	0.0656	17830	17M8D7W

5.3. SOFTWARE

The test utility software used during testing was A515U.001.

5.4. MAXIMUM ANTENNA GAIN

Please see table below:

Bands	Antenna Gain (dBi)
GSM850, 824-849MHz	-4.5
GSM1900, 1850-1910MHz	0.8
CDMA BC1, 1850-1910 MHz	0.8
CDMA BC0, 824-849 MHz	-4.7
CDMA BC10, 816-824 MHz	-7.5
WCDMA Band 2, 1850-1910 MHz	0.8
WCDMA Band 4, 1710-1755 MHz	-1.9
WCDMA Band 5, 824-849 MHz	-4.5
LTE Band 2, 1850 – 1910 MHz	0.8
LTE Band 4, 1710 – 1755 MHz	-1.9
LTE Band 5, 824 – 849 MHz	-4.5
LTE Band 7, 2500 – 2570 MHz	-1.7
LTE Band 12, 699 – 716 MHz	-6.0
LTE Band 13, 777 – 787 MHz	-4.0
LTE Band 14, 788 – 798 MHz	-5.2
LTE Band 25, 1850 – 1915 MHz	0.8
LTE Band 26, 814 – 849 MHz	-4.8
LTE Band 30, 2305 – 2315 MHz	-1.5
LTE Band 38 2570 – 2620 MHz (IC)	-1.0
LTE Band 41, 2496 – 2690 MHz (FCC)	-1.7
LTE Band 41, 2500 – 2690 MHz (IC)	-1.7
LTE Band 66, 1710 – 1780 MHz	-1.9
LTE Band 71, 663 – 698 MHz	-5.8

5.5. WORST-CASE CONFIGURATION AND MODE

The EUT supports LTE Bands of:

Band 2, Band 4, Band 5, Band 7, Band 12, Band 13, Band 14, Band 25, Band 26, Band 30, Band 38, Band 41, Band 66 and Band 71.

LTE Band 2 (1850-1910MHz) is covered by LTE Band 25 because it is a subset of LTE band 25 and they have same output power and supported bandwidths.

LTE Band 4 (1710-1755MHz, 5/10/15/20MHz bandwidth) is covered by LTE Band 66 because it is a subset of LTE band 66 and they have same output power.

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.

All testing for LTE Band 41 FCC was tested on HPUE mode since it is high power.

The fundamental of the EUT was investigated in three orthogonal orientations X, Y, & Z. It was determined that X-Axis for 1900, 800 and 700MHz. And Y-Axis for 2500 and 1700MHz with AC/DC Adapter and headset was worst-case orientation.

All radios that can be transmitted simultaneously have been evaluated for radiated for all possible combinations of transmission and found to be in compliance.

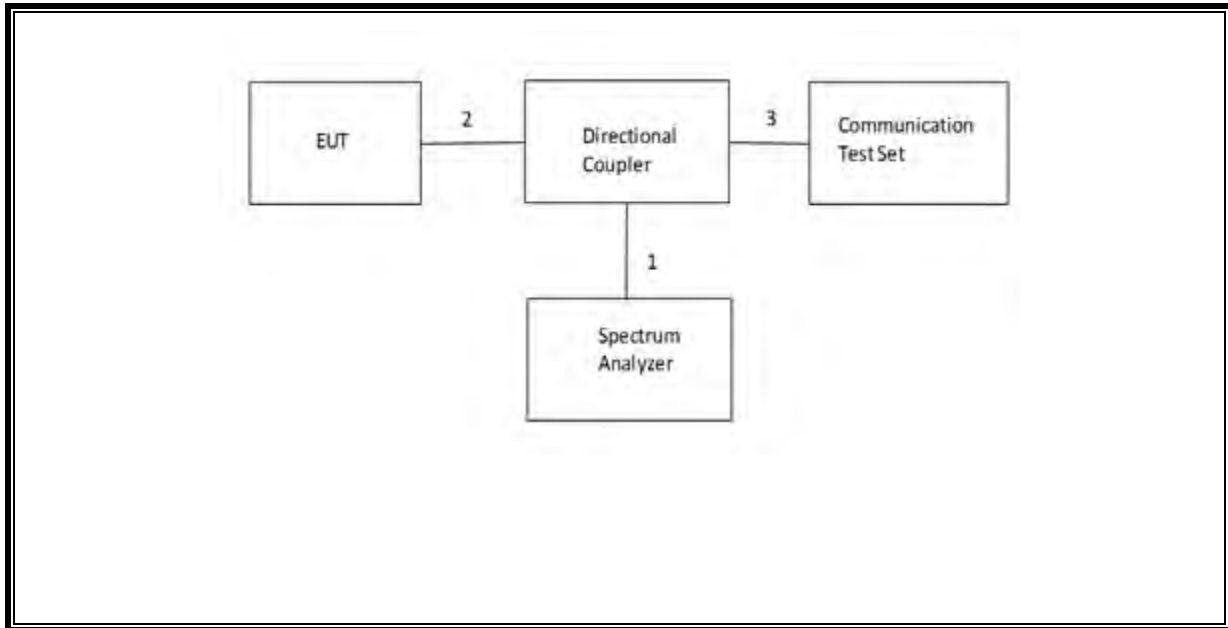
Radiated spurious emissions were investigated below 30MHz, 30MHz-1GHz, and above 1GHz. There were no emissions found below 30MHz and 30MHz-1GHz.

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.

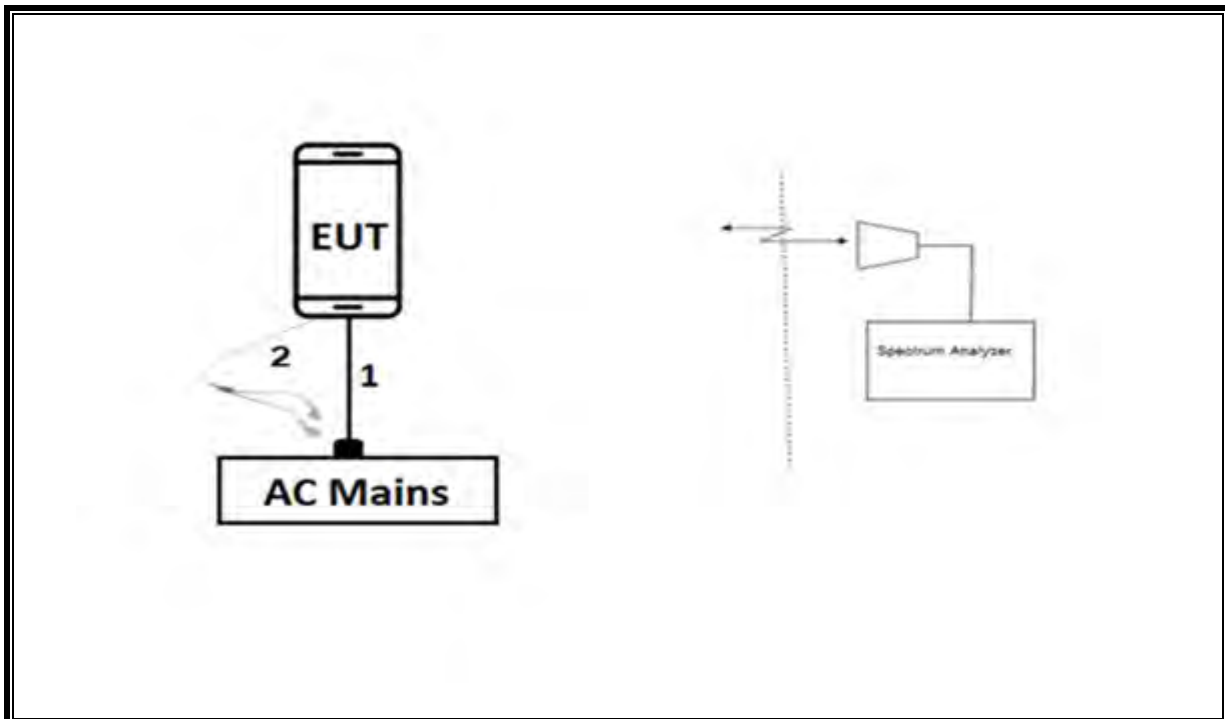
5.6. DESCRIPTION OF TEST SETUP

SUPPORT TEST EQUIPMENT						
Description	Manufacturer	Model	Serial Number	FCC ID/ DoC		
AC Adapter	Samsung	EP-TA200	R37KBKLF1W1DK3	N/A		
Earphone	Samsung	N/A	N/A	N/A		
I/O CABLES (RF CONDUCTED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	RF Out	1	Spectrum Analyzer	Shielded	None	N/A
2	Antenna Port	1	EUT	Shielded	0.1m	N/A
3	RF In/Out	1	Communication Test Set	Shielded	1m	N/A
I/O CABLES (RF RADIATED TEST)						
Cable No.	Port	# of Identical Ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	USB	1	AC Adapter	Shielded	1	No
2	Earphone	1	USB	Un-shielded	1	No
3	RF In/out	1	Communication Test Set	Un-shielded	2	No

CONDUCTED SETUP



RADIATED SETUP



6. 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	ID Num	Cal Due	Last Cal
Highpass Filter, 2.7 GHz	Micro-Circuits	H2G518G6	T772	12/31/2020	12/31/2019
Highpass Filter, 1.5 GHz	Micro-Tronics	HPM50114	T1852	07/20/2020	08/20/2019
Highpass Filter, 4GHz	Micro-Tronics	HPM13351	T1240	05/22/2020	06/22/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T862	06/05/2020	06/05/2019
Ant., Horn 18 - 26.5 GHz	ARA	MWH-1826/B	T448	03/26/2020	03/26/2019
Antenna, Horn 1-18GHz	ETS-Lindgren	3117	T344	05/07/2020	05/07/2019
Hybrid Antenna	SunAR rf motion	JB3	T899	08/23/2020	08/23/2019
RF Amplifier	MITEQ	AFS42-00101800-25-S-42	171460	08/24/2020	08/24/2019
RF Amplifier	AMPLICAL	AMP1G18-35	T1571	05/28/2020	05/28/2019
Pre-Amp 1-26.5 GHz	Agilent	8449B	T404	03/23/2020	03/23/2019
RF Amplifier 9KHz – 1GHz	SONOMA INSTR	310	PRE0180175	05/29/2020	05/29/2019
RF Amplifier 9KHz – 1GHz	SONOMA INSTR	310	PRE0180174	06/01/2020	06/01/2019
Directional Coupler	Mini-Circuits	ZUDC10-183+	PRE0181619	07/21/2020	08/21/2019
Wideband Communication Test Set, Call Box	R&S	CMW500	T375	02/18/2020	02/18/2019
Wideband Communication Test Set, Call Box	R&S	CMW500	T948	02/18/2020	02/18/2019
Wideband Communication Test Set, Call Box	R&S	CMW500	T959	02/16/2020	02/16/2019
Chamber, Environmental	Thermotron	SE-600-10-10	T80	05/07/2020	11/07/2019
Spectrum Analyzer	Agilent (Keysight) Technologies	E4440A	T200	01/28/2020	01/28/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	T917	01/24/2020	01/24/2019
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight	E4446A	T146	01/28/2020	01/28/2019
Spectrum Analyzer, PXA, 3Hz to 44GHz	Agilent	N9030A	T1450	01/23/2020	01/23/2019
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179376	02/14/2020	02/14/2019
EMI TEST RECEIVER	Rohde & Schwarz	ESW44	PRE0179367	05/16/2020	05/16/2019
Spectrum Analyzer	Agilent (Keysight) Technologies	E4440A	T200	01/24/2021	01/24/2020
DC power supply, 8 V @ 3 A or 15 V @ 2 A	Agilent / HP	E3610A	None	CNR	CNR
DC power supply 15V	Sorensen	XT15-4	T465	CNR	CNR
Power Meter	Keysight	N1911A	T1268	01/31/2020	01/31/2019
Power Sensor	Keysight	N1921A	T1226	02/06/2020	02/06/2019
Power Meter	Keysight	N1921A	T229	01/31/2020	01/31/2019
Power Sensor	Keysight	N1921A	T1228	03/01/2020	03/01/2019
UL AUTOMATION SOFTWARE					
CLT Software	UL	UL RF	Ver 7.6, November 11, 2017		
Power Measurement Software	UL	UL RF	Ver 2.7, 2019		
Radiated test software	UL	UL RF	Ver 9.5 June 15, 2019		

NOTES:

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

7. RF OUTPUT POWER VERIFICATION

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:

7.1. GSM

Using CMW500 Communication Test Set

Function: Menu select > GSM Mobile Station > GSM 850/900/1800/1900

Press **Connection control** to choose the different menus

Press **RESET** > choose all to reset all settings

Connection	Press Signal Off to turn off the signal and change settings Network Support > GSM+GPRS or GSM+EGPRS Main Service > Packet Data Service selection > Test Mode A – Auto Slot Config. off
MS Signal	Press Slot Config bottom on the right twice to select and change the number of time slots and power setting > Slot configuration > Uplink/Gamma > 33 dBm for GPRS 850/900 > 27 dBm for EGPRS 850/900 > 30 dBm for GPRS1800/1900 > 26 dBm for EGPRS1800/1900
BS Signal	Enter the same channel number for TCH channel (test channel) and BCCH channel Frequency Offset > + 0 Hz Mode > BCCH and TCH BCCH Level > -85 dBm (May need to adjust if link is not stable) BCCH Channel > choose desire test channel [Enter the same channel number for TCH channel (test channel) and BCCH channel] Channel Type > Off P0> 4 dB Slot Config > Unchanged (if already set under MS Signal) TCH > choose desired test channel Hopping > Off Main Timeslot > 3 (Default)
Network	Coding Scheme > CS 4 (GPRS) and MCS5 (EGPRS) Bit Stream > 2E9-1PSR Bit Pattern
AF/RF	Enter appropriate offsets for Ext. Att. Output and Ext. Att. Input
Connection	Press Signal On to turn on the signal and change settings

RESULT

7.1.1. GSM 850

Test Engineer ID:	52300	Test Date:	12/26/2019
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Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Conducted Average Power (dBm)
					ANT 1
GPRS (GMSK)	CS1	1	128	824.2	32.37
			190	836.6	32.71
			251	848.8	32.70
		2	128	824.2	30.90
			190	836.6	30.85
			251	848.8	30.83
		3	128	824.2	29.50
			190	836.6	29.46
			251	848.8	29.20
		4	128	824.2	28.00
			190	836.6	28.00
			251	848.8	28.00
EGPRS (8PSK)	MCS5	1	128	824.2	26.60
			190	836.6	26.60
			251	848.8	26.40
		2	128	824.2	24.40
			190	836.6	24.28
			251	848.8	24.22
		3	128	824.2	23.8
			190	836.6	23.8
			251	848.8	23.8
		4	128	824.2	22.4
			190	836.6	22.4
			251	848.8	22.4

7.1.2. GSM 1900

Test Engineer ID:	52300	Test Date:	12/26/2019
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Mode	Coding Scheme	Time Slots	Ch No.	Freq. (MHz)	Conducted Average Power (dBm)
					ANT 1
GPRS (GMSK)	CS1	1	512	1850.2	31.02
			661	1880	30.20
			810	1909.8	29.60
		2	512	1850.2	28.50
			661	1880	28.00
			810	1909.8	27.20
		3	512	1850.2	26.40
			661	1880	26.30
			810	1909.8	25.57
		4	512	1850.2	24.10
			661	1880	24.40
			810	1909.8	24.50
EGPRS (8PSK)	MCS5	1	512	1850.2	25.10
			661	1880	25.30
			810	1909.8	25.30
		2	512	1850.2	23.60
			661	1880	23.70
			810	1909.8	23.80
		3	512	1850.2	22.00
			661	1880	22.30
			810	1909.8	22.10
		4	512	1850.2	21.20
			661	1880	21.30
			810	1909.8	21.40

7.2. CDMA

Maximum output power is verified on the Low, Middle and High channels according to procedures in section 4.4.5.2 of 3GPP2 C.S0011/TIA-98-E for 1xRTT, section 3.1.2.3.4 of 3GPP2 C.S0033-0/TIA-866 for Rel. 0 and section 4.3.4 of 3GPP2 C.S0033-A for Rev. A

1xRTT/ 1xAdvanced

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev, License</u>
CDMA2000 Mobile Test	B.15.18, L

- Protocol Rev > 6 (IS-2000-0)
- System ID: 18; NID: 65535, Reg. Ch. #: 610 for Cell, 600 for PCS & 450 for AWS
- Radio Config (RC) > RC1 or RC3
- Service Option (SO) Setup > SO55 or SO32
- Traffic Data Rate > Full
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

1xEV-DO - Release 0 (REL 0)

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

EVDO Release 0 - RTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 : 00000000 : 00000000 : 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parm:
 - Cell Power > -105.5 dBm/1.23 MHz
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > RTAP
 - RTAP Rate > 153.6 kbps
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

EVDO Release 0 - FTAP

- Call Setup > Shift & Preset
- Call Control:
 - Access Network Info > Cell Parameters > Sector ID > 00000000 : 00000000 : 00000000 : 00000000 > Subnet Mask > 0
 - Generator Info > Termination Parameters > Max Forward Packet Duration > 16 Slots
- Call Parm:
 - Cell Power > -105.5 dBm/1.23 MHz
 - Cell Band > (Select US Cellular or US PCS)
 - Channel > (Enter channel number)
 - Application Config > Enhanced Test Application Protocol > FTAP (default)
 - FTAP Rate > 307.2 kbps (2 Slot, QPSK)
 - Rvs Power Ctrl > Active bits
 - Protocol Rel > 0 (1xEV-DO)
- Press "Start Data Connection" when "Session Open" appear in "Active Cell"
- Rvs Power Ctrl > All Up bits (Maximum TxPout)

1xEV-DO - Revision A (REV A)

This procedure assumes the Agilent 8960 Test Set has the following applications installed and with valid license.

<u>Application</u>	<u>Rev, License</u>
1xEV-DO Terminal Test	A.09.13

EVDO Rev. A – RETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > RETAP
- R-Data Pkt Size > 4096
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
 - PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters
 - Sector ID > 00000000: 00000000: 00000000: 00000000
 - Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots
 - ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

EVDO Rev. A - FETAP

- Call Setup > Shift & Preset
- Cell Power > -60 dBm/1.23 MHz
- Protocol Rev > A (1xEV-DO-A)
- Application Config > Enhanced Test Application Protocol > FETAP
- F-Traffic Format > 4 (1024, 2,128) Canonical (307.2k, QPSK)
- Protocol Subtype Config > Release A Physical Layer Subtype > Subtype 2
 - PL Subtype 2 Access Channel MAC Subtype > Default (Subtype 0)
- Access Network Info > Cell Parameters > Sector ID > 00000000: 00000000: 00000000: 00000000
 - Subnet Mask > 0
- Generator Info > Termination Parameters > Max Forward Packet Duration >16 Slots
 - ACK R-Data After > Subpacket 0 (All ACK)
- Rvs Power Ctrl > All Up bits (to get the maximum power)

CMW500

1x Advanced Setup Procedures used to establish the test signals

Call box setup procedure

- Protocol Rev > 6 (IS-2000-0)
- System ID: 331; NID: 65535, Reg. Ch. #.:
- Radio Config (RC) > Fwd11,Rvs8
- Service Option (SO) Setup > SO75 (Loopback)
- Traffic Data Rate > Full
- Rvs Power Ctrl > All Up bits (Maximum TxPout)
- Reverse Power Control Mode: 00-200 to 400 bps
- Smart blanking was disabled.

1xEV-DO Rev. B Setup Procedures used to establish the test signals

Call box setup procedure

- CMW 500 Signal Generator > 1xEV-DO Taskbar Enable
- CMW 500 1xEV-DO Signaling Configuration Window >
- 1xEV-DO Signaling On Window:
Under Access Network Control:
Band Class: BC0: US Cellular
RF Channel: 31
1xEV-DO Power: -70 dBm
Release B
- 1xEV-DO Signaling Configuration Window

Under RF Frequency Band / Channel: Enter Ch. Frequency

- Under Carrier Configuration: RF Frequency
For Two Carriers: Low Channel (1013)

	<u>RF Channel</u>	<u>RF Channel Offset</u>
Carrier [0]	31	0
Carrier [1]	1013	982

- Under Carrier Configuration: RF Pilot

	<u>Carrier Sector</u>	<u>Active on AN</u>	<u>Assigned to AT</u>
Pilot [0]	C0/S0	✓	✓
	CA/S1	✓	✓

For Three Carriers: Low Channel (1013)

	<u>RF Channel</u>	<u>RF Channel Offset</u>
Carrier [0]	72	0
Carrier [1]	31	-41
Carrier [2]	1013	941

- Under Carrier Configuration: RF Pilot

	<u>Carrier Sector</u>	<u>Active on AN</u>	<u>Assigned to AT</u>
Pilot [0]	C0/S0	✓	✓
Pilot [1]	C1/S1	✓	✓
Pilot [2]	C2/S2	✓	✓

- Rvs Power Ctrl > All Up bits (to get the maximum power)

RESULT

7.2.1. CDMA BC10

Test Engineer ID:	38515	Test Date:	1/22/2020
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Band	Mode	Radio Configuration (RC)	Service Option (SO)	Ch No.	Freq. (MHz)	Conducted
						Average Power (dBm) ANT 1
BC10 (800MHz)	1xRTT	RC1	2 (Loopback)	450	817.25	24.4
				560	820.00	24.4
				670	822.75	24.4
			55 (Loopback)	450	817.25	24.4
				560	820.00	24.4
				670	822.75	24.4
		RC3	2 (Loopback)	450	817.25	24.4
				560	820.00	24.4
				670	822.75	24.4
			55 (Loopback)	450	817.25	24.4
				560	820.00	24.4
				670	822.75	24.4
	32 (+ F-SCH)	450	817.25	24.4		
		560	820.00	24.4		
		670	822.75	24.3		
	1xAdvanced	Fwd11/Rvs8, SO75 (Loopback)	75 Loopback	450	817.25	24.4
				560	820.00	24.4
				670	822.75	24.3
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK)	RTAP Rate: 153.6 kbps	450	817.25	24.3
				560	820.00	24.3
				670	822.75	24.2
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK	RETAP: 4096	450	817.25	24.4
				560	820.00	24.3
				670	822.75	24.3

7.2.2. CDMA BC0

Test Engineer ID:	38515	Test Date:	1/22/2020
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Band	Mode	Radio Configuration (RC)	Service Option (SO)	Ch No.	Freq. (MHz)	Conducted
						Average Power (dBm) ANT 1
BC0 (850MHz)	1xRTT	RC1	2 (Loopback)	1013	824.70	24.4
				384	836.52	24.3
				777	848.31	24.2
			55 (Loopback)	1013	824.70	24.5
				384	836.52	24.3
				777	848.31	24.2
		RC3	55 (Loopback)	1013	824.70	24.5
				384	836.52	24.3
				777	848.31	24.2
			32 (+ F-SCH)	1013	824.70	24.5
				384	836.52	24.3
				777	848.31	24.2
	1xAdvanced	Fwd11/Rvs8 SO75 (Loopback)	75 (Loopback)	1013	824.70	24.5
				384	836.52	24.3
				777	848.31	24.2
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK)	RTAP Rate: 153.6 kbps	1013	824.70	24.3
				384	836.52	24.2
				777	848.31	24.1
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK	RETAP: 4096	1013	824.70	24.5
				384	836.52	24.3
				777	848.31	24.1

7.2.3. CDMA BC1

Test Engineer ID:	38515	Test Date:	1/22/2020
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Band	Mode	Radio Configuration (RC)	Service Option (SO)	Ch No.	Freq. (MHz)	Conducted Average Power (dBm)
						ANT 1
BC1 (1900MHz)	1xRTT	RC1	2 (Loopback)	25	1851.25	23.8
				600	1880.00	23.8
				1175	1908.75	23.9
			55 (Loopback)	25	1851.25	23.8
				600	1880.00	23.8
				1175	1908.75	23.9
		RC3	2 (Loopback)	25	1851.25	23.8
				600	1880.00	23.8
				1175	1908.75	23.8
			55 (Loopback)	25	1851.25	23.8
				600	1880.00	23.8
				1175	1908.75	23.9
	32 (+ F-SCH)	25	1851.25	23.7		
		600	1880.00	23.8		
		1175	1908.75	23.9		
	1xAdvanced	Fwd11/Rvs8 SO75 (Loopback)	75 (Loopback)	25	1851.25	23.7
				600	1880.00	23.8
				1175	1908.75	23.9
	1xEVDO Rel. 0	FTAP Rate: 307.2 kbps(2 slot, QPSK)	RTAP Rate: 153.6 kbps	25	1851.25	23.7
				600	1880	23.8
				1175	1908.75	23.8
	1xEVDO Rev. A	FETAP: 307.2k, QPSK/ ACK	RETAP: 4096	25	1851.25	23.8
				600	1880	23.8
				1175	1908.75	23.9

7.3. WCDMA

TEST PROCEDURE

The transmitter output was connected to the input terminal of Directional Coupler via calibrated coaxial cable. The output coupling terminal of the Directional Coupler was directly connected to a spectrum analyzer while the output through terminal connected to the communication test set via calibrated coaxial cable.

The output power was measured with the spectrum analyzer at the low, middle and high channel in each band.

- Set the spectrum analyzer span wide enough or greater than the modulated signal BW.
- Set a spectrum analyzer at peak detection mode with $VBW \geq RBW \geq 26dB$ BW, typically 5MHz.
- Set a marker to point the corresponding peak value.

REL 99

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

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

HSDPA REL 5

The following 4 Sub-tests were completed according to Release 5 procedures in table C.10.1.4 of 3GPP TS 34.121-1

A summary of these settings are illustrated below:

Table C.10.1.4: β values for transmitter characteristics tests with HS-DPCCH

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1, Note 2)	CM (dB) (Note 3)	MPR (dB) (Note 3)
1	2/15	15/15	64	2/15	4/15	0.0	0.0
2	12/15 (Note 4)	15/15 (Note 4)	64	12/15 (Note 4)	24/15	1.0	0.0
3	15/15	8/15	64	15/8	30/15	1.5	0.5
4	15/15	4/15	64	15/4	30/15	1.5	0.5

Note 1: Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$.

Note 2: For the HS-DPCCH power mask requirement test in clause 5.2C, 5.7A, and the Error Vector Magnitude (EVM) with HS-DPCCH test in clause 5.13.1A, and HSDPA EVM with phase discontinuity in clause 5.13.1AA, Δ_{ACK} and $\Delta_{NACK} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$, and $\Delta_{CQI} = 24/15$ with $\beta_{HS} = 24/15 * \beta_c$.

Note 3: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH and HS-DPCCH the MPR is based on the relative CM difference. This is applicable for only UEs that support HSDPA in release 6 and later releases.

Note 4: For subtest 2 the β_c/β_d ratio of 12/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 11/15$ and $\beta_d = 15/15$.

HSPA REL 6 (HSDPA & HSUPA)

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

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

Sub-test	β_c	β_d	β_d (SF)	β_c/β_d	β_{HS} (Note 1)	β_{ec}	β_{ed} (Note 4) (Note 5)	β_{ed} (SF)	β_{ed} (Codes)	CM (dB) (Note 2)	MPR (dB) (Note 2) (Note 6)	AG Index (Note 5)	E-TFCI
1	11/15 (Note 3)	15/15 (Note 3)	64	11/15 (Note 3)	22/15	209/25	1309/225	4	1	1.0	0.0	20	75
2	6/15	15/15	64	6/15	12/15	12/15	94/75	4	1	3.0	2.0	12	67
3	15/15	9/15	64	15/9	30/15	30/15	$\beta_{ed1}: 47/15$ $\beta_{ed2}: 47/15$	4 4	2	2.0	1.0	15	92
4	2/15	15/15	64	2/15	4/15	2/15	56/75	4	1	3.0	2.0	17	71
5	15/15	0	-	-	5/15	5/15	47/15	4	1	1.0	0.0	12	67

Note 1: For sub-test 1 to 4, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 30/15$ with $\beta_{HS} = 30/15 * \beta_c$. For sub-test 5, Δ_{ACK} , Δ_{NACK} and $\Delta_{CQI} = 5/15$ with $\beta_{HS} = 5/15 * \beta_c$.

Note 2: CM = 1 for $\beta_c/\beta_d = 12/15$, $\beta_{HS}/\beta_c = 24/15$. For all other combinations of DPDCH, DPCCH, HS-DPCCH, E-DPDCH and E-DPCCH the MPR is based on the relative CM difference.

Note 3: For subtest 1 the β_c/β_d ratio of 11/15 for the TFC during the measurement period (TF1, TF0) is achieved by setting the signalled gain factors for the reference TFC (TF1, TF1) to $\beta_c = 10/15$ and $\beta_d = 15/15$.

Note 4: In case of testing by UE using E-DPDCH Physical Layer category 1, Sub-test 3 is omitted according to TS25.306 Table 5.1g.

Note 5: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 6: For subtests 2, 3 and 4, UE may perform E-DPDCH power scaling at max power which could result in slightly smaller MPR values.

DUAL CARRIER HSDPA (DC-HSDPA (REL 8, CAT 24))

The following 4 Sub-tests for DC-HSDPA were completed according to Release 8 procedures in table C08.1.12 of 3GPP TS 34.121-1. A summary of subtest settings are illustrated below:

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

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

HSPA+ REL 7

The following 1 Sub-test was completed according to Release 7 procedures in table C.11.1.4 of 3GPP TS34.121. A summary of these settings are illustrated below:

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

Sub-test	β_c (Note3)	β_d	β_{HS} (Note1)	β_{ec}	β_{ed} (2xSF2) (Note 4)	β_{ed} (2xSF4) (Note 4)	CM (dB) (Note 2)	MPR (dB) (Note 2)	AG Index (Note 4)	E-TFCI (Note 5)	E-TFCI (boost)
1	1	0	30/15	30/15	β_{ed1} : 30/15 β_{ed2} : 30/15	β_{ed3} : 24/15 β_{ed4} : 24/15	3.5	2.5	14	105	105

Note 1: $\Delta_{ACK}, \Delta_{NACK}$ and $\Delta_{CQI} = 30/15$ with $\beta_{hs} = 30/15 * \beta_c$.

Note 2: CM = 3.5 and the MPR is based on the relative CM difference, MPR = MAX(CM-1,0).

Note 3: DPDCH is not configured, therefore the β_c is set to 1 and $\beta_d = 0$ by default.

Note 4: β_{ed} can not be set directly; it is set by Absolute Grant Value.

Note 5: All the sub-tests require the UE to transmit 2SF2+2SF4 16QAM EDCH and they apply for UE using E-DPDCH category 7. E-DCH TTI is set to 2ms TTI and E-DCH table index = 2. To support these E-DCH configurations DPDCH is not allocated. The UE is signalled to use the extrapolation algorithm.

RESULT

7.3.1. WCDMA BAND 5

Test Engineer ID:	52300	Test Date:	12/26/2019
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Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)	
						ANT 1	
W-CDMA Band 5 (850MHz)	Rel 99	RMC, 12.2 kbps	4132	826.4	N/A	24.0	
			4183	836.6	N/A	24.0	
			4233	846.6	N/A	24.0	
	HSDPA	Subtest 1	4132	826.4	0	23.0	
			4183	836.6	0	23.0	
			4233	846.6	0	23.0	
		Subtest 2	4132	826.4	0	23.0	
			4183	836.6	0	23.0	
			4233	846.6	0	22.9	
		Subtest 3	4132	826.4	0.5	22.1	
			4183	836.6	0.5	22.2	
			4233	846.6	0.5	22.2	
			4132	826.4	0.5	22.2	
			4183	836.6	0.5	22.2	
			4233	846.6	0.5	22.2	
		HSPA (HSDPA & HSUPA)	Subtest 1	4132	826.4	0	21.1
				4183	836.6	0	21.2
				4233	846.6	0	21.2
	Subtest 2		4132	826.4	2	19.1	
			4183	836.6	2	19.3	
			4233	846.6	2	19.2	
	Subtest 3		4132	826.4	1	21.1	
			4183	836.6	1	21.2	
			4233	846.6	1	21.2	
	Subtest 4		4132	826.4	2	19.2	
			4183	836.6	2	19.3	
			4233	846.6	2	19.2	
	Subtest 5		4132	826.4	0	22.6	
			4183	836.6	0	22.6	
			4233	846.6	0	22.6	
	DC-HSDPA	Subtest 1	4132	826.4	0	23.1	
			4183	836.6	0	23.1	
			4233	846.6	0	23.1	
		Subtest 2	4132	826.4	0	23.1	
			4183	836.6	0	23.1	
			4233	846.6	0	23.0	
		Subtest 3	4132	826.4	0.5	22.2	
			4183	836.6	0.5	22.3	
			4233	846.6	0.5	22.3	
		Subtest 4	4132	826.4	0.5	22.3	
			4183	836.6	0.5	22.3	
			4233	846.6	0.5	22.3	

7.3.2. WCDMA BAND 2

Test Engineer ID:	52300	Test Date:	12/26/2019
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Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)
						ANT 1
W-CDMA Band 2 (1900MHz)	Rel 99	RMC, 12.2 kbps	9262	1852.4	N/A	24.0
			9400	1880.0	N/A	24.0
			9538	1907.6	N/A	24.0
	HSDPA	Subtest 1	9262	1852.4	0	22.9
			9400	1880.0	0	23.0
			9538	1907.6	0	22.7
		Subtest 2	9262	1852.4	0	22.0
			9400	1880.0	0	22.0
			9538	1907.6	0	22.0
		Subtest 3	9262	1852.4	0.5	22.0
			9400	1880.0	0.5	22.0
			9538	1907.6	0.5	21.9
		Subtest 4	9262	1852.4	0.5	22.0
			9400	1880.0	0.5	22.0
			9538	1907.6	0.5	21.8
	HSPA (HSDPA & HSUPA)	Subtest 1	9262	1852.4	0	22.8
			9400	1880.0	0	23.0
			9538	1907.6	0	22.8
		Subtest 2	9262	1852.4	2	20.9
			9400	1880.0	2	21.0
			9538	1907.6	2	20.8
		Subtest 3	9262	1852.4	1	21.9
			9400	1880.0	1	22.0
			9538	1907.6	1	22.0
		Subtest 4	9262	1852.4	2	20.8
			9400	1880.0	2	21.0
			9538	1907.6	2	20.9
		Subtest 5	9262	1852.4	0	23.0
			9400	1880.0	0	23.0
			9538	1907.6	0	23.0
	DC-HSDPA	Subtest 1	9262	1852.4	0	22.9
			9400	1880.0	0	23.0
			9538	1907.6	0	22.7
Subtest 2		9262	1852.4	0	22.1	
		9400	1880.0	0	22.0	
		9538	1907.6	0	22.0	
Subtest 3		9262	1852.4	0.5	22.0	
		9400	1880.0	0.5	22.0	
		9538	1907.6	0.5	21.9	
Subtest 4		9262	1852.4	0.5	22.0	
		9400	1880.0	0.5	22.0	
		9538	1907.6	0.5	21.9	

7.3.3. WCDMA BAND 4

Test Engineer ID:	52300	Test Date:	12/26/2019
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Band	Mode		UL Ch No.	Freq. (MHz)	MPR (dB)	Conducted Average Power (dBm)	
						ANT 1	
W-CDMA Band 4 (1700MHz)	Rel 99	RMC, 12.2 kbps	1312	1712.4	N/A	23.5	
			1413	1732.6	N/A	23.7	
			1513	1752.6	N/A	23.8	
	HSDPA	Subtest 1	1312	1712.4	0	22.3	
			1413	1732.6	0	22.4	
			1513	1752.6	0	22.2	
		Subtest 2	1312	1712.4	0	21.3	
			1413	1732.6	0	21.3	
			1513	1752.6	0	21.3	
		Subtest 3	1312	1712.4	0.5	21.3	
			1413	1732.6	0.5	21.5	
			1513	1752.6	0.5	21.8	
		Subtest 4	1312	1712.4	0.5	21.3	
			1413	1732.6	0.5	21.5	
			1513	1752.6	0.5	21.8	
		HSPA (HSDPA & HSUPA)	Subtest 1	1312	1712.4	0	19.8
				1413	1732.6	0	20.0
				1513	1752.6	0	20.3
	Subtest 2		1312	1712.4	2	17.8	
			1413	1732.6	2	18.0	
			1513	1752.6	2	18.2	
	Subtest 3		1312	1712.4	1	20.3	
			1413	1732.6	1	20.5	
			1513	1752.6	1	20.5	
	Subtest 4		1312	1712.4	2	17.8	
			1413	1732.6	2	18.0	
			1513	1752.6	2	18.2	
	Subtest 5		1312	1712.4	0	20.8	
			1413	1732.6	0	21.0	
			1513	1752.6	0	21.2	
	DC-HSDPA	Subtest 1	1312	1712.4	0	23.4	
			1413	1732.6	0	23.5	
			1513	1752.6	0	23.3	
		Subtest 2	1312	1712.4	0	22.4	
			1413	1732.6	0	22.4	
			1513	1752.6	0	22.4	
		Subtest 3	1312	1712.4	0.5	22.4	
			1413	1732.6	0.5	22.6	
			1513	1752.6	0.5	22.9	
		Subtest 4	1312	1712.4	0.5	22.4	
			1413	1732.6	0.5	22.6	
			1513	1752.6	0.5	22.9	

7.4. LTE

CONDUCTED OUTPUT POWER MEASUREMENT PROCEDURE

All LTE bands conducted average power is obtained from the CMW500 telecommunication test set.

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

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

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

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

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

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

Network Signalling value	Requirements (sub-clause)	E-UTRA Band	Channel bandwidth (MHz)	Resources Blocks (N_{RB})	A-MPR (dB)
NS_01	6.6.2.1.1	Table 5.5-1	1.4, 3, 5, 10, 15, 20	Table 5.6-1	NA
NS_03	6.6.2.2.1	2, 4, 10, 23, 25, 35, 36	3	>5	≤ 1
			5	>6	≤ 1
			10	>6	≤ 1
			15	>8	≤ 1
NS_04	6.6.2.2.2	41	5	>6	≤ 1
			10, 15, 20	See Table 6.2.4-4	
NS_05	6.6.3.3.1	1	10, 15, 20	≥ 50	≤ 1
NS_06	6.6.2.2.3	12, 13, 14, 17	1.4, 3, 5, 10	Table 5.6-1	n/a
NS_07	6.6.2.2.3	13	10	Table 6.2.4-2	Table 6.2.4-2
	6.6.3.3.2				
NS_08	6.6.3.3.3	19	10, 15	> 44	≤ 3
NS_09	6.6.3.3.4	21	10, 15	> 40	≤ 1
				> 55	≤ 2
NS_10		20	15, 20	Table 6.2.4-3	Table 6.2.4-3
NS_11	6.6.2.2.1	23 ¹	1.4, 3, 5, 10	Table 6.2.4-5	Table 6.2.4-5
...					
NS_32	-	-	-	-	-

Note 1: Applies to the lower block of Band 23, i.e. a carrier placed in the 2000-2010 MHz region.

