CERTIFICATION TEST REPORT

Report Number. : 12901678 - E10V1

Applicant	:	APPLE, INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	:	A2161, A2219, AND A2220
FCC ID	:	BCG-E3306A
EUT Description	:	SMARTPHONE
Test Standard(s)	:	FCC CFR47 PART 22 H, PART 27

Date Of Issue:
AUGUST 21, 2019

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

NVLAP TESTING

NVLAP Lab code: 200065-0

Revision History

Rev.	Issue Date	Revisions	Revised By
V1	8/21/2019	Initial Review	Mengistu Mekuria

TABLE OF CONTENTS

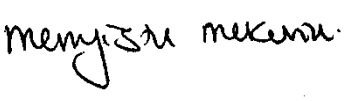
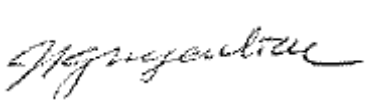
1. ATTESTATION OF TEST RESULTS

Applicant Name and Address	APPLE, INC. 1 APPLE PARK WAY CUPERTINO, CA 95014, U.S.A.
Model	A2161, A2219, AND A2220
FCC ID	BCG-E3306A
EUT Description	SMARTPHONE
Serial Number	G6TYW014N397 (Conducted), G6TYW034N395 (Radiated).
Date Tested	MAY 23, 2019 to AUGUST 02, 2019
Applicable Standards	FCC CFR47 PART 22H, PART 27
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:	Prepared By:
	
Mengistu Mekuria Project Engineer UL Verification Services Inc.	Lieu Nguyen Test Engineer UL Verification Services Inc.

2. TEST METHODOLOGY

The tests documented in this report were performed in accordance with ANSI C63.26:2015, FCC CFR 47 Part 2, FCC KDB 971168 D01 v03r01/ D02 v02r01, KDB 412172 D01 Determining ERP and EIRP v01r01, Part 22H, Part 27.

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 Rd.
☒ Chamber A (ISED:2324B-1)	☐ Chamber D (ISED:22541-1)	☐ Chamber I (ISED: 2324A-5)
☒ Chamber B (ISED:2324B-2)	☐ Chamber E (ISED:22541-2)	☐ Chamber J (ISED: 2324A-6)
☐ Chamber C (ISED:2324B-3)	☐ Chamber F (ISED:22541-3)	☐ Chamber K (ISED: 2324A-1)
	☐ Chamber G (ISED:22541-4)	☐ Chamber L (ISED: 2324A-3)
	☐ Chamber H (ISED:22541-5)	

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.

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:
Field Strength (dBuV/m) = Measured Voltage (dBuV) + Antenna Factor (dB/m) + Cable Loss (dB) – Preamp Gain (dB)
36.5 dBuV + 18.7 dB/m + 0.6 dB – 26.9 dB = 28.9 dBuV/m

MAINS CONDUCTED EMISSIONS

Where relevant, the following sample calculation is provided:
Final Voltage (dBuV) = Measured Voltage (dBuV) + Cable Loss (dB) + Limiter Factor (dB) + LISN Insertion Loss.
36.5 dBuV + 0 dB +10.1 dB+ 0 dB = 46.6 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	3.84 dB
Conducted Disturbance, 0.15 to 30 MHz	3.65 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 Apple iPhone is a smartphone with multimedia functions (music, application support, and video), cellular GSM, GPRS, EGPRS, UMTS, LTE, TD-SCDMA, CDMA, IEEE 802.11a/b/g/n/ac/ax, Bluetooth, Ultra-Wide band, GPS and NFC. All models support at least one UICC based SIM. The second SIM, if present, is either UICC based pSIM (physical SIM) or e-SIM (electronic SIM). The device has a built-in inductive charging receiver. The rechargeable battery is also not user accessible.

5.2. DIFFERENCE IN MODEL NUMBER

Model A2161, A2219 and A2220 is electrically identical to Model A2161. Three model numbers are allocated for marketing and logistic purposes only. A2161 was used to perform all final tests.

5.3. MAXIMUM OUTPUT POWER

EIRP LIMIT

FCC: §2.1046, §22.913, §27.50

EIRP TEST PROCEDURE

ANSI C63.26:2015
KDB 971168 D01 Section 5.6

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

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

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

OUTPUT POWER FOR LTE BAND 5

Part 22H	
ERP Limit (W)	7.00
Antenna Gain (dBi)	-5.50

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	ERP Average (dBm)	ERP Average (W)	99% BW (kHz)	Emission Designator
3+5	QPSK	825.5	846.5	24.8	17.15	0.052	7539.6	7M54G7W
	16QAM			24.3	16.65	0.046	7511.3	7M51D7W
	64QAM			23.8	16.15	0.041	7546.6	7M55D7W
5+3	QPSK	826.5	847.5	24.9	17.25	0.053	7559.2	7M56G7W
	16QAM			23.5	15.85	0.038	7514.5	7M51D7W
	64QAM			22.8	15.15	0.033	7524.6	7M52D7W
5+10	QPSK	826.5	844.0	25.0	17.35	0.054	13861.3	13M9G7W
	16QAM			24.0	16.35	0.043	13878.2	13M9D7W
	64QAM			22.5	14.85	0.031	13866.0	13M9D7W
10+5	QPSK	829.0	846.5	25.0	17.35	0.054	13894.4	13M9G7W
	16QAM			24.1	16.45	0.044	13842.9	13M8D7W
	64QAM			23.1	15.45	0.035	13856.0	13M9D7W
10+10	QPSK	829.0	844.0	25.0	17.35	0.054	18859.8	18M9G7W
	16QAM			24.2	16.55	0.045	18827.2	18M8D7W
	64QAM			23.2	15.55	0.036	18742.0	18M7D7W

OUTPUT POWER FOR LTE BAND 7

Part 27 / RSS 199	
EIRP Limit (W)	2.00
Antenna Gain (dBi)	-2.30

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (kHz)	Emission Designator
10+20	QPSK	2505.5	2560.0	24.1	21.80	0.151	28132.6	28M1G7W
	16QAM			23.3	21.00	0.126	28190.8	28M2D7W
	64QAM			21.7	19.40	0.087	27995	28M0D7W
20+10	QPSK	2510.0	2564.5	24.5	22.20	0.166	28194.3	28M2G7W
	16QAM			23.5	21.20	0.132	28053.5	28M1D7W
	64QAM			22.5	20.20	0.105	27905	27M9D7W
15+15	QPSK	2507.5	2562.5	24.3	22.00	0.158	28665.5	28M7G7W
	16QAM			22.0	19.70	0.093	28554	28M6D7W
	64QAM			21.1	18.80	0.076	28427	28M4D7W
15+20	QPSK	2507.8	2560.0	24.3	22.00	0.158	32855	32M9G7W
	16QAM			23.4	21.10	0.129	32851.5	32M9D7W
	64QAM			22.8	20.50	0.112	32873	32M9D7W
20+15	QPSK	2510.0	2562.2	24.5	22.20	0.166	32984.4	33M0G7W
	16QAM			23.5	21.20	0.132	32849.7	32M8D7W
	64QAM			22.8	20.50	0.112	32718	32M7D7W
20+20	QPSK	2510.0	2560.0	24.3	22.00	0.158	37734	37M7G7W
	16QAM			23.6	21.30	0.135	37648.2	37M6D7W
	64QAM			22.9	20.60	0.115	37641	37M6D7W

OUTPUT POWER FOR LTE BAND 41

Part 27	
EIRP Limit (W)	2.00
Antenna Gain (dBi)	-2.30

Bandwidth (MHz)	Modulation	Low Frequency (MHz)	Upper Frequency (MHz)	Conducted Average (dBm)	EIRP Average (dBm)	EIRP Average (W)	99% BW (kHz)	Emission Designator
5+20	QPSK	2499.3	2680.0	26.4	24.10	0.257	23359	23M4G7W
	16QAM			25.8	23.50	0.224	23246	23M2D7W
	64QAM			24.7	22.40	0.174	23123	23M1D7W
20+5	QPSK	2506.0	2686.7	26.5	24.20	0.263	23322.1	23M3G7W
	16QAM			25.6	23.30	0.214	23276.2	23M3D7W
	64QAM			24.6	22.30	0.170	23087	23M1D7W
10+20	QPSK	2501.5	2680.0	26.4	24.10	0.257	27996	28M0G7W
	16QAM			25.5	23.20	0.209	27949	27M9D7W
	64QAM			24.7	22.40	0.174	27881	27M9D7W
20+10	QPSK	2506.0	2684.5	26.5	24.20	0.263	28110.8	28M1G7W
	16QAM			25.5	23.20	0.209	27716	27M7D7W
	64QAM			24.6	22.30	0.170	27926	27M9D7W
15+15	QPSK	2503.5	2682.5	26.4	24.10	0.257	28215	28M2G7W
	16QAM			25.5	23.20	0.209	28048	28M0D7W
	64QAM			24.5	22.20	0.166	28670	28M7D7W
15+20	QPSK	2503.8	2680.0	26.5	24.20	0.263	32537	32M5G7W
	16QAM			25.4	23.10	0.204	32392	32M4D7W
	64QAM			24.7	22.40	0.174	32733	32M7D7W
20+15	QPSK	2506.0	2682.2	26.3	24.00	0.251	32478	32M5G7W
	16QAM			25.6	23.30	0.214	32276	32M3D7W
	64QAM			24.7	22.40	0.174	32568	32M6D7W
20+20	QPSK	2506.0	2680.0	26.5	24.20	0.263	37377	37M4G7W
	16QAM			25.7	23.40	0.219	37681.3	37M7D7W
	64QAM			24.6	22.30	0.170	37627	37M6D7W

5.4. SOFTWARE AND FIRMWARE

The EUT Firmware installed during testing was version: 19-01.1919.01_27-0.22.00-27.

5.5. MAXIMUM ANTENNA GAIN

Please see table below:

LTE Bands	Ant 1 Gain (dBi)	Ant 2 Gain (dBi)	Ant 3 Gain (dBi)	Ant 4 Gain (dBi)
LTE Band 5, 824 – 849 MHz	-5.5	-6.3	N/A	N/A
LTE Band 7, 2500 – 2570 MHz	-3.7	-6.3	-2.3	-1.1
LTE Band 41, 2498 – 2690 MHz	-3.6	-5.7	-2.3	-1.1

5.6. WORST-CASE CONFIGURATION AND MODE

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

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. Tests were performed on the conducted test at LAT 1 antenna as worst case since it has higher output powers.

The EUT was investigated in three orthogonal orientations X/Y/Z on antennas 1, 2, 3, and 4. For ANT 1 antenna, it was determined that Z (Portrait) orientation was worst-case orientation for bands 5; X (Flatbed) orientation was worst-case orientation for bands 7, and 41 without AC/DC adapter.
For ANT 2 antenna, it was determined that Y (Landscapet) orientation was worst-case orientation for band 5; X (Flatbed) orientation was worst-case orientation for bands 7, and 41 without AC/DC adapter.
For ANT 3 antenna, it was determined that X (Flatbed) orientation was worst-case orientation for bands 7, 41 without AC/DC adapter.
For ANT 4 antenna, it was determined that X (Flatbed) orientation was worst-case orientation for bands 7 and 41 without AC/DC adapter

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

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

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

For simultaneous transmission of multiple channels in the 2.4GHz/5GH WLAN, UWB, and Cellular bands, tests were conducted for various configurations having the highest power, least separation in frequencies and widest operation bandwidths. No noticeable new emission was found.