RESULTS

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:

7.4.1. LTE BAND 5

Test Engineer ID:	52300	Test Date:	12/30/2019
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OUTPUT POWER FOR LTE BAND 5 (1.4 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power			
				Conducted Average (dBm)			
				20407 824.7 MHz	20525 836.5 MHz	20643 848.3 MHz	
1.4	QPSK	1	0	24.5	24.5	24.3	
		1	2	24.5	24.4	24.3	
		1	5	24.5	24.5	24.3	
		3	0	24.4	24.4	24.3	
		3	1	24.4	24.4	24.3	
		3	2	24.4	24.4	24.3	
	16QAM	6	0	23.4	23.4	23.4	
		1	0	23.4	23.2	23.3	
		1	2	23.4	23.2	23.4	
		1	5	23.3	23.3	23.3	
		3	0	23.4	23.4	23.3	
		3	1	23.4	23.4	23.3	
	64QAM	3	2	23.4	23.4	23.3	
		6	0	22.4	22.5	22.3	
		1	0	22.4	22.7	21.9	
		1	2	21.9	22.4	22.0	
		1	5	22.2	22.6	21.8	
		3	0	22.5	22.6	22.4	
		64QAM	3	1	22.6	22.6	22.3
			3	2	22.6	22.6	22.3
			6	0	21.3	21.4	21.5

OUTPUT POWER FOR LTE BAND 5 (3.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				20415 825.5 MHz	20525 836.5 MHz	20635 847.5 MHz
3.0	QPSK	1	0	24.5	24.5	24.4
		1	7	24.5	24.5	24.4
		1	14	24.5	24.5	24.5
		8	0	23.4	23.4	23.4
		8	4	23.4	23.4	23.4
		8	7	23.4	23.4	23.4
		15	0	23.4	23.4	23.3
	16QAM	1	0	23.3	23.2	23.4
		1	7	23.3	23.1	23.4
		1	14	23.3	23.1	23.4
		8	0	22.3	22.4	22.4
		8	4	22.3	22.4	22.4
		8	7	22.3	22.4	22.4
	64QAM	15	0	22.4	22.4	22.3
		1	0	22.0	22.5	22.1
		1	7	22.0	22.5	22.0
		1	14	22.1	22.5	21.8
		8	0	21.3	21.4	21.3
		8	4	21.2	21.3	21.3
		8	7	21.3	21.4	21.3
		15	0	21.5	21.3	21.4

OUTPUT POWER FOR LTE BAND 5 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				20425	20525	20625
				826.5 MHz	836.5 MHz	846.5 MHz
5.0	QPSK	1	0	24.4	24.4	24.4
		1	12	24.4	24.4	24.4
		1	24	24.4	24.4	24.4
		12	0	23.4	23.5	23.4
		12	6	23.4	23.4	23.4
		12	11	23.4	23.4	23.4
	16QAM	25	0	23.4	23.4	23.4
		1	0	23.3	23.2	23.1
		1	12	23.3	23.2	23.3
		1	24	23.3	23.1	23.1
		12	0	22.4	22.5	22.4
		12	6	22.4	22.5	22.3
	64QAM	12	11	22.4	22.5	22.3
		25	0	22.4	22.4	22.4
		1	0	22.4	22.0	22.4
		1	12	22.3	22.0	22.4
		1	24	22.3	21.9	22.4
		12	0	21.3	21.3	21.3
		12	6	21.3	21.3	21.3
		12	11	21.3	21.3	21.3
		25	0	21.3	21.4	21.4

OUTPUT POWER FOR LTE BAND 5 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				20450	20525	20600
				829.0 MHz	836.5 MHz	844.0 MHz
10.0	QPSK	1	0	24.4	24.5	24.5
		1	24	24.4	24.5	24.5
		1	49	24.4	24.5	24.5
		25	0	23.4	23.4	23.4
		25	12	23.4	23.4	23.4
		25	24	23.4	23.4	23.3
		50	0	23.4	23.4	23.4
	16QAM	1	0	23.1	23.4	23.3
		1	24	23.0	23.3	23.3
		1	49	23.0	23.2	23.2
		25	0	22.4	22.4	22.5
		25	12	22.4	22.4	22.4
		25	24	22.4	22.4	22.4
		50	0	22.4	22.4	22.4
	64QAM	1	0	22.5	22.1	22.3
		1	24	22.4	22.1	22.3
		1	49	22.3	22.1	22.3
		25	0	21.4	21.5	21.4
		25	12	21.4	21.4	21.4
		25	24	21.4	21.4	21.4
		50	0	21.4	21.4	21.5

7.4.2. LTE BAND 7

Test Engineer ID:	52300	Test Date:	2/4/2020
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OUTPUT POWER FOR LTE BAND 7 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power			
				Conducted Average (dBm)			
				20775	21100	21425	
				2502.5 MHz	2535.0 MHz	2567.5 MHz	
5.0	QPSK	1	0	22.3	22.5	22.5	
		1	12	22.3	22.5	22.5	
		1	24	22.3	22.5	22.5	
		12	0	21.4	21.5	21.4	
		12	6	21.4	21.5	21.4	
		12	11	21.4	21.5	21.4	
	16QAM	25	0	21.4	21.5	21.4	
		1	0	21.2	21.3	21.6	
		1	12	21.1	21.3	21.6	
		1	24	21.1	21.3	21.6	
		12	0	20.4	20.6	20.6	
		12	6	20.4	20.5	20.5	
	64QAM	12	11	20.4	20.6	20.5	
		25	0	20.4	20.6	20.5	
		1	0	20.6	20.5	20.8	
		1	12	20.5	20.5	20.8	
		1	24	20.5	20.5	20.8	
		12	0	19.4	19.5	19.4	
			12	6	19.4	19.5	19.4
			12	11	19.4	19.4	19.4
			25	0	19.4	19.5	19.5

OUTPUT POWER FOR LTE BAND 7 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				20800	21100	21400
				2505.0 MHz	2535.0 MHz	2565.0 MHz
10.0	QPSK	1	0	22.6	22.6	22.6
		1	24	22.5	22.6	22.5
		1	49	22.5	22.5	22.5
		25	0	21.5	21.5	21.4
		25	12	21.5	21.5	21.4
		25	24	21.4	21.5	21.4
		50	0	21.5	21.5	21.4
	16QAM	1	0	21.4	21.3	21.8
		1	24	21.5	21.3	21.7
		1	49	21.5	21.2	21.7
		25	0	20.6	20.6	20.6
		25	12	20.5	20.6	20.6
		25	24	20.5	20.6	20.6
	64QAM	50	0	20.5	20.6	20.5
		1	0	20.4	20.7	20.4
		1	24	20.4	20.7	20.4
		1	49	20.4	20.7	20.5
		25	0	19.6	19.6	19.5
		25	12	19.5	19.6	19.5
		25	24	19.5	19.6	19.5
			50	0	19.5	19.5

OUTPUT POWER FOR LTE BAND 7 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				20825	21100	21375
				2507.5 MHz	2535.0 MHz	2562.5 MHz
15.0	QPSK	1	0	22.6	22.6	22.5
		1	37	22.5	22.5	22.4
		1	74	22.5	22.5	22.4
		36	0	21.5	21.5	21.5
		36	16	21.5	21.5	21.4
		36	35	21.5	21.5	21.4
		75	0	21.5	21.5	21.4
	16QAM	1	0	21.4	21.4	21.6
		1	37	21.4	21.3	21.6
		1	74	21.3	21.3	21.5
		36	0	20.5	20.6	20.6
		36	16	20.5	20.6	20.5
		36	35	20.5	20.5	20.5
		75	0	20.5	20.5	20.5
	64QAM	1	0	20.6	20.8	20.7
		1	37	20.5	20.7	20.6
		1	74	20.5	20.7	20.5
		36	0	19.5	19.6	19.6
		36	16	19.5	19.6	19.6
		36	35	19.5	19.6	19.6
		75	0	19.5	19.5	19.5

OUTPUT POWER FOR LTE BAND 7 (20.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				20850	21100	21350
				2510.0 MHz	2535.0 MHz	2560.0 MHz
20.0	QPSK	1	0	22.5	22.6	22.5
		1	49	22.4	22.5	22.3
		1	99	22.3	22.5	22.3
		50	0	21.5	21.5	21.4
		50	24	21.4	21.4	21.4
		50	49	21.4	21.4	21.3
		100	0	21.4	21.5	21.3
	16QAM	1	0	21.4	21.6	21.4
		1	49	21.3	21.5	21.3
		1	99	21.2	21.5	21.3
		50	0	20.5	20.6	20.5
		50	24	20.5	20.5	20.5
		50	49	20.4	20.5	20.4
		100	0	20.5	20.6	20.5
	64QAM	1	0	20.8	20.9	20.6
		1	49	20.6	20.8	20.5
		1	99	20.4	20.8	20.4
		50	0	19.5	19.6	19.5
		50	24	19.5	19.6	19.5
		50	49	19.5	19.5	19.5
		100	0	19.5	19.5	19.4

7.4.3. LTE BAND 12

Test Engineer ID:	52300	Test Date:	12/26/2019
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OUTPUT POWER FOR LTE BAND 12 (1.4 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				23017	23095	23173
				699.7 MHz	707.5 MHz	715.3 MHz
1.4	QPSK	1	0	24.3	24.4	24.4
		1	2	24.3	24.4	24.4
		1	5	24.3	24.5	24.5
		3	0	24.3	24.3	24.4
		3	1	24.3	24.4	24.4
		3	2	24.3	24.4	24.4
		6	0	23.3	23.4	23.4
	16QAM	1	0	23.3	23.2	23.4
		1	2	23.3	23.2	23.4
		1	5	23.4	23.2	23.4
		3	0	23.3	23.3	23.4
		3	1	23.3	23.3	23.4
		3	2	23.3	23.3	23.4
		6	0	22.3	22.4	22.4
	64QAM	1	0	22.4	22.1	22.1
		1	2	22.1	22.2	22.1
		1	5	22.1	22.1	22.1
		3	0	22.5	22.3	22.5
		3	1	22.5	22.3	22.6
		3	2	22.5	22.3	22.5
		6	0	21.3	21.6	21.3

OUTPUT POWER FOR LTE BAND 12 (3.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				23025	23095	23165
				700.5 MHz	707.5 MHz	714.5 MHz
3.0	QPSK	1	0	24.4	24.5	24.5
		1	7	24.4	24.5	24.5
		1	14	24.3	24.5	24.5
		8	0	23.3	23.4	23.4
		8	4	23.2	23.4	23.4
		8	7	23.3	23.4	23.4
		15	0	23.3	23.4	23.4
	16QAM	1	0	23.5	23.5	23.3
		1	7	23.5	23.3	23.4
		1	14	23.5	23.4	23.4
		8	0	22.1	22.5	22.4
		8	4	22.1	22.5	22.4
		8	7	22.1	22.5	22.4
		15	0	22.2	22.4	22.4
	64QAM	1	0	22.3	22.4	22.3
		1	7	22.2	22.4	22.2
		1	14	22.2	22.2	22.3
		8	0	21.3	21.5	21.4
		8	4	21.3	21.5	21.4
		8	7	21.2	21.5	21.4
		15	0	21.4	21.4	21.4

OUTPUT POWER FOR LTE BAND 12 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				23035	23095	23155
				701.5 MHz	707.5 MHz	713.5 MHz
5.0	QPSK	1	0	24.4	24.5	24.4
		1	12	24.3	24.4	24.3
		1	24	24.3	24.4	24.3
		12	0	23.3	23.4	23.4
		12	6	23.3	23.4	23.4
		12	11	23.3	23.4	23.3
	25	0	23.3	23.4	23.3	
	16QAM	1	0	23.1	23.2	23.4
		1	12	23.1	23.2	23.3
		1	24	23.1	23.2	23.4
		12	0	22.2	22.3	22.3
		12	6	22.2	22.3	22.4
		12	11	22.2	22.3	22.4
	25	0	22.3	22.4	22.3	
	64QAM	1	0	22.3	22.2	22.6
		1	12	22.1	22.2	22.5
		1	24	22.1	22.2	22.6
		12	0	21.4	21.5	21.4
		12	6	21.3	21.5	21.4
		12	11	21.4	21.5	21.4
25		0	21.4	21.5	21.5	

OUTPUT POWER FOR LTE BAND 12 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				23060	23095	23130
				704.0 MHz	707.5 MHz	711.0 MHz
10.0	QPSK	1	0	24.4	24.4	24.4
		1	24	24.3	24.4	24.3
		1	49	24.3	24.4	24.3
		25	0	23.3	23.4	23.3
		25	12	23.3	23.4	23.3
		25	24	23.3	23.4	23.3
		50	0	23.3	23.4	23.3
	16QAM	1	0	23.3	23.4	23.3
		1	24	23.3	23.3	23.3
		1	49	23.3	23.3	23.3
		25	0	22.4	22.4	22.4
		25	12	22.4	22.4	22.4
		25	24	22.4	22.4	22.4
		50	0	22.3	22.4	22.3
	64QAM	1	0	22.3	22.7	22.2
		1	24	22.3	22.6	22.2
		1	49	22.3	22.6	22.2
		25	0	21.5	21.6	21.6
		25	12	21.5	21.6	21.5
		25	24	21.5	21.6	21.5
50	0	21.5	21.6	21.5		

7.4.4. LTE BAND 13

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OUTPUT POWER FOR LTE BAND 13 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				23205	23230	23255
				779.5 MHz	782.0 MHz	784.5 MHz
5.0	QPSK	1	0	24.3	24.4	24.3
		1	12	24.3	24.4	24.3
		1	24	24.3	24.4	24.3
		12	0	23.4	23.4	23.3
		12	6	23.3	23.4	23.2
		12	11	23.3	23.3	23.2
		25	0	23.3	23.3	23.2
	16QAM	1	0	23.3	23.2	23.2
		1	12	23.3	23.2	23.1
		1	24	23.3	23.2	23.1
		12	0	22.4	22.4	22.2
		12	6	22.3	22.3	22.2
		12	11	22.3	22.3	22.2
		25	0	22.4	22.4	22.3
	64QAM	1	0	22.3	22.2	22.2
		1	12	22.3	22.2	22.1
		1	24	22.3	22.2	22.1
		12	0	21.3	21.3	21.2
		12	6	21.3	21.3	21.2
		12	11	21.3	21.3	21.2
		25	0	21.3	21.4	21.3

OUTPUT POWER FOR LTE BAND 13 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				N/A	23230	N/A
				N/A	782.0 MHz	N/A
10.0	QPSK	1	0		24.4	
		1	24		24.4	
		1	49		24.3	
		25	0		23.4	
		25	12		23.4	
		25	24		23.3	
		50	0		23.3	
	16QAM	1	0		23.4	
		1	24		23.4	
		1	49		23.4	
		25	0		22.4	
		25	12		22.4	
		25	24		22.4	
		50	0		22.4	
	64QAM	1	0		22.3	
		1	24		22.2	
		1	49		22.2	
		25	0		21.5	
		25	12		21.5	
		25	24		21.5	
		50	0		21.5	

7.4.5. LTE BAND 14

Test Engineer ID:	37433	Test Date:	1/16/2020
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OUTPUT POWER FOR LTE BAND 14 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				23305 790.5 MHz	23330 793.0 MHz	23355 795.5 MHz
5.0	QPSK	1	0	24.3	24.3	24.2
		1	12	24.2	24.2	24.2
		1	24	24.2	24.2	24.2
		12	0	23.4	23.4	23.3
		12	6	23.3	23.4	23.2
		12	11	23.3	23.3	23.3
	16QAM	25	0	23.3	23.3	23.3
		1	0	23.2	23.2	23.2
		1	12	23.2	23.2	23.2
		1	24	23.3	23.3	23.3
		12	0	22.2	22.3	22.2
		12	6	22.3	22.3	22.3
	64QAM	12	11	22.3	22.3	22.3
		25	0	22.3	22.3	22.3
		1	0	22.4	22.5	22.4
		1	12	22.4	22.4	22.4
		1	24	22.3	22.3	22.3
		12	0	21.3	21.3	21.2
		12	6	21.2	21.2	21.2
		12	11	21.2	21.2	21.2
		25	0	21.3	21.3	21.2

OUTPUT POWER FOR LTE BAND 14 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				N/A	23330 793.0 MHz	N/A
10.0	QPSK	1	0		24.3	
		1	24		24.3	
		1	49		24.3	
		25	0		23.4	
		25	12		23.4	
		25	24		23.4	
	16QAM	50	0		23.4	
		1	0		22.9	
		1	24		22.9	
		1	49		22.9	
		25	0		22.4	
		25	12		22.3	
	64QAM	25	24		22.3	
		50	0		22.4	
		1	0		22.1	
		1	24		22.2	
		1	49		22.2	
		25	0		21.4	
		25	12		21.3	
		25	24		21.3	
		50	0		21.3	

7.4.6. LTE BAND 25

Test Engineer ID:	52300	Test Date:	12/26/2019
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OUTPUT POWER FOR LTE BAND 25 (1.4 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26047	26365	26683
				1850.7 MHz	1882.5 MHz	1914.3 MHz
1.4	QPSK	1	0	23.9	24.0	23.8
		1	2	23.8	23.9	23.8
		1	5	23.9	23.9	23.8
		3	0	23.8	23.9	23.7
		3	1	23.9	23.9	23.7
		3	2	23.9	23.9	23.7
	16QAM	6	0	22.8	22.9	22.7
		1	0	22.8	22.9	22.6
		1	2	22.7	23.0	22.6
		1	5	22.9	22.9	22.6
		3	0	22.9	22.8	22.6
		3	1	22.9	22.8	22.6
	64QAM	3	2	22.9	22.8	22.6
		6	0	21.8	21.8	21.6
		1	0	21.5	21.4	21.6
		1	2	21.4	21.7	21.8
		1	5	21.4	21.3	21.6
		3	0	21.9	22.0	21.8
		3	1	21.9	22.1	21.9
		3	2	21.9	22.1	21.8
		6	0	21.0	20.7	20.6

OUTPUT POWER FOR LTE BAND 25 (3.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26055	26365	26675
				1851.5 MHz	1882.5 MHz	1913.5 MHz
3.0	QPSK	1	0	24.0	23.9	23.7
		1	7	24.0	23.9	23.7
		1	14	24.0	23.9	23.7
		8	0	22.9	22.8	22.7
		8	4	22.9	22.8	22.7
		8	7	22.9	22.9	22.6
	16QAM	15	0	22.9	22.9	22.7
		1	0	23.0	22.9	22.7
		1	7	23.0	22.9	22.7
		1	14	23.0	22.8	22.7
		8	0	21.8	21.8	21.6
		8	4	21.8	21.8	21.7
	64QAM	8	7	21.8	21.8	21.7
		15	0	21.9	21.8	21.7
		1	0	21.5	21.8	21.5
		1	7	21.7	22.0	21.5
		1	14	21.6	22.0	21.3
		8	0	20.8	20.8	20.5
		8	4	20.8	20.8	20.6
		8	7	20.8	20.8	20.5
		15	0	20.9	20.8	20.7

OUTPUT POWER FOR LTE BAND 25 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26065	26365	26665
				1852.5 MHz	1882.5 MHz	1912.5 MHz
5.0	QPSK	1	0	23.9	23.9	23.7
		1	12	24.0	23.9	23.7
		1	24	23.9	23.9	23.7
		12	0	22.9	22.9	22.7
		12	6	22.9	22.9	22.7
		12	11	22.9	22.9	22.7
	25	0	22.9	22.9	22.7	
	16QAM	1	0	22.7	22.7	22.7
		1	12	22.7	22.7	22.7
		1	24	22.8	22.8	22.7
		12	0	21.8	21.8	21.7
		12	6	21.8	21.8	21.7
		12	11	21.9	21.8	21.7
	25	0	21.9	22.0	21.7	
	64QAM	1	0	21.6	21.7	21.6
		1	12	21.6	21.7	21.6
		1	24	21.7	21.7	21.6
		12	0	20.7	20.8	20.7
12		6	20.8	20.8	20.6	
12		11	20.8	20.8	20.6	
25	0	20.8	20.9	20.7		

OUTPUT POWER FOR LTE BAND 25 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26090	26365	26640
				1855.0 MHz	1882.5 MHz	1910.0 MHz
10.0	QPSK	1	0	23.9	23.8	23.7
		1	24	23.9	23.9	23.6
		1	49	24.0	23.9	23.7
		25	0	22.9	22.9	22.6
		25	12	22.9	22.9	22.7
		25	24	22.9	22.9	22.7
		50	0	22.9	22.9	22.7
	16QAM	1	0	22.9	22.8	22.7
		1	24	22.9	22.8	22.7
		1	49	23.0	22.8	22.8
		25	0	21.9	21.9	21.7
		25	12	21.9	21.9	21.7
		25	24	21.9	21.9	21.7
	50	0	21.9	21.9	21.6	
	64QAM	1	0	21.6	21.5	21.6
		1	24	21.7	21.6	21.6
		1	49	21.7	21.7	21.6
		25	0	20.9	20.9	20.7
25		12	20.9	20.9	20.7	
25		24	20.9	20.9	20.7	
50		0	20.9	20.9	20.6	

OUTPUT POWER FOR LTE BAND 25 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26115	26365	26615
				1857.5 MHz	1882.5 MHz	1907.5 MHz
15.0	QPSK	1	0	23.9	23.9	23.6
		1	37	23.9	23.9	23.6
		1	74	23.9	23.9	23.7
		36	0	22.9	22.9	22.7
		36	16	22.9	22.9	22.7
		36	35	22.9	22.9	22.7
		75	0	22.9	22.9	22.6
	16QAM	1	0	23.2	22.7	22.7
		1	37	23.3	22.6	22.7
		1	74	23.2	22.7	22.8
		36	0	21.9	21.8	21.7
		36	16	21.9	21.8	21.7
		36	35	21.9	21.9	21.7
		75	0	21.9	21.9	21.7
	64QAM	1	0	21.9	21.8	21.4
		1	37	21.9	21.8	21.4
		1	74	21.9	21.9	21.4
		36	0	20.9	20.9	20.7
		36	16	20.9	20.9	20.7
		36	35	20.9	20.9	20.7
		75	0	20.9	20.8	20.6

OUTPUT POWER FOR LTE BAND 25 (20.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26140	26365	26590
				1860.0 MHz	1882.5 MHz	1905.0 MHz
20.0	QPSK	1	0	23.9	23.9	23.6
		1	49	23.9	23.9	23.6
		1	99	23.9	23.9	23.6
		50	0	22.9	22.8	22.7
		50	24	22.9	22.9	22.7
		50	49	22.9	22.9	22.7
		100	0	22.9	22.8	22.7
	16QAM	1	0	22.8	22.8	22.5
		1	49	22.8	22.8	22.5
		1	99	22.8	22.8	22.5
		50	0	21.9	21.8	21.7
		50	24	21.9	21.8	21.7
		50	49	21.9	21.8	21.6
		100	0	22.0	21.9	21.7
	64QAM	1	0	21.9	21.8	21.5
		1	49	21.9	21.8	21.5
		1	99	21.9	21.8	21.6
		50	0	21.0	20.9	20.7
		50	24	21.0	20.9	20.7
		50	49	21.0	20.9	20.7
		100	0	21.0	20.9	20.7

7.4.7. LTE BAND 26 (FCC Part 90S)

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OUTPUT POWER FOR LTE BAND 26 (1.4 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26697 814.7 MHz	26740 819.0 MHz	26783 823.3 MHz
1.4	QPSK	1	0	24.2	24.2	24.2
		1	2	24.2	24.2	24.1
		1	5	24.2	24.2	24.1
		3	0	24.1	23.1	23.0
		3	1	24.1	23.1	23.1
		3	2	24.1	23.1	23.1
	16QAM	6	0	23.1	23.1	23.1
		1	0	23.2	23.2	23.2
		1	2	23.2	23.2	23.2
		1	5	23.2	23.1	23.1
		3	0	23.2	22.3	22.2
		3	1	23.2	22.2	22.2
	64QAM	3	2	23.1	22.2	22.2
		6	0	22.2	22.2	22.2
		1	0	21.7	21.9	21.9
		1	2	21.7	21.9	21.9
		1	5	21.7	21.8	21.8
		3	0	22.2	21.2	21.3
		3	1	22.2	21.2	21.2
		3	2	22.2	21.2	21.2
		6	0	21.1	21.2	21.2

OUTPUT POWER FOR LTE BAND 26 (3.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26705 815.5 MHz	26740 819.0 MHz	26775 822.5 MHz
3.0	QPSK	1	0	24.1	24.1	24.1
		1	7	24.1	24.1	24.1
		1	14	24.1	24.1	24.1
		8	0	23.1	23.1	23.0
		8	4	23.1	23.1	23.1
		8	7	23.1	23.1	23.1
	16QAM	15	0	23.1	23.1	23.1
		1	0	23.1	23.1	23.1
		1	7	23.1	23.0	23.1
		1	14	23.1	23.1	23.1
		8	0	22.0	22.0	22.0
		8	4	22.0	22.0	22.0
	64QAM	8	7	22.0	22.0	22.0
		15	0	22.0	22.0	22.1
		1	0	21.8	21.7	21.8
		1	7	21.6	21.5	21.6
		1	14	21.8	21.7	21.9
		8	0	21.0	21.1	21.1
		8	4	21.0	21.0	21.1
		8	7	21.0	21.0	21.0
		15	0	21.2	21.2	21.1

OUTPUT POWER FOR LTE BAND 26 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26715	26740	26765
				816.5 MHz	819.0 MHz	821.5 MHz
5.0	QPSK	1	0	24.1	24.1	24.1
		1	12	24.1	24.1	24.1
		1	24	24.1	24.1	24.1
		12	0	23.1	23.1	23.1
		12	6	23.1	23.1	23.1
		12	11	23.1	23.1	23.1
	25	0	23.1	23.1	23.1	
	16QAM	1	0	22.9	23.1	23.1
		1	12	22.8	23.1	23.0
		1	24	22.9	23.1	23.1
		12	0	22.0	22.0	22.0
		12	6	22.0	22.0	22.0
		12	11	22.0	22.0	22.0
	25	0	22.1	22.0	22.1	
	64QAM	1	0	22.0	21.8	21.8
		1	12	22.0	21.6	21.8
		1	24	22.0	21.7	21.9
		12	0	21.1	21.2	21.1
		12	6	21.1	21.1	21.1
		12	11	21.1	21.0	21.1
	25	0	21.1	21.1	21.1	

OUTPUT POWER FOR LTE BAND 26 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				N/A	26740	N/A
				N/A	819.0 MHz	N/A
10.0	QPSK	1	0	24.2		
		1	24	24.2		
		1	49	24.2		
		25	0	23.1		
		25	12	23.1		
		25	24	23.1		
		50	0	23.1		
	16QAM	1	0	23.2		
		1	24	23.2		
		1	49	23.1		
		25	0	22.2		
		25	12	22.2		
		25	24	22.2		
	50	0	22.1			
	64QAM	1	0	21.9		
		1	24	21.8		
		1	49	21.8		
		25	0	21.2		
		25	12	21.2		
		25	24	21.2		
	50	0	21.2			

OUTPUT POWER FOR LTE BAND 26 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				N/A	26740	N/A
				N/A	821.5 MHz	N/A
10.0	QPSK	1	0		24.2	
		1	24		24.1	
		1	49		24.1	
		25	0		23.1	
		25	12		23.1	
		25	24		23.0	
		50	0		23.0	
	16QAM	1	0		22.9	
		1	24		22.9	
		1	49		22.9	
		25	0		22.0	
		25	12		22.0	
		25	24		22.0	
		50	0		22.0	
	64QAM	1	0		21.7	
		1	24		21.9	
		1	49		21.9	
		25	0		21.1	
		25	12		21.0	
		25	24		21.0	
		50	0		21.0	

7.4.8. LTE BAND 26 (FCC Part 22)

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OUTPUT POWER FOR LTE BAND 26 (1.4 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26797 824.7 MHz	26915 836.5 MHz	27033 848.3 MHz
1.4	QPSK	1	0	24.1	24.1	24.1
		1	2	24.1	24.1	24.1
		1	5	24.1	24.0	24.1
		3	0	24.0	24.0	24.0
		3	1	24.0	24.0	24.0
		3	2	24.0	24.0	24.0
	16QAM	6	0	23.0	23.0	22.9
		1	0	23.2	23.1	23.1
		1	2	23.1	23.1	23.1
		1	5	23.1	23.1	23.2
		3	0	23.0	22.9	22.9
		3	1	23.0	23.0	23.0
	64QAM	3	2	22.9	22.9	22.9
		6	0	21.9	21.9	21.9
		1	0	21.5	21.5	21.5
		1	2	21.5	21.5	21.6
		1	5	21.5	21.5	21.5
		3	0	22.0	22.0	21.9
		3	1	22.0	22.0	22.0
		3	2	21.9	21.9	21.9
		6	0	21.2	21.2	21.2

OUTPUT POWER FOR LTE BAND 26 (3.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26805 825.5 MHz	26915 836.5 MHz	27025 847.5 MHz
3.0	QPSK	1	0	24.1	24.0	24.1
		1	7	24.1	24.0	24.0
		1	14	24.0	24.0	24.1
		8	0	22.9	22.9	22.9
		8	4	22.9	22.9	23.0
		8	7	22.9	22.9	22.9
		15	0	22.9	22.9	23.0
	16QAM	1	0	22.9	22.9	22.9
		1	7	22.9	22.9	23.0
		1	14	22.8	22.8	23.0
		8	0	21.9	21.8	21.9
		8	4	21.9	21.8	21.9
		8	7	21.8	21.8	21.9
		15	0	21.9	21.9	21.9
	64QAM	1	0	21.7	21.8	21.6
		1	7	21.6	21.8	21.7
		1	14	21.8	21.8	21.6
		8	0	20.9	20.9	20.9
		8	4	20.9	20.9	20.9
		8	7	20.9	20.9	20.9
		15	0	21.0	21.0	21.0

OUTPUT POWER FOR LTE BAND 26 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26815	26915	27015
				826.5 MHz	836.5 MHz	846.5 MHz
5.0	QPSK	1	0	23.9	23.9	23.9
		1	12	23.8	23.9	23.9
		1	24	23.9	23.9	23.9
		12	0	22.9	22.9	23.0
		12	6	22.9	22.9	22.9
		12	11	22.9	22.9	22.9
	25	0	22.9	22.9	22.9	
	16QAM	1	0	22.9	22.9	22.9
		1	12	22.9	22.9	22.9
		1	24	22.9	22.9	22.9
		12	0	21.9	21.8	21.9
		12	6	21.9	21.8	21.9
		12	11	21.8	21.8	21.9
	25	0	21.9	22.0	21.9	
	64QAM	1	0	21.7	21.8	21.8
		1	12	21.6	21.8	21.8
		1	24	21.7	21.7	21.8
		12	0	20.9	20.9	20.9
12		6	20.9	20.9	20.9	
12		11	20.8	20.9	20.9	
25	0	20.9	20.9	21.0		

OUTPUT POWER FOR LTE BAND 26 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26840	26915	26990
				829.0 MHz	836.5 MHz	844.0 MHz
10.0	QPSK	1	0	24.0	24.0	24.0
		1	24	24.0	24.0	23.9
		1	49	23.9	24.0	23.9
		25	0	22.9	22.9	22.9
		25	12	22.9	22.9	22.9
		25	24	22.8	22.9	22.9
	50	0	22.4	22.9	22.9	
	16QAM	1	0	22.8	22.8	23.1
		1	24	22.7	22.7	23.0
		1	49	22.8	22.8	23.0
		25	0	21.9	21.9	21.9
		25	12	21.9	21.9	21.9
		25	24	21.9	21.9	21.9
	50	0	21.9	21.9	21.9	
	64QAM	1	0	21.9	21.8	21.8
		1	24	21.9	21.8	21.7
		1	49	21.8	21.8	21.7
		25	0	21.1	21.0	21.0
25		12	21.0	21.0	21.0	
25		24	21.1	21.0	21.0	
50	0	21.0	21.0	21.0		

OUTPUT POWER FOR LTE BAND 26 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				26865	26915	26965
				831.5 MHz	836.5 MHz	841.5 MHz
15.0	QPSK	1	0	24.1	24.0	24.0
		1	37	24.1	24.0	23.9
		1	74	24.0	24.0	23.9
		36	0	23.0	22.9	23.0
		36	16	23.0	22.9	23.0
		36	35	23.0	22.9	22.9
		75	0	22.4	22.9	22.9
	16QAM	1	0	22.9	23.0	23.4
		1	37	22.9	23.0	23.3
		1	74	22.8	22.8	23.2
		36	0	21.9	21.9	21.9
		36	16	21.9	21.9	21.9
		36	35	21.9	21.9	21.9
		75	0	21.9	21.9	21.9
	64QAM	1	0	21.9	21.8	21.9
		1	37	21.9	21.8	21.9
		1	74	21.8	21.8	21.8
		36	0	21.1	21.0	21.0
		36	16	21.0	21.0	21.0
		36	35	21.1	21.0	21.0
		75	0	21.0	21.0	21.0

7.4.9. LTE BAND 30

Test Engineer ID:	52300	Test Date:	2/6/2020
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OUTPUT POWER FOR LTE BAND 30 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				27685	27710	27735
				2307.5 MHz	2310.0 MHz	2312.5 MHz
5.0	QPSK	1	0	23.5	23.5	23.5
		1	12	23.4	23.4	23.4
		1	24	23.4	23.4	23.4
		12	0	22.4	22.4	22.4
		12	6	22.4	22.4	22.4
		12	11	22.4	22.4	22.4
		25	0	22.3	22.4	22.4
	16QAM	1	0	22.5	22.5	22.4
		1	12	22.5	22.5	22.4
		1	24	22.4	22.4	22.4
		12	0	21.4	21.4	21.4
		12	6	21.4	21.4	21.4
		12	11	21.4	21.4	21.4
		25	0	21.5	21.5	21.5
	64QAM	1	0	21.4	21.4	21.4
		1	12	21.4	21.4	21.4
		1	24	21.3	21.3	21.3
		12	0	20.5	20.5	20.5
		12	6	20.4	20.5	20.5
		12	11	20.4	20.4	20.4
		25	0	20.5	20.5	20.5

OUTPUT POWER FOR LTE BAND 30 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				N/A	27710	N/A
				N/A	2310.0 MHz	N/A
10.0	QPSK	1	0		23.6	
		1	24		23.5	
		1	49		23.5	
		25	0		22.5	
		25	12		22.4	
		25	24		22.4	
		50	0		22.4	
	16QAM	1	0		22.4	
		1	24		22.3	
		1	49		22.2	
		25	0		21.5	
		25	12		21.5	
		25	24		21.5	
		50	0		21.4	
	64QAM	1	0		21.4	
		1	24		21.3	
		1	49		21.2	
		25	0		20.6	
		25	12		20.6	
		25	24		20.6	
		50	0		20.5	

7.4.10. LTE BAND 38 (IC)

Test Engineer ID:	52300	Test Date:	1/6/2020
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OUTPUT POWER FOR LTE BAND 38 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Ant 1		
				Conducted Average (dBm)		
				37775 2572.5 MHz	38000 2595.0 MHz	38225 2617.5 MHz
5.0	QPSK	1	0	23.6	23.5	23.1
		1	12	23.6	23.5	23.1
		1	24	23.5	23.5	23.1
		12	0	22.6	22.6	22.1
		12	6	22.6	22.6	22.1
		12	11	22.6	22.6	22.1
	25	0	22.6	22.6	22.1	
	16QAM	1	0	22.5	22.1	22.0
		1	12	22.5	22.0	22.0
		1	24	22.5	22.1	21.9
		12	0	21.6	21.6	21.1
		12	6	21.6	21.6	21.1
		12	11	21.6	21.6	21.1
	25	0	21.6	21.7	21.1	
	64QAM	1	0	21.7	21.3	21.0
		1	12	21.7	21.3	21.1
		1	24	21.7	21.3	21.0
		12	0	20.7	20.6	20.1
12		6	20.7	20.6	20.1	
12		11	20.7	20.6	20.1	
25	0	20.5	20.7	20.1		

OUTPUT POWER FOR LTE BAND 38 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				37800 2575.0 MHz	38000 2595.0 MHz	38200 2615.0 MHz
10.0	QPSK	1	0	23.5	23.6	23.2
		1	24	23.5	23.6	23.2
		1	49	23.5	23.5	23.1
		25	0	22.6	22.6	22.2
		25	12	22.6	22.6	22.2
		25	24	22.6	22.6	22.1
	50	0	22.5	22.6	22.1	
	16QAM	1	0	22.6	22.3	22.0
		1	24	22.6	22.3	22.0
		1	49	22.6	22.3	22.0
		25	0	21.6	21.7	21.2
		25	12	21.6	21.6	21.2
		25	24	21.6	21.6	21.2
	50	0	21.6	21.6	21.2	
	64QAM	1	0	21.3	21.5	21.1
		1	24	21.3	21.3	21.1
		1	49	21.3	21.3	21.0
		25	0	20.6	20.7	20.2
25		12	20.6	20.7	20.1	
25		24	20.5	20.7	20.1	
50	0	20.6	20.7	20.1		

OUTPUT POWER FOR LTE BAND 38 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				37825	38000	38175
				2577.5 MHz	2595.0 MHz	2612.5 MHz
15.0	QPSK	1	0	23.6	23.6	23.3
		1	37	23.6	23.5	23.3
		1	74	23.5	23.5	23.2
		36	0	22.6	22.6	22.2
		36	16	22.6	22.6	22.2
		36	35	22.5	22.6	22.2
		75	0	22.6	22.6	22.2
	16QAM	1	0	22.2	22.5	22.1
		1	37	22.5	22.1	22.1
		1	74	22.6	22.5	22.2
		36	0	21.7	21.7	21.3
		36	16	21.7	21.6	21.2
		36	35	21.7	21.6	21.2
		75	0	21.6	21.6	21.3
	64QAM	1	0	21.9	21.7	21.2
		1	37	21.7	21.4	21.2
		1	74	21.7	20.9	21.1
		36	0	20.6	20.7	20.3
		36	16	20.6	20.6	20.3
		36	35	20.5	20.7	20.2
		75	0	20.6	20.6	20.3

OUTPUT POWER FOR LTE BAND 38 (20.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Ant 1		
				Conducted Average (dBm)		
				37850	38000	38150
				2580.0 MHz	2595.0 MHz	2610.0 MHz
20.0	QPSK	1	0	23.6	23.7	23.4
		1	49	23.6	23.6	23.3
		1	99	23.5	23.5	23.3
		50	0	22.5	22.6	22.3
		50	24	22.5	22.6	22.3
		50	49	22.5	22.5	22.3
		100	0	22.5	22.6	22.3
	16QAM	1	0	22.4	22.5	22.1
		1	49	22.7	22.5	22.1
		1	99	22.3	22.4	22.2
		50	0	21.5	21.7	21.3
		50	24	21.5	21.7	21.3
		50	49	21.5	21.6	21.3
		100	0	21.5	21.6	21.3
	64QAM	1	0	21.9	22.0	21.3
		1	49	21.6	21.8	21.3
		1	99	21.6	21.5	21.2
		50	0	20.6	20.7	20.3
		50	24	20.6	20.7	20.3
		50	49	20.6	20.7	20.3
		100	0	20.6	20.7	20.3

7.4.11. LTE BAND 41 (FCC) HPUE

Test Engineer ID:	52280	Test Date:	1/2/2020
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OUTPUT POWER FOR LTE BAND 41 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				39675 2498.5 MHz	40620 2593.0 MHz	41565 2687.5 MHz
5.0	QPSK	1	0	26.1	27.2	26.1
		1	12	26.1	27.2	26.1
		1	24	26.1	27.1	26.0
		12	0	25.2	26.1	25.1
		12	6	25.1	26.1	25.1
		12	11	25.1	26.1	25.1
	16QAM	25	0	25.2	26.1	25.0
		1	0	24.9	25.9	24.8
		1	12	24.9	25.9	24.9
		1	24	24.9	25.9	24.8
		12	0	24.1	25.0	24.0
		12	6	24.1	25.0	24.0
	64QAM	12	11	24.1	25.0	24.0
		25	0	24.1	25.1	24.1
		1	0	24.2	24.7	24.0
		1	12	24.3	24.7	24.0
		1	24	24.2	24.7	24.0
		12	0	23.3	24.0	23.2
		12	6	23.2	24.0	23.2
		12	11	23.2	24.0	23.3
		25	0	23.2	24.2	23.2

OUTPUT POWER FOR LTE BAND 41 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				39700 2501.0 MHz	40620 2593.0 MHz	41540 2685.0 MHz
10.0	QPSK	1	0	26.2	27.2	26.2
		1	24	26.2	27.2	26.2
		1	49	26.0	27.1	26.0
		25	0	25.1	26.1	25.1
		25	12	25.1	26.1	25.1
		25	24	25.1	26.1	25.1
	16QAM	50	0	25.1	26.1	25.1
		1	0	25.4	25.9	25.1
		1	24	25.3	25.9	25.0
		1	49	25.2	25.9	24.9
		25	0	24.2	25.1	24.2
		25	12	24.2	25.1	24.2
	64QAM	25	24	24.1	25.1	24.1
		50	0	24.0	25.1	24.2
		1	0	23.8	25.2	24.2
		1	24	23.8	25.3	24.0
		1	49	23.8	25.2	24.2
		25	0	23.3	24.0	23.4
		25	12	23.2	24.0	23.3
		25	24	23.2	24.0	23.4
		50	0	23.3	24.0	23.3

OUTPUT POWER FOR LTE BAND 41 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				39765	40640	41515
				2507.5 MHz	2595.0 MHz	2682.5 MHz
15.0	QPSK	1	0	26.3	27.1	26.2
		1	37	26.1	27.1	26.2
		1	74	25.9	27.1	26.0
		36	0	25.2	26.1	25.2
		36	16	25.1	26.1	25.1
		36	35	25.1	26.1	25.1
	16QAM	75	0	25.1	26.1	25.1
		1	0	25.0	26.1	24.9
		1	37	25.0	26.1	24.9
		1	74	24.8	26.0	24.7
		36	0	24.1	25.0	24.2
		36	16	24.1	25.0	24.2
	64QAM	36	35	24.0	25.0	24.1
		75	0	24.1	25.1	24.2
		1	0	24.4	25.1	24.2
		1	37	24.4	25.1	24.2
		1	74	24.3	25.0	24.1
		36	0	23.2	24.2	23.3
36	16	23.2	24.1	23.3		
36	35	23.2	24.1	23.3		
75	0	23.2	24.1	23.3		

OUTPUT POWER FOR LTE BAND 41 (20.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				39750	40620	41490
				2506.0 MHz	2593.0 MHz	2680.0 MHz
20.0	QPSK	1	0	26.6	27.2	26.5
		1	49	26.3	27.1	26.3
		1	99	26.3	27.1	26.4
		50	0	25.5	26.1	25.3
		50	24	25.2	26.1	25.3
		50	49	25.2	26.0	25.2
	16QAM	100	0	25.2	26.1	25.3
		1	0	25.0	26.2	25.2
		1	49	25.1	26.2	25.1
		1	99	25.0	26.1	25.1
		50	0	24.1	25.2	24.3
		50	24	24.2	25.1	24.2
	64QAM	50	49	24.1	25.1	24.2
		100	0	24.0	25.0	24.2
		1	0	24.3	25.3	25.1
		1	49	24.2	25.2	24.9
		1	99	24.2	25.2	25.0
		50	0	23.4	24.2	23.3
50	24	23.4	24.1	23.2		
50	49	23.3	24.1	23.2		
100	0	23.4	24.1	23.3		

7.4.12. LTE BAND 41 (IC)

Test Engineer ID:	52300	Test Date:	1/7/2020
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OUTPUT POWER FOR LTE BAND 41 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				39715 2502.5 MHz	40640 2595.0 MHz	41565 2687.5 MHz
5.0	QPSK	1	0	23.2	23.9	23.0
		1	12	23.2	23.9	23.0
		1	24	23.1	23.8	23.0
		12	0	22.1	22.9	22.0
		12	6	22.2	22.8	22.0
		12	11	22.1	22.8	22.0
		25	0	22.2	22.8	22.0
	16QAM	1	0	22.1	22.2	21.8
		1	12	22.1	22.2	21.8
		1	24	21.8	22.2	21.8
		12	0	21.1	21.8	21.0
		12	6	21.1	21.8	20.9
		12	11	21.0	21.8	20.9
		25	0	21.1	21.9	21.1
	64QAM	1	0	21.3	21.6	20.9
		1	12	21.2	21.6	20.9
		1	24	21.1	21.6	20.9
		12	0	20.3	21.0	20.2
		12	6	20.3	21.0	20.2
		12	11	20.3	21.0	20.2
		25	0	20.3	21.1	20.2

OUTPUT POWER FOR LTE BAND 41 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				39740 2505.0 MHz	40640 2595.0 MHz	41540 2685.0 MHz
10.0	QPSK	1	0	23.3	24.0	23.2
		1	24	23.2	23.9	23.1
		1	49	23.1	23.8	23.0
		25	0	22.3	22.9	22.1
		25	12	22.2	22.8	22.1
		25	24	22.2	22.8	22.0
		50	0	22.2	22.8	22.0
	16QAM	1	0	21.8	22.6	22.1
		1	24	21.8	22.5	22.0
		1	49	21.7	22.4	21.9
		25	0	21.2	21.9	21.2
		25	12	21.2	21.9	21.1
		25	24	21.2	21.8	21.1
		50	0	21.2	21.9	21.1
	64QAM	1	0	21.4	22.0	21.2
		1	24	21.3	22.0	21.0
		1	49	21.4	22.0	21.2
		25	0	20.4	21.0	20.3
		25	12	20.4	21.0	20.3
		25	24	20.4	21.0	20.3
		50	0	20.3	21.0	20.3

OUTPUT POWER FOR LTE BAND 41 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				39765 2507.5 MHz	40640 2595.0 MHz	41515 2682.5 MHz
15.0	QPSK	1	0	23.3	24.0	23.2
		1	37	23.1	24.0	23.1
		1	74	23.0	23.8	23.0
		36	0	22.2	22.9	22.1
		36	16	22.2	22.9	22.1
		36	35	22.1	22.8	22.0
		75	0	22.2	22.9	22.1
	16QAM	1	0	21.9	22.4	21.9
		1	37	21.9	22.4	21.8
		1	74	21.7	22.2	21.7
		36	0	21.3	22.0	21.1
		36	16	21.2	21.9	21.1
		36	35	21.2	21.8	21.0
		75	0	21.1	21.9	21.2
	64QAM	1	0	21.3	22.1	21.2
		1	37	21.3	22.1	21.1
		1	74	21.2	22.0	21.1
		36	0	20.3	21.1	20.3
		36	16	20.3	21.1	20.3
		36	35	20.3	21.1	20.3
		75	0	20.3	21.1	20.2

OUTPUT POWER FOR LTE BAND 41 (20.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				39790 2510.0 MHz	40640 2595.0 MHz	41490 2680.0 MHz
20.0	QPSK	1	0	23.1	24.0	23.4
		1	49	23.0	24.0	23.3
		1	99	23.0	23.9	23.2
		50	0	22.4	23.1	22.2
		50	24	22.4	23.0	22.2
		50	49	22.4	23.0	22.1
		100	0	22.4	23.0	22.2
	16QAM	1	0	22.2	23.0	22.0
		1	49	22.2	23.0	21.9
		1	99	22.2	22.9	21.9
		50	0	21.4	22.1	21.3
		50	24	21.3	22.1	21.2
		50	49	21.4	22.0	21.2
		100	0	21.4	22.0	21.2
	64QAM	1	0	21.4	22.0	21.2
		1	49	21.6	22.0	21.2
		1	99	21.6	21.9	21.1
		50	0	20.2	21.1	20.4
		50	24	20.2	21.1	20.3
		50	49	20.2	21.1	20.3
		100	0	20.2	21.1	20.3

7.4.13. LTE BAND 66

Test Engineer ID:	52300	Test Date:	12/27/2019
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OUTPUT POWER FOR LTE BAND 66 (1.4 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power			
				Conducted Average (dBm)			
				131979 1710.7 MHz	132322 1745.0 MHz	132665 1779.3 MHz	
1.4	QPSK	1	0	23.2	23.5	24.2	
		1	2	23.1	23.5	24.2	
		1	5	23.2	23.5	24.2	
		3	0	23.2	23.5	24.1	
		3	1	23.2	23.5	24.2	
		3	2	23.2	23.5	24.2	
	16QAM	6	0	22.2	22.5	23.1	
		1	0	22.1	22.5	23.1	
		1	2	22.2	22.5	23.2	
		1	5	22.3	22.5	23.1	
		3	0	22.1	22.5	23.1	
		3	1	22.2	22.6	23.1	
	64QAM	3	2	22.2	22.5	23.1	
		6	0	21.1	21.3	22.2	
		1	0	20.8	21.3	21.8	
		1	2	20.9	21.4	21.9	
		1	5	20.9	21.3	21.8	
		3	0	21.3	21.8	22.1	
			3	1	21.3	21.8	22.1
			3	2	21.3	21.8	22.1
			6	0	20.1	20.5	21.3

OUTPUT POWER FOR LTE BAND 66 (3.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				131987 1711.5 MHz	132322 1745.0 MHz	132657 1778.5 MHz
3.0	QPSK	1	0	23.3	23.5	24.2
		1	7	23.2	23.5	24.2
		1	14	23.3	23.5	24.2
		8	0	22.2	22.5	23.1
		8	4	22.2	22.5	23.1
		8	7	22.2	22.5	23.1
		15	0	22.2	22.5	23.1
	16QAM	1	0	22.3	22.4	23.3
		1	7	22.2	22.5	23.3
		1	14	22.4	22.5	23.3
		8	0	21.0	21.5	22.1
		8	4	21.0	21.5	22.2
		8	7	21.0	21.5	22.2
	64QAM	15	0	21.2	21.5	22.2
		1	0	21.0	21.4	21.9
		1	7	21.0	21.4	22.1
		1	14	21.0	21.4	21.9
		8	0	20.0	20.5	21.0
		8	4	20.0	20.5	21.1
		8	7	20.0	20.5	21.0
			15	0	20.1	20.5

OUTPUT POWER FOR LTE BAND 66 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				131997	132322	132647
				1712.5 MHz	1745.0 MHz	1777.5 MHz
5.0	QPSK	1	0	23.2	23.5	24.1
		1	12	23.2	23.5	24.1
		1	24	23.3	23.6	24.1
		12	0	22.2	22.5	23.1
		12	6	22.2	22.5	23.1
		12	11	22.2	22.5	23.1
		25	0	22.2	22.5	23.1
	16QAM	1	0	22.1	22.3	23.1
		1	12	22.1	22.3	23.1
		1	24	22.1	22.4	23.2
		12	0	21.1	21.4	22.1
		12	6	21.1	21.4	22.1
		12	11	21.1	21.4	22.1
		25	0	21.2	21.6	22.1
	64QAM	1	0	21.2	21.1	22.1
		1	12	21.1	21.2	22.1
		1	24	21.2	21.2	22.2
		12	0	20.1	20.3	21.1
		12	6	20.1	20.4	21.1
		12	11	20.1	20.4	21.1
		25	0	20.1	20.5	21.1

OUTPUT POWER FOR LTE BAND 66 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				132022	132322	132622
				1715.0 MHz	1745.0 MHz	1775.0 MHz
10.0	QPSK	1	0	23.3	23.5	24.1
		1	24	23.3	23.5	24.1
		1	49	23.3	23.5	24.1
		25	0	22.2	22.5	23.1
		25	12	22.3	22.5	23.1
		25	24	22.3	22.5	23.1
		50	0	22.3	22.5	23.1
	16QAM	1	0	22.3	22.5	23.2
		1	24	22.3	22.5	23.2
		1	49	22.4	22.5	23.3
		25	0	21.3	21.5	22.1
		25	12	21.3	21.5	22.1
		25	24	21.3	21.5	22.1
		50	0	21.2	21.5	22.1
	64QAM	1	0	20.9	21.5	21.7
		1	24	20.9	21.5	21.8
		1	49	20.9	21.6	21.8
		25	0	20.2	20.5	21.1
		25	12	20.2	20.5	21.1
		25	24	20.2	20.6	21.2
		50	0	20.2	20.5	21.1

OUTPUT POWER FOR LTE BAND 66 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				132047	132322	132597
				1717.5 MHz	1745.0 MHz	1772.5 MHz
15.0	QPSK	1	0	23.3	23.5	24.1
		1	37	23.3	23.5	24.2
		1	74	23.3	23.5	24.2
		36	0	22.3	22.5	23.1
		36	16	22.3	22.5	23.1
		36	35	22.3	22.5	23.2
		75	0	22.3	22.5	23.1
	16QAM	1	0	22.5	22.6	23.1
		1	37	22.5	22.6	23.2
		1	74	22.5	22.6	23.2
		36	0	21.2	21.5	22.2
		36	16	21.3	21.5	22.2
		36	35	21.3	21.6	22.2
		75	0	21.3	21.5	22.1
	64QAM	1	0	21.2	21.5	22.0
		1	37	21.2	21.5	22.0
		1	74	21.3	21.5	22.1
		36	0	20.2	20.6	21.2
		36	16	20.2	20.6	21.2
		36	35	20.2	20.6	21.2
		75	0	20.2	20.5	21.2

OUTPUT POWER FOR LTE BAND 66 (20.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				132072	132322	132572
				1720.0 MHz	1745.0 MHz	1770.0 MHz
20.0	QPSK	1	0	23.3	23.5	24.0
		1	49	23.3	23.6	24.0
		1	99	23.4	23.6	24.1
		50	0	22.3	22.5	23.0
		50	24	22.3	22.5	23.0
		50	49	22.3	22.6	23.0
		100	0	22.3	22.5	23.0
	16QAM	1	0	22.0	22.5	23.2
		1	49	22.1	22.4	23.3
		1	99	22.1	22.6	23.3
		50	0	21.3	21.5	22.0
		50	24	21.3	21.5	22.0
		50	49	21.3	21.5	22.1
		100	0	21.3	21.5	22.1
	64QAM	1	0	21.1	21.5	22.1
		1	49	21.1	21.5	22.1
		1	99	21.2	21.5	22.2
		50	0	20.2	20.5	21.0
		50	24	20.3	20.5	21.0
		50	49	20.3	20.5	21.1
		100	0	20.2	20.5	21.0

7.4.14. LTE BAND 71

Test Engineer ID:	52300	Test Date:	12/27/2019
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OUTPUT POWER FOR LTE BAND 71 (5.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				133147 665.5 MHz	133297 680.5 MHz	133447 695.5 MHz
5.0	QPSK	1	0	24.5	24.4	24.2
		1	12	24.5	24.4	24.2
		1	24	24.5	24.4	24.2
		12	0	23.5	23.4	23.2
		12	6	23.4	23.4	23.2
		12	11	23.4	23.3	23.2
	16QAM	25	0	23.4	23.3	23.2
		1	0	23.3	23.3	23.1
		1	12	23.3	23.3	23.0
		1	24	23.3	23.3	23.1
		12	0	22.3	22.3	22.1
		12	6	22.4	22.3	22.1
	64QAM	12	11	22.4	22.3	22.1
		25	0	22.4	22.4	22.2
		1	0	22.4	22.2	22.0
		1	12	22.2	22.2	22.0
		1	24	22.2	22.1	22.0
		12	0	21.5	21.3	21.2
		12	6	21.5	21.3	21.1
		12	11	21.5	21.3	21.1
		25	0	21.4	21.4	21.3

OUTPUT POWER FOR LTE BAND 71 (10.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power			
				Conducted Average (dBm)			
				133172 668.0 MHz	133322 683.0 MHz	133422 693.0 MHz	
10.0	QPSK	1	0	24.5	24.4	24.3	
		1	24	24.4	24.3	24.3	
		1	49	24.4	24.3	24.3	
		25	0	23.4	23.4	23.3	
		25	12	23.4	23.3	23.3	
		25	24	23.4	23.3	23.3	
	16QAM	50	0	23.4	23.4	23.3	
		1	0	23.5	23.4	23.5	
		1	24	23.5	23.4	23.4	
		1	49	23.4	23.4	23.4	
		25	0	22.5	22.3	22.3	
		25	12	22.5	22.3	22.3	
	64QAM	25	24	22.5	22.3	22.3	
		50	0	22.4	22.4	22.2	
		1	0	22.4	22.2	22.0	
		1	24	22.2	22.2	21.9	
		1	49	22.2	22.1	21.9	
		25	0	21.5	21.5	21.3	
			25	12	21.5	21.4	21.3
			25	24	21.5	21.4	21.3
			50	0	21.5	21.4	21.3

OUTPUT POWER FOR LTE BAND 71 (15.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				133197	133297	133397
				670.5 MHz	680.5 MHz	690.5 MHz
15.0	QPSK	1	0	24.5	24.5	24.4
		1	37	24.5	24.4	24.3
		1	74	24.4	24.3	24.3
		36	0	23.5	23.4	23.3
		36	16	23.5	23.4	23.3
		36	35	23.4	23.4	23.3
		75	0	23.5	23.4	23.3
	16QAM	1	0	23.7	23.5	23.5
		1	37	23.5	23.4	23.4
		1	74	23.5	23.3	23.3
		36	0	22.5	22.4	22.3
		36	16	22.4	22.4	22.3
		36	35	22.4	22.3	22.3
		75	0	22.4	22.4	22.3
	64QAM	1	0	22.2	22.2	22.1
		1	37	22.1	22.1	22.1
		1	74	22.0	22.0	22.0
		36	0	21.5	21.5	21.5
		36	16	21.4	21.5	21.5
		36	35	21.4	21.4	21.4
		75	0	21.4	21.4	21.4

OUTPUT POWER FOR LTE BAND 71 (20.0 MHz)

Bandwidth (MHz)	Modulation	RB Allocation	RB Offset	Power		
				Conducted Average (dBm)		
				133222	133322	133372
				673.0 MHz	683.0 MHz	688.0 MHz
20.0	QPSK	1	0	23.4	24.5	24.4
		1	49	24.5	24.5	24.3
		1	99	24.4	24.4	24.2
		50	0	23.5	23.4	23.4
		50	24	23.4	23.4	23.3
		50	49	23.4	23.3	23.3
		100	0	23.4	23.3	23.3
	16QAM	1	0	23.3	23.5	23.4
		1	49	23.2	23.4	23.3
		1	99	23.1	23.3	23.2
		50	0	22.4	22.4	22.3
		50	24	22.4	22.4	22.3
		50	49	22.4	22.3	22.2
		100	0	22.5	22.3	22.3
	64QAM	1	0	22.4	22.1	22.2
		1	49	22.1	22.1	22.1
		1	99	22.1	22.0	22.0
		50	0	21.5	21.5	23.4
		50	24	21.4	21.4	21.4
		50	49	21.4	21.4	21.4
		100	0	21.4	21.4	21.4

8. CONDUCTED TEST RESULTS

8.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049
ISED: RSS130, RSS132; RSS133 §2.3, RSS139, RSS 140, RSS199§4.2

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. Worst-case plots (QPSK/16QAM modes and highest bandwidth) are reported only.

GSM

Band	Modulation	Channel	f(MHz)	99% BW (KHz)	-26dB BW (KHz)
850	GPRS	190	836.6	244.8	306
	EGPRS			240.1	300.3
1900	GPRS	661	1880.0	242.9	318
	EGPRS			239.5	307.9

CDMA

Band	Modulation	Channel	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
BC10	1xRTT	560	820.0	1.44	2.85
	1xEV-DO Rev A			1.35	2.82
BC0	1xRTT	384	836.5	1.29	1.47
	1xEV-DO Rev A			1.28	1.44
BC1	1xRTT	600	1880.0	1.29	1.45
	1xEV-DO Rev A			1.28	1.45

WCDMA

Band	Modulation	Channel	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
BAND 5	REL 99	4408	836.6	4.13	4.72
	HSDPA			4.14	4.71
BAND 2	REL 99	9800	1880.0	4.12	4.71
	HSDPA			4.14	4.71
BAND 4	REL 99	1638	1732.6	4.13	4.71
	HSDPA			4.13	4.72

LTE BAND 5

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 5	1.4MHz, QPSK	6/0	836.5	1.09	1.31
	1.4MHz, 16QAM			1.09	1.31
	3MHz, QPSK	15/0		2.71	3.1
	3MHz, 16QAM			2.71	3.08
	5MHz, QPSK	25/0		4.51	5.31
	5MHz, 16QAM			4.51	5.2
	10MHz, QPSK	50/0		8.98	10.24
	10MHz, 16QAM			8.95	10.28

LTE BAND 7

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 7	5MHz, QPSK	25/0	2535.0	4.51	5.26
	5MHz, 16QAM			4.5	5.13
	10MHz, QPSK	50/0		8.96	10.27
	10MHz, 16QAM			8.97	10.14
	15MHz, QPSK	75/0		13.43	15.19
	15MHz, 16QAM			13.37	15.05
	20MHz, QPSK	100/0		17.79	19.59
	20MHz, 16QAM			17.87	19.44

LTE BAND 12

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 12	1.4 MHz, QPSK	6/0	707.5	1.09	1.31
	1.4 MHz, 16QAM			1.09	1.3
	3 MHz, QPSK	15/0		2.71	3.08
	3 MHz, 16QAM			2.7	3.1
	5 MHz, QPSK	25/0		4.5	5.29
	5 MHz, 16QAM			4.5	5.2
	10 MHz, QPSK	50/0		8.97	10.21
	10 MHz, 16QAM			9.01	10.43

LTE BAND 13

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 13	5 MHz, QPSK	25/0	782.0	4.5	5.26
	5 MHz, 16QAM			4.51	5.2
	10 MHz, QPSK	50/0		8.97	10.16
	10 MHz, 16QAM			8.97	10.11

LTE BAND 14

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 14	5 MHz, QPSK	25/0	793.0	4.50	5.16
	5 MHz, 16QAM			4.50	5.25
	10 MHz, QPSK	50/0		8.95	9.90
	10 MHz, 16QAM			8.95	10.11

LTE BAND 25

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 25	1.4MHz, QPSK	6/0	1882.5	1.08	1.29
	1.4MHz, 16QAM			1.09	1.3
	3MHz, QPSK	15/0		2.71	3.12
	3MHz, 16QAM			2.7	3.08
	5MHz, QPSK	25/0		4.51	5.27
	5MHz, 16QAM			4.5	5.22
	10MHz, QPSK	50/0		9	10.31
	10MHz, 16QAM			8.99	10.24
	15MHz, QPSK	75/0		13.42	15.11
	15MHz, 16QAM			13.4	15.04
	20MHz, QPSK	100/0		17.89	19.62
	20MHz, 16QAM			17.85	19.64

LTE BAND 26(FCC PART 90S)

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 26	1.4 MHz, QPSK	6/0	819.0	1.09	1.33
	1.4 MHz, 16QAM			1.09	1.34
	3 MHz, QPSK	15/0		2.70	3.10
	3 MHz, 16QAM			2.71	3.09
	5 MHz, QPSK	25/0		4.50	5.24
	5 MHz, 16QAM			4.51	5.35
	10 MHz, QPSK	50/0		8.98	10.27
	10 MHz, 16QAM			8.99	10.25
	15 MHz, QPSK	75/0		13.40	15.08
	15 MHz, 16QAM			13.42	14.94

LTE BAND 26 (FCC PART 22)

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 26	1.4 MHz, QPSK	6/0	836.5	1.09	1.29
	1.4 MHz, 16QAM			1.09	1.32
	3 MHz, QPSK	15/0		2.69	3.09
	3 MHz, 16QAM			2.70	3.04
	5 MHz, QPSK	25/0		4.49	5.28
	5 MHz, 16QAM			4.52	5.27
	10 MHz, QPSK	50/0		8.95	10.14
	10 MHz, 16QAM			8.95	10.15
	15 MHz, QPSK	75/0		13.40	14.92
	15 MHz, 16QAM			13.41	15.04

LTE BAND 30

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 30	5MHz, QPSK	25/0	2310.0	4.51	5.26
	5MHz, 16QAM			4.5	5.23
	10MHz, QPSK	50/0		8.95	9.82
	10MHz, 16QAM			8.95	10.26

LTE BAND 38 (IC)

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 38	5MHz, QPSK	25/0	2595.0	4.51	5.19
	5MHz, 16QAM			4.5	5.02
	10MHz, QPSK	50/0		8.96	10.13
	10MHz, 16QAM			8.98	10.26
	15MHz, QPSK	75/0		13.4	14.65
	15MHz, 16QAM			13.39	14.93
	20MHz, QPSK	100/0		17.76	19.35
	20MHz, 16QAM			17.82	19.28

LTE BAND 41 (FCC) HPUE

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 41	5MHz, QPSK	25/0	2593.0	4.51	5.22
	5MHz, 16QAM			4.51	5.33
	10MHz, QPSK	50/0		8.98	10.26
	10MHz, 16QAM			8.99	10.65
	15MHz, QPSK	75/0		13.44	15.26
	15MHz, 16QAM			13.45	14.95
	20MHz, QPSK	100/0		17.89	19.97
	20MHz, 16QAM			17.86	19.78

LTE BAND 41 (IC)

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 41	5MHz, QPSK	25/0	2595.0	4.51	5.33
	5MHz, 16QAM			4.51	5.35
	10MHz, QPSK	50/0		8.97	10.24
	10MHz, 16QAM			8.97	10.84
	15MHz, QPSK	75/0		13.42	15.17
	15MHz, 16QAM			13.42	15.03
	20MHz, QPSK	100/0		17.87	19.91
	20MHz, 16QAM			17.86	19.61

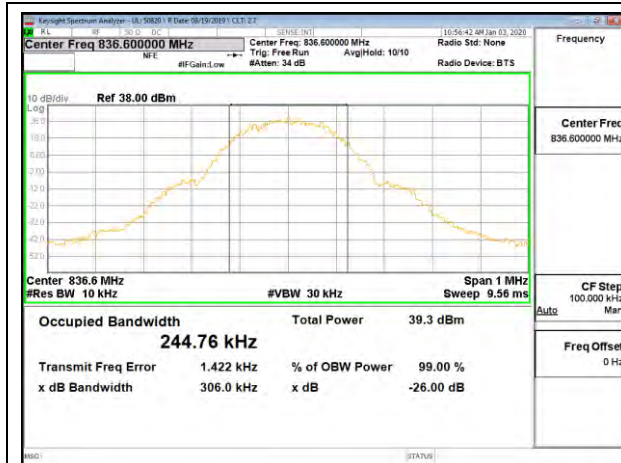
LTE BAND 66

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
LTE BAND 66	1.4MHz, QPSK	6/0	1745.0	1.09	1.28
	1.4MHz, 16QAM			1.09	1.32
	3MHz, QPSK	15/0		2.71	3.12
	3MHz, 16QAM			2.70	3.04
	5MHz, QPSK	25/0		4.51	5.23
	5MHz, 16QAM			4.51	5.20
	10MHz, QPSK	50/0		8.98	10.31
	10MHz, 16QAM			8.99	10.29
	15MHz, QPSK	75/0		13.46	15.11
	15MHz, 16QAM			13.45	15.14
	20MHz, QPSK	100/0		17.86	19.58
	20MHz, 16QAM			17.87	19.74

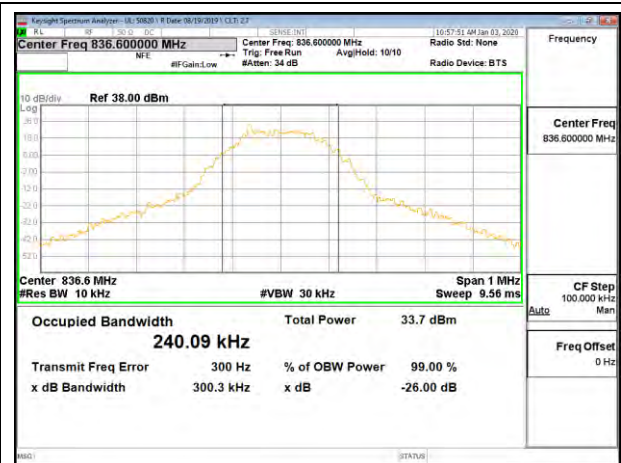
LTE BAND 71

Band	Mode	RB Allocation/RB Offset	f(MHz)	99% BW (MHz)	-26dB BW (MHz)
	5MHz, QPSK	25/0	680.5	4.51	5.26
	5MHz, 16QAM			4.50	5.27
	10MHz, QPSK	50/0		8.96	10.24
	10MHz, 16QAM			8.98	10.39
	15MHz, QPSK	75/0		13.41	15.04
	15MHz, 16QAM			13.42	15.06
	20MHz, QPSK	100/0		17.80	19.47
	20MHz, 16QAM			17.83	19.68

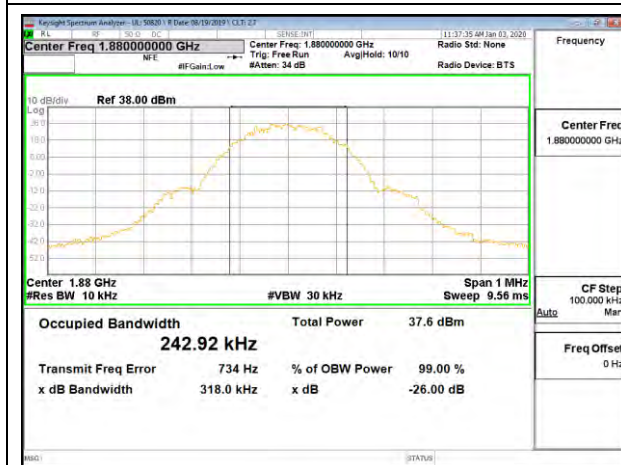
8.1.1. GSM



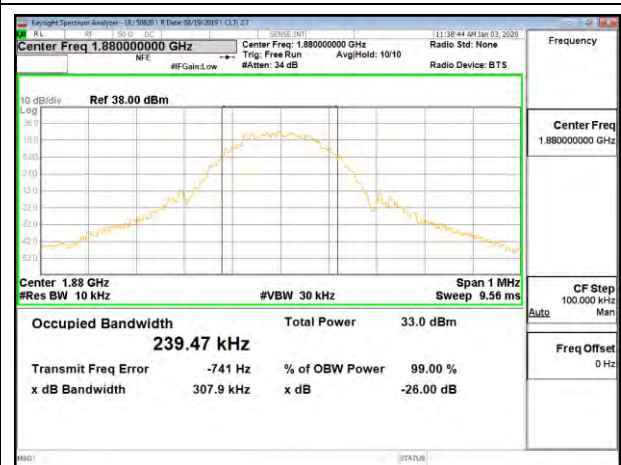
GSM 850 GPRS Middle Channel



GSM 850 EGPRS Middle Channel

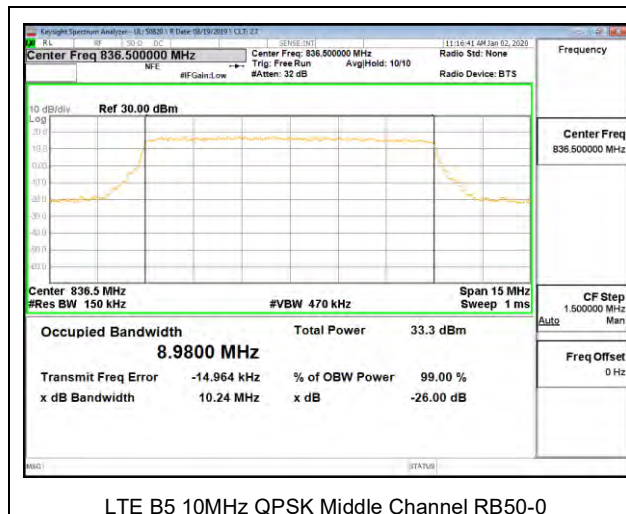


GSM 1900 GPRS Middle Channel

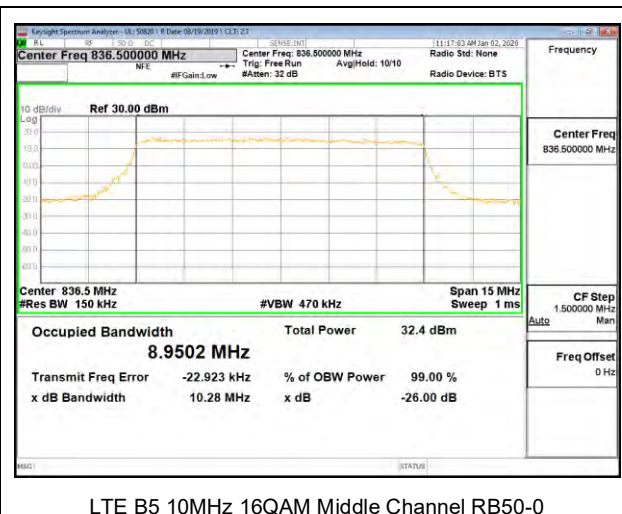


GSM 1900 EGPRS Middle Channel

8.1.4. LTE BAND 5

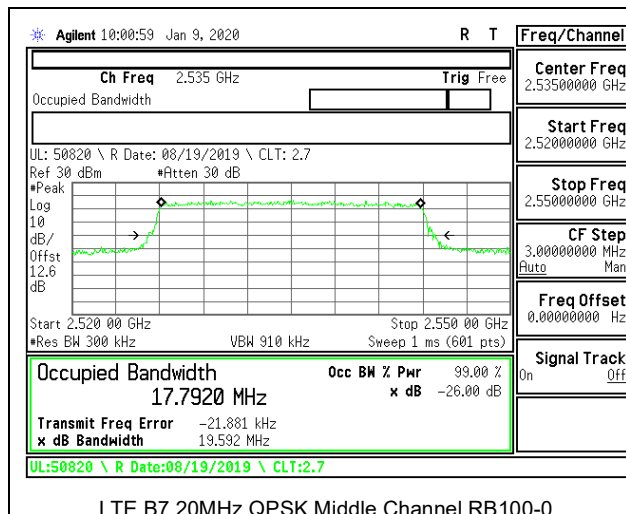


LTE B5 10MHz QPSK Middle Channel RB50-0

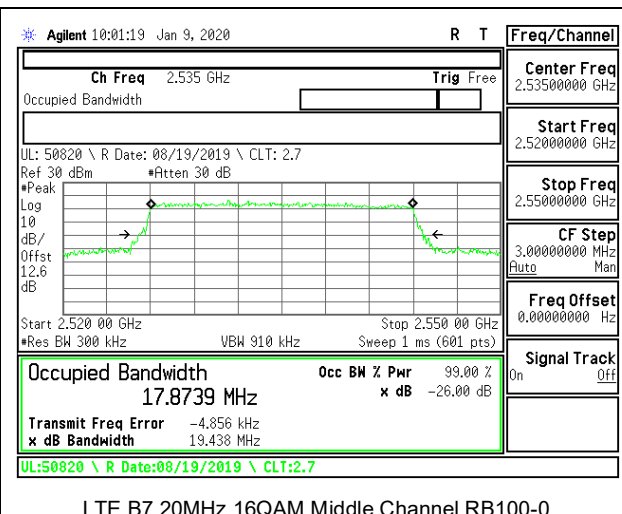


LTE B5 10MHz 16QAM Middle Channel RB50-0

8.1.5. LTE BAND 7

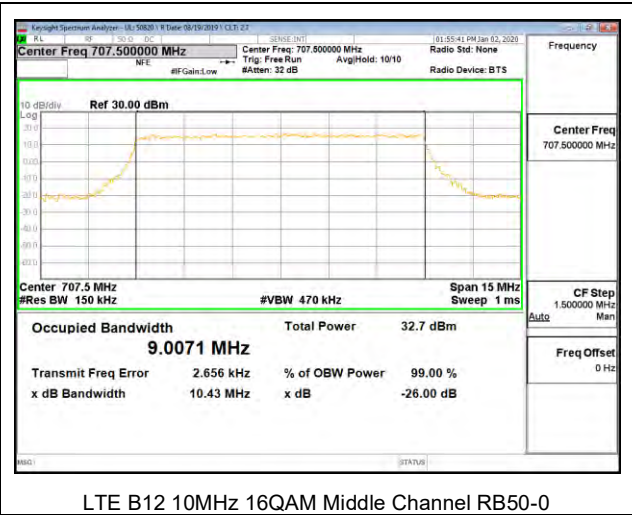
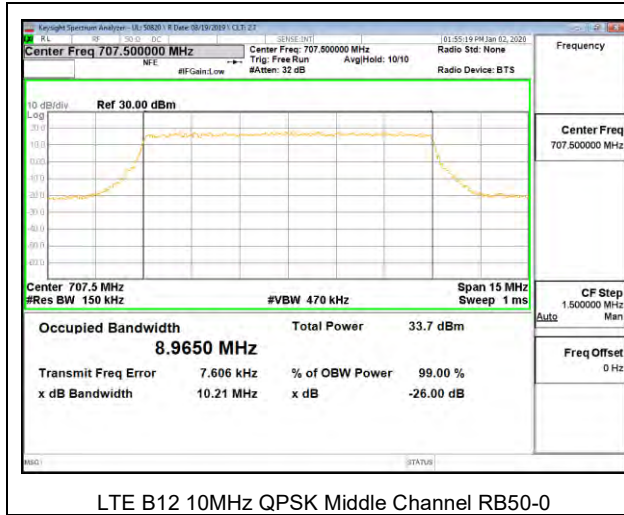