For interband transmission of multiple channels in Ant 1 and Ant 3 in Cellular bands, tests were conducted for various configurations having the highest power, least separation in frequencies and widest operation bandwidths. No noticeable new emission was found.

5.7. DESCRIPTION OF TEST SETUP

SUPPORT EQUIPMENT

Support Equipment List			
Description	Manufacturer	Model	Serial Number
Laptop AC/DC adapter	Apple	85W MagSafe 2	C0651730MMMG6P4AL
Laptop	Apple	Macbook Pro	C02PM012G3QD
Laptop	Apple	Macbook Pro	C02P52HGG085

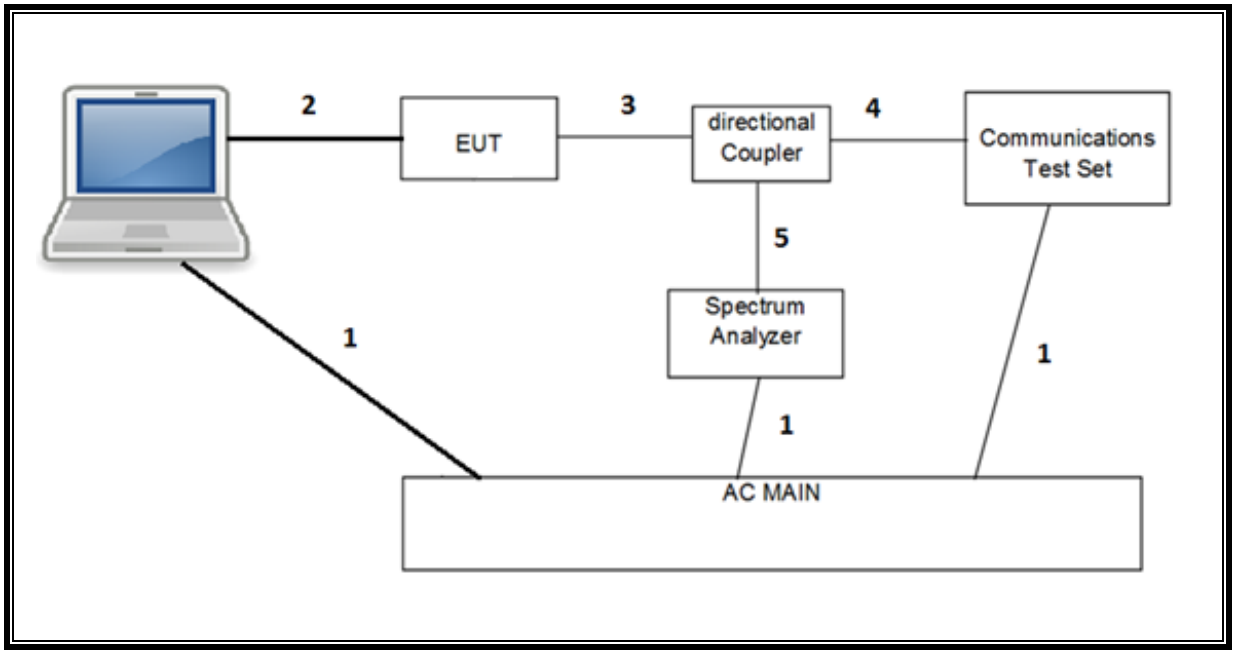
I/O CABLES (RF Conducted Test)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	AC	3	US 115V	Un-shielded	2.0m	N/A
2	USB	1	DC	Un-shielded	1.0m	N/A
3	RF In/Out	1	EUT	Un-shielded	0.6m	N/A
4	RF In/Out	1	Communication Test Set	Un-shielded	1.2m	N/A
5	RF In/Out	1	Barrel	N/A	N/A	N/A

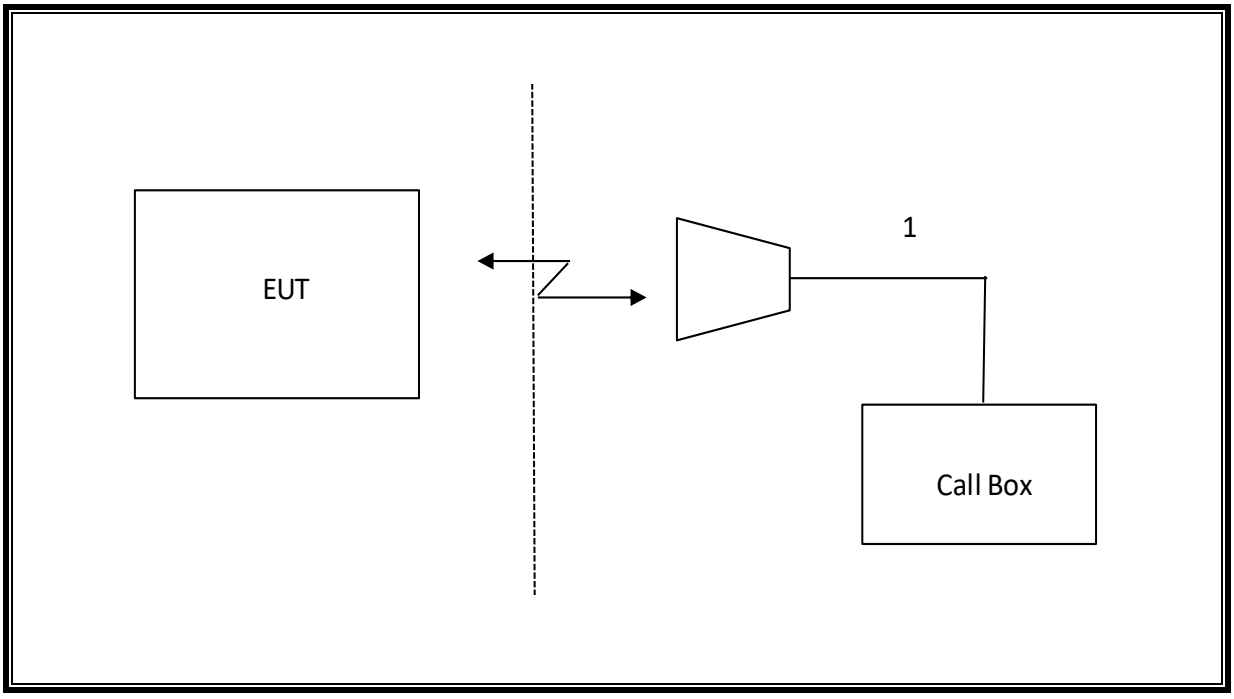
I/O CABLES (RF Radiated Test)

I/O Cable List						
Cable No	Port	# of identical ports	Connector Type	Cable Type	Cable Length (m)	Remarks
1	RF In/Out	1	Antenna	Un-shielded	5.0m	N/A

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**	**Asset**	**Cal Due**
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	T15	08/15/2019
Amplifier, 18-26GHz	Agilent	8449B	T404	3/23/2020
Amplifier, 26-40GHz	Miteq	TTA2640	T1804	3/23/2020
Spectrum Analyzer, PXA 3Hz to 44GHZ	Agilent	N9030A	T905	1/24/2020
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T340	01/22/2020
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T1454	01/23/2020
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T908	01/23/2020
Spectrum Analyzer, PXA 3Hz to 44GHz	Keysight	N9030A	T339	01/29/2020
Amplifier, 1 to 18GHz	MITEQ	AFS42-00101800-25-S-42	T931	05/11/2020
Amplifier, 10KHz to 1GHz, 32dB	Sonoma	310N	PRE0180176	11/01/2019
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight	E4446A	T123	01/28/2020
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight	E4440A	T198	01/30/2020
Spectrum Analyzer, PSA, 3Hz to 44GHz	Keysight	E4440A	T99	1/28/2020
Directional Coupler	KRYTAR	152610	T1536	07/09//2020
Directional Coupler	KRYTAR	152610	T1537	07/09/2020
Wireless Communications Test Set, 8960 Series 10	Agilent	E5515C	T211	05/10/2020
Filter, HPF 3.0GHz	Micro-Tronics	HPM17543	T487	12/04/2019
Filter, HPF 1.2GHz	Micro-Tronics	WHKX1.2/15G-6ST	T1182	05/30/2020
Spectrum Analyzer, PXA, 3Hz to 44GHz	Keysight	N9030A	T459	01/24/2020
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	T959	02/16/2020
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	T1871	02/18/2020
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	T921	02/18/2020
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	T376	02/21/2020
Wideband Communication Test Set, Call Box	R&S GmbH & Co. KG	CMW500	T958	02/20/2020
Chamber, Environmental	Cincinnati Sub Zero	ZPHS-8-3.5-SCT/WC	T754	08/15/2019
Power Meter, P-series single channel	Keysight	N1911A	T1268	01/31/2020
Power Sensor	Keysight	N1921A	T1228	03/01/2020
Antenna, Horn 1-18GHz	ETS Lindgren	T3117	T346	05/14/2020
Antenna, Horn 1-18GHz	ETS Lindgren	3117	T344	05/07/2020
*Antenna, Horn 18-26GHz	ARA	MWH-1826/B	T447	*6/16/2019
Antenna, Horn 26-40GHz	ARA	MWH-2640/B	T446	8/9/2019
*Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	PRE0181574	*08/01/2019
Antenna, Broadband Hybrid, 30MHz to 2000MHz	Sunol Sciences	JB3	PRE0077974	05/13/2020
Antenna, Active Loop 9KHz to 30MHz	EMCO	6502	T1616	10/18/2019
UL AUTOMATION SOFTWARE				
CLT Software	UL	UL RF	Ver 9.5, April 26, 2016	
Power Measurement Software	UL	UL RF	Ver 2.2, June 2017	

NOTES:

1. For equipment listed above that had a calibration due during the testing period, its use was paused to allow for calibration.
2. * the testing done with this equipment was completed before calibration expiration date

7. RF OUTPUT POWER VERIFICATION

RULE PART(S)

FCC: §2.1046

MODES TESTED

- LTE Band 5
- LTE Band 7
- LTE Band 41

RESULT

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

7.1. LTE BAND 5

ID:	39004	Date:	6/8/19

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)					
							Ant 1			Ant 2		
							QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
3MHz / 5MHz	825.5	829.4	1	14	1	0	**24.8**	**24.3**	**23.8**	**22.9**	**21.8**	20.9
			15	0	25	0	23.5	22.8	22.2	21.4	20.4	19.5
	834.0	837.9	1	14	1	0	24.8	24.2	23.6	22.7	21.5	20.9
			15	0	25	0	23.3	22.7	22.1	21.2	20.3	19.3
	43.6	847.5	1	14	1	0	24.5	24.0	23.5	22.8	21.6	**20.9**
			15	0	25	0	23.2	22.6	22.0	21.3	20.4	19.4