LTE B7 20MHz QPSK Middle Channel RB100-0

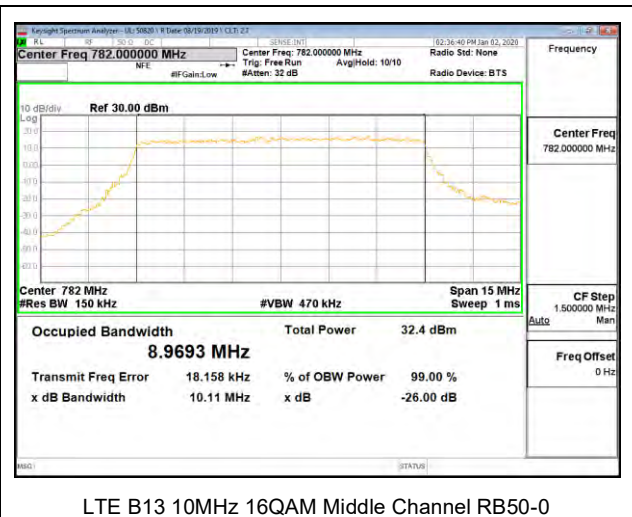
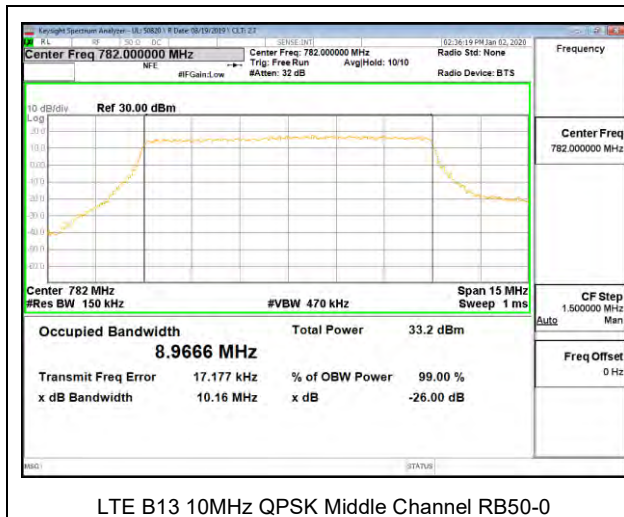


LTE B7 20MHz 16QAM Middle Channel RB100-0

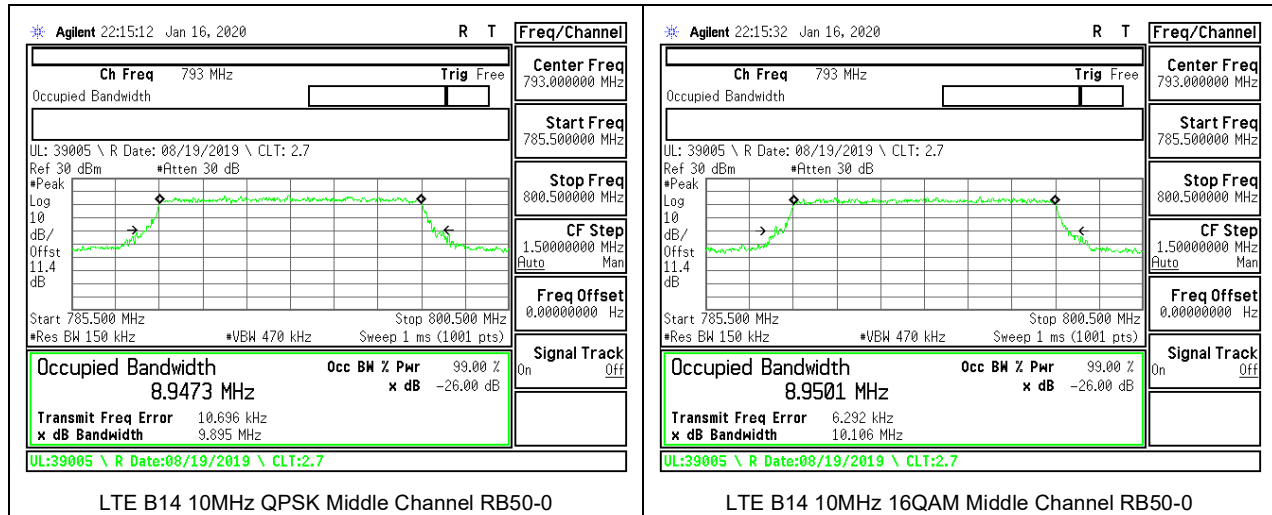
8.1.6. LTE BAND 12



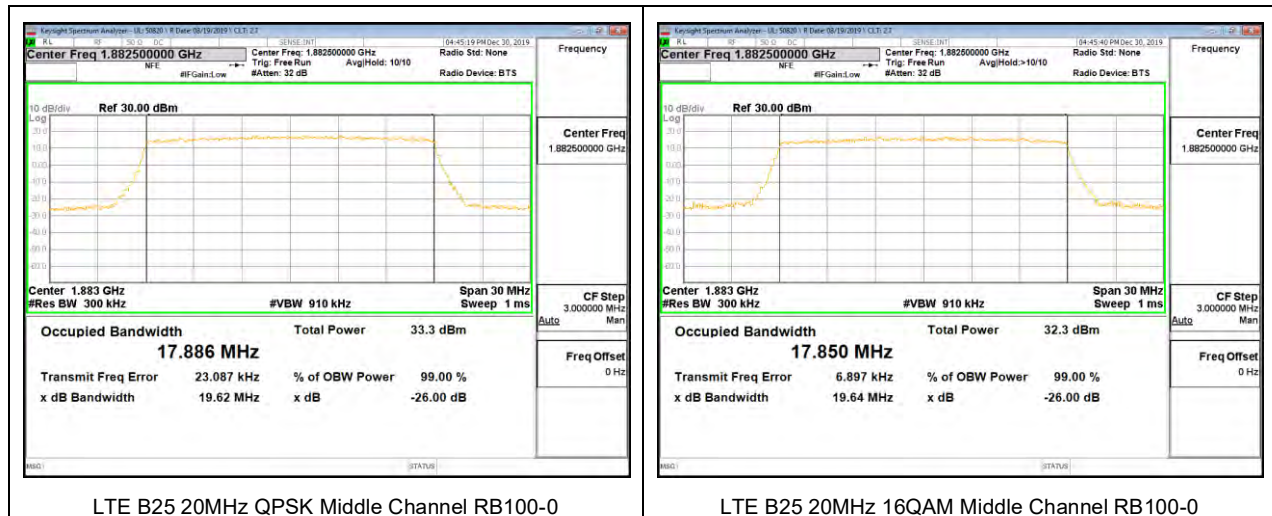
8.1.7. LTE BAND 13



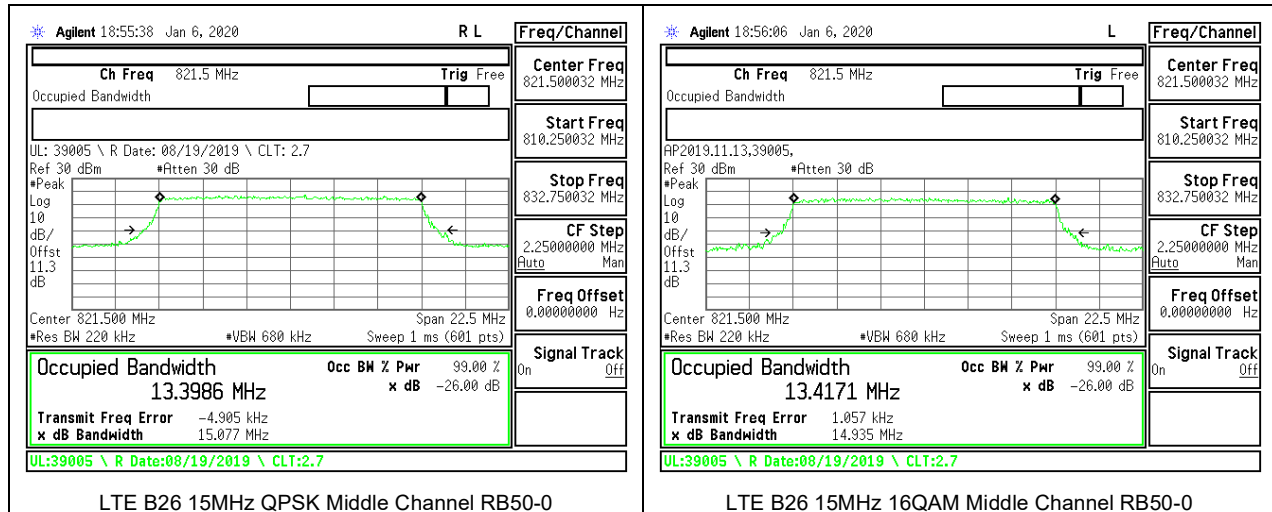
8.1.8. LTE BAND 14



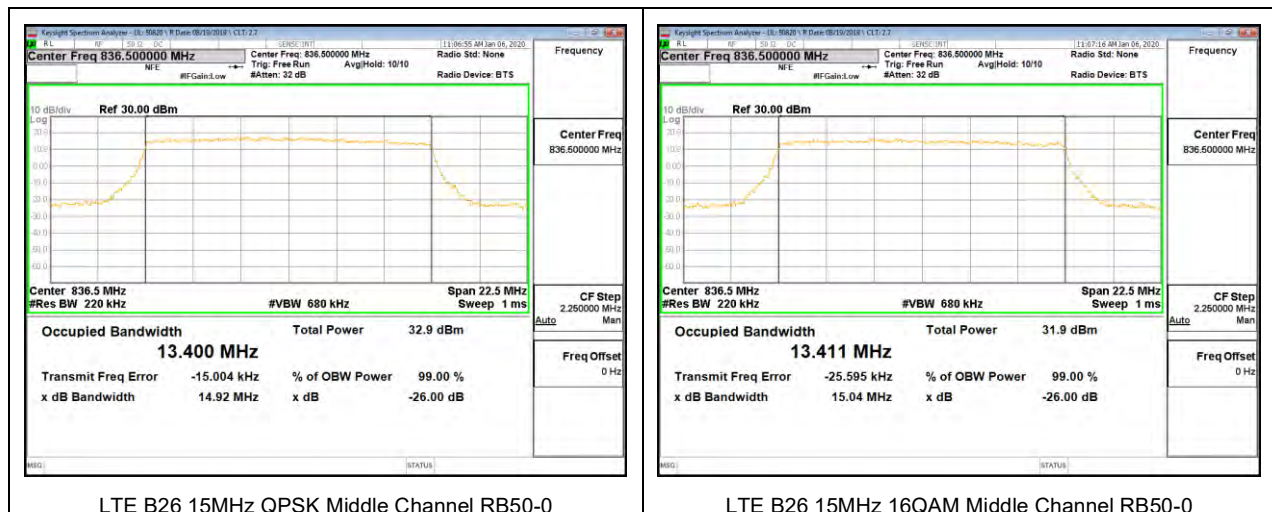
8.1.9. LTE BAND 25



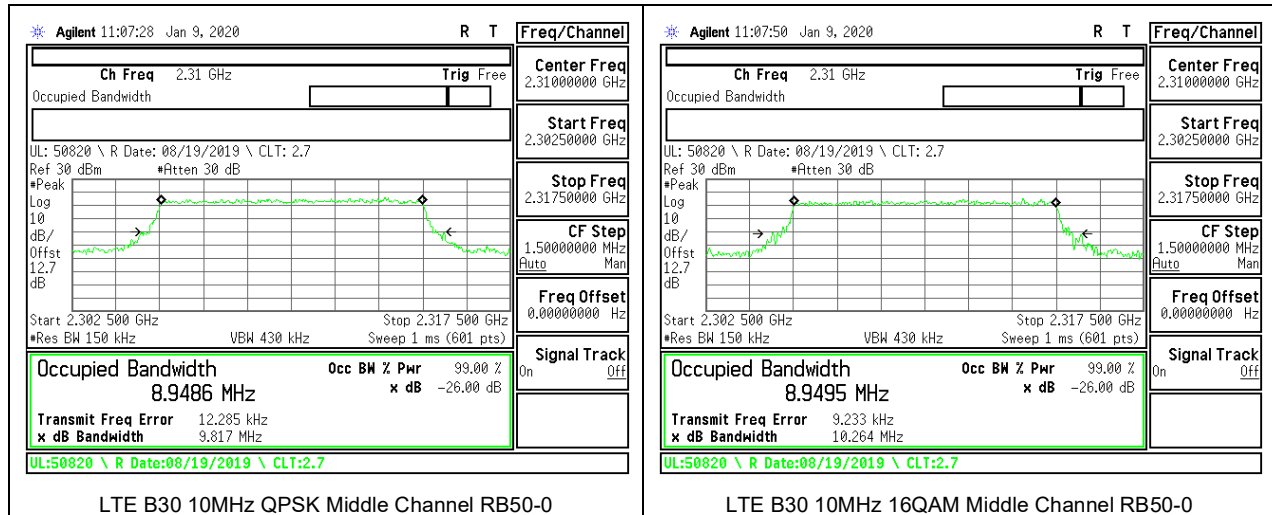
8.1.10. LTE BAND 26 (FCC PART 90S)



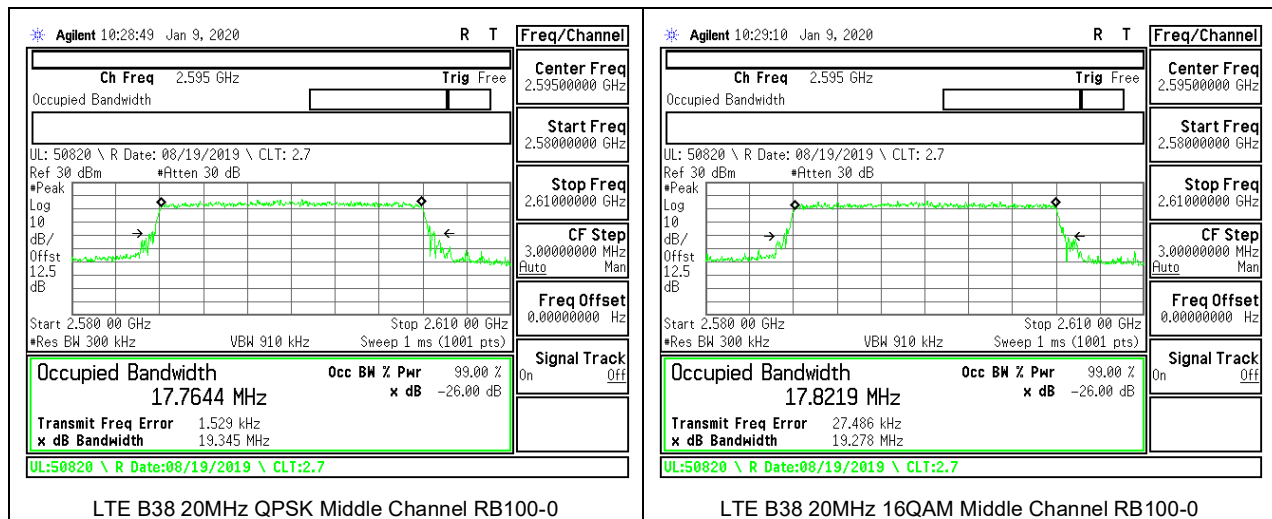
8.1.11. LTE BAND 26 (FCC PART 22)



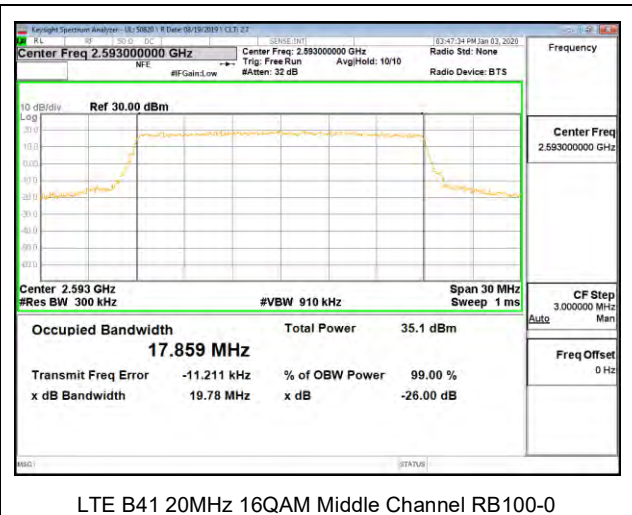
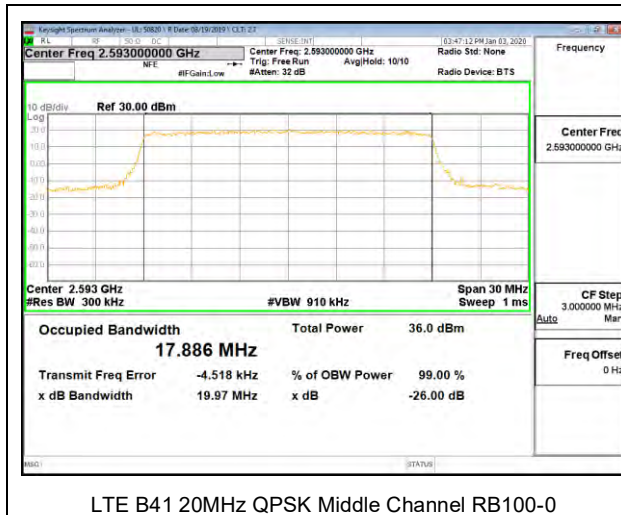
8.1.12. LTE BAND 30



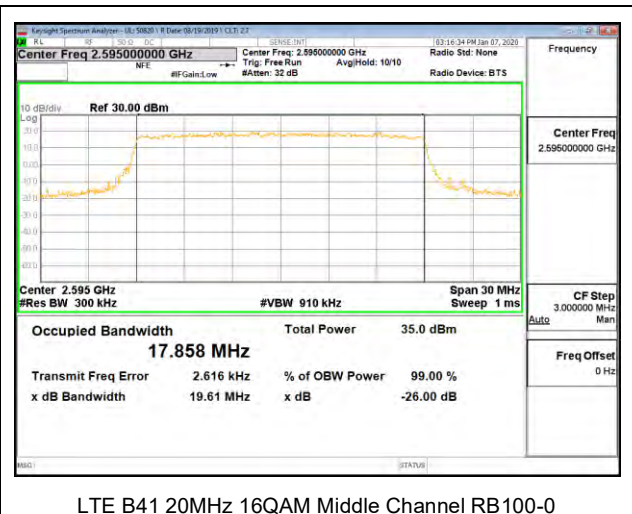
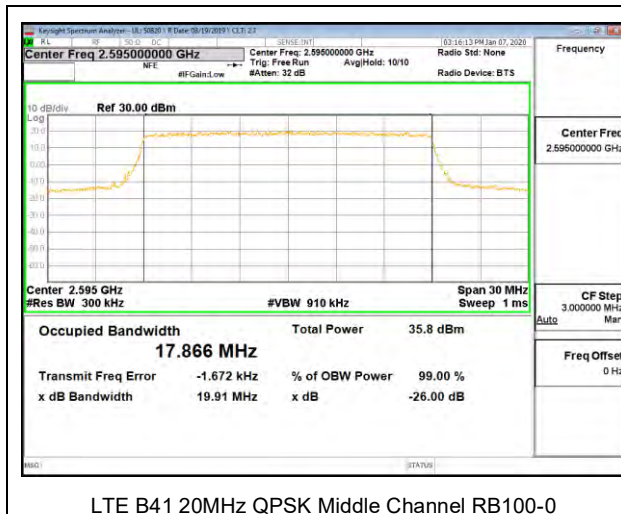
8.1.13. LTE BAND 38 (IC)



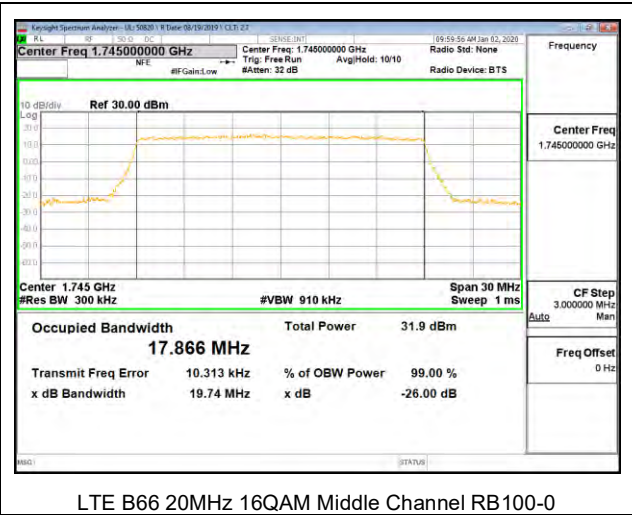
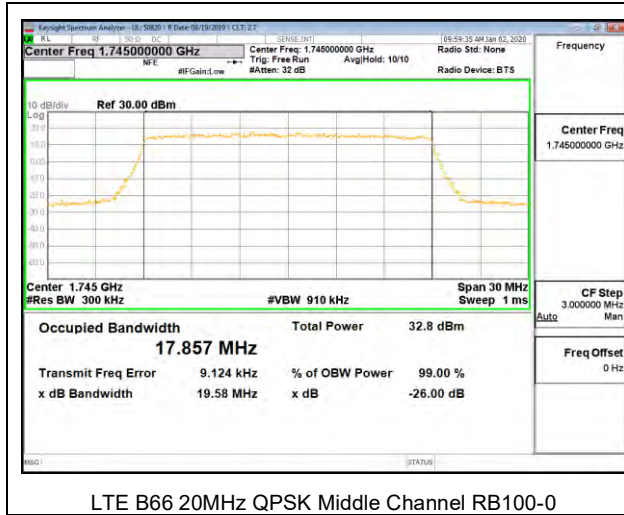
8.1.14. LTE BAND 41 (FCC) HPUE



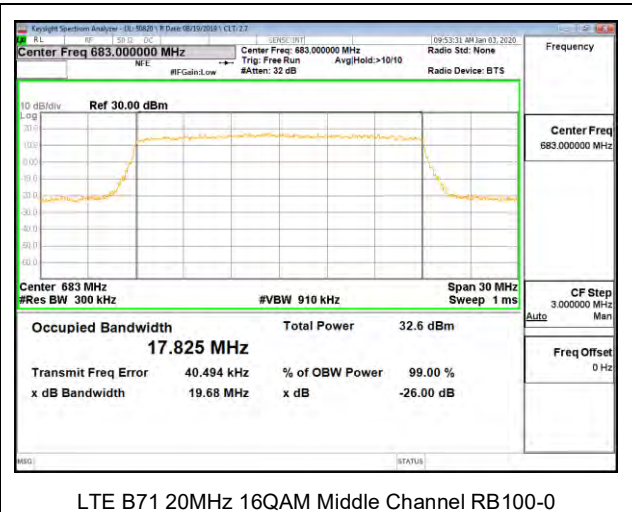
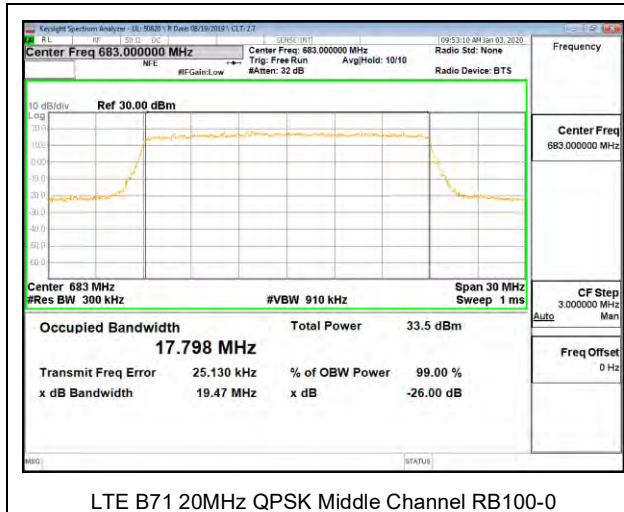
8.1.15. LTE BAND 41 (IC)



8.1.16. LTE BAND 66



8.1.17. LTE BAND 71



8.2. BAND EDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.917, §24.238, §27.53, §90.691 §90.543

ISED: RSS130§4.7, RSS132§5.5; RSS133§6.5, RSS139§6.6, RSS140§4.4 , RSS199§4.5.

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.

FCC: §90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the "outer" channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $116 \text{ Log}_{10}(f/6.1)$ decibels or $50 + 10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least $43 + 10 \text{ Log}_{10}(P)$ decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

FCC: §90.543 Emission Limitations. (Band 14)

(e) For operations in the 758-768 MHz and the 788-798 MHz bands, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(2) On all frequencies between 769-775 MHz and 799-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations.

(3) On any frequency between 775-788 MHz, above 805 MHz, and below 758 MHz, by at least $43 + 10 \log (P)$ dB.

(4) Compliance with the provisions of paragraphs (e)(1) and (2) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(5) Compliance with the provisions of paragraph (e)(3) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of 30 kHz may be employed.

(f) For operations in the 758-775 MHz and 788-805 MHz bands, all emissions including harmonics in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals, and -80 dBW EIRP for discrete emissions of less than 700 Hz bandwidth. For the purpose of equipment authorization, a transmitter shall be tested with an antenna that is representative of the type that will be used with the equipment in normal operation.

FCC: §27.53 (Band 30)

(a) For operations in the 2305-2320 MHz band and the 2345-2360 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power P (with averaging performed only during periods of transmission) within the licensed band(s) of operation, in watts, by the following amounts:

(4) For mobile and portable stations operating in the 2305-2315 MHz and 2350-2360 MHz bands:

(i) By a factor of not less than: $43 + 10 \log (P)$ dB on all frequencies between 2305 and 2320 MHz and on all frequencies between 2345 and 2360 MHz that are outside the licensed band(s) of operation, not less than $55 + 10 \log (P)$ dB on all frequencies between 2320 and 2324 MHz and on all frequencies between 2341 and 2345 MHz, not less than $61 + 10 \log (P)$ dB on all frequencies between 2324 and 2328 MHz and on all frequencies between 2337 and 2341 MHz, and not less than $67 + 10 \log (P)$ dB on all frequencies between 2328 and 2337 MHz;

(ii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2300 and 2305 MHz, $55 + 10 \log (P)$ dB on all frequencies between 2296 and 2300 MHz, $61 + 10 \log (P)$ dB on all frequencies between 2292 and 2296 MHz, $67 + 10 \log (P)$ dB on all frequencies between 2288 and 2292 MHz, and $70 + 10 \log (P)$ dB below 2288 MHz;

(iii) By a factor of not less than $43 + 10 \log (P)$ dB on all frequencies between 2360 and 2365 MHz, and not less than $70 + 10 \log (P)$ dB above 2365 MHz.

FCC: §27.53 (Band 13)

(c) For operations in the 746-758 MHz band and the 776-788 MHz band, the power of any emission outside the licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, in accordance with the following:

(2) On any frequency outside the 776-788 MHz band, the power of any emission shall be attenuated outside the band below the transmitter power (P) by at least $43 + 10 \log (P)$ dB;

(4) On all frequencies between 763-775 MHz and 793-805 MHz, by a factor not less than $65 + 10 \log (P)$ dB in a 6.25 kHz band segment, for mobile and portable stations;

(5) Compliance with the provisions of paragraphs (c)(2) of this section is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 30 kHz may be employed;

(6) Compliance with the provisions of paragraphs (c)(4) of this section is based on the use of measurement instrumentation such that the reading taken with any resolution bandwidth setting should be adjusted to indicate spectral energy in a 6.25 kHz segment.

(f) Emissions in the band 1559-1610 MHz shall be limited to -70 dBW/MHz equivalent isotropically radiated power (EIRP) for wideband signals. (-70 dBW/MHz = -40 dBm/MHz).

FCC: §27.53 (Band 12, 71)

(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log (P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.

FCC: §27.53 (Band 7, 41)

(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 than $43 + 10 \log (P)$ 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.
RSS130§4.7

4.7.1 General unwanted emissions limits

The unwanted emissions in any 100 kHz bandwidth on any frequency outside the low frequency edge and the high frequency edge of each frequency block range(s), shall be attenuated below the transmitter power, P (dBW), by at

least $43 + 10 \log_{10} p$ (watts), dB. However, in the 100 kHz band immediately outside of the equipment's frequency block range, a resolution bandwidth of 30 kHz may be employed.

4.7.2 Additional unwanted emissions limits

In addition to the limit outlined in section 4.7.1 above, equipment operating in the frequency bands 746-756 MHz and 777-787 MHz shall also comply with the following restrictions:

- (a) the power of any unwanted emissions in any 6.25 kHz bandwidth for all frequencies between 763-775 MHz and 793-806 MHz shall be attenuated below the transmitter power, P (dBW), by at least:
 - i. $76 + 10 \log_{10} p$ (watts), dB, for base and fixed equipment and
 - ii. $65 + 10 \log_{10} p$ (watts), dB, for mobile and portable equipment
- (b) the e.i.r.p. in the band 1559-1610 MHz shall not exceed -70 dBW/MHz for wideband signal and -80 dBW for discrete emission with bandwidth less than 700 Hz.

RSS132§5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

- (i) In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).
- (ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS133§6.5

Equipment shall comply with the limits in (i) and (ii) below.

- (i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).
- (ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS139§6.6

- (i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, Footnote 2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.
- (ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.

RSS140§4.4 (Band 14)

The power of any unwanted emission outside the bands 758-768 MHz and 788-798 MHz shall be attenuated below the transmitter output power P in dBW as follows, where p is the transmitter output power in watts:

- a. For any frequency between 769-775 MHz and 799-806 MHz:
 - i. $76 + 10 \log(p)$, dB in a 6.25 kHz band for fixed and base station equipment
 - ii. $65 + 10 \log(p)$, dB in a 6.25 kHz band for mobile and portable/hand-held equipment

- b. For any frequency between 775-788 MHz, above 806 MHz, and below 758 MHz: $43 + 10 \log(p)$, dB in a bandwidth of 100 kHz or greater. However, in the 100 kHz bands immediately outside and adjacent to the frequency bands 758-768 MHz and 788-798 MHz, a resolution bandwidth of 30 kHz may be employed.

In addition, the equivalent isotropically radiated power (e.i.r.p.) of all emissions, including harmonics in the band 1559-1610 MHz, shall not exceed -70 dBW/MHz for wideband emissions, and -80 dBW/kHz for discrete emissions of less than 700 Hz bandwidth.

RSS199§4.5

Equipment shall comply with the following unwanted emission limits:

- a. for base station and fixed subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least $43 + 10 \log_{10} p$
- b. for mobile subscriber equipment, the power of any unwanted emissions measured as above shall be attenuated (in dB) below the transmitter power, P (dBW), by at least:
 - i. $40 + 10 \log_{10} p$ from the channel edges to 5 MHz away
 - ii. $43 + 10 \log_{10} p$ between 5 MHz and X MHz from the channel edges, and
 - iii. $55 + 10 \log_{10} p$ at X MHz and beyond from the channel edges

In addition, the attenuation shall not be less than $43 + 10 \log_{10} p$ on all frequencies between 2490.5 MHz and 2496 MHz, and $55 + 10 \log_{10} p$ at or below 2490.5 MHz.

In (a) and (b), **p** is the transmitter power measured in watts and **X** is 6 MHz or the equipment occupied bandwidth, whichever is greater.

TEST PROCEDURE

The transmitter output was connected to a 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:

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

TEST PROCEDURE (FCC LTE BAND 14)

(b) ACP measurement procedure. The following are the procedures for making the transmitter ACP measurements. For all measurements modulate the transmitter as it would be modulated in normal operating conditions. For time division multiple access (TDMA) systems, the measurements are to be made under TDMA operation only during time slots when the transmitter is active. All measurements are made at the transmitter's output port. If a transmitter has an integral antenna, a suitable power coupling device shall be used to couple the RF signal to the measurement instrument. The coupling device shall substantially maintain the proper transmitter load impedance. The ACP measurements may be made with a spectrum analyzer capable of making direct ACP measurements. "Measurement bandwidth", as used for non-swept measurements, implies an instrument that measures the power in many narrow bandwidths equal to the nominal resolution bandwidth and integrates these powers to determine the total power in the specified measurement bandwidth.

(1) Setting reference level. Set transmitter to maximum output power. Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth to the channel size. For example, for a 6.25 kHz transmitter set the measurement bandwidth to 6.25 kHz. Set the frequency offset of the measurement bandwidth to zero and adjust the center frequency of the instrument to the assigned center frequency to measure the average power level of the transmitter. Record this power level in dBm as the "reference power level."

(2)Non-swept power measurement. Using a spectrum analyzer capable of ACP measurements, set the measurement bandwidth and frequency offset from the assigned center frequency as shown in the tables in §90.543 (a) above. Any value of resolution bandwidth may be used as long as it does not exceed 2 percent of the specified measurement bandwidth. Measure the power level in dBm. These measurements should be made at maximum power. Calculate ACP by subtracting the reference power level measured in (b)(1) from the measurements made in this step. The absolute value of the calculated ACP must be greater than or equal to the absolute value of the ACP given in the table for each condition above.

(3)Swept power measurement. Set a spectrum analyzer to 30 kHz resolution bandwidth, 1 MHz video bandwidth and average, sample, or RMS detection. Set the reference level of the spectrum analyzer to the RMS value of the transmitter power. Sweep above and below the carrier frequency to the limits defined in the tables. Calculate ACP by subtracting the reference power level measured in (b)(1) from the measurements made in this step. The absolute value of the calculated ACP must be greater than or equal to the absolute value of the ACP given in the table for each condition above.

TEST PROCEDURE (FCC LTE BAND 7, 41)

(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 (FCC LTE BAND 30)

(5) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the channel blocks at 2305, 2310, 2315, 2320, 2345, 2350, 2355, and 2360 MHz, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter 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 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.

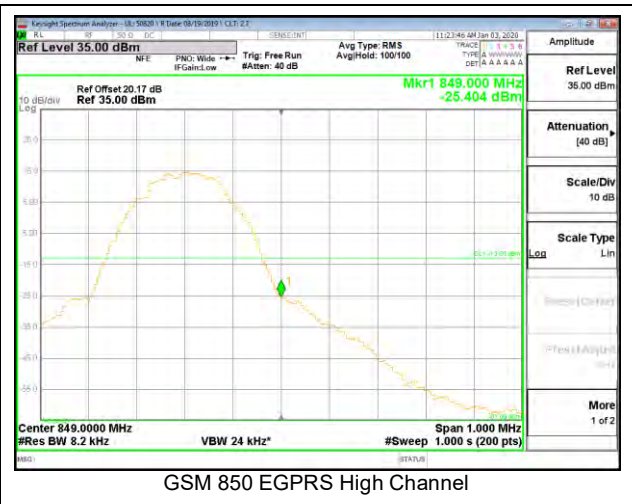
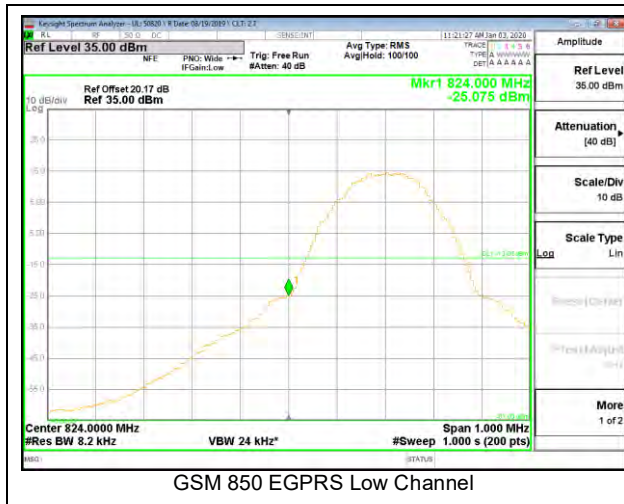
TEST PROCEDURE FOR RSS 199

In the 1 MHz band immediately outside and adjacent to the channel edge, the unwanted emission power shall be measured with a resolution bandwidth of at least 1% of the occupied bandwidth for base station and fixed subscriber equipment and 2% for mobile subscriber equipment. Beyond the 1 MHz band, a resolution bandwidth of 1 MHz shall be used. A narrower resolution bandwidth is allowed to be used, provided that the measured power is integrated over the full required measurement bandwidth of 1 MHz or 1%/2% of the occupied bandwidth, as applicable.