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)					
							Ant 1			Ant 2		
							QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz / 3MHz	826.5	830.4	1	24	1	0	24.8	23.4	22.6	**23.4**	**22.6**	**21.6**
			25	0	15	0	23.3	22.2	21.2	21.1	20.3	19.0
	835.0	838.9	1	24	1	0	**24.9**	**23.5**	22.4	22.9	22.1	21.2
			25	0	15	0	23.2	22.3	21.1	20.8	19.9	18.9
	842.6	846.5	1	24	1	0	24.8	**23.5**	**22.8**	23.1	22.3	21.4
			25	0	15	0	23.0	22.2	21.1	20.9	19.8	18.9

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)					
							Ant 1			Ant 2		
							QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz / 10MHz	826.5	833.7	1	24	1	0	24.8	24.0	**22.5**	23.3	**22.3**	**21.2**
			25	0	50	0	23.0	21.9	20.9	21.1	20.1	19.0
	831.6	838.8	1	24	1	0	**25.0**	**24.0**	22.3	23.3	22.3	21.1
			25	0	50	0	22.8	21.8	20.6	21.2	20.1	19.0
	836.8	844.0	1	24	1	0	24.7	23.7	21.7	**23.4**	22.1	21.2
			25	0	50	0	22.7	21.6	20.2	21.1	20.1	19.8

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)					
							Ant 1			Ant 2		
							QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
10MHz/ 5MHz	829.0	836.2	1	49	1	0	**25.0**	**24.1**	**23.1**	23.3	22.7	20.9
			1	0	1	24	16.4	16.2	15.4	15.1	14.9	14.6
			50	0	25	0	23.1	21.9	21.0	21.8	20.6	20.2
	834.3	841.5	1	49	1	0	24.8	24.0	23.0	**23.4**	22.7	**21.5**
			1	0	1	24	16.4	16.3	15.6	15.1	14.9	14.5
			50	0	25	0	22.8	21.8	21.0	21.8	20.6	20.3
	839.3	846.5	1	49	1	0	24.8	23.9	22.9	23.4	**22.8**	21.4
			1	0	1	24	16.4	16.1	15.7	15.1	14.9	14.5
			50	0	25	0	22.6	21.6	20.8	21.5	20.5	20.1

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB Size	PCC RB Offset	SCC1 RB Size	SCC1 RB Offset	Conducted Average (dBm)					
							Ant 1			Ant 2		
							QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
10MHz/ 10MHz	829.0	838.9	1	49	1	0	**25.0**	**24.2**	**23.2**	23.3	**22.4**	21.2
			1	0	1	49	16.8	16.5	15.5	14.5	13.8	13.3
			50	0	50	0	22.8	21.8	21.0	21.1	19.9	19.3
	831.5	841.4	1	49	1	0	24.8	24.0	23.1	**23.3**	22.2	**21.2**
			1	0	1	49	16.7	16.3	15.5	14.8	14.4	13.4
			50	0	50	0	22.7	21.8	21.0	21.1	19.8	19.0
	834.1	844.0	1	49	1	0	24.9	24.0	23.1	23.3	22.2	21.0
			1	0	1	49	16.7	16.3	15.4	14.9	14.4	13.5
			50	0	50	0	22.7	21.7	20.9	21.0	19.9	19.0

7.2. LTE BAND 7

ID:	39004	Date:	6/12/19

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
10MHz / 20MHz	2505.5	2519.9	1	49	1	0	24.9	23.9	23.2	20.3	**19.2**	**18.2**
			50	0	100	0	23.0	22.0	21.4	18.5	17.5	17.3
	2525.6	2540.0	1	49	1	0	24.8	**24.1**	**23.7**	20.5	19.0	18.1
			50	0	100	0	22.8	21.9	21.3	18.3	17.3	17.2
	2545.5	2560.0	1	49	1	0	**25.0**	23.9	23.4	**20.5**	19.1	18.0
			50	0	100	0	22.9	22.2	21.1	18.2	17.3	17.1

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
10MHz / 20MHz	2505.5	2519.9	1	49	1	0	23.8	**23.3**	**21.7**	18.4	**17.9**	**16.8**
			50	0	100	0	22.1	21.1	19.4	16.2	15.6	15.3
	2525.6	2540.0	1	49	1	0	23.9	23.3	20.9	18.3	17.2	16.5
			50	0	100	0	22.2	21.2	19.6	16.2	15.6	15.4
	2545.5	2560.0	1	49	1	0	**24.1**	23.2	21.6	**18.5**	17.8	16.2
			50	0	100	0	21.8	20.9	20.2	16.6	15.7	15.2

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 10MHz	2510.0	2524.4	1	99	1	0	**24.9**	**23.9**	**22.7**	**20.5**	**19.5**	**18.2**
			1	0	1	49	17.3	16.3	15.3	13.7	12.7	11.5
			100	0	50	0	22.7	21.8	20.7	18.2	17.2	16.4
	2530.1	2544.5	1	99	1	0	24.6	23.5	22.5	20.2	19.2	18.1
			1	0	1	49	17.1	15.9	15.1	13.5	12.5	11.6
			100	0	50	0	22.4	21.4	20.5	18.0	17.0	16.6
	2550.1	2564.5	1	99	1	0	24.4	23.6	22.6	20.3	19.3	**18.2**
			1	0	1	49	16.9	15.7	15.1	13.4	12.5	11.3
			100	0	50	0	22.2	21.3	20.4	18.0	17.0	16.3

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 10MHz	2510.0	2524.4	1	99	1	0	**24.5**	**23.5**	21.9	**18.5**	**17.4**	16.4
			1	0	1	49	17.5	16.4	15.4	10.8	9.9	8.7
			100	0	50	0	22.2	21.2	20.5	16.4	15.4	14.2
	2530.1	2544.5	1	99	1	0	24.3	23.3	**22.5**	17.8	17.1	16.2
			1	0	1	49	17.6	16.6	15.1	10.6	9.7	8.6
			100	0	50	0	22.3	21.3	20.5	15.8	15.1	14.6
	2550.1	2564.5	1	99	1	0	24.4	23.0	22.3	18.3	**17.4**	**16.6**
			1	0	1	49	17.2	16.3	15.3	10.4	9.5	9.0
			100	0	50	0	21.9	20.9	20.1	16.0	15.0	14.3

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15MHz / 15MHz	2507.5	2522.5	1	74	1	0	**25.0**	**24.0**	**23.2**	**20.3**	**19.3**	18.1
			75	0	75	0	22.9	21.9	21.1	18.1	17.2	16.4
	2527.5	2542.5	1	74	1	0	24.7	23.7	23.0	20.2	19.2	**18.1**
			75	0	75	0	22.5	21.6	20.9	18.0	16.9	16.5
	2547.5	2562.5	1	74	1	0	24.6	23.7	23.0	20.0	19.1	18.0
			75	0	75	0	22.4	21.5	20.8	17.8	16.9	16.2

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15MHz / 15MHz	2507.5	2522.5	1	74	1	0	23.9	21.9	**21.1**	**18.4**	**17.5**	**16.9**
			75	0	75	0	20.7	19.7	19.0	16.2	15.3	14.1
	2527.5	2542.5	1	74	1	0	23.9	**22.0**	20.9	18.1	17.2	16.7
			75	0	75	0	20.8	19.8	19.1	16.0	15.0	14.3
	2547.5	2562.5	1	74	1	0	**24.3**	21.7	21.0	18.0	17.2	16.7
			75	0	75	0	20.4	19.5	18.7	15.8	14.9	13.7

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15MHz / 20MHz	2507.8	2524.9	1	74	1	0	**25.0**	**24.2**	**23.2**	**20.4**	19.3	18.2
			75	0	100	0	23.2	22.1	20.9	18.2	17.3	16.9
	2525.3	2542.4	1	74	1	0	24.8	23.9	22.9	20.1	**19.3**	**18.3**
			75	0	100	0	22.8	21.8	20.8	18.1	17.1	16.8
	2542.9	2560.0	1	74	1	0	24.9	24.0	22.7	20.1	19.2	18.1
			75	0	100	0	22.6	21.7	20.7	18.0	17.0	16.7

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15MHz / 20MHz	2507.8	2524.9	1	74	1	0	24.1	23.4	22.6	**18.4**	**17.4**	**16.4**
			75	0	100	0	22.2	21.2	20.5	16.3	15.4	14.2
	2525.3	2542.4	1	74	1	0	**24.3**	**23.4**	**22.8**	18.3	17.4	16.3
			75	0	100	0	22.3	21.3	20.5	16.2	15.1	14.4
	2542.9	2560.0	1	74	1	0	24.1	23.3	22.5	18.0	17.1	16.1
			75	0	100	0	21.9	21.0	20.3	16.0	15.0	14.2

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 15MHz	2510.0	2527.1	1	99	1	0	**24.9**	**23.7**	**22.7**	**20.2**	**19.5**	**18.3**
			100	0	75	0	22.8	21.8	20.6	18.2	17.2	17.0
	2527.6	2544.7	1	99	1	0	24.5	23.6	22.5	20.2	19.2	18.2
			100	0	75	0	22.3	21.4	20.4	18.0	17.1	16.7
	2545.1	2562.2	1	99	1	0	24.5	23.5	22.5	20.2	19.3	18.1
			100	0	75	0	22.3	21.3	20.3	17.9	16.9	16.3

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 15MHz	2510.0	2527.1	1	99	1	0	**24.5**	**23.5**	**22.8**	**18.5**	**17.5**	**16.5**
			100	0	75	0	22.3	21.2	20.6	16.4	15.4	14.1
	2527.6	2544.7	1	99	1	0	24.3	23.4	22.5	18.1	17.3	16.2
			100	0	75	0	22.3	21.3	20.5	16.1	15.1	13.5
	2545.1	2562.2	1	99	1	0	23.9	23.2	22.4	18.2	17.2	16.2
			100	0	75	0	22.0	21.0	20.2	16.0	15.0	14.1

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz/ 20MHz	2510.0	2529.8	1	99	1	0	24.2	**23.8**	**22.9**	**20.4**	**19.4**	18.3
			1	0	1	99	22.3	16.0	14.8	12.4	11.5	11.3
			100	0	100	0	24.1	21.7	20.5	18.2	17.2	16.7
	2525.1	2544.9	1	99	1	0	23.9	23.5	22.6	20.2	19.2	**18.4**
			1	0	1	99	24.0	15.6	14.6	11.5	11.1	10.5
			100	0	100	0	21.8	21.4	20.4	18.1	16.9	16.0
	2540.2	2560.0	1	99	1	0	**24.9**	23.5	22.5	20.2	19.0	18.1
			1	0	1	99	23.7	15.5	14.7	12.1	11.1	10.5
			100	0	100	0	22.7	21.3	20.2	17.9	16.9	16.6