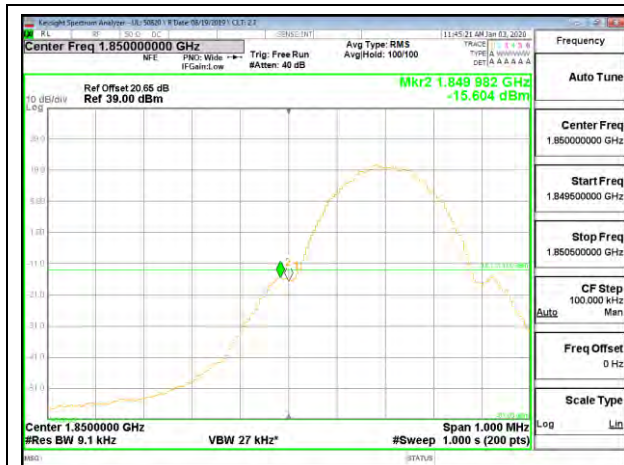
RESULTS

8.2.1. GSM 850

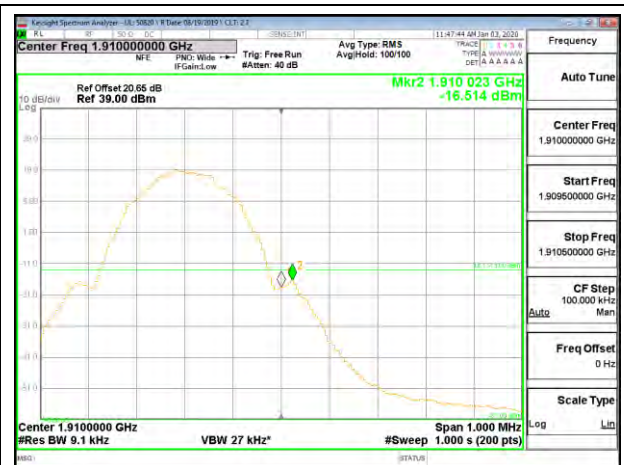




8.2.2. GSM 1900



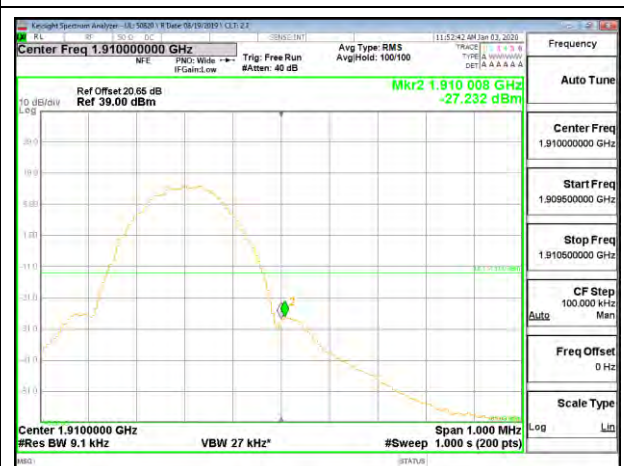
GSM 1900 GPRS Low Channel



GSM 1900 GPRS High Channel



GSM 1900 EGPRS Low Channel



GSM 1900 EGPRS High Channel

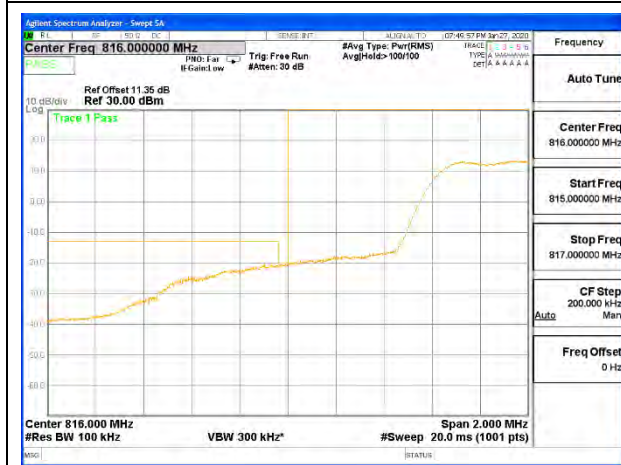
8.2.3. CDMA BC10



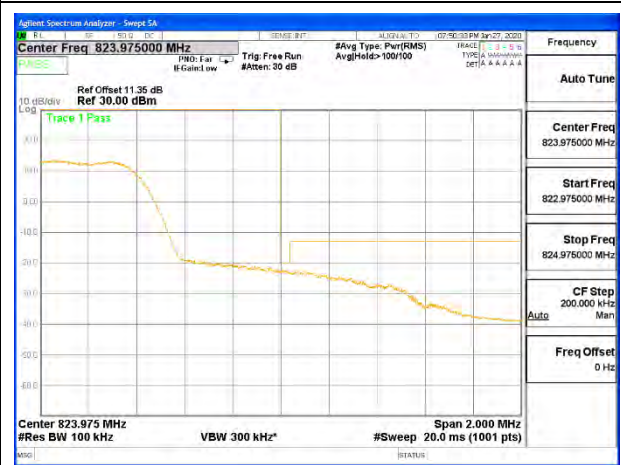
CDMA BC10 1xRTT Low Channel



CDMA BC10 1xRTT High Channel



CDMA BC10 1xEV-DO Rev A Low Channel

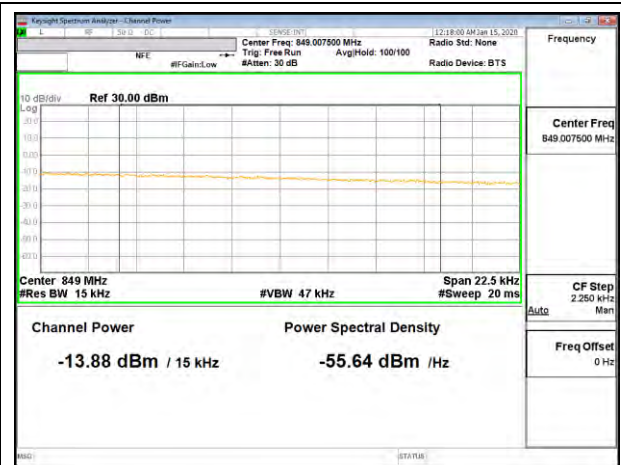


CDMA BC10 1xEV-DO Rev A High Channel

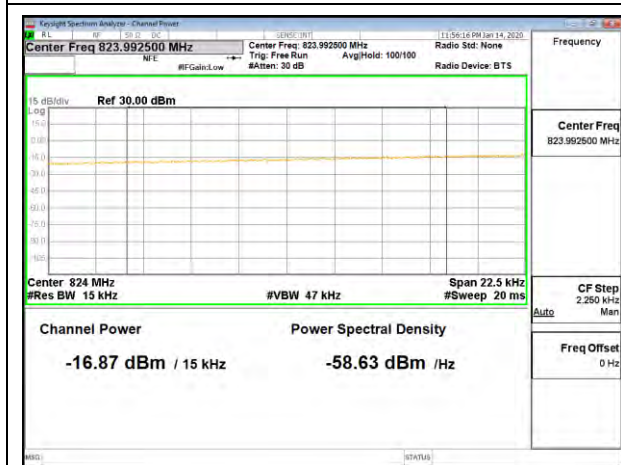
8.2.4. CDMA BC0



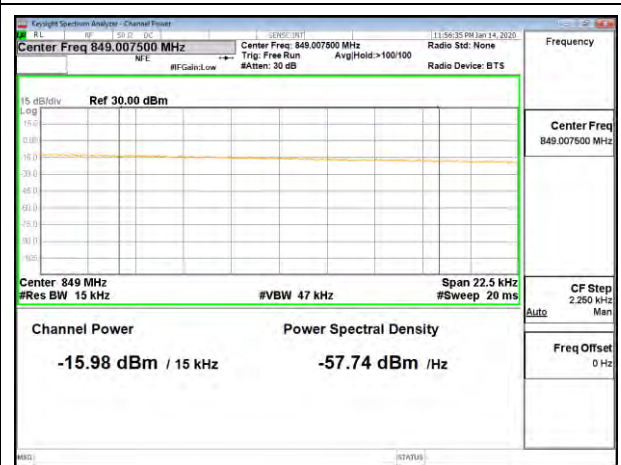
CDMA BC0 1xRTT Low Channel



CDMA BC0 1xRTT High Channel



CDMA BC0 1xEV-DO Rev A Low Channel



CDMA BC0 1xEV-DO Rev A High Channel

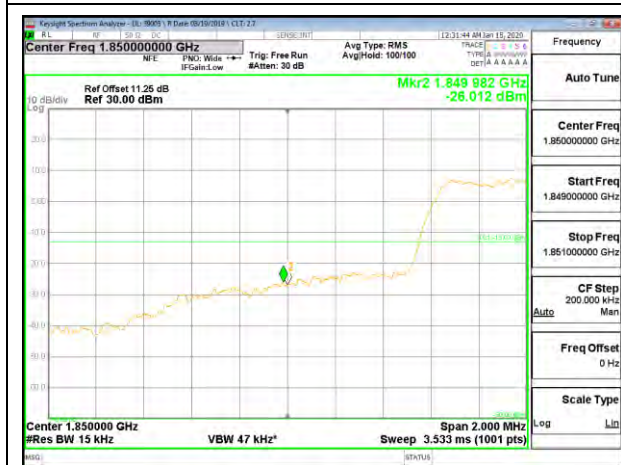
8.2.5. CDMA BC1



CDMA BC1 1xRTT Low Channel



CDMA BC1 1xRTT High Channel

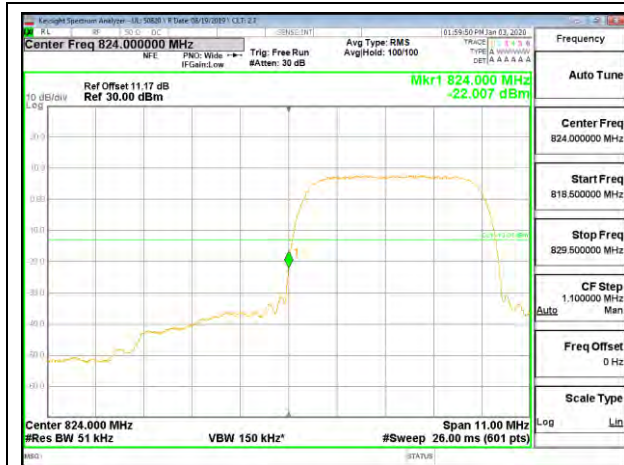


CDMA BC1 1xEV-DO Rev A Low Channel

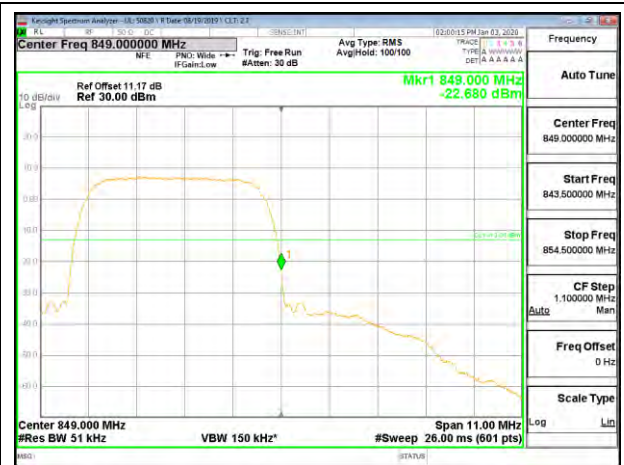


CDMA BC1 1xEV-DO Rev A High Channel

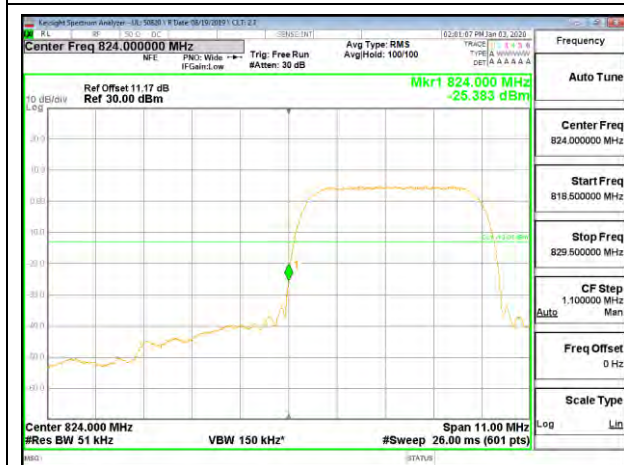
8.2.6. WCDMA BAND 5



WCDMA Band 5 Rel 99 Low Channel



WCDMA Band 5 Rel 99 High Channel



WCDMA Band 5 HSDPA Low Channel



WCDMA Band 5 HSDPA High Channel

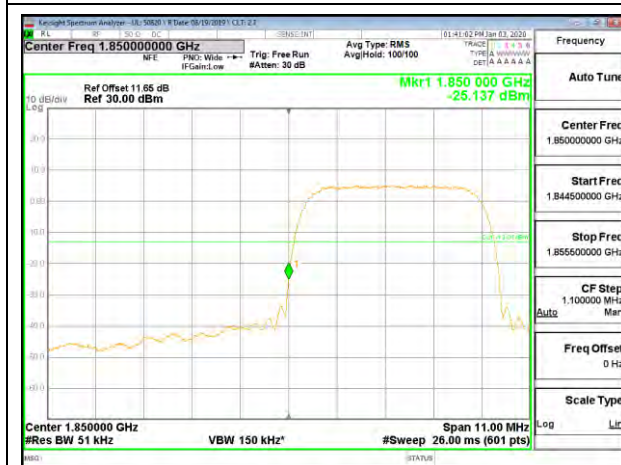
8.2.7. WCDMA BAND 2



WCDMA Band 2 Rel 99 Low Channel



WCDMA Band 2 Rel 99 High Channel



WCDMA Band 2 HSDPA Low Channel

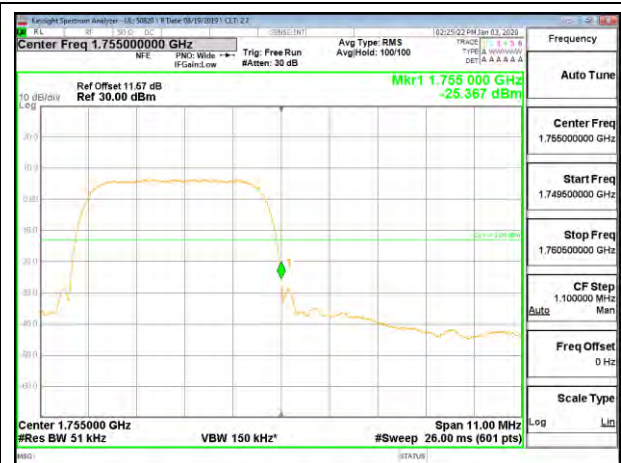


WCDMA Band 2 HSDPA High Channel

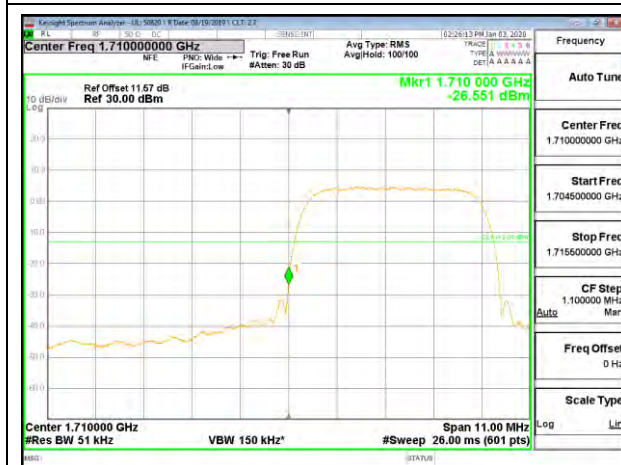
8.2.8. WCDMA BAND 4



WCDMA Band 4 Rel 99 Low Channel



WCDMA Band 4 Rel 99 High Channel



WCDMA Band 4 HSDPA Low Channel



WCDMA Band 4 HSDPA High Channel

8.2.9. LTE BAND 5 BANDEDGE

LIMITS

FCC: §22.917

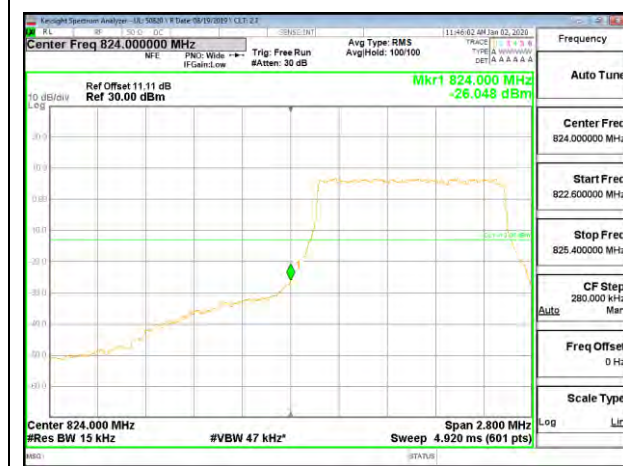
The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.



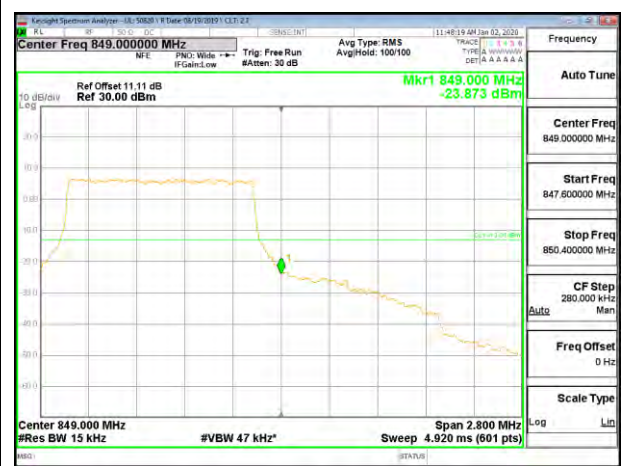
LTE B5 1.4MHz QPSK Low Channel RB1-0



LTE B5 1.4MHz QPSK High Channel RB1-5



LTE B5 1.4MHz QPSK Low Channel RB6-0



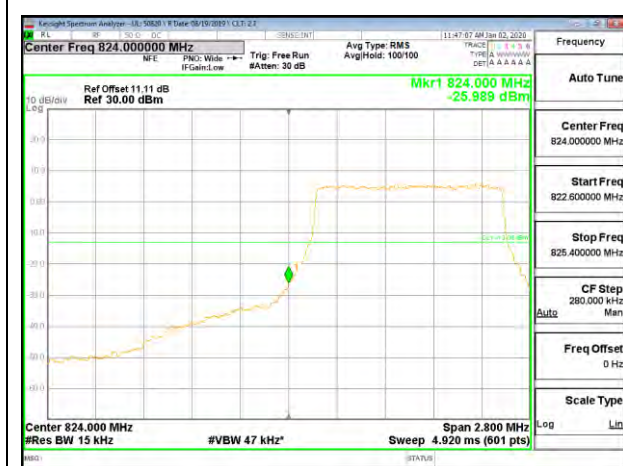
LTE B5 1.4MHz QPSK High Channel RB6-0



LTE B5 1.4MHz 16QAM Low Channel RB1-0



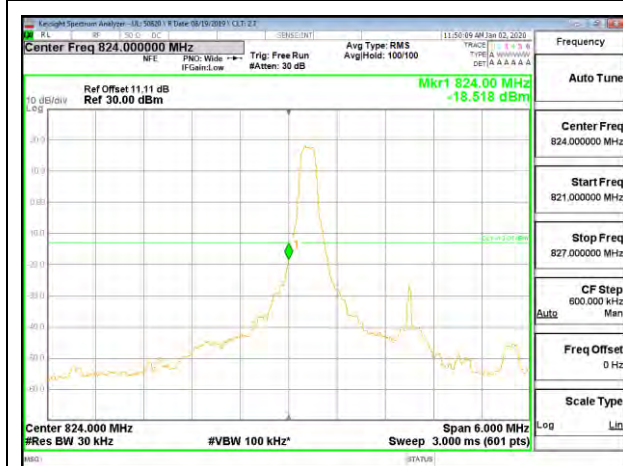
LTE B5 1.4MHz 16QAM High Channel RB1-5



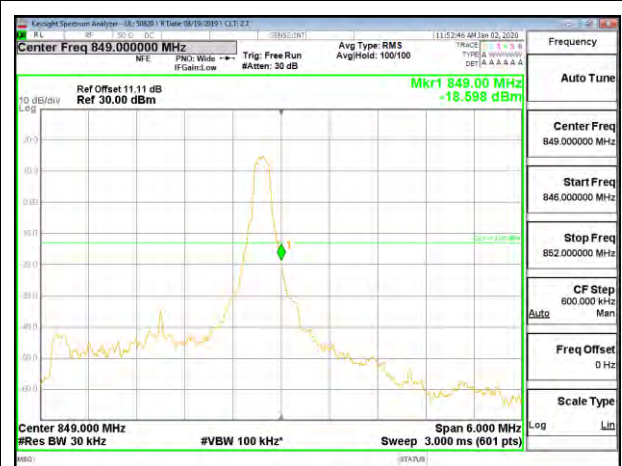
LTE B5 1.4MHz 16QAM Low Channel RB6-0



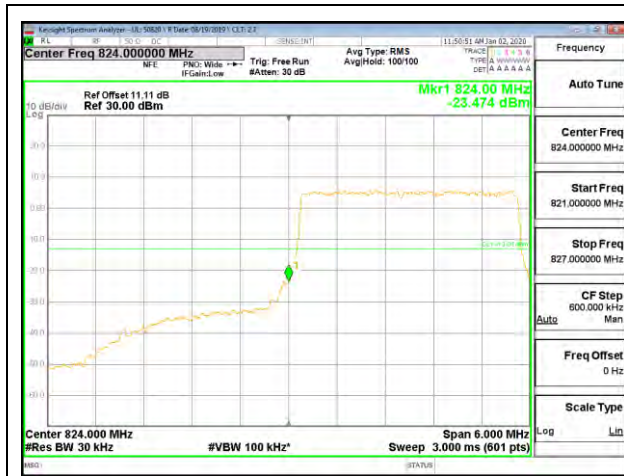
LTE B5 1.4MHz 16QAM High Channel RB6-0



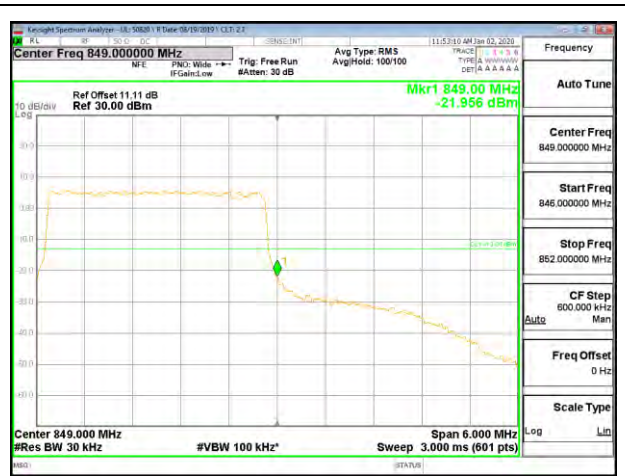
LTE B5 3MHz QPSK Low Channel RB1-0



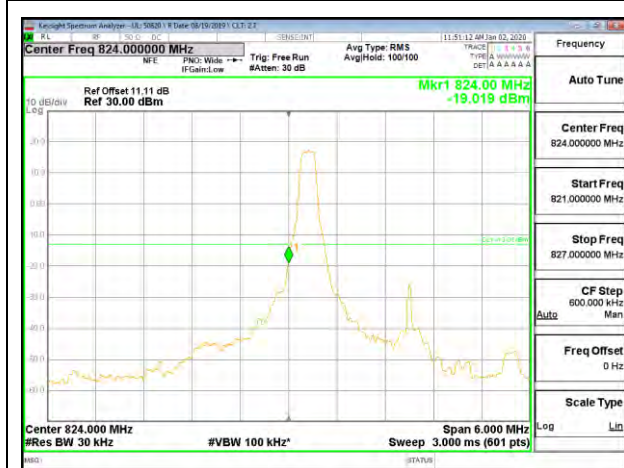
LTE B5 3MHz QPSK High Channel RB1-14



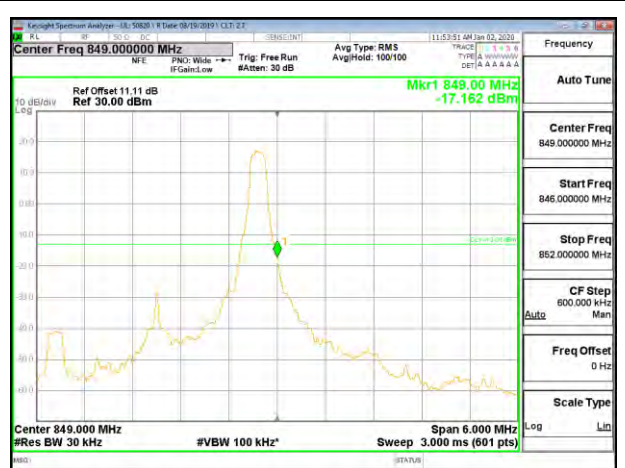
LTE B5 3MHz QPSK Low Channel RB15-0



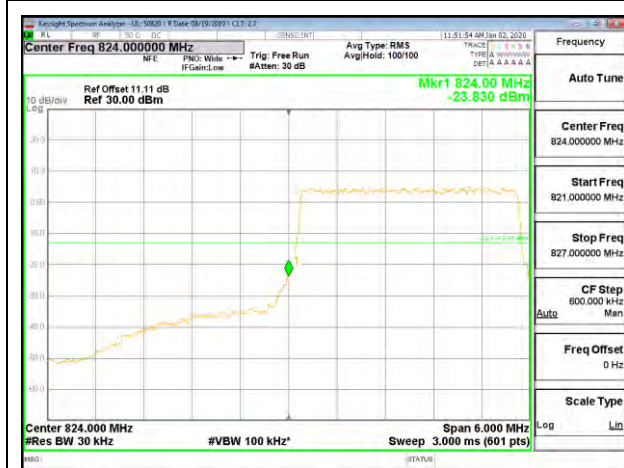
LTE B5 3MHz QPSK High Channel RB15-0



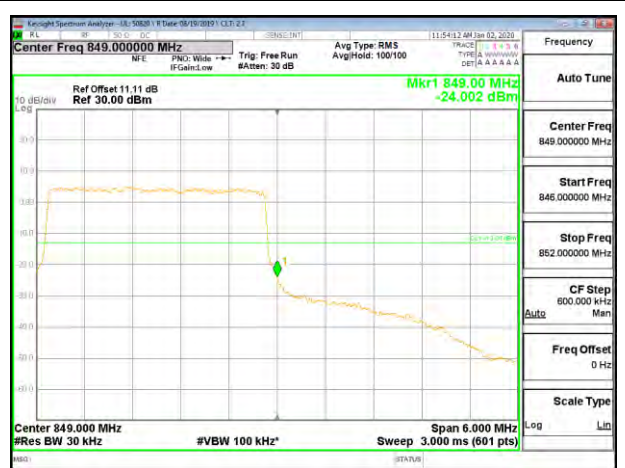
LTE B5 3MHz 16QAM Low Channel RB1-0



LTE B5 3MHz 16QAM High Channel RB1-14



LTE B5 3MHz 16QAM Low Channel RB15-0



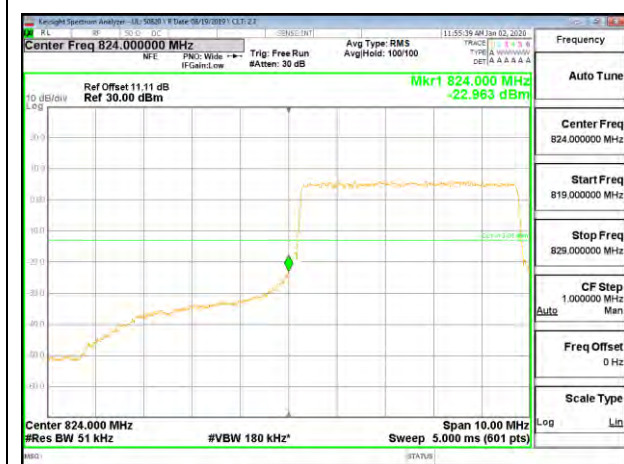
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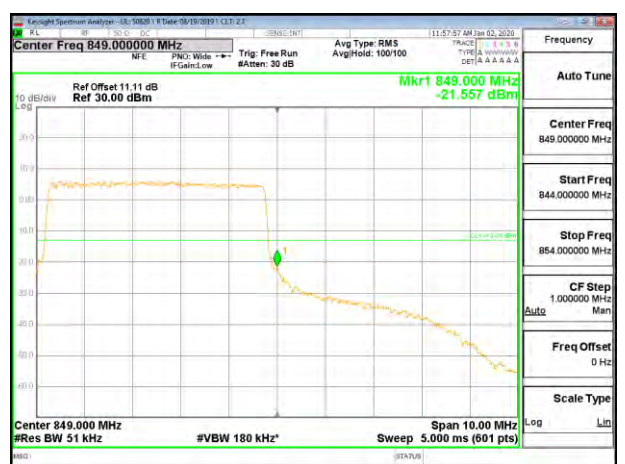
LTE B5 5MHz QPSK Low Channel RB1-0



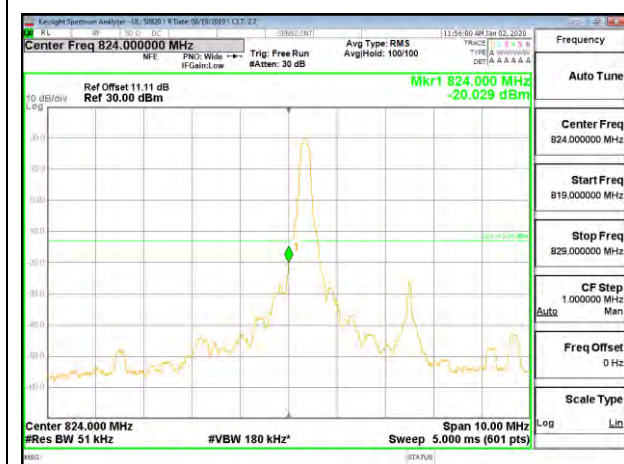
LTE B5 5MHz QPSK High Channel RB1-24



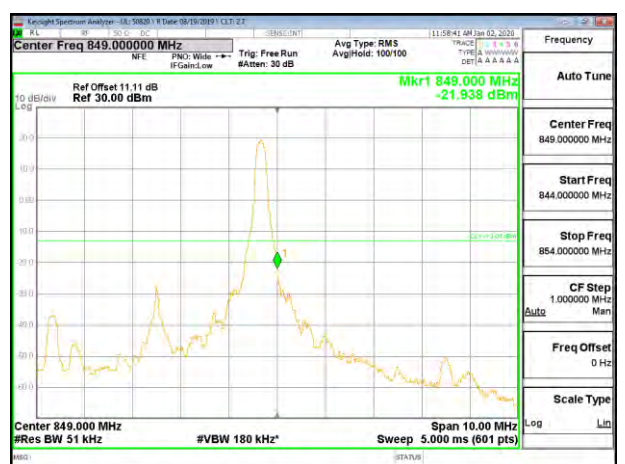
LTE B5 5MHz QPSK Low Channel RB25-0



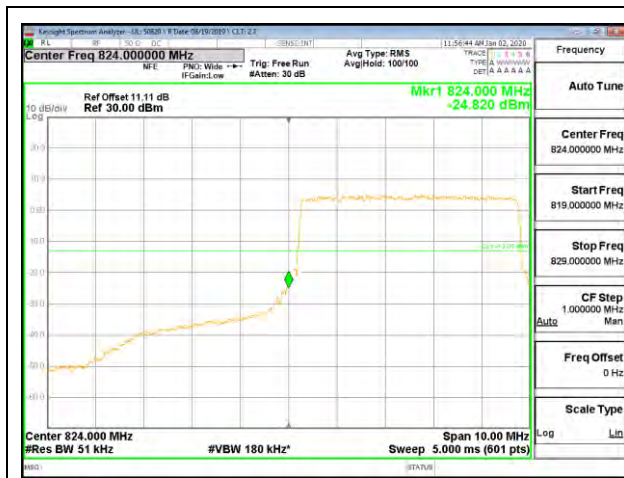
LTE B5 5MHz QPSK High Channel RB25-0



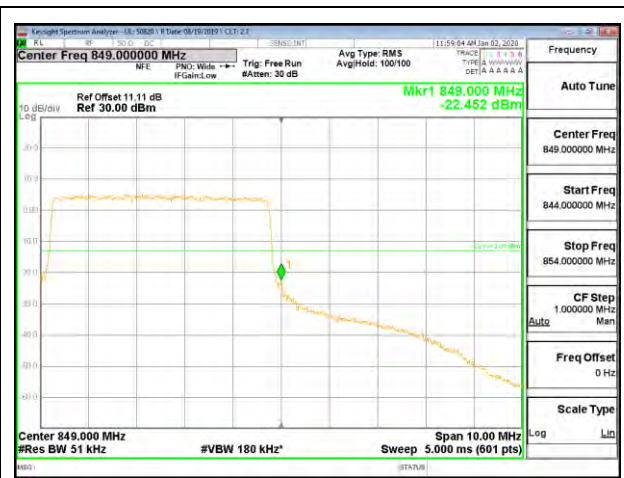
LTE B5 5MHz 16QAM Low Channel RB1-0



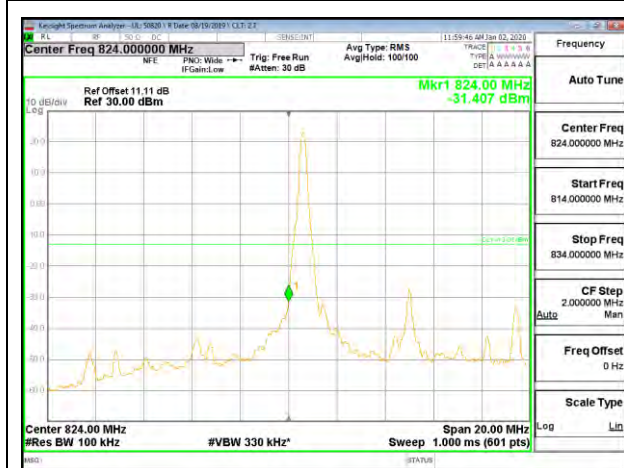
LTE B5 5MHz 16QAM High Channel RB1-24



LTE B5 5MHz 16QAM Low Channel RB25-0



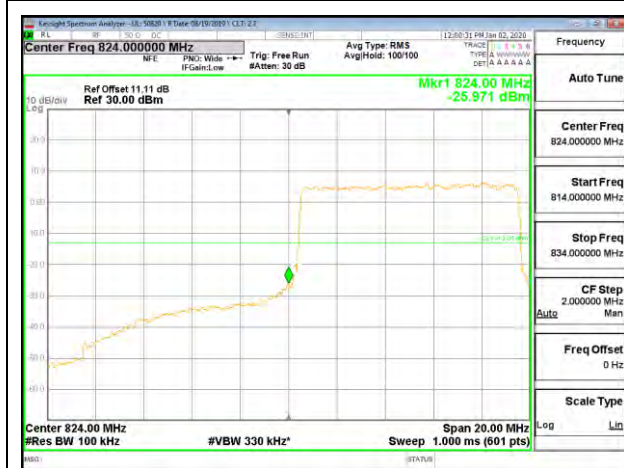
LTE B5 5MHz 16QAM High Channel RB25-0



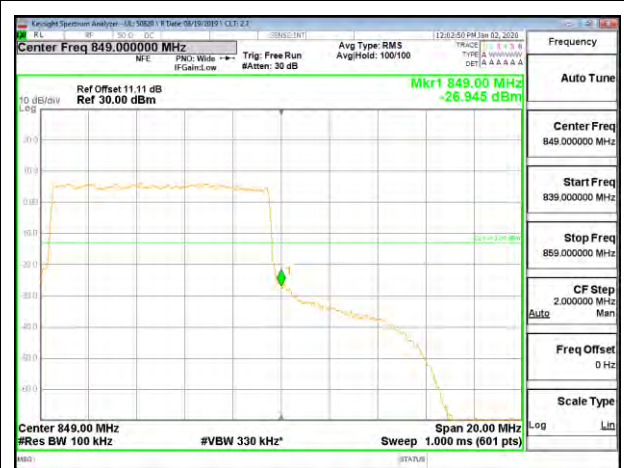
LTE B5 10MHz QPSK Low Channel RB1-0



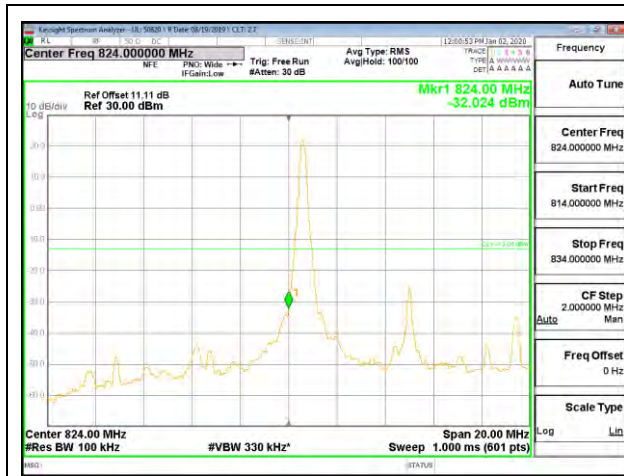
LTE B5 10MHz QPSK High Channel RB1-49



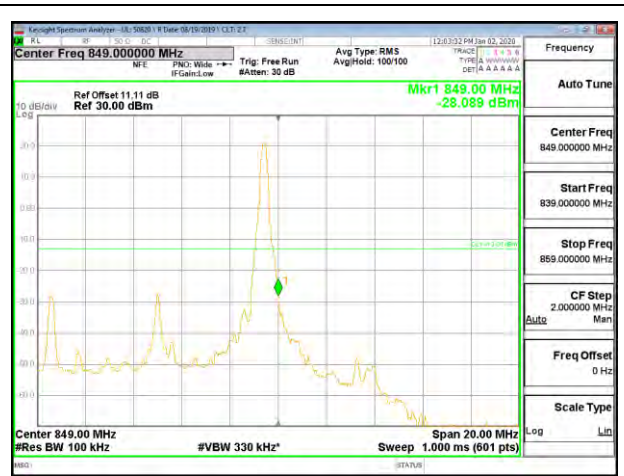
LTE B5 10MHz QPSK Low Channel RB50-0



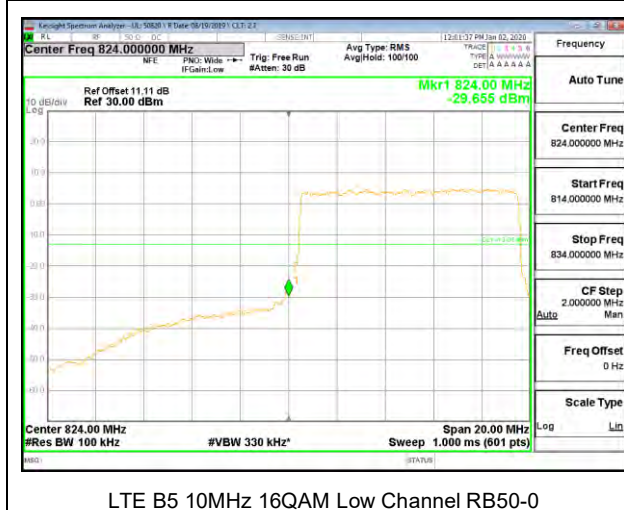
LTE B5 10MHz QPSK High Channel RB50-0



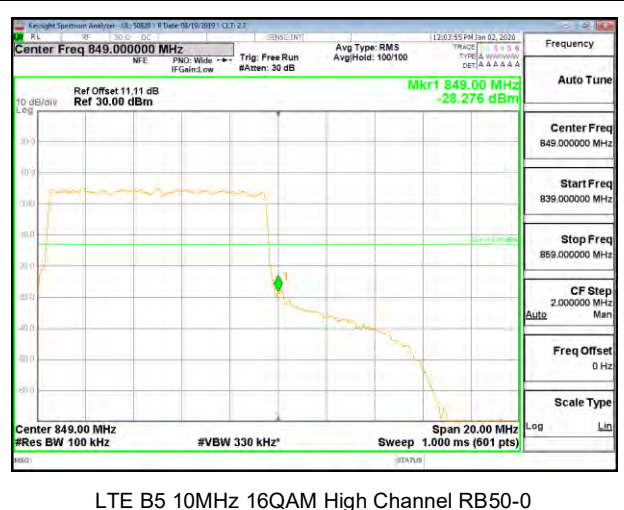
LTE B5 10MHz 16QAM Low Channel RB1-0



LTE B5 10MHz 16QAM High Channel RB1-49



LTE B5 10MHz 16QAM Low Channel RB50-0



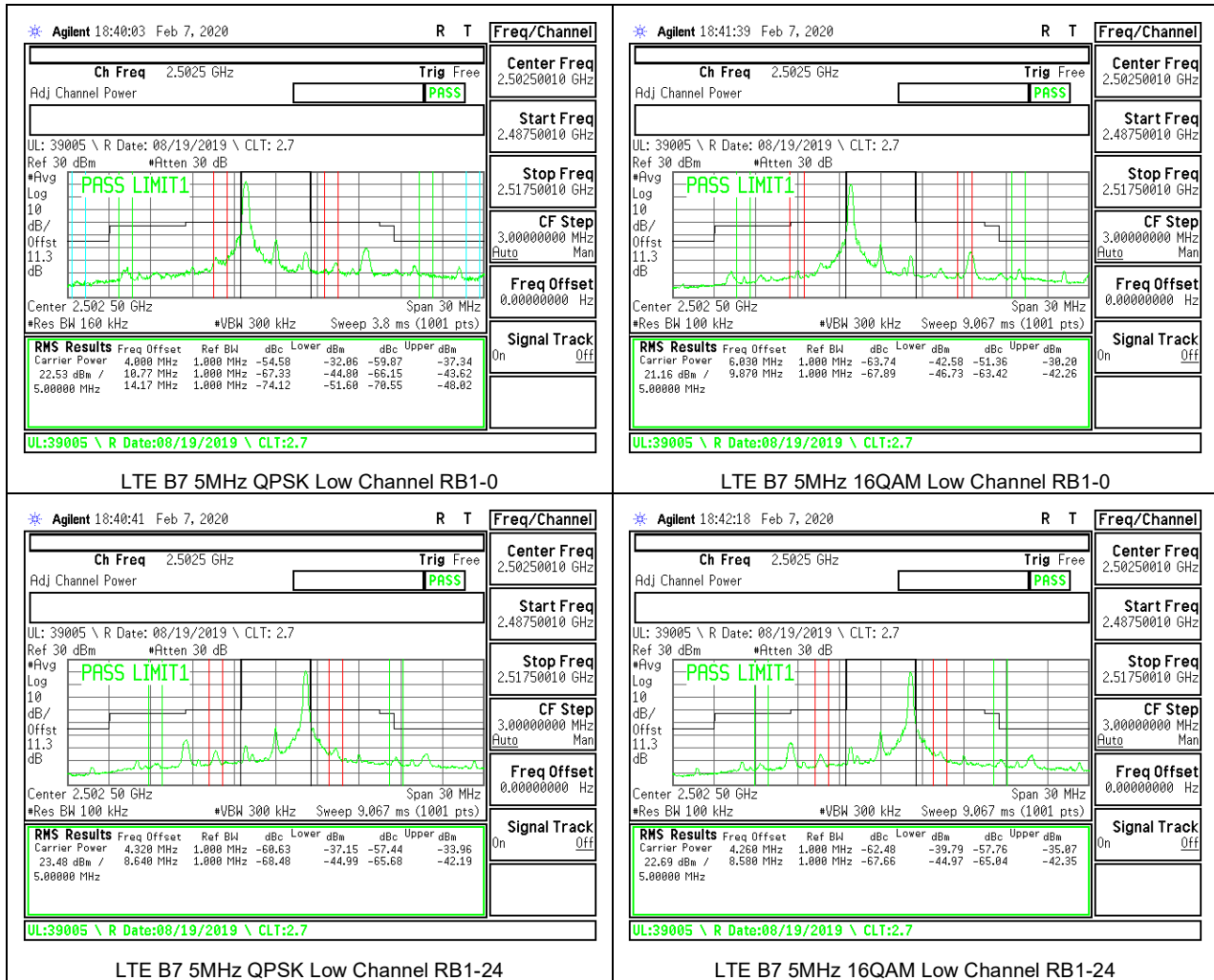
LTE B5 10MHz 16QAM High Channel RB50-0

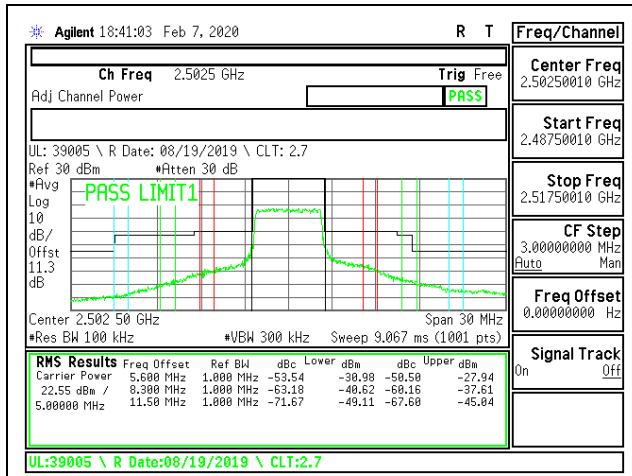
8.2.10. LTE BAND 7 ADJACENT CHANNEL POWER

LIMITS

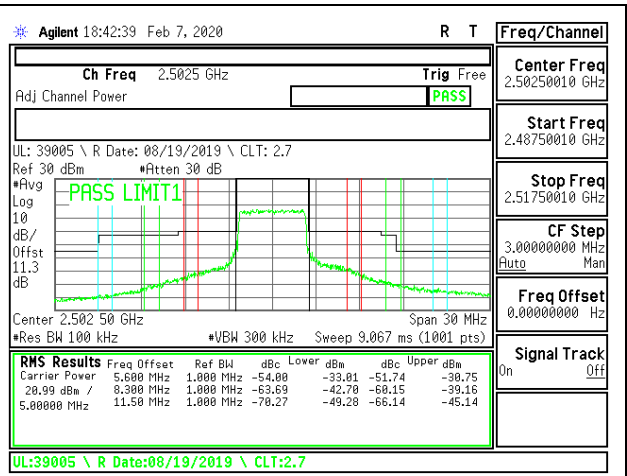
FCC: §27.53

(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.

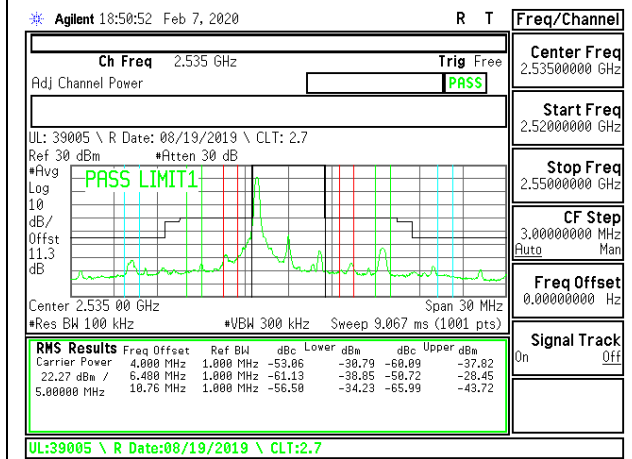




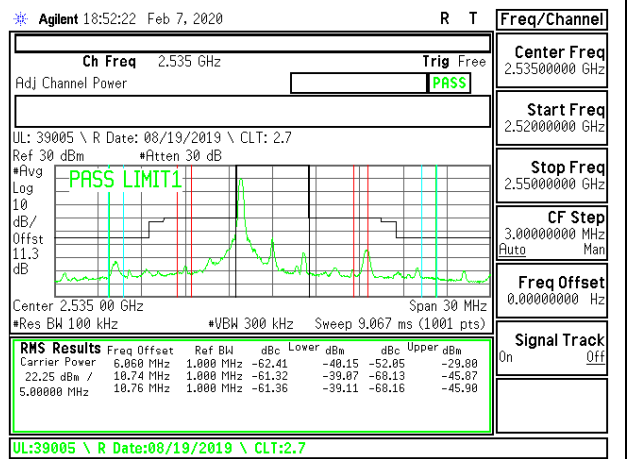
LTE B7 5MHz QPSK Low Channel RB25-0



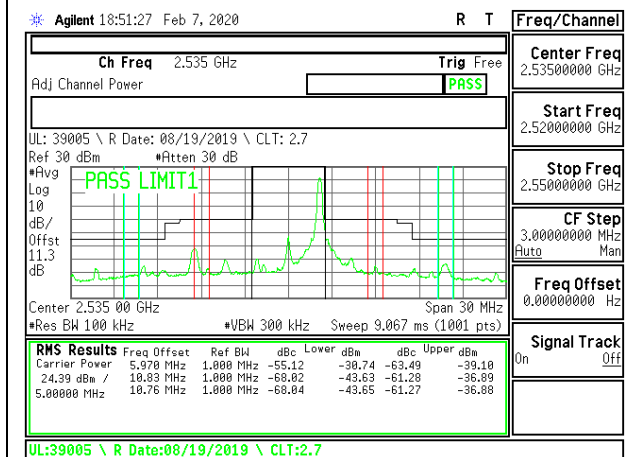
LTE B7 5MHz 16QAM Low Channel RB25-0



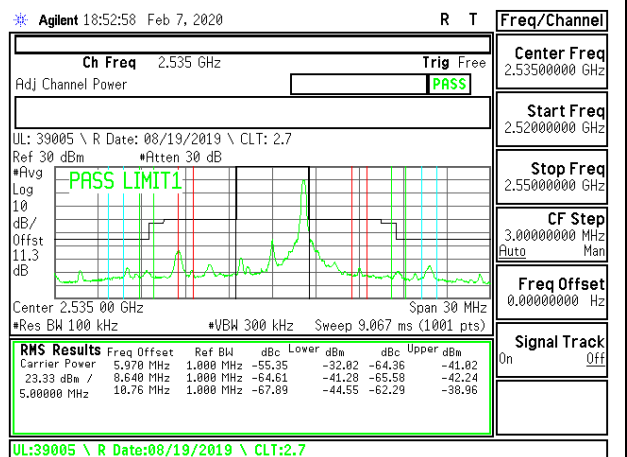
LTE B7 5MHz QPSK Middle Channel RB1-0



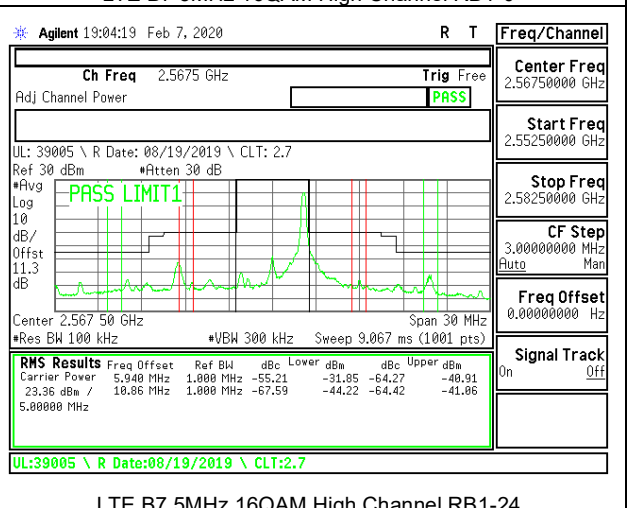
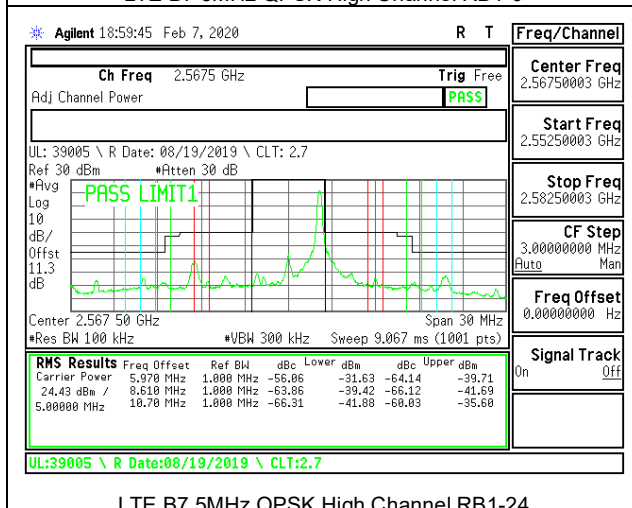
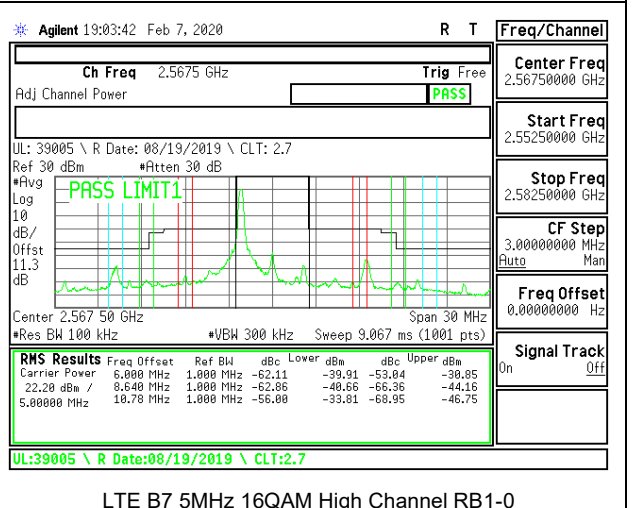
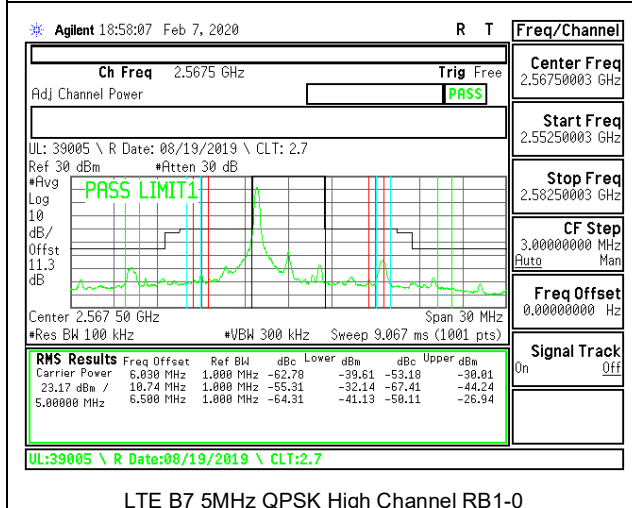
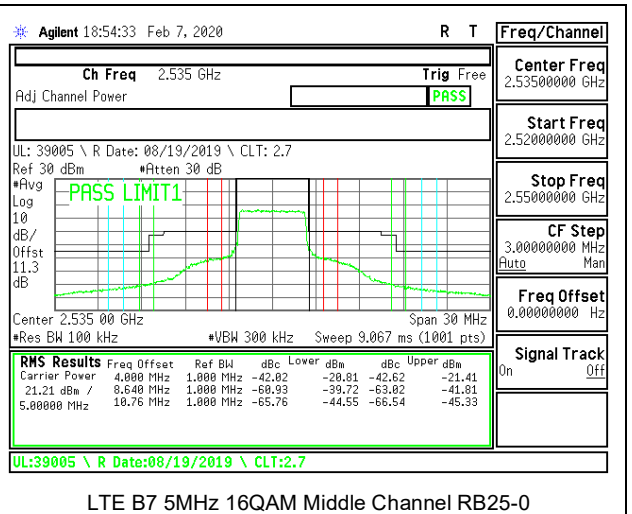
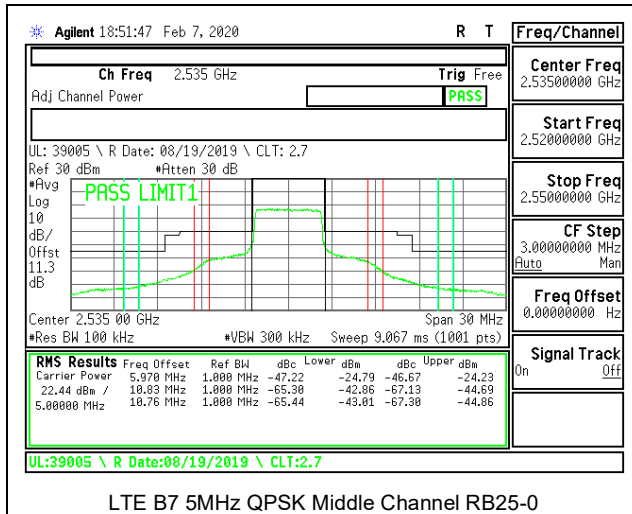
LTE B7 5MHz 16QAM Middle Channel RB1-0

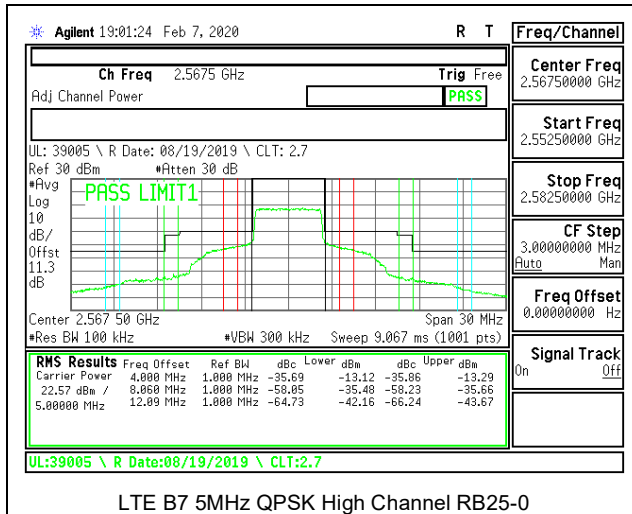


LTE B7 5MHz QPSK Middle Channel RB1-24

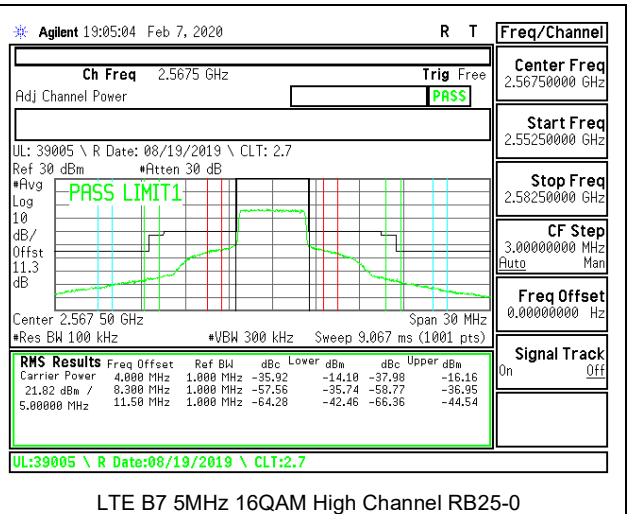


LTE B7 5MHz 16QAM Middle Channel RB1-24

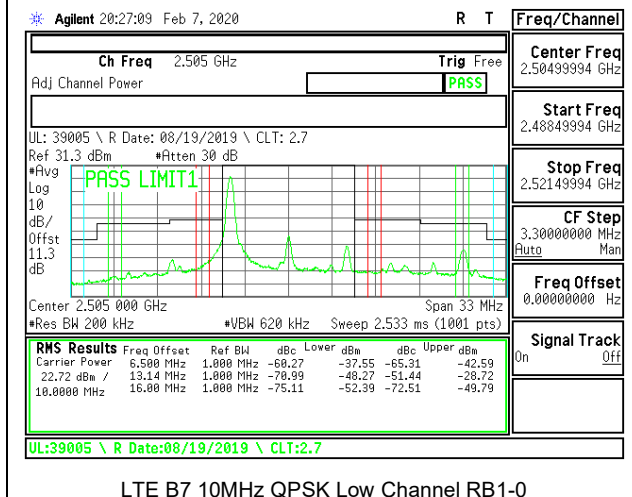




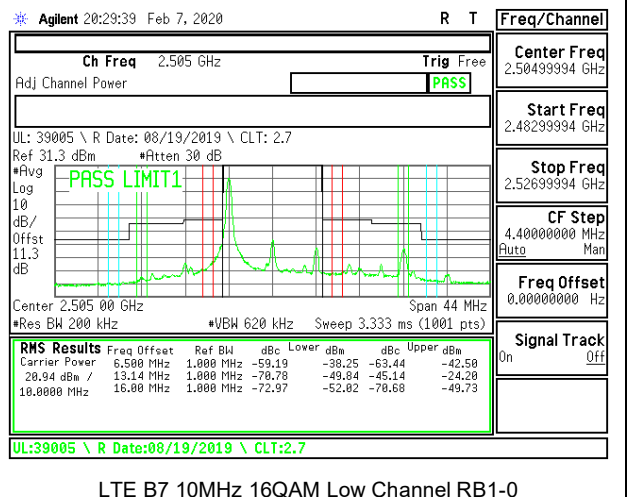
LTE B7 5MHz QPSK High Channel RB25-0



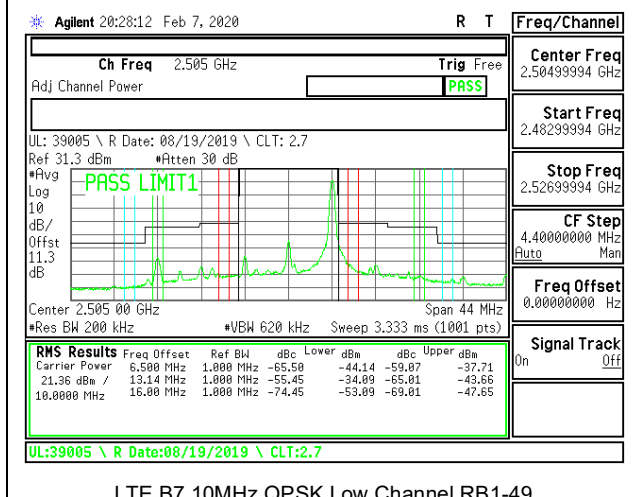
LTE B7 5MHz 16QAM High Channel RB25-0



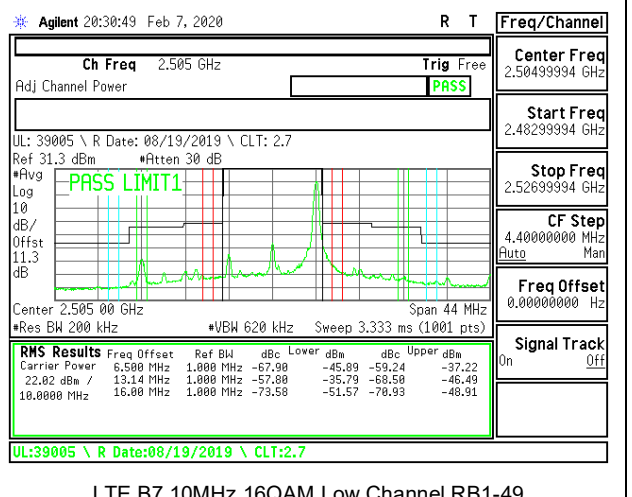
LTE B7 10MHz QPSK Low Channel RB1-0



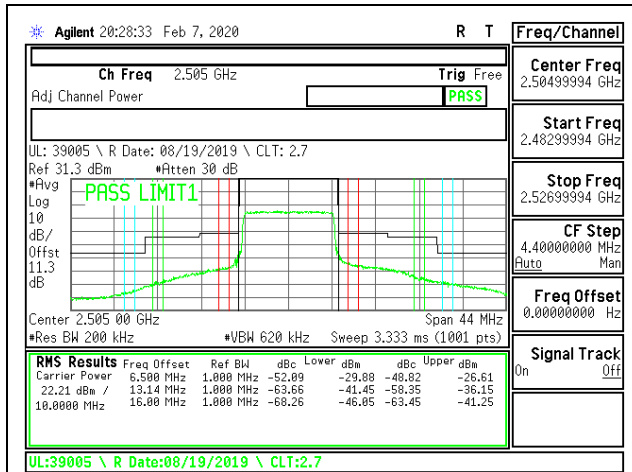
LTE B7 10MHz 16QAM Low Channel RB1-0



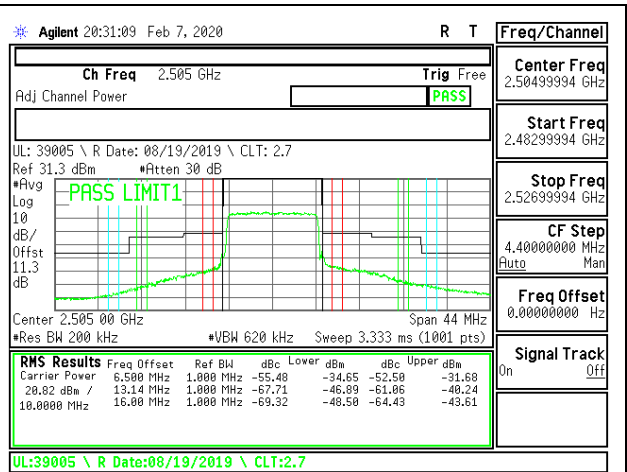
LTE B7 10MHz QPSK Low Channel RB1-49



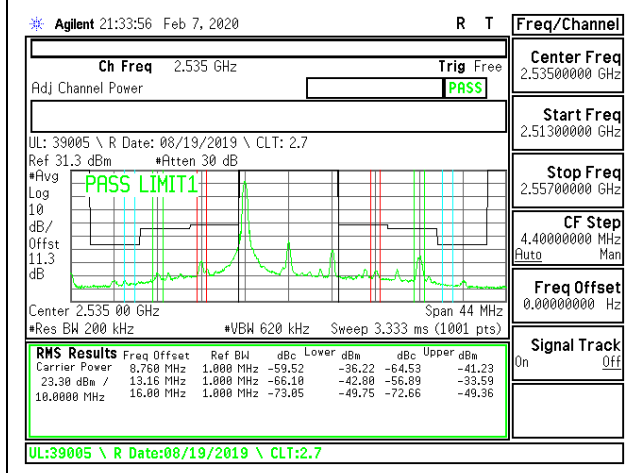
LTE B7 10MHz 16QAM Low Channel RB1-49



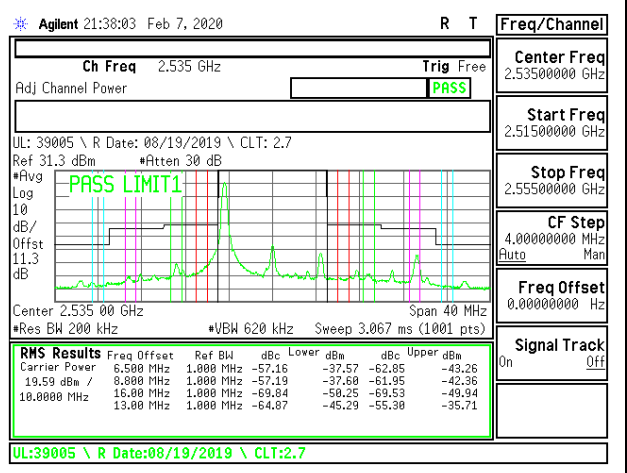
LTE B7 10MHz QPSK Low Channel RB50-0



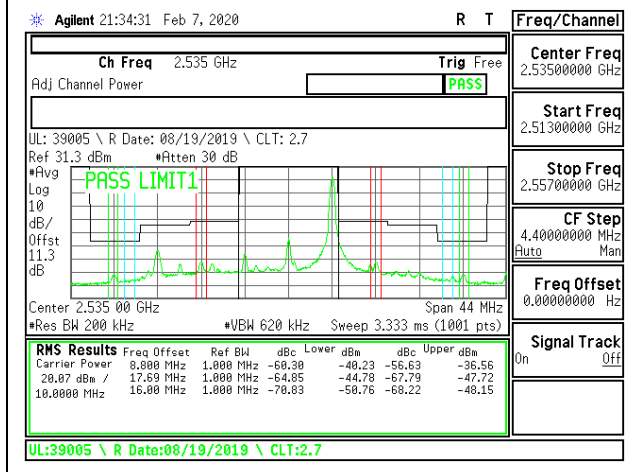
LTE B7 10MHz 16QAM Low Channel RB50-0



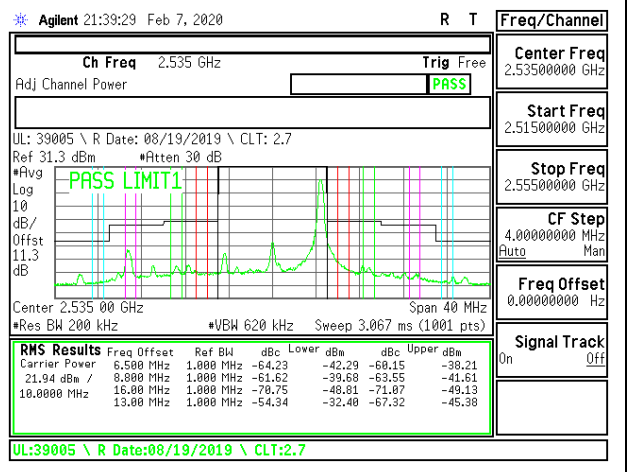
LTE B7 10MHz QPSK Middle Channel RB1-0



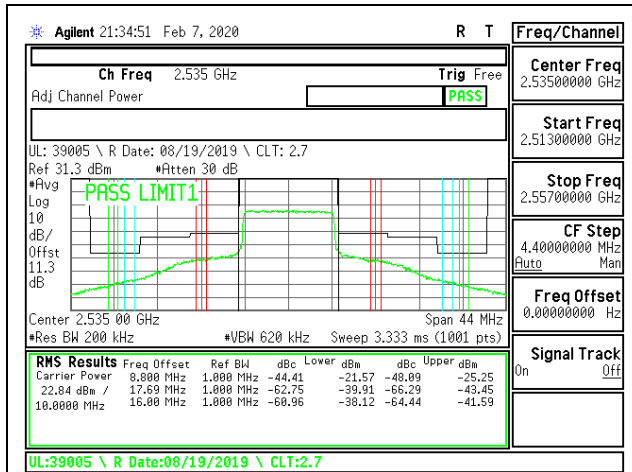
LTE B7 10MHz 16QAM Middle Channel RB1-0



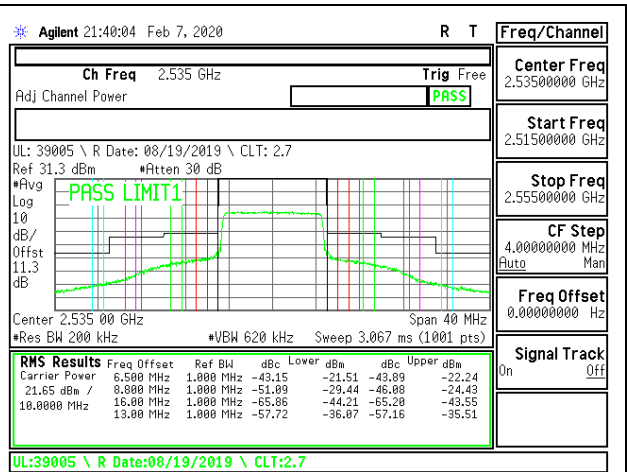
LTE B7 10MHz QPSK Middle Channel RB1-49



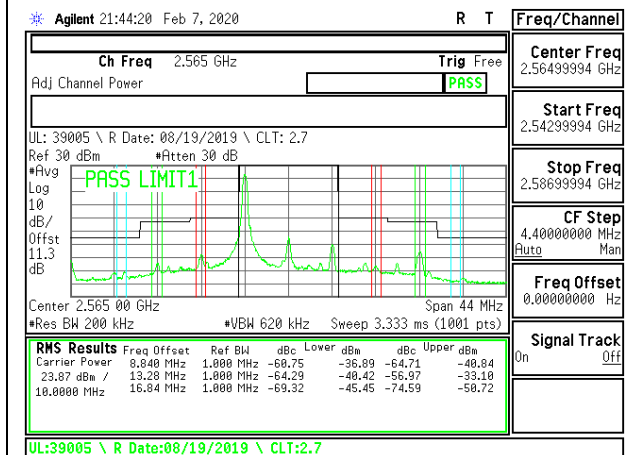
LTE B7 10MHz 16QAM Middle Channel RB1-49



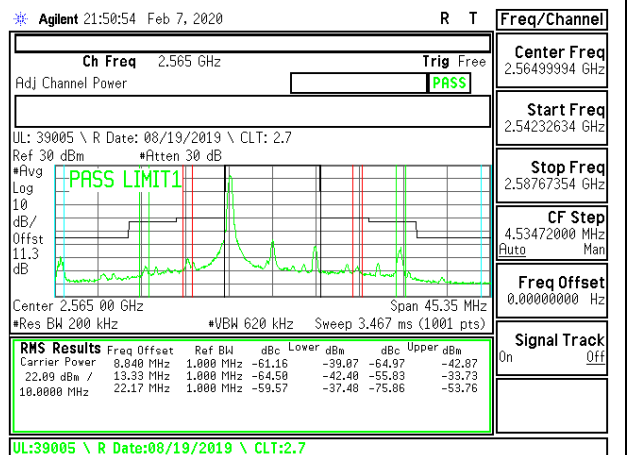
LTE B7 10MHz QPSK Middle Channel RB50-0



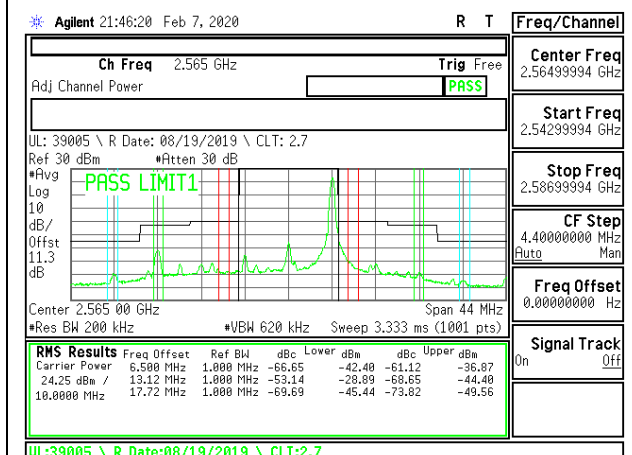
LTE B7 10MHz 16QAM Middle Channel RB50-0



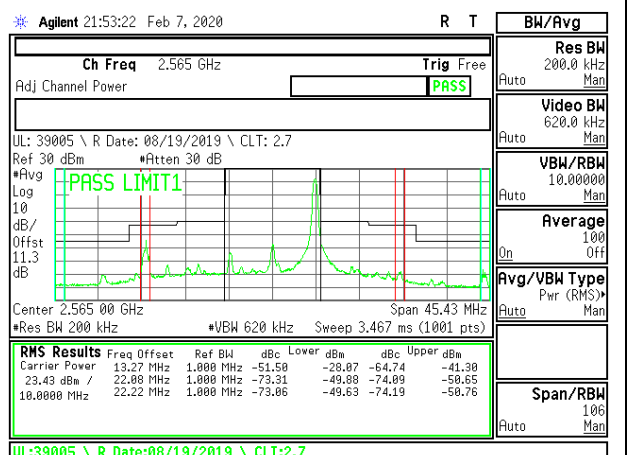
LTE B7 10MHz QPSK High Channel RB1-0



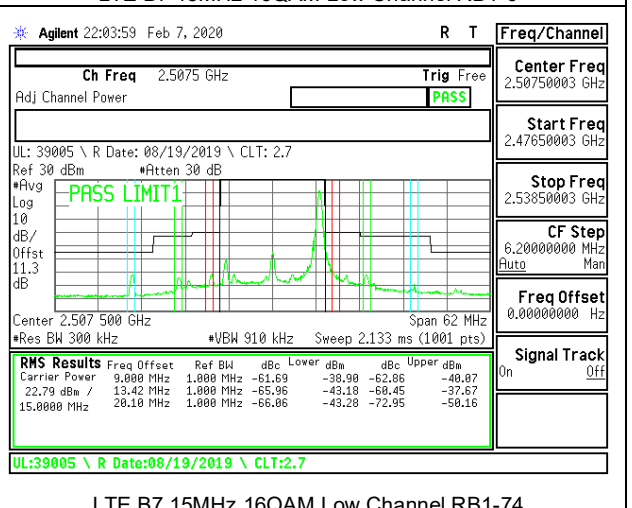
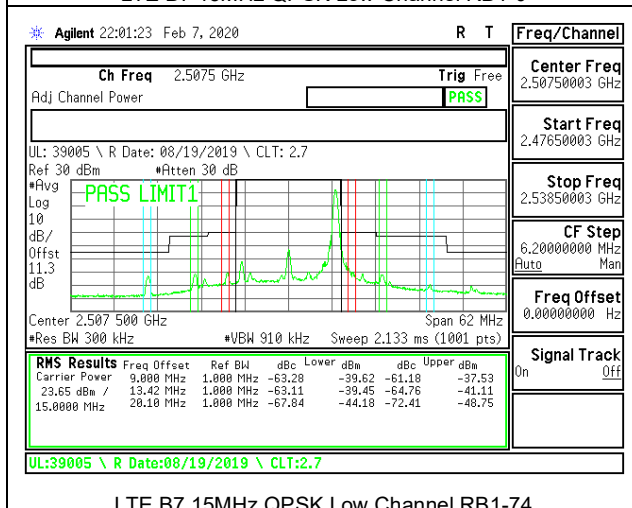
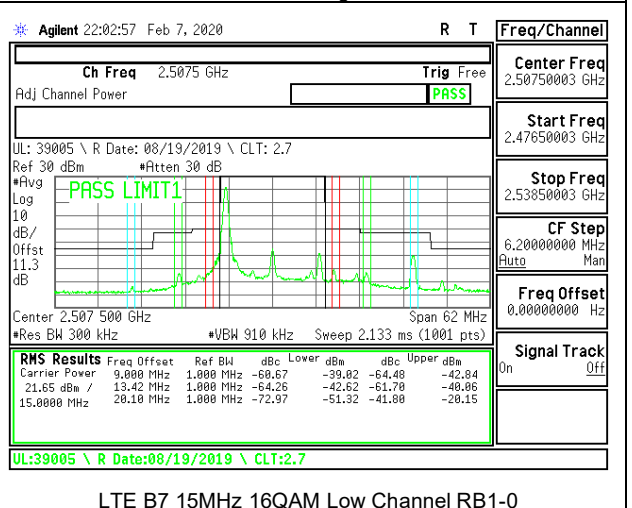
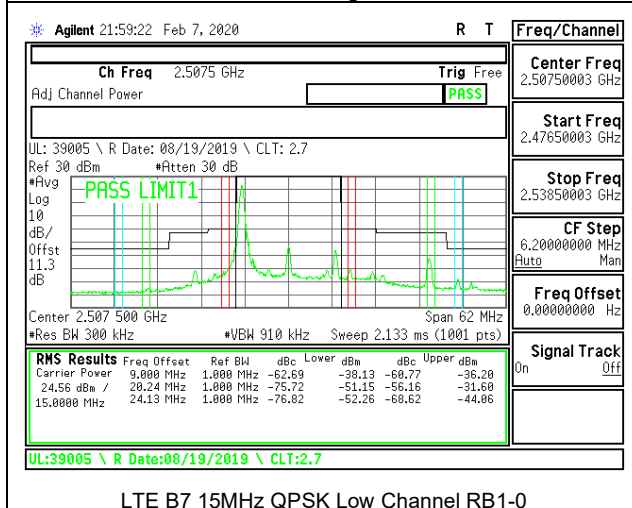
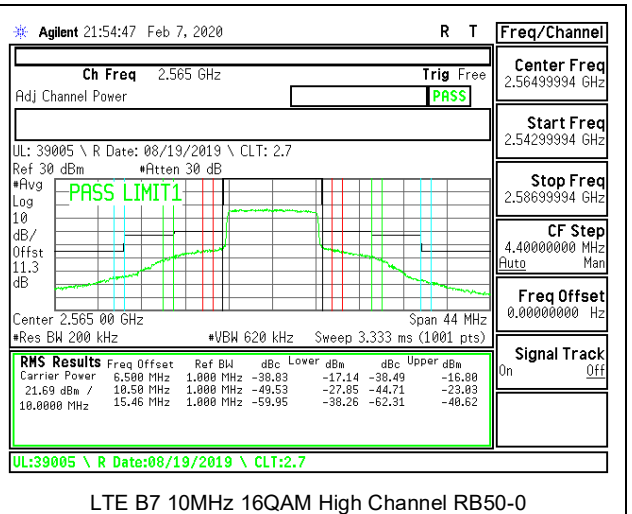
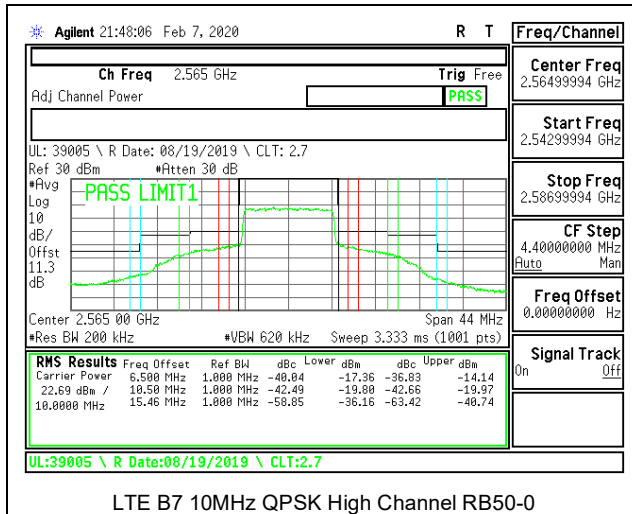
LTE B7 10MHz 16QAM High Channel RB1-0