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz/ 20MHz	2510.0	2529.8	1	99	1	0	24.2	**23.6**	**22.9**	**18.3**	**17.4**	**16.3**
			1	0	1	99	13.3	13.2	12.8	10.1	9.2	8.4
			100	0	100	0	20.3	19.3	18.5	16.1	15.2	14.3
	2525.1	2544.9	1	99	1	0	**24.3**	23.5	22.6	18.1	17.0	16.0
			1	0	1	99	13.7	13.5	13.1	10.4	9.3	8.7
			100	0	100	0	20.4	19.3	18.5	16.0	14.9	14.4
	2540.2	2560.0	1	99	1	0	24.2	23.3	22.6	18.0	16.9	16.0
			1	0	1	99	13.8	13.3	12.4	9.8	8.9	8.2
			100	0	100	0	20.0	19.1	18.2	15.8	14.7	13.7

7.3. LTE BAND 41

ID:	39004	Date:	6/12/19

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz / 20MHz	2499.3	2511.0	1	24	1	0	25.1	24.8	**25.3**	22.9	21.8	20.9
			25	0	100	0	24.3	23.9	22.4	21.0	20.0	19.0
	2583.8	2595.5	1	24	1	0	27.0	24.0	25.2	23.0	22.0	21.1
			25	0	100	0	25.5	23.9	22.3	21.0	20.0	19.0
	2668.3	2680.0	1	24	1	0	**27.0**	**26.0**	25.0	**23.2**	**22.2**	**21.5**
			25	0	100	0	25.0	24.0	22.4	21.1	20.2	19.2

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
5MHz / 20MHz	2499.3	2511.0	1	24	1	0	**26.4**	**25.8**	24.6	**19.7**	**18.7**	**17.6**
			25	0	100	0	24.0	23.4	22.3	17.3	16.3	15.4
	2583.8	2595.5	1	24	1	0	26.1	25.4	**24.7**	19.3	18.3	17.3
			25	0	100	0	23.9	23.2	22.2	17.2	16.2	15.1
	2668.3	2680.0	1	24	1	0	25.2	24.5	24.0	18.8	17.8	17.5
			25	0	100	0	23.6	22.9	21.9	16.4	16.4	15.4

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 5MHz	2506.0	2517.7	1	99	1	0	**26.9**	**26.1**	**24.8**	**23.2**	**22.4**	**22.2**
			1	0	1	24	18.2	17.4	16.9	17.4	16.5	15.4
			100	0	25	0	24.8	23.7	21.4	21.1	20.1	20.0
	2590.5	2602.2	1	99	1	0	26.6	25.7	24.7	23.2	22.3	22.1
			1	0	1	24	18.0	17.1	16.9	17.3	16.4	15.4
			100	0	25	0	24.5	23.5	22.2	21.0	20.5	20.0
	2675.0	2686.7	1	99	1	0	26.7	25.8	24.8	23.3	22.7	22.3
			1	0	1	24	18.0	17.0	16.4	17.5	16.6	15.6
			100	0	25	0	24.5	23.5	22.4	21.2	20.9	20.2

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 5MHz	2506.0	2517.7	1	99	1	0	**26.5**	**25.6**	**24.6**	**19.7**	**19.2**	**18.4**
			1	0	1	24	18.8	17.9	17.3	13.7	13.0	12.2
			100	0	25	0	24.5	23.5	22.4	18.5	17.8	17.5
	2590.5	2602.2	1	99	1	0	26.3	25.4	24.4	19.3	18.7	17.9
			1	0	1	24	18.6	17.6	17.2	13.5	12.8	12.1
			100	0	25	0	24.1	23.1	22.1	18.1	17.4	17.1
	2675.0	2686.7	1	99	1	0	26.1	25.1	24.2	18.3	17.5	17.0
			1	0	1	24	18.2	17.3	16.7	12.6	11.9	11.3
			100	0	25	0	23.8	22.8	21.9	17.3	16.5	16.3

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
10MHz / 20MHz	2501.5	2515.9	1	49	1	0	**27.0**	**25.9**	**24.7**	23.0	22.4	**22.1**
			50	0	100	0	24.7	23.9	23.4	20.9	20.4	19.8
	2583.6	2598.0	1	49	1	0	26.7	25.8	24.4	22.9	22.1	22.0
			50	0	100	0	24.5	23.6	23.2	20.9	20.4	19.9
	2665.6	2680.0	1	49	1	0	26.5	25.6	24.4	**23.2**	**22.7**	22.1
			50	0	100	0	24.4	23.5	23.4	21.0	20.5	20.0

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
10MHz / 20MHz	2501.5	2515.9	1	49	1	0	**26.4**	**25.5**	24.3	**19.6**	**18.6**	**17.5**
			50	0	100	0	24.3	23.4	22.4	17.4	16.4	15.4
	2583.6	2598.0	1	49	1	0	26.4	25.5	**24.7**	19.3	18.1	17.4
			50	0	100	0	24.1	23.2	22.2	17.1	16.2	15.0
	2665.6	2680.0	1	49	1	0	25.4	24.5	24.2	19.4	18.5	17.4
			50	0	100	0	23.6	22.8	21.8	16.2	15.2	15.2

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 10MHz	2506.0	2520.4	1	99	1	0	**26.8**	**25.9**	**24.6**	23.0	**22.2**	21.6
			100	0	50	0	24.8	23.7	23.4	20.9	19.8	19.3
	2588.1	2602.5	1	99	1	0	26.7	25.8	24.3	23.0	22.1	21.5
			100	0	50	0	24.6	23.5	23.2	20.8	19.8	19.3
	2670.1	2684.5	1	99	1	0	26.6	25.7	24.6	**23.2**	22.2	**21.7**
			100	0	50	0	24.5	23.5	23.4	20.9	19.9	19.4

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 10MHz	2506.0	2520.4	1	99	1	0	**26.5**	**25.5**	**24.6**	**19.7**	**18.9**	**17.9**
			100	0	50	0	24.4	23.5	22.5	17.4	16.5	15.5
	2588.1	2602.5	1	99	1	0	26.3	25.4	24.4	19.1	18.4	17.4
			100	0	50	0	24.1	23.1	22.2	16.9	16.1	15.1
	2670.1	2684.5	1	99	1	0	26.0	25.1	24.1	18.2	17.6	16.6
			100	0	50	0	23.8	22.8	21.8	16.1	15.3	14.3

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15MHz / 15MHz	2503.5	2518.5	1	74	1	0	**26.9**	25.8	**24.4**	23.0	21.8	20.7
			75	0	75	0	24.8	23.8	22.4	22.9	21.7	18.7
	2585.5	2600.5	1	74	1	0	26.6	**25.8**	24.3	23.0	21.8	20.8
			75	0	75	0	24.6	23.6	22.2	22.9	21.7	18.6
	2667.5	2682.5	1	74	1	0	26.7	25.7	24.4	**23.2**	**22.0**	**20.9**
			75	0	75	0	24.5	23.5	22.3	23.0	21.8	18.7

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15MHz / 15MHz	2503.5	2518.5	1	74	1	0	**26.4**	**25.5**	**24.5**	**19.7**	18.3	**17.2**
			75	0	75	0	24.4	23.4	22.4	19.5	18.0	16.9
	2585.5	2600.5	1	74	1	0	26.3	25.4	24.2	19.4	17.8	16.7
			75	0	75	0	24.1	23.2	22.2	19.2	17.6	16.5
	2667.5	2682.5	1	74	1	0	25.9	25.1	23.9	19.4	**18.8**	15.9
			75	0	75	0	23.8	22.8	21.8	18.4	16.7	15.8

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							LAT1			UAT2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15MHz / 20MHz	2503.8	2520.9	1	74	1	0	**27.0**	**26.0**	**25.0**	**23.2**	22.0	20.8
			75	0	100	0	24.9	23.9	22.6	21.1	19.9	18.6
	2583.3	2600.4	1	74	1	0	26.9	25.9	24.5	23.1	21.9	20.8
			75	0	100	0	24.6	23.6	22.4	21.0	19.8	18.6
	2662.9	2680.0	1	74	1	0	26.7	25.7	24.8	22.5	**22.0**	**20.9**
			75	0	100	0	24.6	23.6	22.4	21.1	19.9	18.8

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
15MHz / 20MHz	2503.8	2520.9	1	74	1	0	**26.5**	**25.4**	**24.7**	**19.7**	**18.9**	**18.3**
			75	0	100	0	24.2	23.3	22.6	17.6	16.8	16.1
	2583.3	2600.4	1	74	1	0	26.3	25.4	24.5	19.3	18.7	17.9
			75	0	100	0	24.1	23.1	22.3	17.2	16.4	15.7
	2662.9	2680.0	1	74	1	0	25.4	24.5	23.9	19.3	18.5	17.4
			75	0	100	0	23.7	22.7	21.9	16.3	15.5	14.9

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 15MHz	2506.0	2523.1	1	99	1	0	**26.9**	**25.9**	**24.6**	23.1	**22.3**	21.7
			100	0	75	0	24.8	23.1	22.5	21.0	20.0	19.6
	2585.6	2602.7	1	99	1	0	26.6	25.8	24.4	23.0	22.1	21.8
			100	0	75	0	24.7	23.7	22.3	20.9	19.9	19.6
	2665.1	2682.2	1	99	1	0	26.6	25.8	24.6	**23.1**	22.2	**21.9**
			100	0	75	0	24.7	23.6	22.5	21.0	20.0	19.7

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz / 15MHz	2506.0	2523.1	1	99	1	0	**26.3**	**25.6**	**24.7**	**19.6**	**19.0**	**18.4**
			100	0	75	0	24.6	23.6	22.6	17.4	16.7	16.0
	2585.6	2602.7	1	99	1	0	26.3	25.3	24.2	19.1	18.5	17.8
			100	0	75	0	24.2	23.2	22.3	17.0	16.3	15.6
	2665.1	2682.2	1	99	1	0	26.0	25.1	24.1	19.2	18.5	18.1
			100	0	75	0	23.9	22.9	21.9	17.1	16.4	15.8

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

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 1			Ant 2		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz/ 20MHz	2506.0	2525.8	1	99	1	0	**26.9**	**26.0**	**25.2**	**23.1**	**22.3**	21.2
			1	0	1	99	18.9	18.0	17.9	15.7	14.0	13.1
			100	0	100	0	24.8	23.8	23.6	21.9	19.9	19.8
	2583.1	2602.9	1	99	1	0	26.8	25.8	25.1	23.0	22.2	**21.2**
			1	0	1	99	18.8	17.8	17.4	15.7	14.2	13.0
			100	0	100	0	24.7	23.7	23.4	21.9	19.9	19.8
	2660.2	2680.0	1	99	1	0	26.7	25.8	25.1	23.1	22.2	21.3
			1	0	1	99	18.7	17.8	17.7	15.9	14.2	13.2
			100	0	100	0	24.6	23.5	23.5	21.9	19.9	19.8