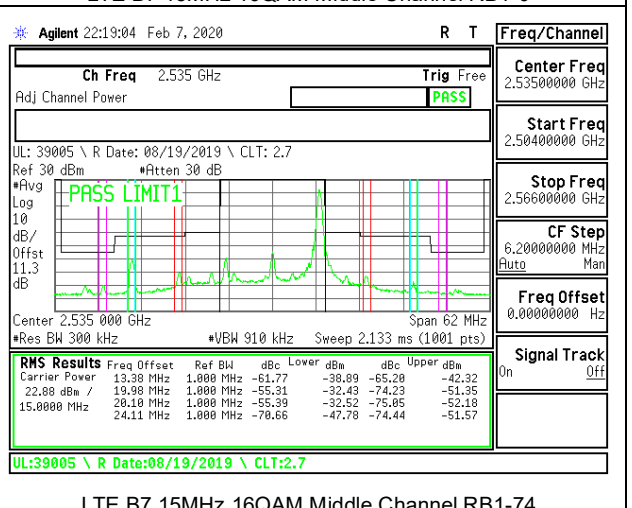
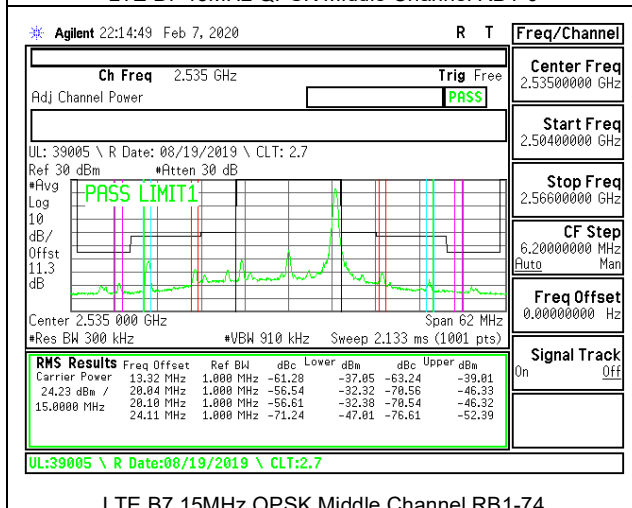
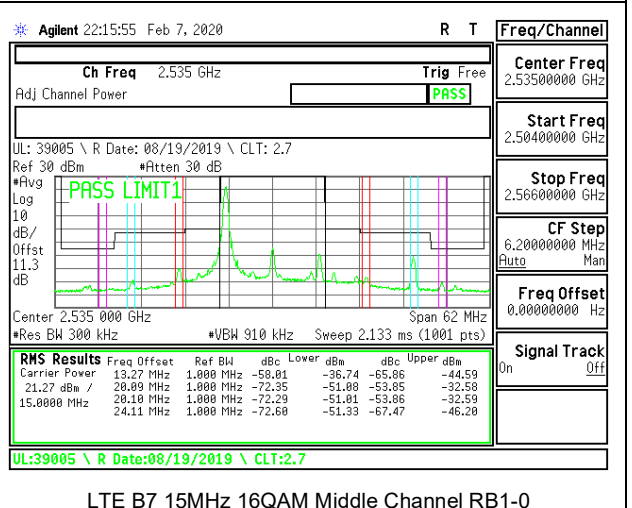
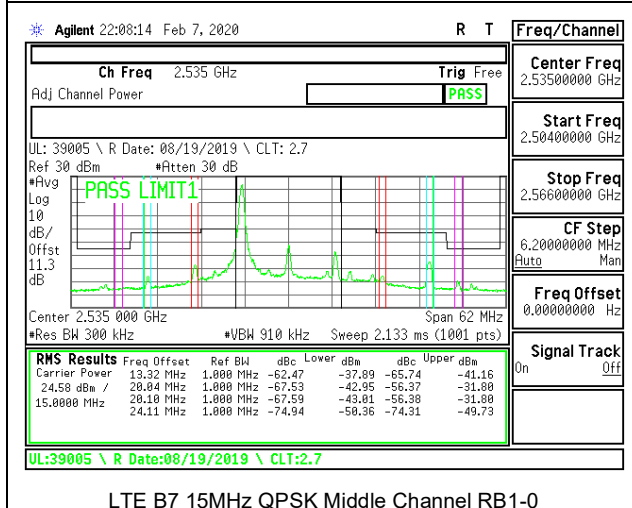
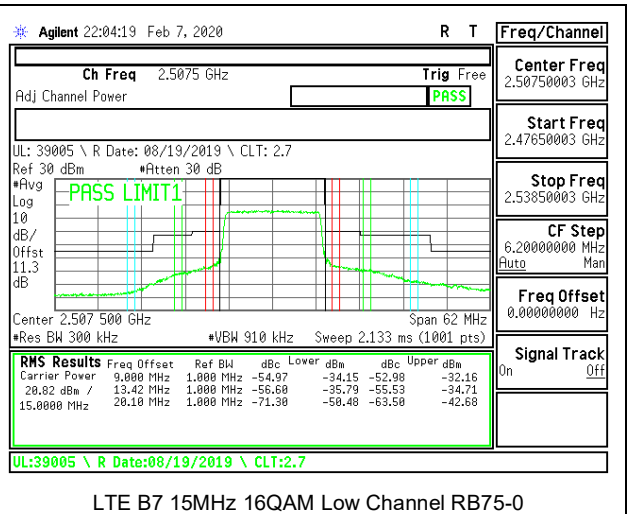
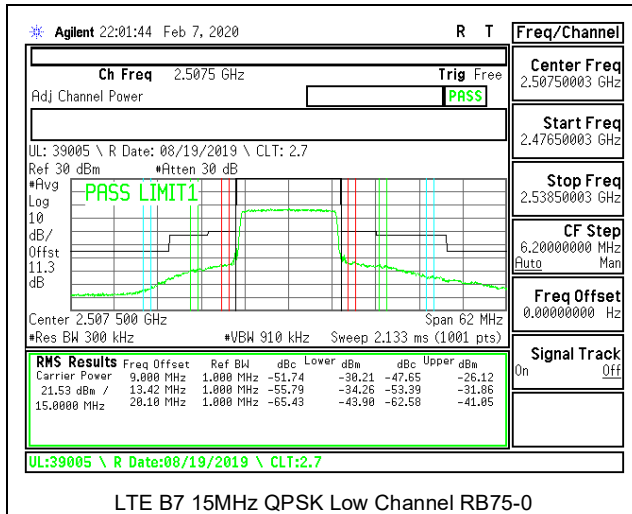


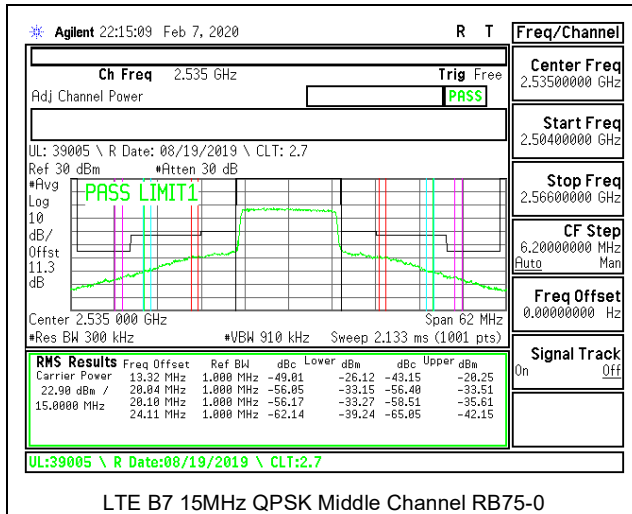
LTE B7 10MHz QPSK High Channel RB1-49



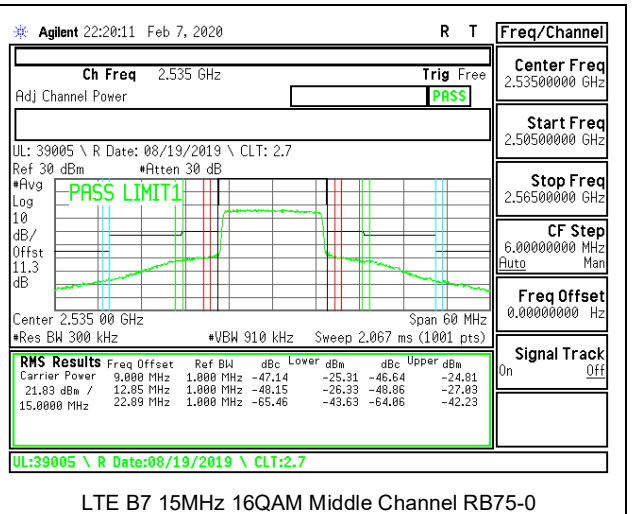
LTE B7 10MHz 16QAM High Channel RB1-49



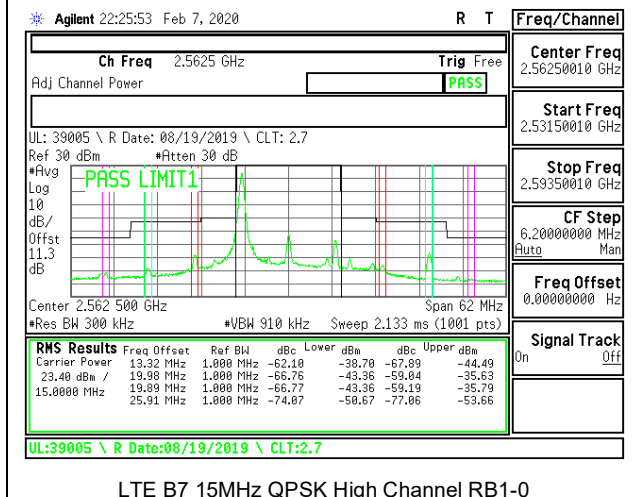




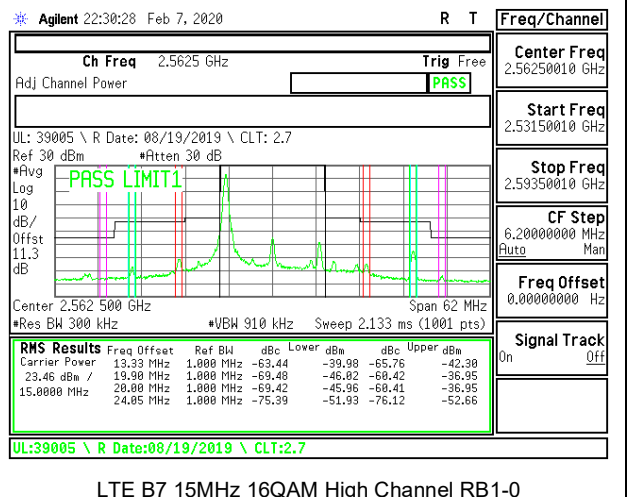
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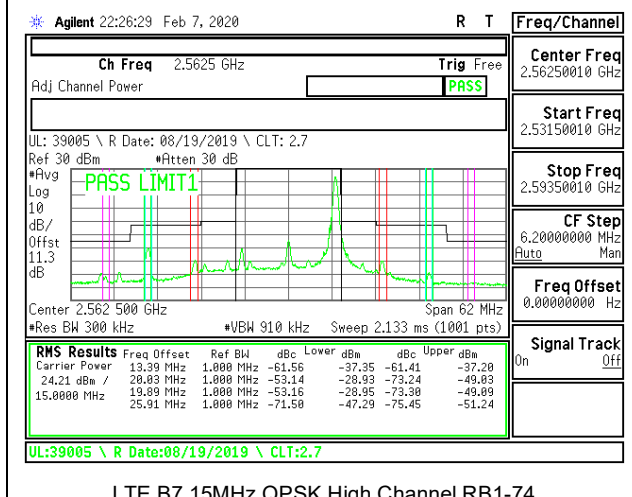
LTE B7 15MHz 16QAM Middle Channel RB75-0



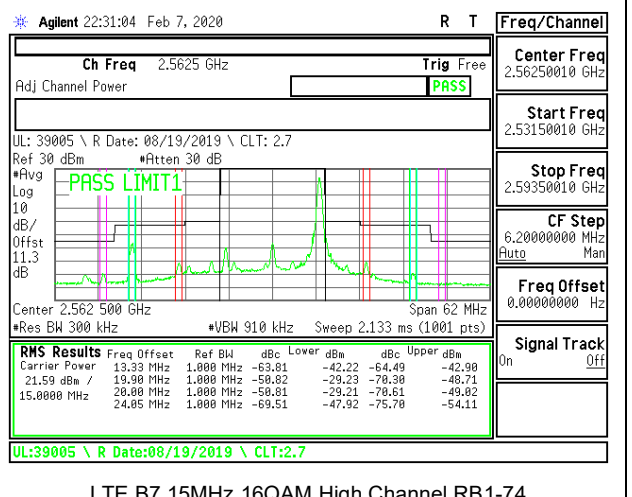
LTE B7 15MHz QPSK High Channel RB1-0



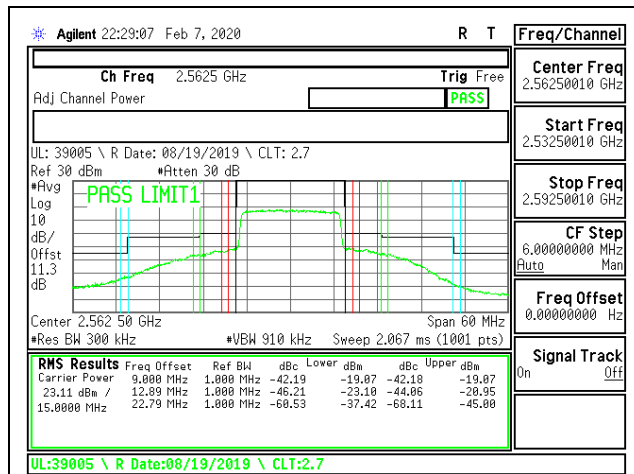
LTE B7 15MHz 16QAM High Channel RB1-0



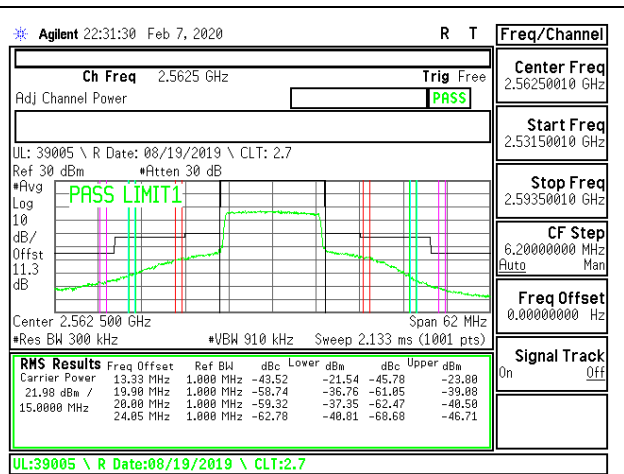
LTE B7 15MHz QPSK High Channel RB1-74



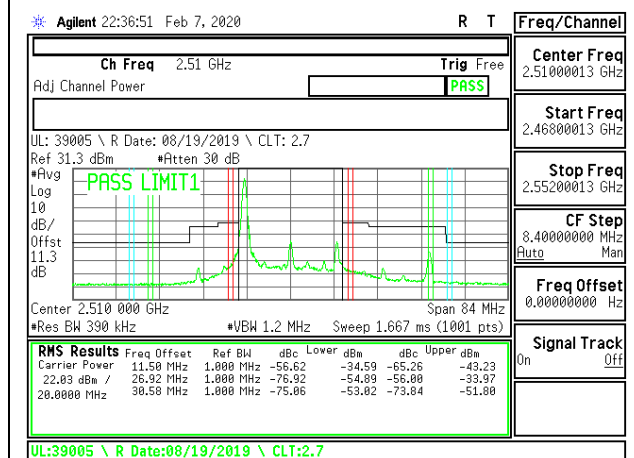
LTE B7 15MHz 16QAM High Channel RB1-74



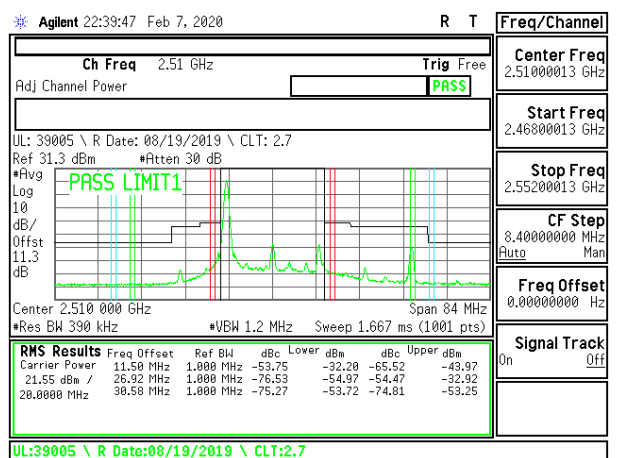
LTE B7 15MHz QPSK High Channel RB75-0



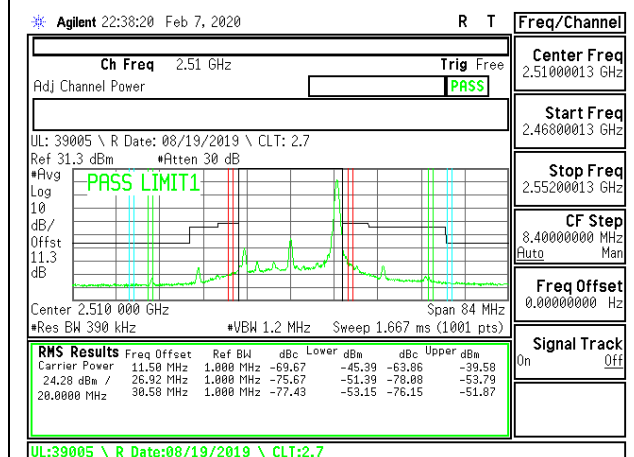
LTE B7 15MHz 16QAM High Channel RB75-0



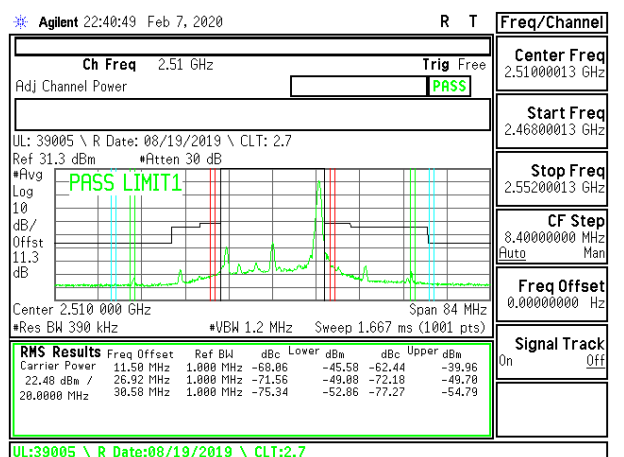
LTE B7 20MHz QPSK Low Channel RB1-0



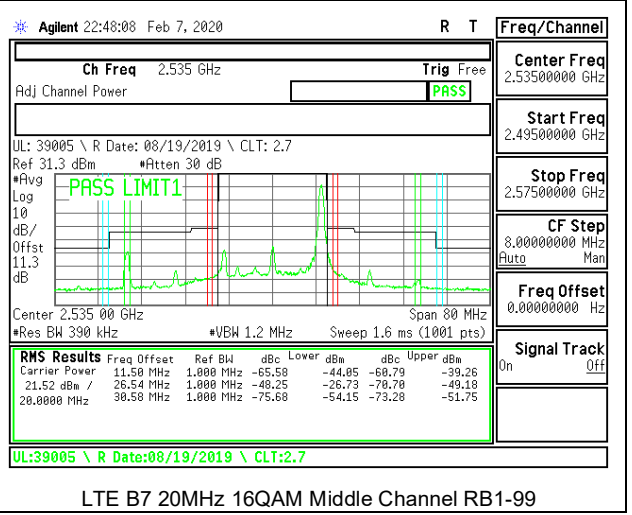
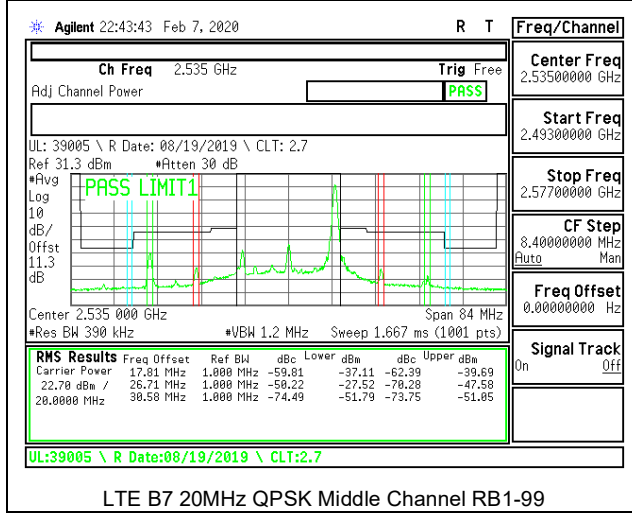
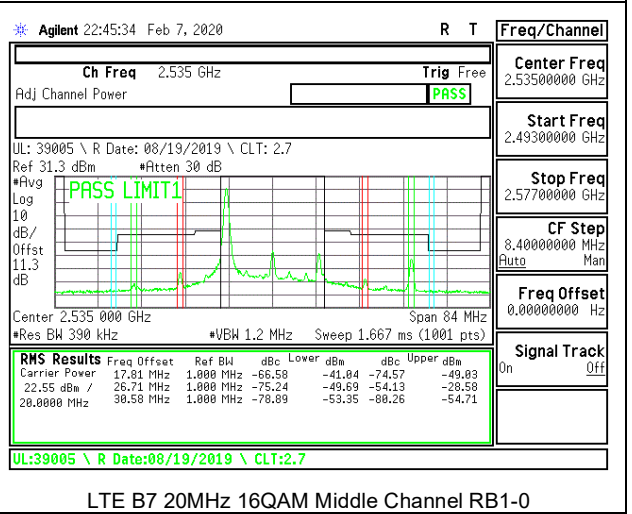
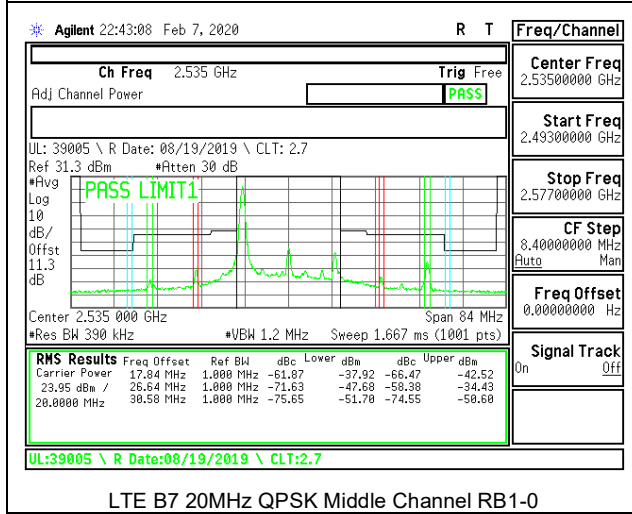
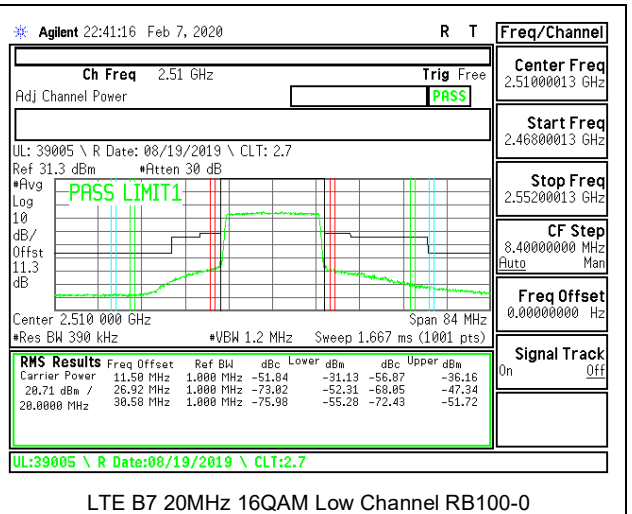
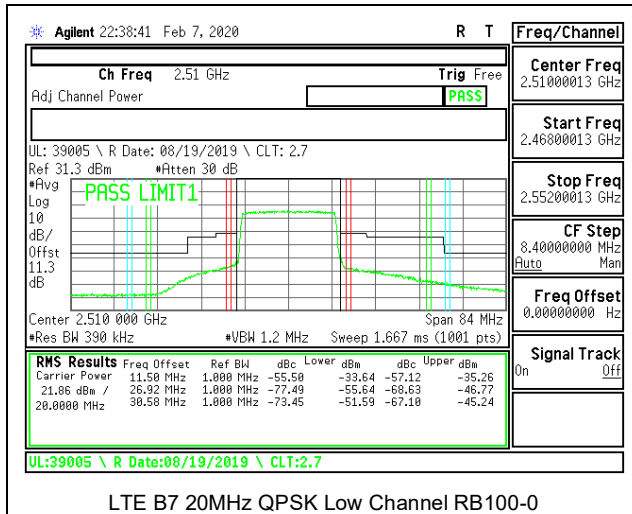
LTE B7 20MHz 16QAM Low Channel RB1-0

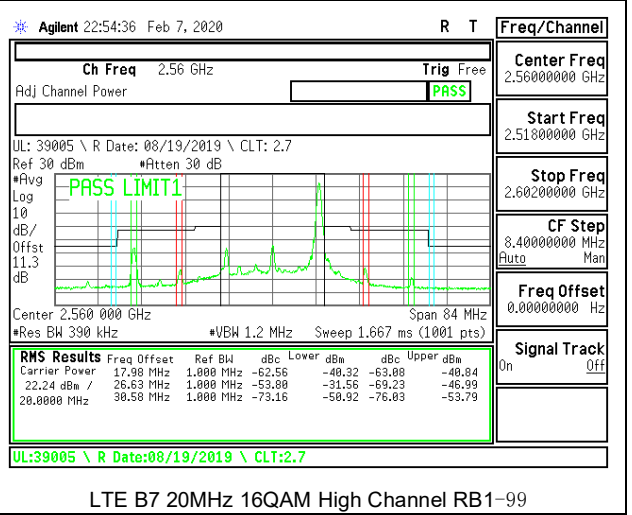
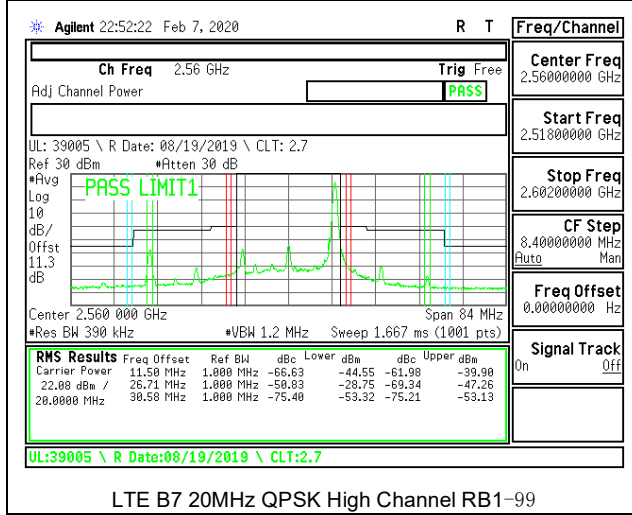
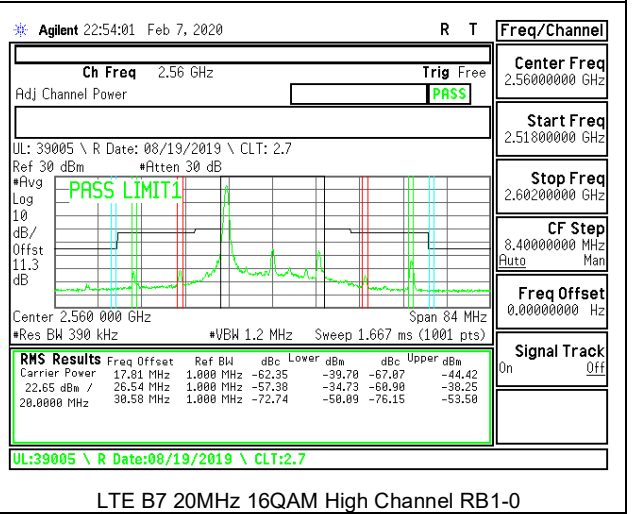
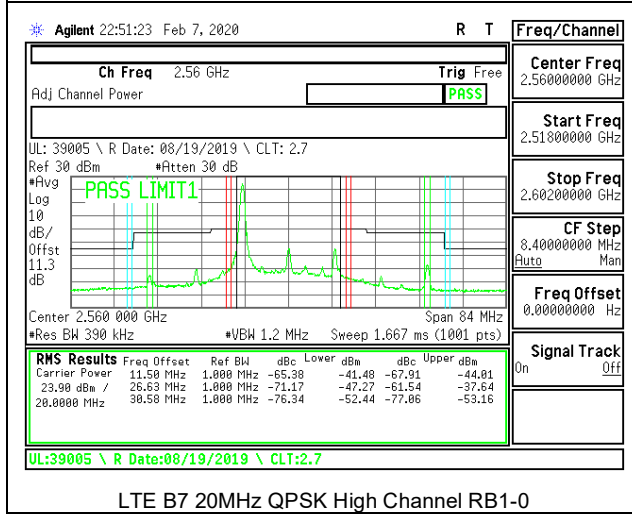
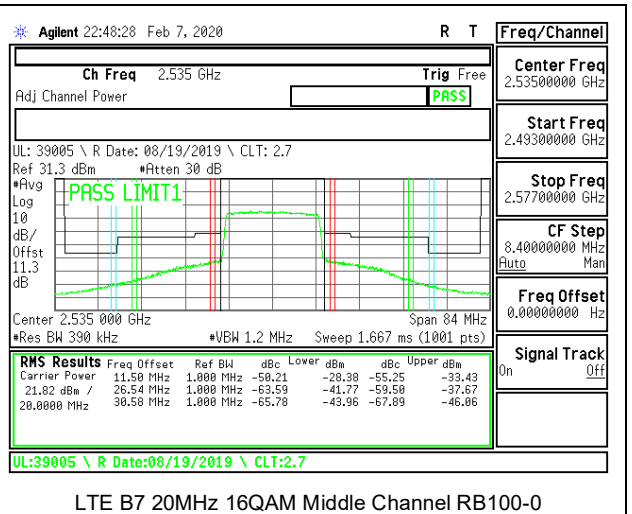
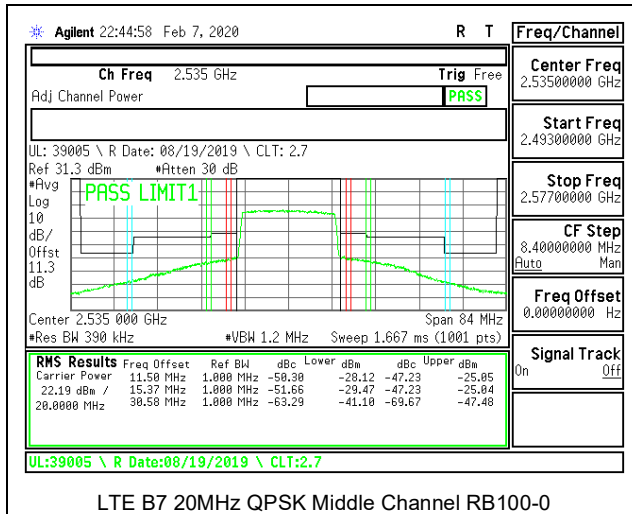


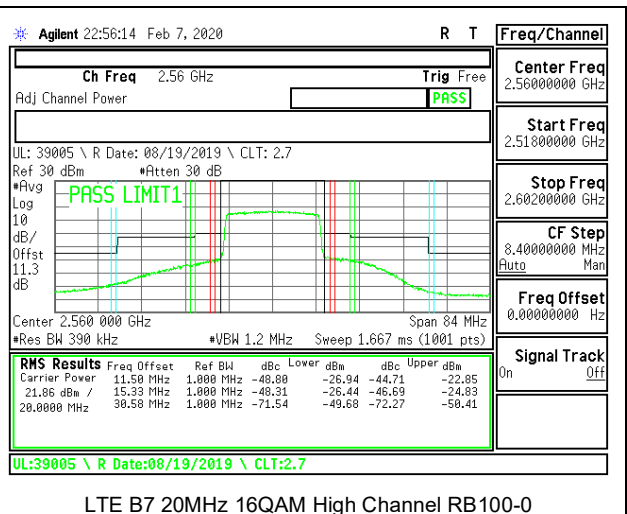
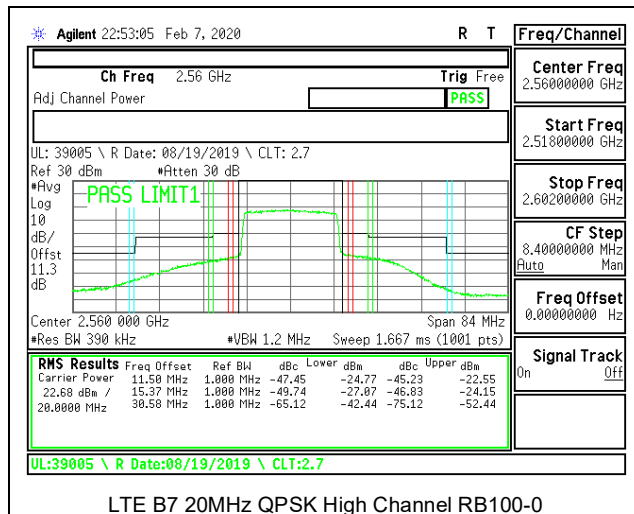
LTE B7 20MHz QPSK Low Channel RB1-99