Bandwidth	PCC Frequency (MHz)	SCC1 Frequency (MHz)	PCC RB	PCC RB	SCC1 RB	SCC1 RB	Conducted Average (dBm)					
							Ant 3			Ant 4		
			Size	Offset	Size	Offset	QPSK	16QAM	64QAM	QPSK	16QAM	64QAM
20MHz/ 20MHz	2506.0	2525.8	1	99	1	0	**26.5**	**25.7**	**24.6**	**19.6**	**18.9**	**17.7**
			1	0	1	99	17.4	16.6	15.9	11.5	10.6	10.0
			100	0	100	0	24.3	23.5	23.0	17.4	16.5	16.2
	2583.1	2602.9	1	99	1	0	26.2	25.5	24.5	19.2	18.4	17.2
			1	0	1	99	17.1	16.4	15.5	11.3	10.4	10.1
			100	0	100	0	23.9	23.2	22.8	17.0	16.2	15.8
	2660.2	2680.0	1	99	1	0	25.9	25.1	24.1	18.3	17.6	16.4
			1	0	1	99	16.9	16.0	15.1	10.0	9.5	9.3
			100	0	100	0	23.7	22.9	22.4	16.1	15.3	15.0

8. CONDUCTED TEST RESULTS

8.1. OCCUPIED BANDWIDTH

RULE PART(S)

FCC: §2.1049

LIMITS

For reporting purposes only

TEST PROCEDURE

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

MODES TESTED

- LTE Band 5
- LTE Band 7
- LTE Band 41

RESULTS

There is no limit required and power is the same for low, middle and high channel; therefore, only middle channel was tested

LTE BAND 5

Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 5	3MHz + 5MHz BAND QPSK	15/0 + 25/0	836.5	7.5396	8.093
	3MHz + 5MHz BAND 16QAM			7.5113	8.047
	3MHz + 5MHz BAND 64QAM			7.5466	8.006
	5MHz + 3MHz BAND QPSK	25/0 + 15/0		7.5592	8.104
	5MHz + 3MHz BAND 16QAM			7.5145	8.028
	5MHz + 3MHz BAND 64QAM			7.5246	8.126
	5MHz + 10MHz BAND QPSK	25/0 + 50/0		13.8613	14.748
	5MHz + 10MHz BAND 16QAM			13.8782	14.740
	5MHz + 10MHz BAND 64QAM			13.8660	14.410
	10MHz + 5MHz BAND QPSK	50/0 + 25/0		13.8944	14.776
	10MHz + 5MHz BAND 16QAM			13.8429	14.765
	10MHz + 5MHz BAND 64QAM			13.8560	14.440
	10MHz + 10MHz BAND QPSK	50/0 + 50/0		18.8598	20.482
	10MHz + 10MHz BAND 16QAM			18.8272	20.442
	10MHz + 10MHz BAND 64QAM			18.7420	19.650

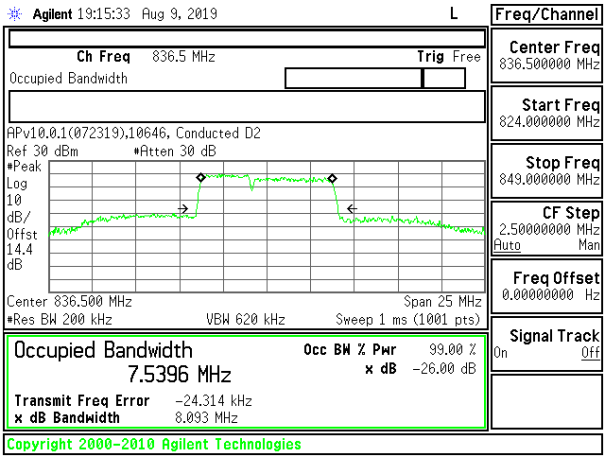
LTE BAND 7

Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 7	10MHz + 20MHz BAND QPSK	50/0 + 100/0	2535	28.1326	30.984
	10MHz + 20MHz BAND 16QAM			28.1908	31.162
	10MHz + 20MHz BAND 64QAM			27.9950	30.450
	20MHz + 10MHz BAND QPSK	100/0 + 50/0		28.1943	30.691
	20MHz + 10MHz BAND 16QAM			28.0535	30.698
	20MHz + 10MHz BAND 64QAM			27.9050	29.860
	15MHz + 15MHz BAND QPSK	75/0 + 75/0		28.6655	31.362
	15MHz + 15MHz BAND 16QAM			28.5540	31.469
	15MHz + 15MHz BAND 64QAM			28.4270	30.700
	15MHz + 20MHz BAND QPSK	75/0 + 100/0		32.8550	35.778
	15MHz + 20MHz BAND 16QAM			32.8515	35.261
	15MHz + 20MHz BAND 64QAM			32.8730	34.980
	20MHz + 15MHz BAND QPSK	100/0 + 75/0		32.9844	36.306
	20MHz + 15MHz BAND 16QAM			32.8497	35.955
	20MHz + 15MHz BAND 64QAM			32.7180	35.370
	20MHz + 20MHz BAND QPSK	100/0 + 100/0		37.7340	41.597
	20MHz + 20MHz BAND 16QAM			37.6482	40.902
	20MHz + 20MHz BAND 64QAM			37.6410	40.600

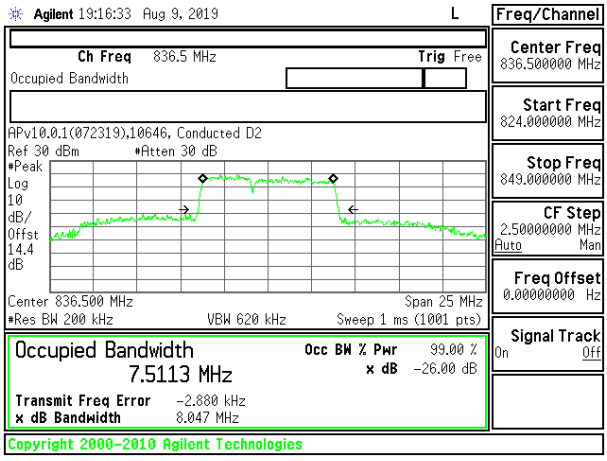
LTE BAND 41

Band	Mode	RB Allocation/RB Offset	f (MHz)	99% BW (MHz)	- 26dB BW (MHz)
LTE BAND 41 (FCC)	5MHz + 20MHz BAND QPSK	25/0 + 100/0	2593	23.3590	25.740
	5MHz + 20MHz BAND 16QAM			23.2460	25.670
	5MHz + 20MHz BAND 64QAM			23.1230	25.080
	20MHz + 5MHz BAND QPSK	100/0 + 25/0		23.3221	25.846
	20MHz + 5MHz BAND 16QAM			23.2762	25.436
	20MHz + 5MHz BAND 64QAM			23.0870	24.770
	10MHz + 20MHz BAND QPSK	50/0 + 100/0		27.9960	29.870
	10MHz + 20MHz BAND 16QAM			27.9490	29.960
	10MHz + 20MHz BAND 64QAM			27.8810	30.100
	20MHz + 10MHz BAND QPSK	100/0 + 50/0		28.1108	30.920
	20MHz + 10MHz BAND 16QAM			27.7160	29.950
	20MHz + 10MHz BAND 64QAM			27.9260	30.160
	15MHz + 15MHz BAND QPSK	75/0 + 75/0		28.2150	31.100
	15MHz + 15MHz BAND 16QAM			28.0480	30.330
	15MHz + 15MHz BAND 64QAM			28.6700	30.400
	15MHz + 20MHz BAND QPSK	75/0 + 100/0		32.5370	34.910
	15MHz + 20MHz BAND 16QAM			32.3920	34.700
	15MHz + 20MHz BAND 64QAM			32.7330	34.910
	20MHz + 15MHz BAND QPSK	100/0 + 75/0		32.4780	35.280
	20MHz + 15MHz BAND 16QAM			32.2760	35.220
	20MHz + 15MHz BAND 64QAM			32.5680	34.690
	20MHz + 20MHz BAND QPSK	100/0 + 100/0		37.3770	39.670
	20MHz + 20MHz BAND 16QAM			37.6813	40.313
	20MHz + 20MHz BAND 64QAM			37.6270	39.720

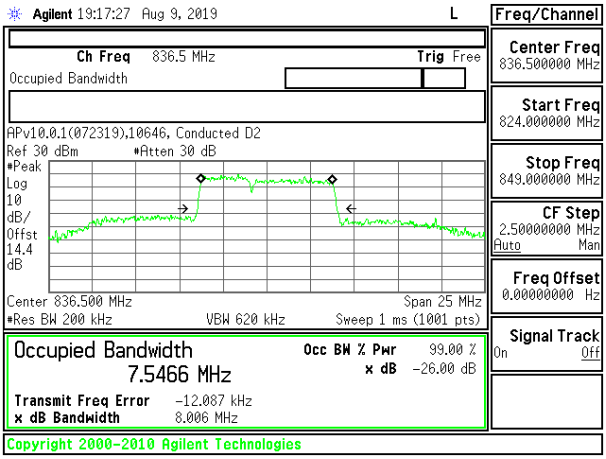
8.1.1. LTE BAND 5



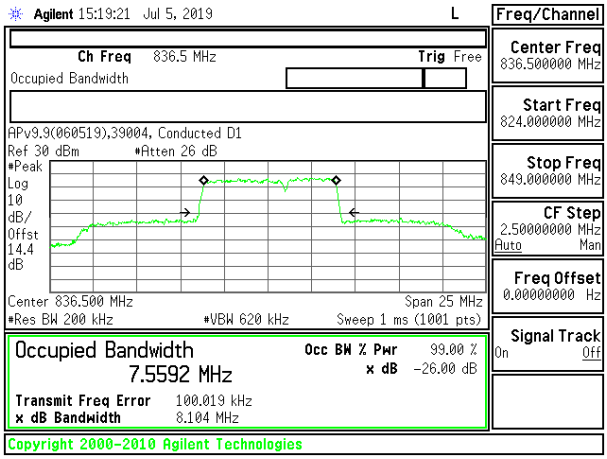
LTE B5 3MHz + 5MHz QPSK RB15-0 + RB25-0



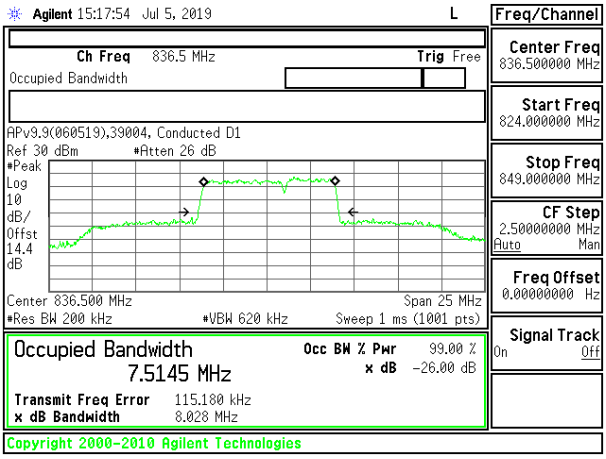
LTE B5 3MHz + 5MHz 16QAM RB15-0 + RB25-0