LTE B7 20MHz 16QAM Low Channel RB1-99





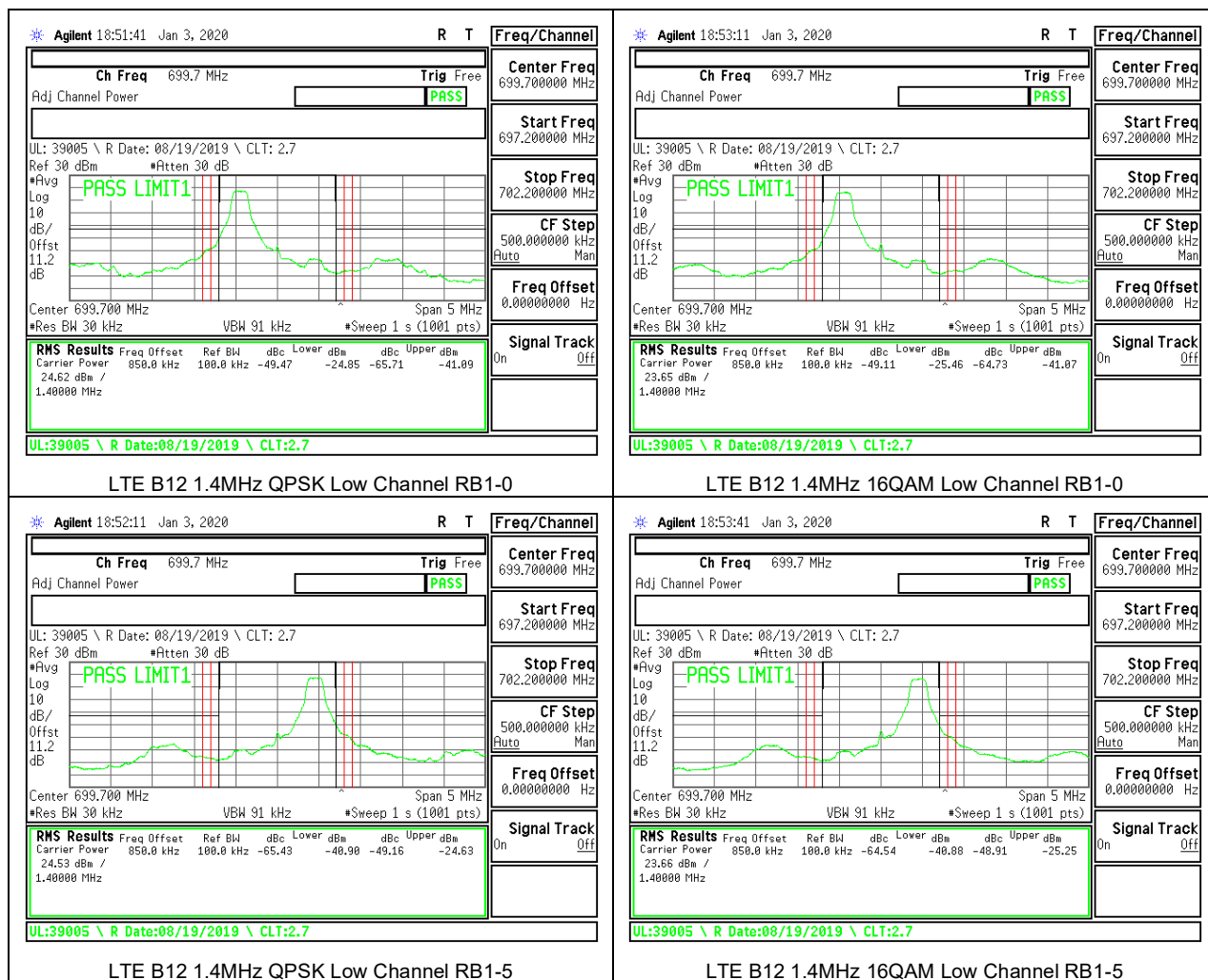


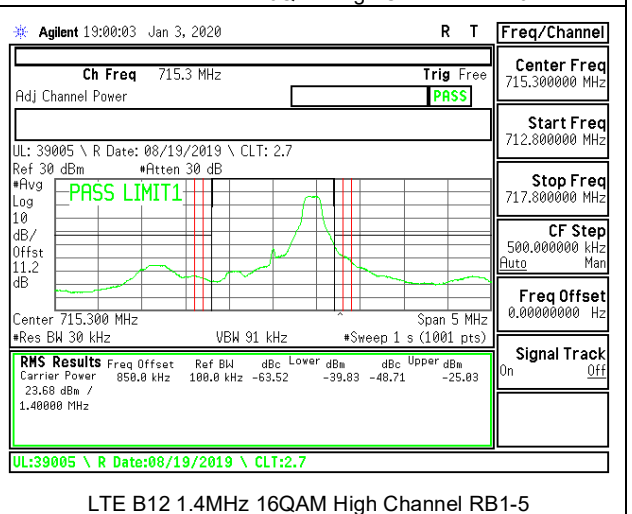
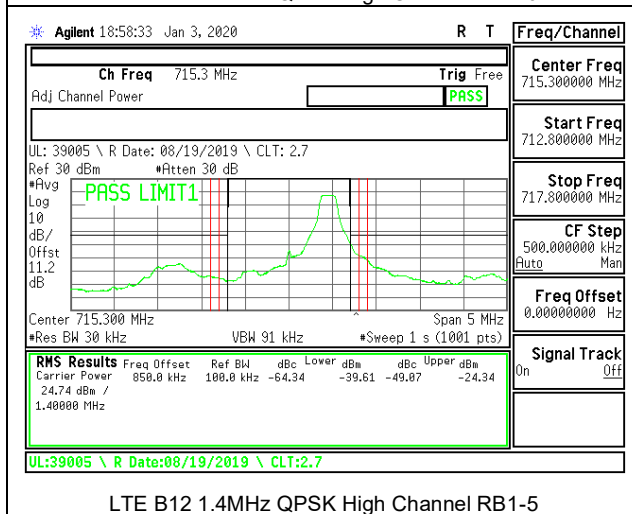
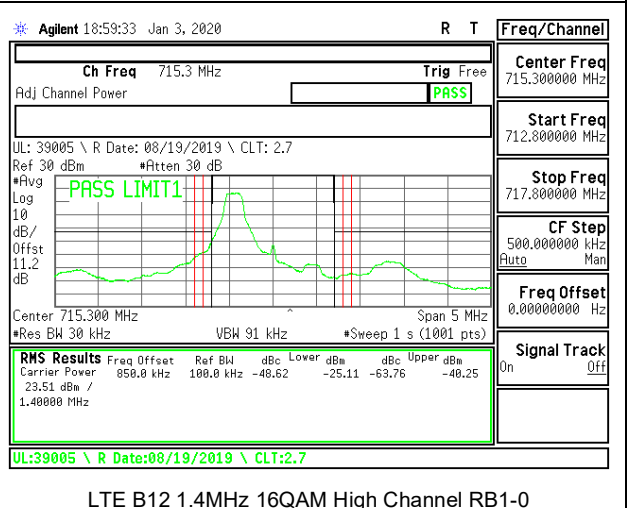
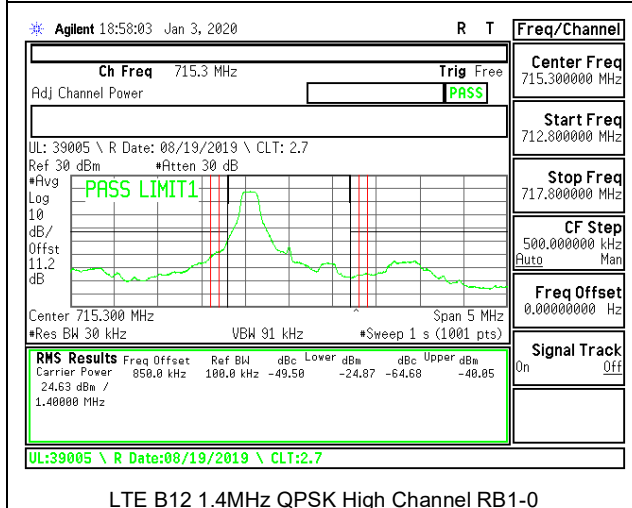
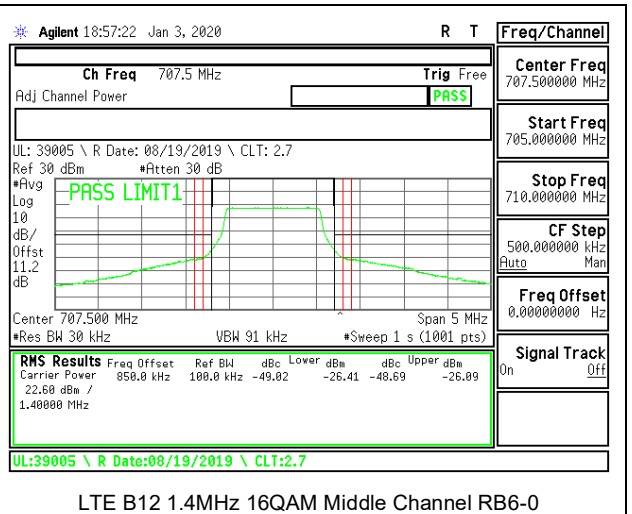
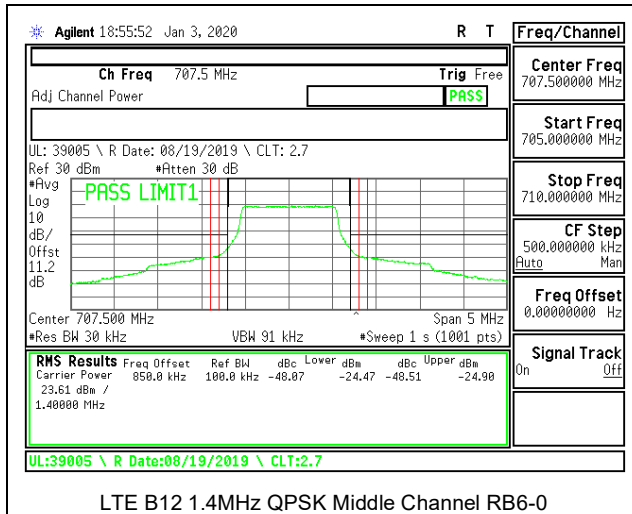
8.2.11. LTE BAND 12 ADJACENT CHANNEL POWER

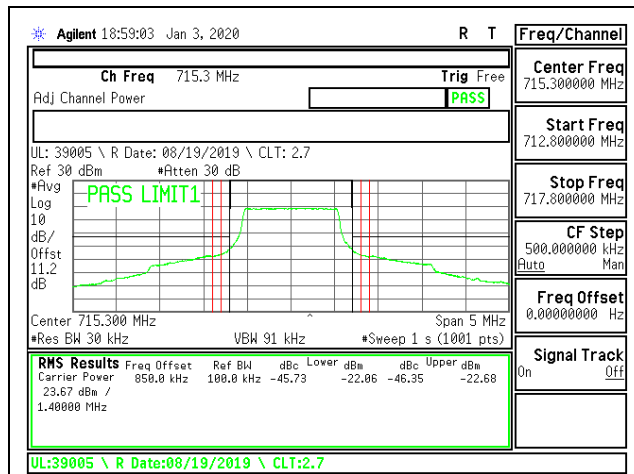
LIMITS

FCC: §27.53

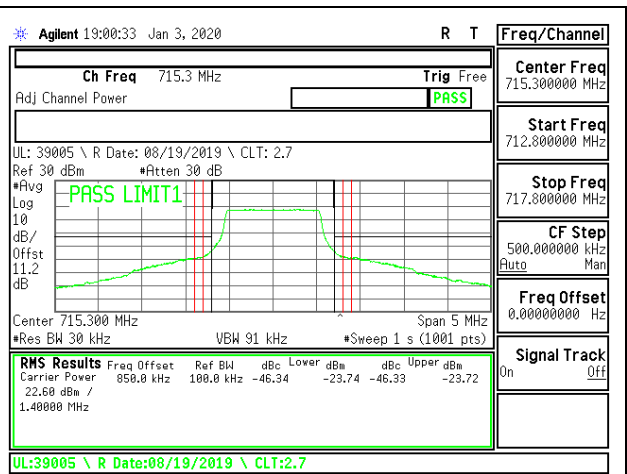
(g) For operations in the 600 MHz band and the 698-746 MHz band, the power of any emission outside a licensee's frequency band(s) of operation shall be attenuated below the transmitter power (P) within the licensed band(s) of operation, measured in watts, by at least $43 + 10 \log(P)$ dB. Compliance with this provision is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kilohertz or greater. However, in the 100 kilohertz bands immediately outside and adjacent to a licensee's frequency block, a resolution bandwidth of at least 30 kHz may be employed.



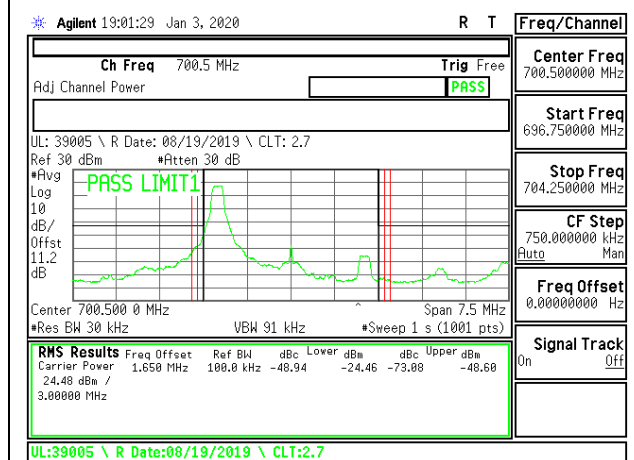




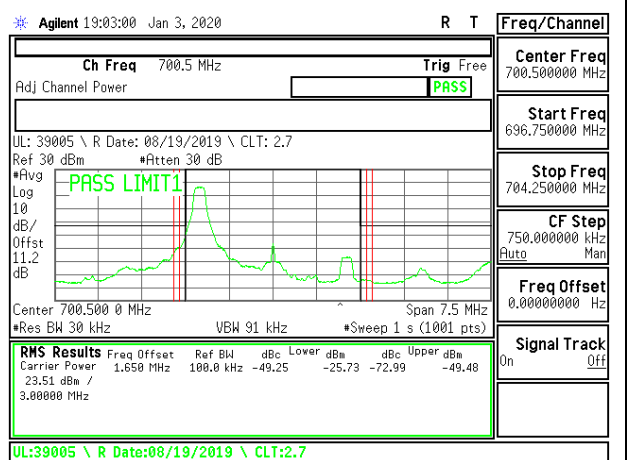
LTE B12 1.4MHz QPSK High Channel RB6-0



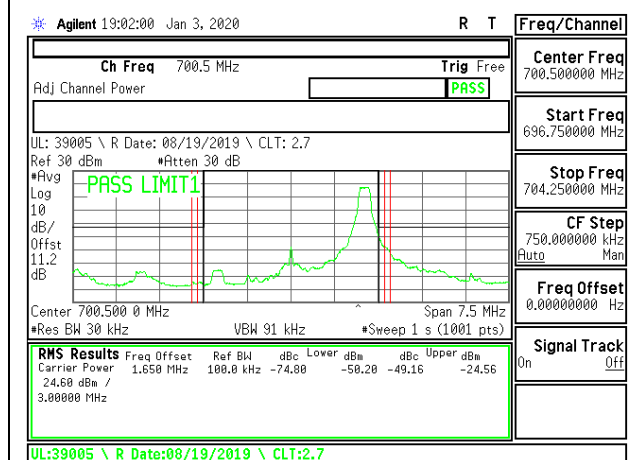
LTE B12 1.4MHz 16QAM High Channel RB6-0



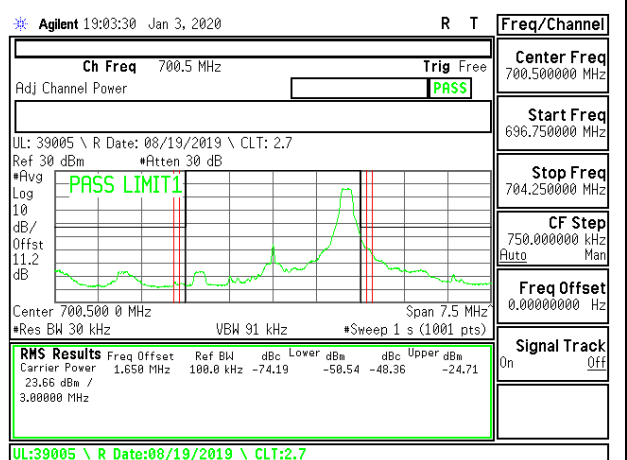
LTE B12 3MHz QPSK Low Channel RB1-0



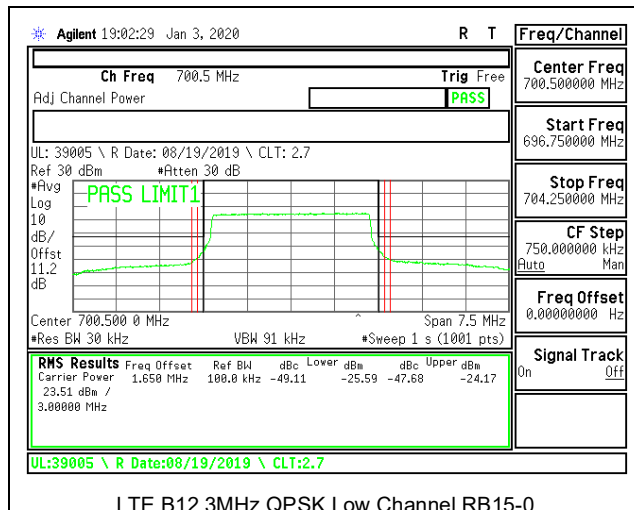
LTE B12 3MHz 16QAM Low Channel RB1-0



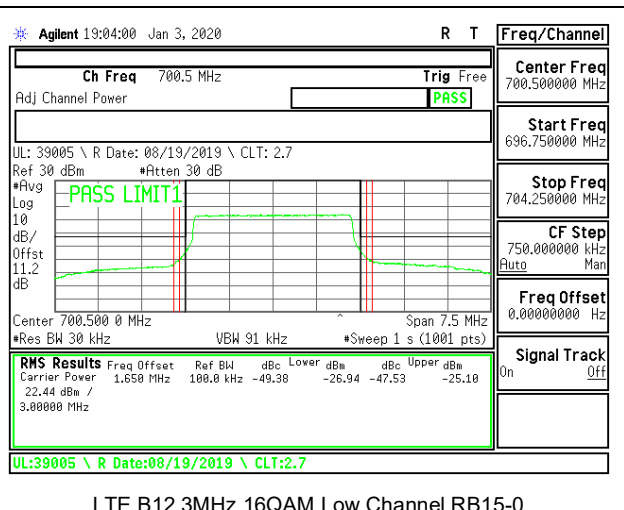
LTE B12 3MHz QPSK Low Channel RB1-14



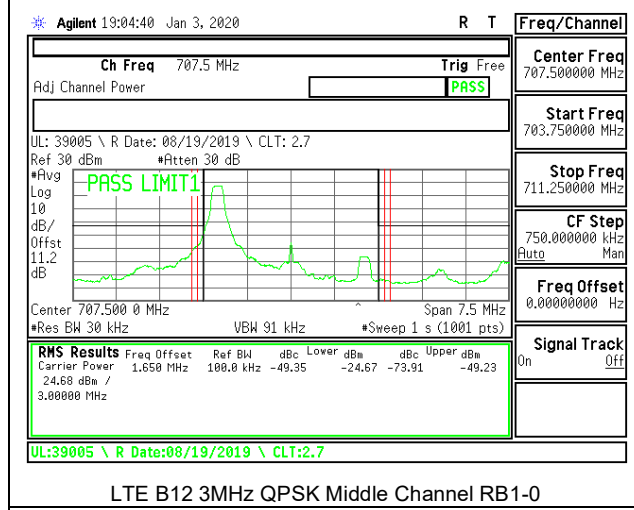
LTE B12 3MHz 16QAM Low Channel RB1-14



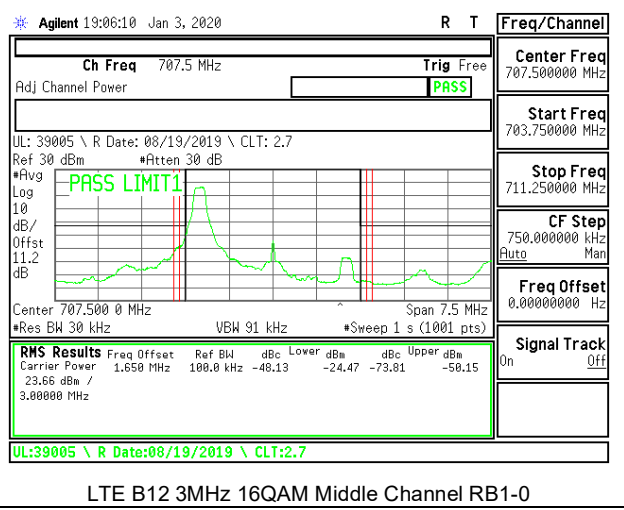
LTE B12 3MHz QPSK Low Channel RB15-0



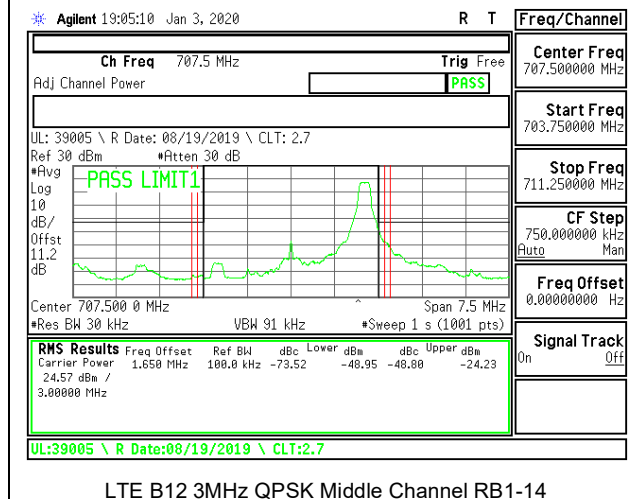
LTE B12 3MHz 16QAM Low Channel RB15-0



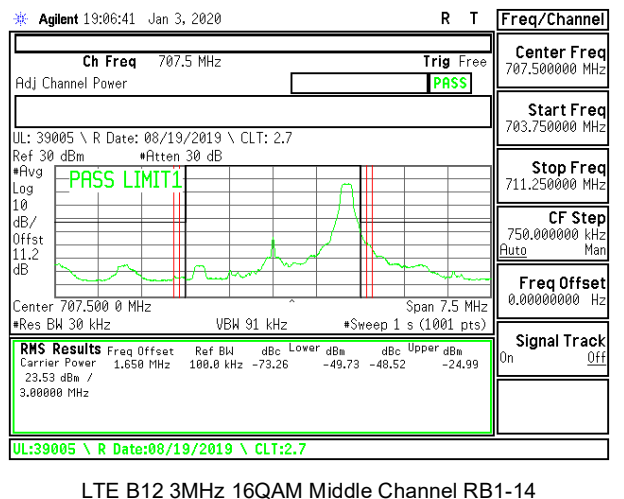
LTE B12 3MHz QPSK Middle Channel RB1-0



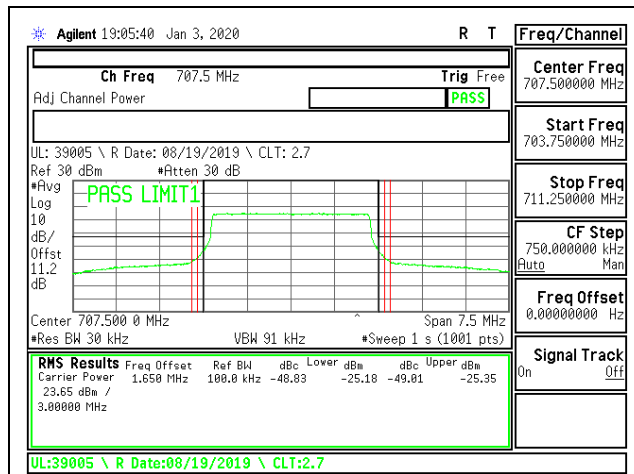
LTE B12 3MHz 16QAM Middle Channel RB1-0



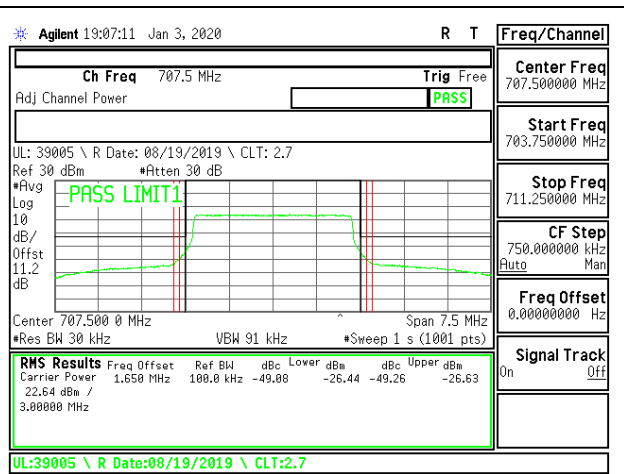
LTE B12 3MHz QPSK Middle Channel RB1-14



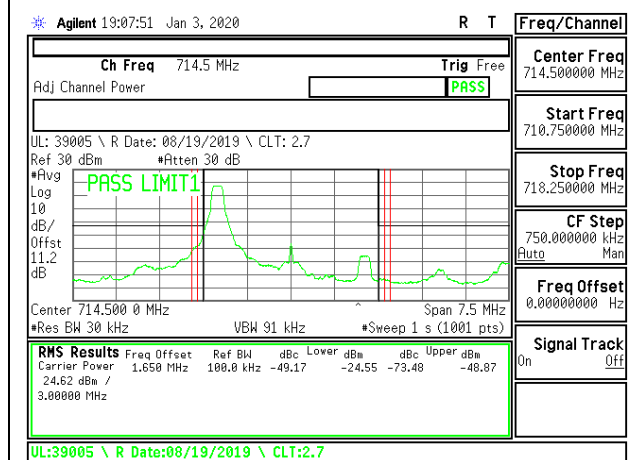
LTE B12 3MHz 16QAM Middle Channel RB1-14



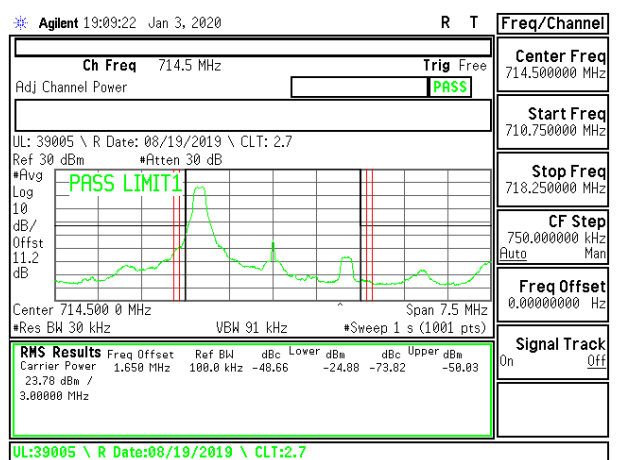
LTE B12 3MHz QPSK Middle Channel RB15-0



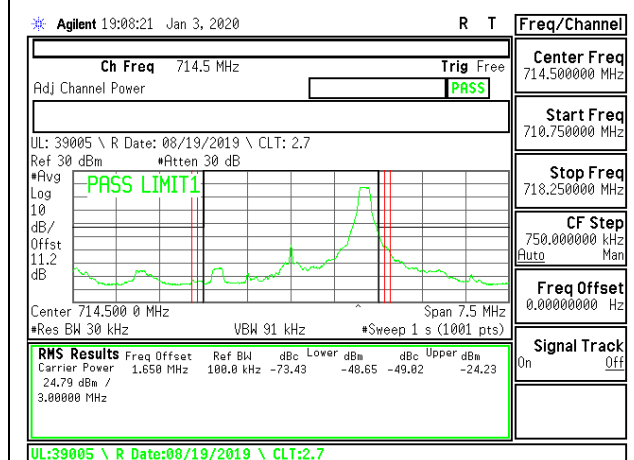
LTE B12 3MHz 16QAM Middle Channel RB15-0



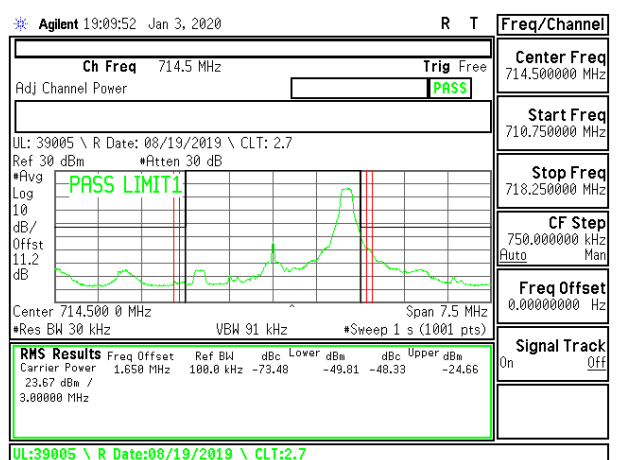
LTE B12 3MHz QPSK High Channel RB1-0



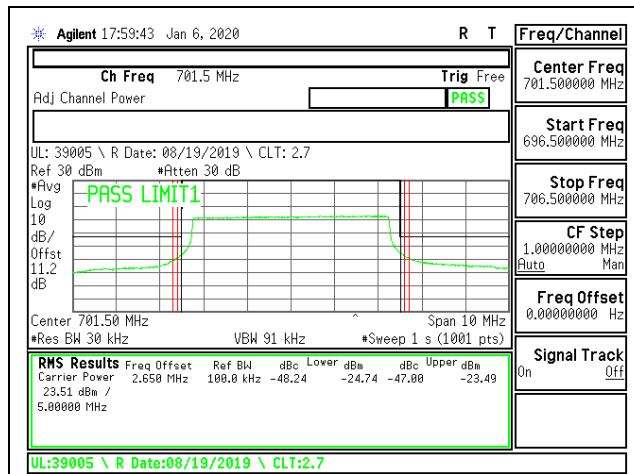
LTE B12 3MHz 16QAM High Channel RB1-0



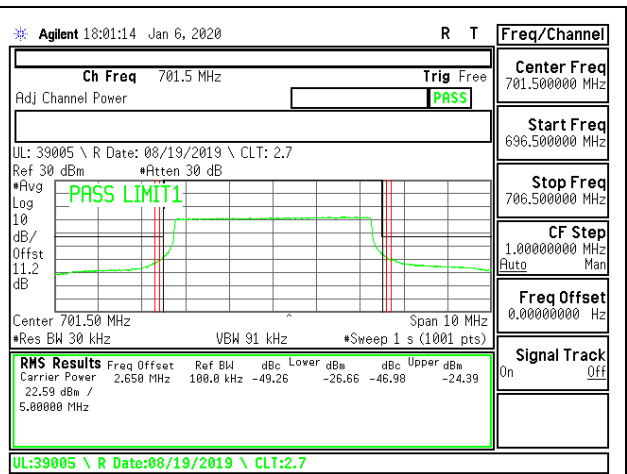
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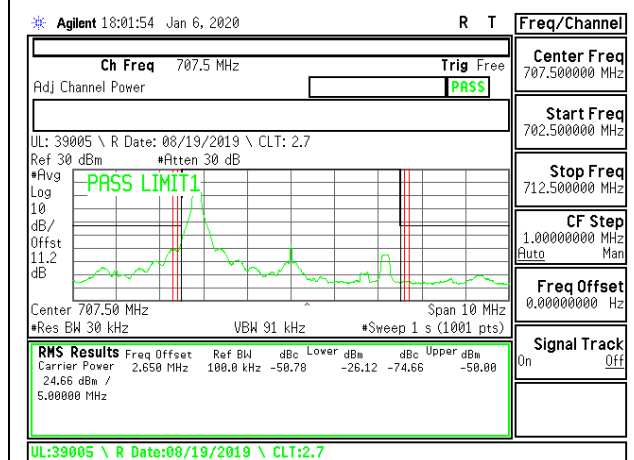
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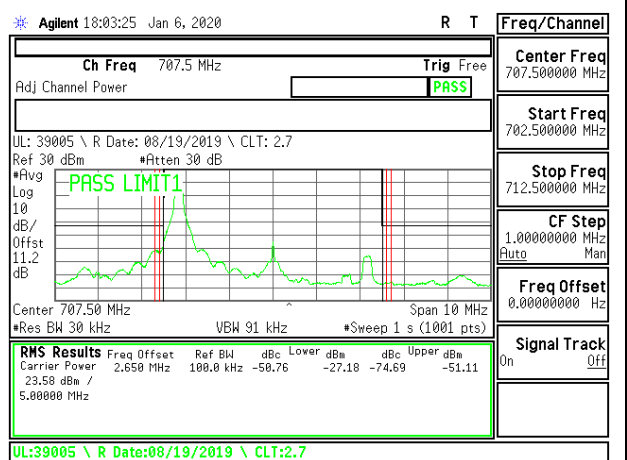
LTE B12 5MHz QPSK Low Channel RB25-0



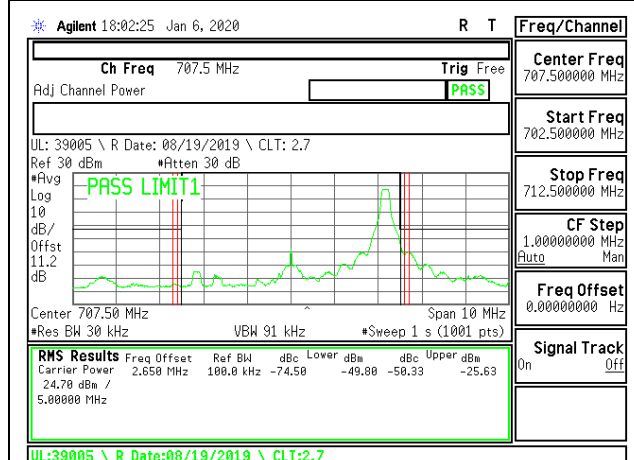
LTE B12 5MHz 16QAM Low Channel RB25-0



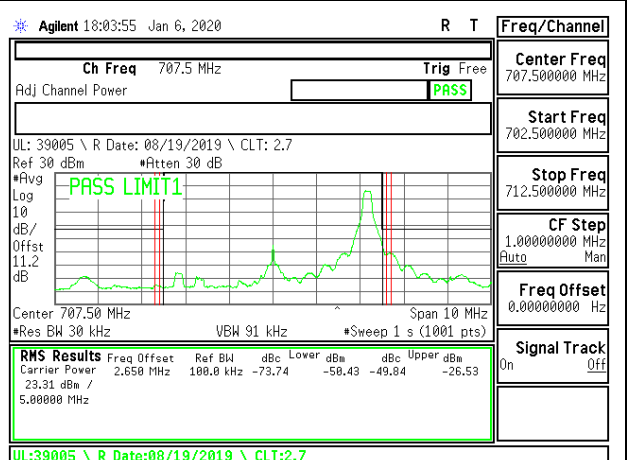
LTE B12 5MHz QPSK Middle Channel RB1-0



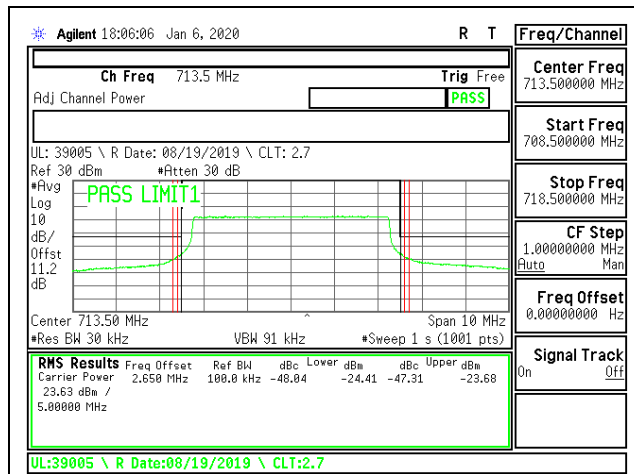
LTE B12 5MHz 16QAM Middle Channel RB1-0



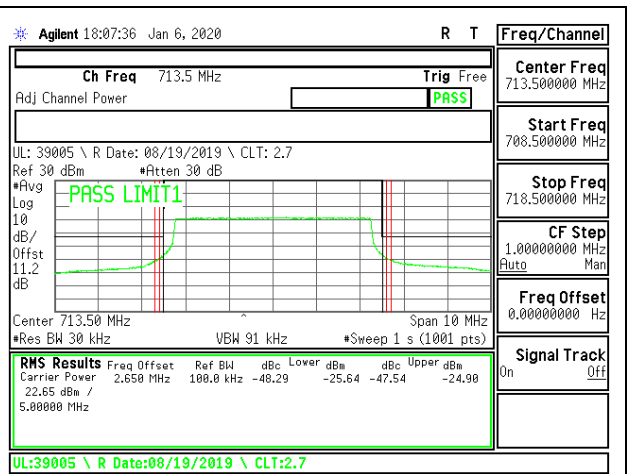
LTE B12 5MHz QPSK Middle Channel RB1-24



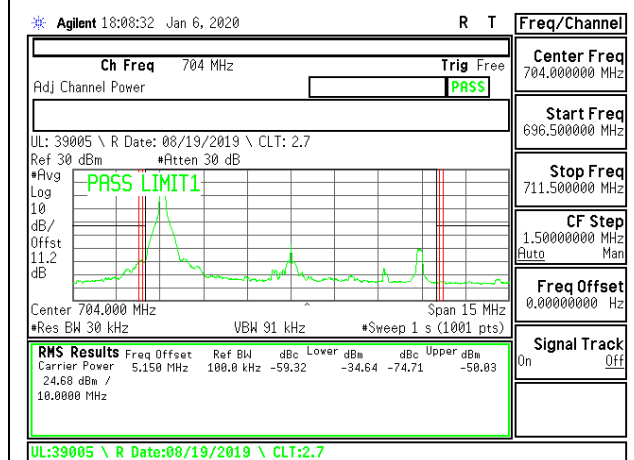
LTE B12 5MHz 16QAM Middle Channel RB1-24



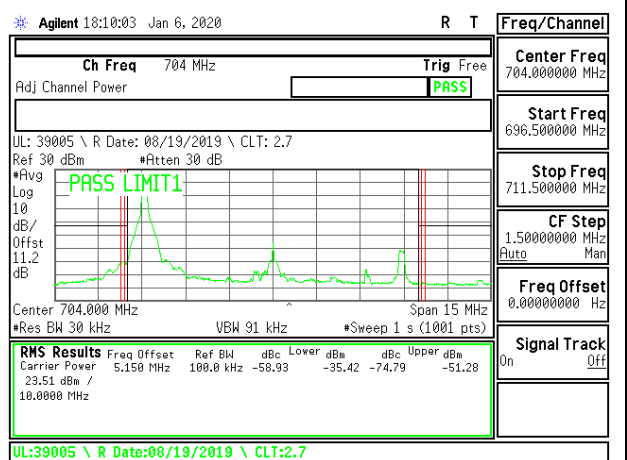
LTE B12 5MHz QPSK High Channel RB25-0



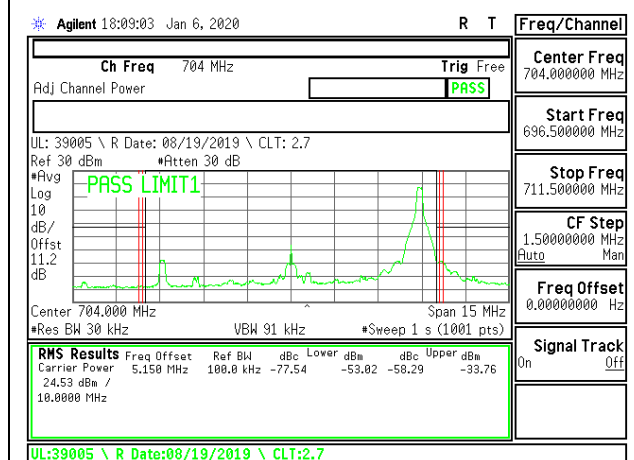
LTE B12 5MHz 16QAM High Channel RB25-0



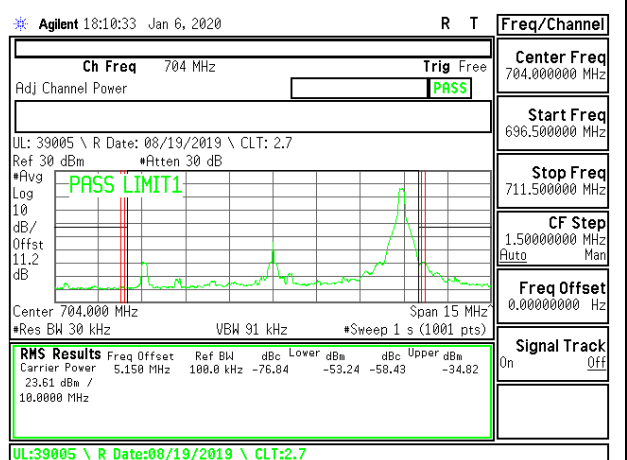
LTE B12 10MHz QPSK Low Channel RB1-0



LTE B12 10MHz 16QAM Low Channel RB1-0



LTE B12 10MHz QPSK Low Channel RB1-49



LTE B12 10MHz 16QAM Low Channel RB1-49