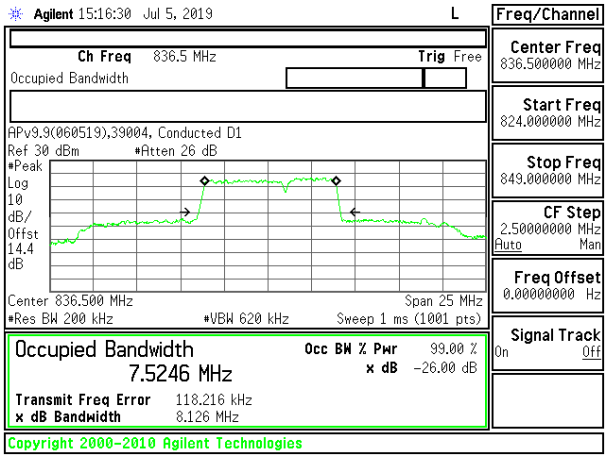
LTE B5 3MHz + 5MHz 64QAM RB15-0 + RB25-0



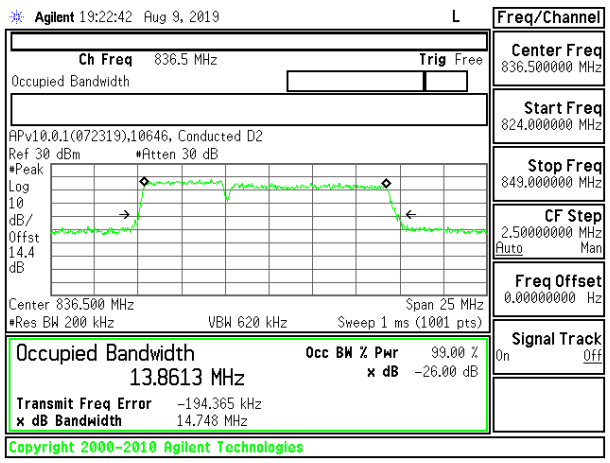
LTE B5 5MHz + 3MHz QPSK RB25-0 + RB15-0



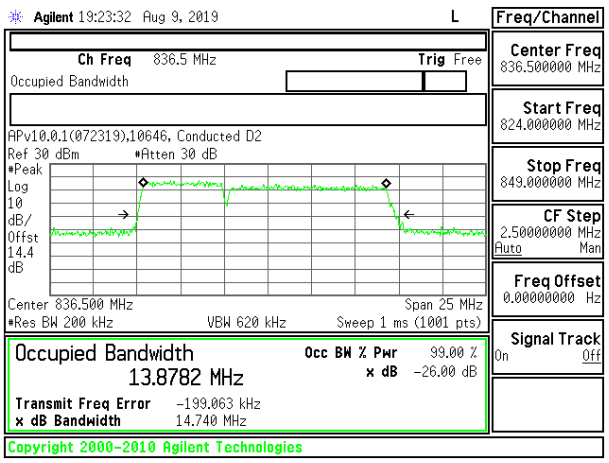
LTE B5 5MHz + 3MHz 16QAM RB25-0 + RB15-0



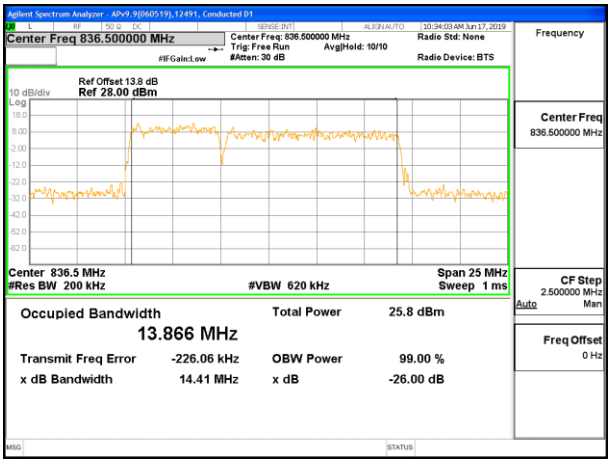
B5 5MHz + 3MHz 64QAM RB25-0 + RB15-0



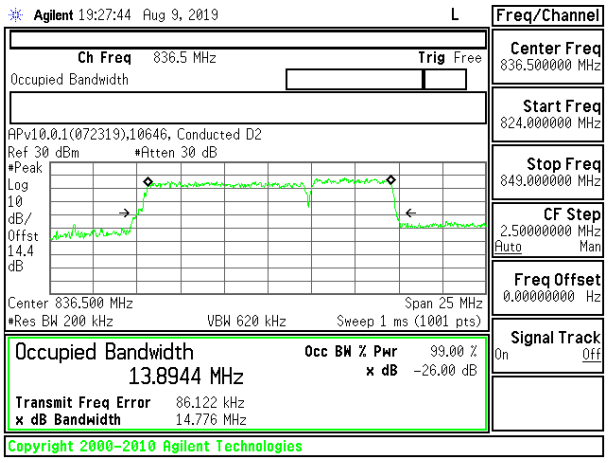
LTE B5 5MHz + 10MHz QPSK RB25-0 + RB50-0



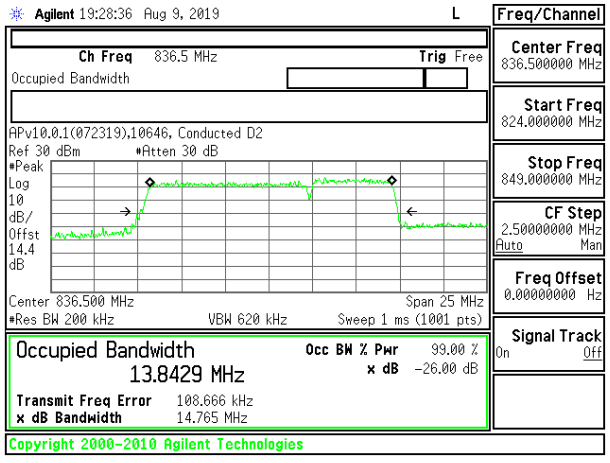
LTE B5 5MHz + 10MHz 16QAM RB25-0 + RB50-0



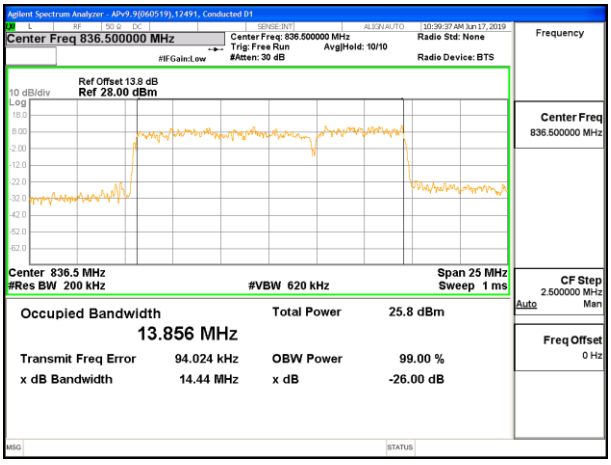
B5 5MHz + 10MHz 64QAM RB25-0 + RB50-0



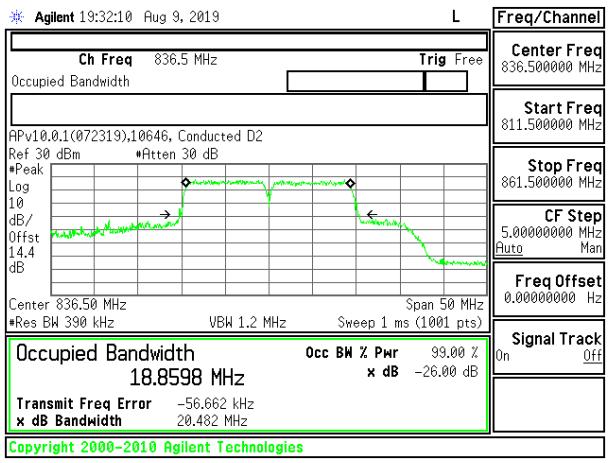
LTE B5 10MHz + 5MHz QPSK RB50-0 + RB25-0



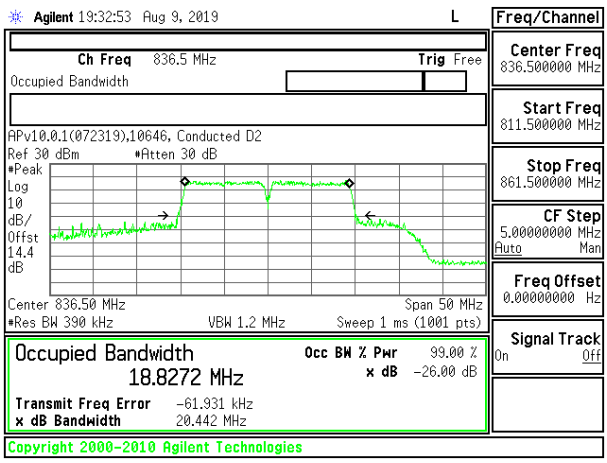
LTE B5 10MHz + 5MHz 16QAM RB50-0 + RB25-0



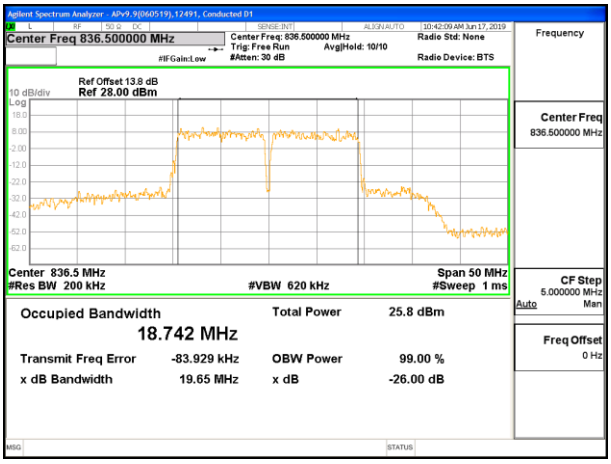
LTE B5 10MHz + 5MHz 64QAM RB50-0 + RB25-0



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

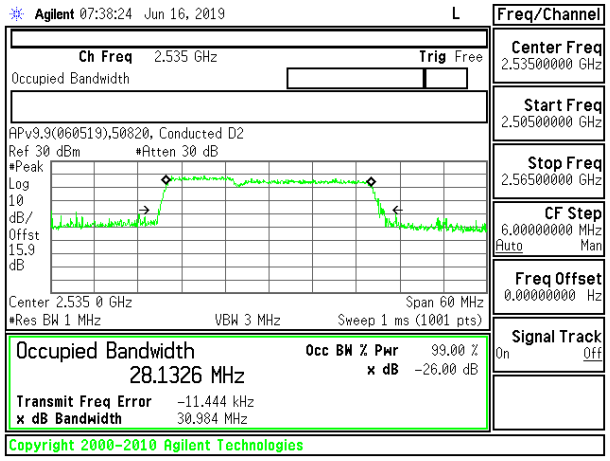


LTE B5 10MHz + 10MHz QPSK RB50-0 + RB50-0

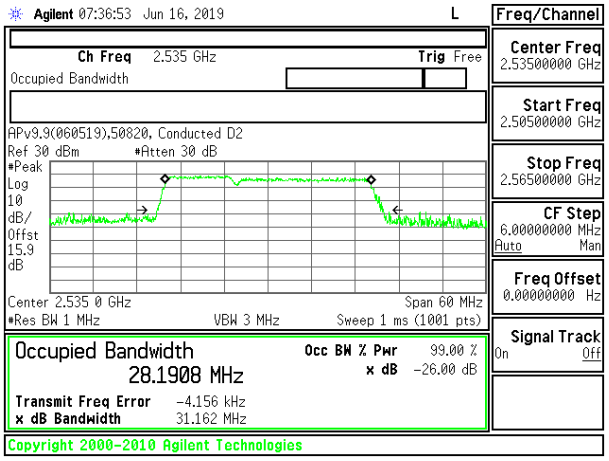


LTE B5 10MHz + 10MHz 64QAM RB50-0 + RB50-0

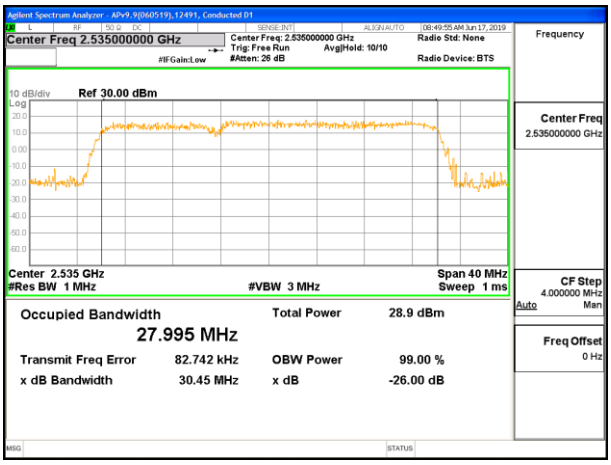
8.1.2. LTE BAND 7



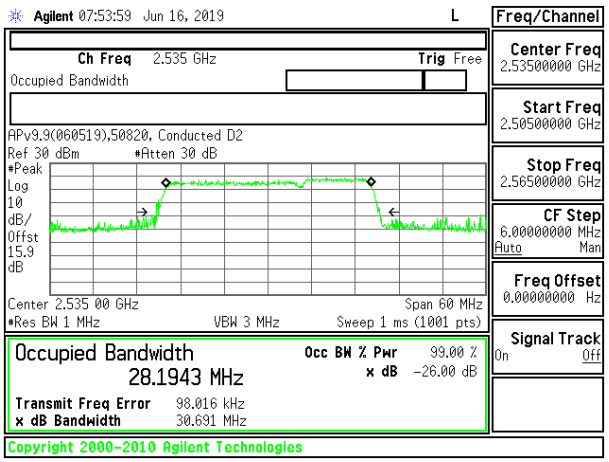
LTE B7 10MHz + 20MHz QPSK RB50-0 + RB100-0



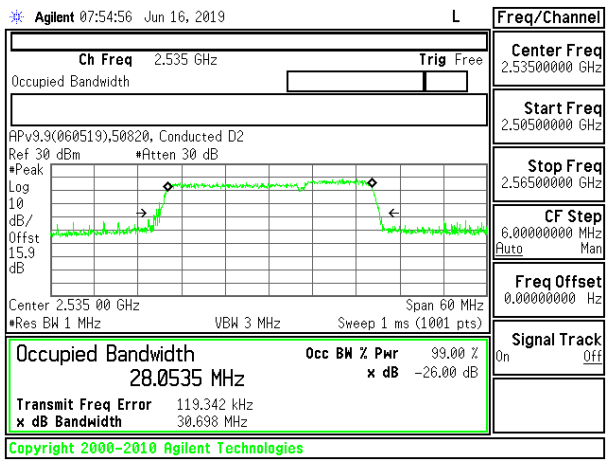
LTE B7 10MHz + 20MHz 16QAM RB50-0 + RB100-0



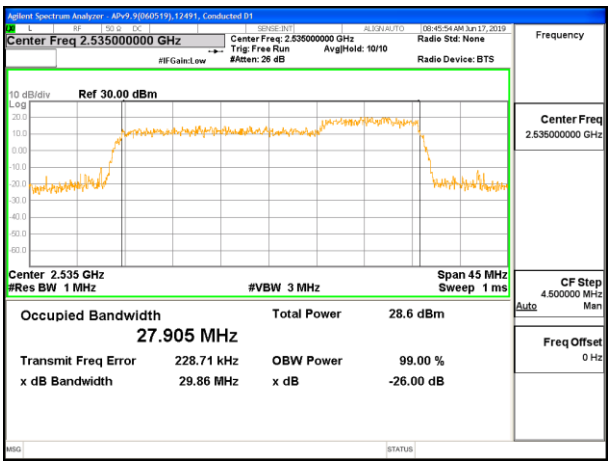
LTE B7 10MHz + 20MHz 64QAM RB50-0 + RB100-0



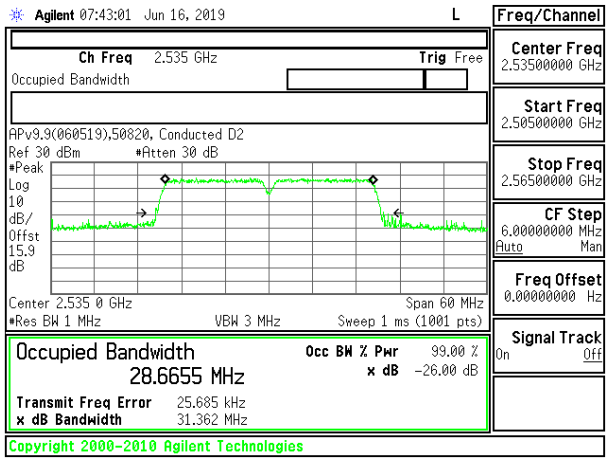
LTE B7 20MHz + 10MHz QPSK RB100-0 + RB50-0



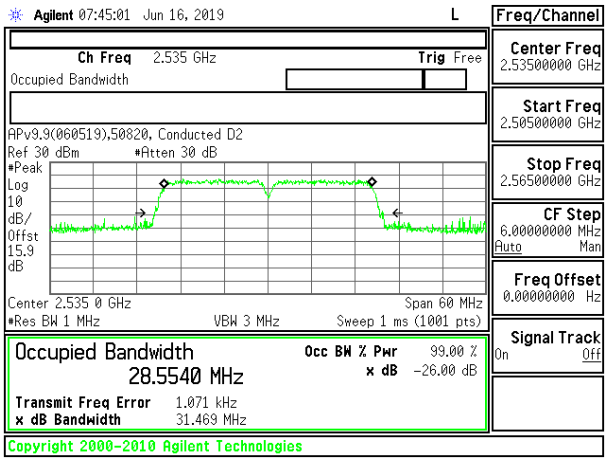
LTE B7 20MHz + 10MHz 16QAM RB100-0 + RB50-0



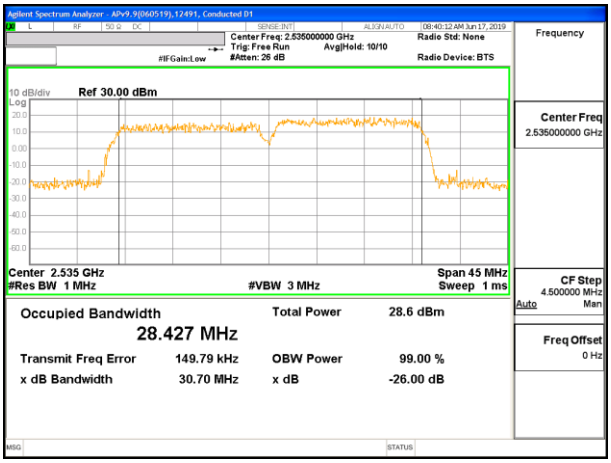
LTE B7 20MHz + 10MHz 64QAM RB100-0 + RB50-0



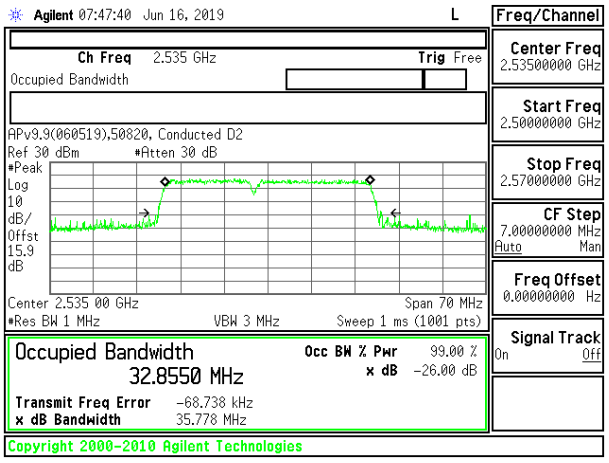
LTE B7 15MHz + 15MHz QPSK RB75-0 + RB75-0



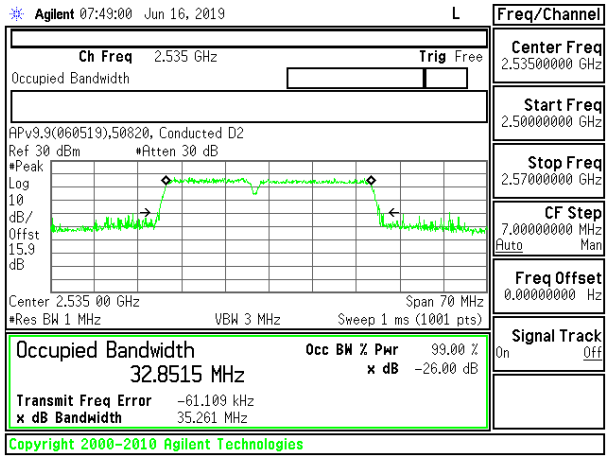
LTE B7 15MHz + 15MHz 16QAM RB75-0 + RB75-0



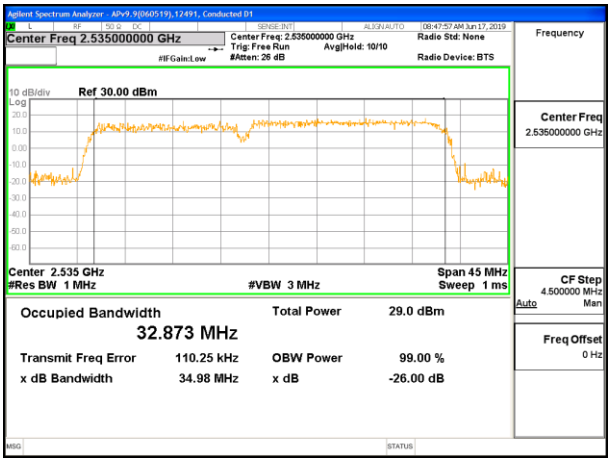
LTE B7 15MHz + 15MHz 64QAM RB75-0 + RB75-0



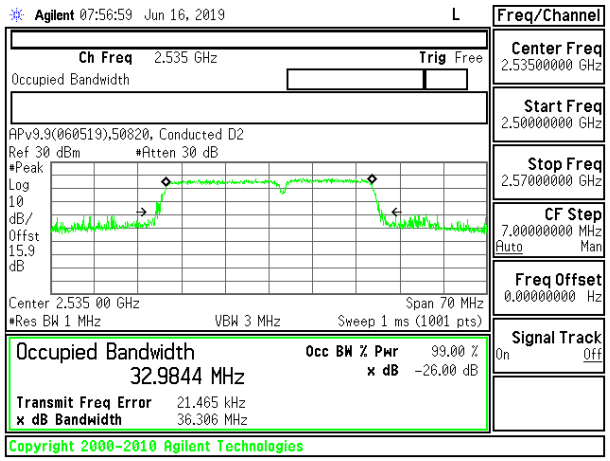
LTE B7 15MHz + 20MHz QPSK RB75-0 + RB100-0



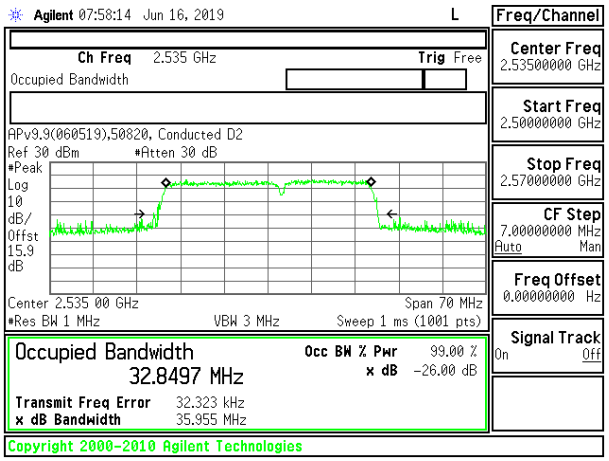
LTE B7 15MHz + 20MHz 16QAM RB75-0 + RB100-0



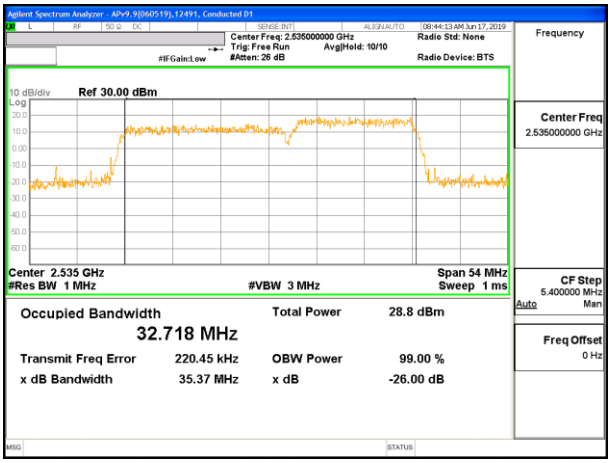
LTE B7 15MHz + 20MHz 64QAM RB75-0 + RB100-0



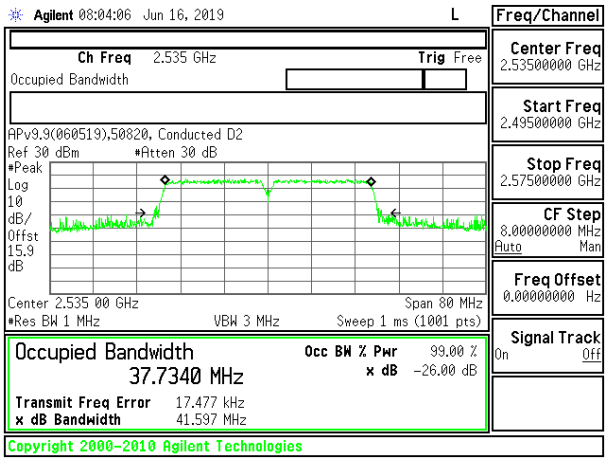
LTE B7 20MHz + 15MHz QPSK RB100-0 + RB75-0



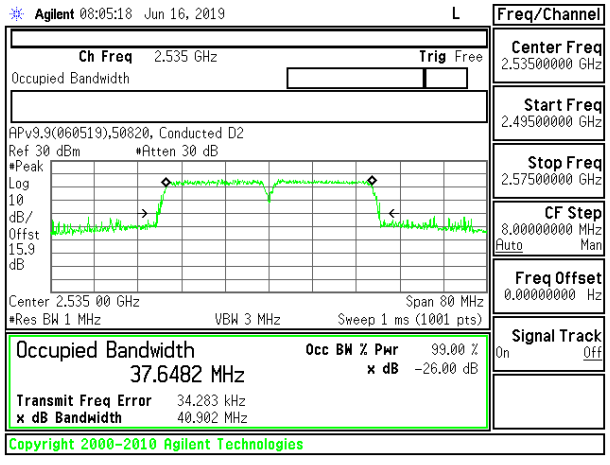
LTE B7 20MHz + 15MHz 16QAM RB100-0 + RB75-0



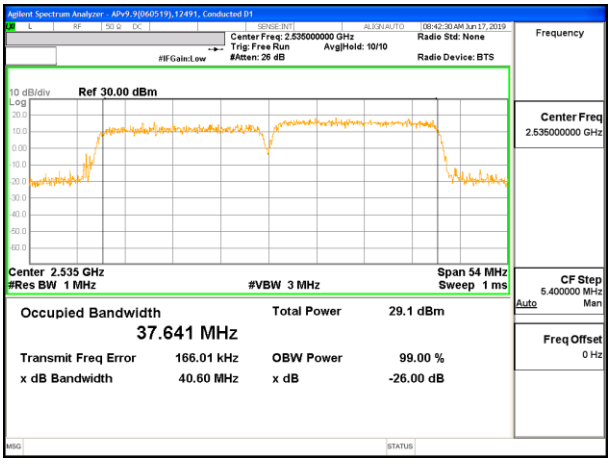
LTE B7 20MHz + 15MHz 64QAM RB100-0 + RB75-0



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

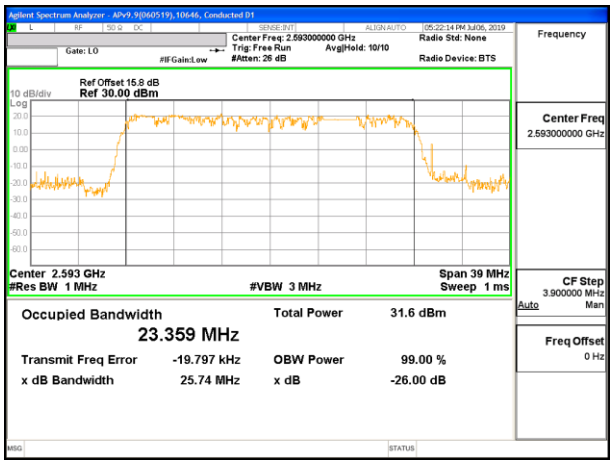


LTE B7 20MHz + 20MHz 16QAM RB100-0 + RB100-0

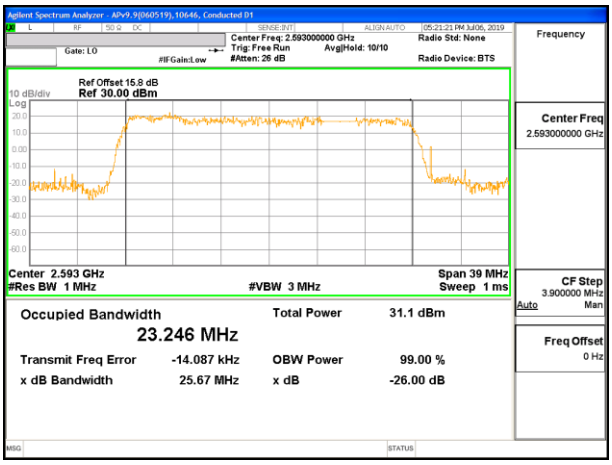


LTE B7 20MHz + 20MHz 64QAM RB100-0 + RB100-0

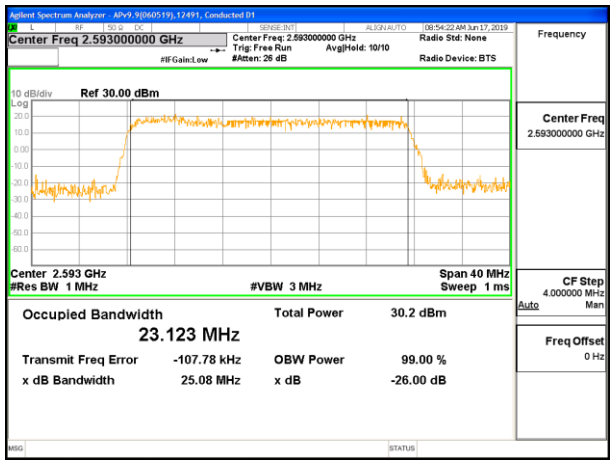
8.1.3. LTE BAND 41



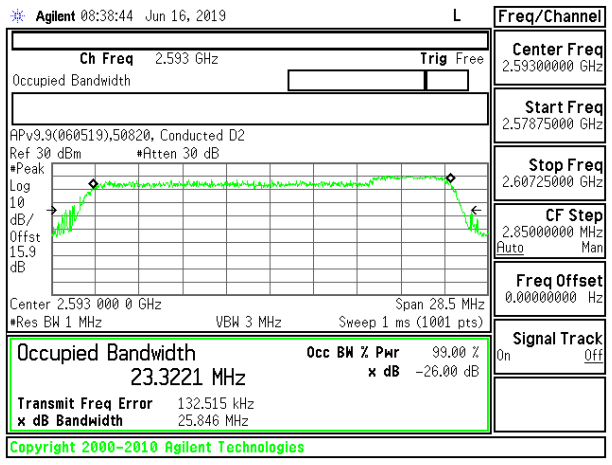
LTE B41 5MHz + 20MHz QPSK RB25-0 + RB100-0



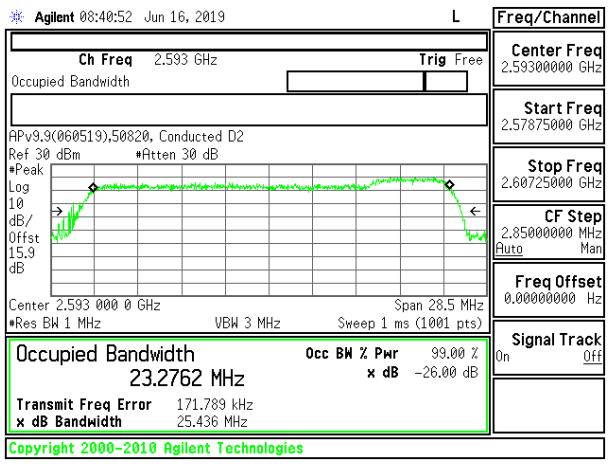
LTE B41 5MHz + 20MHz 16QAM RB25-0 + RB100-0



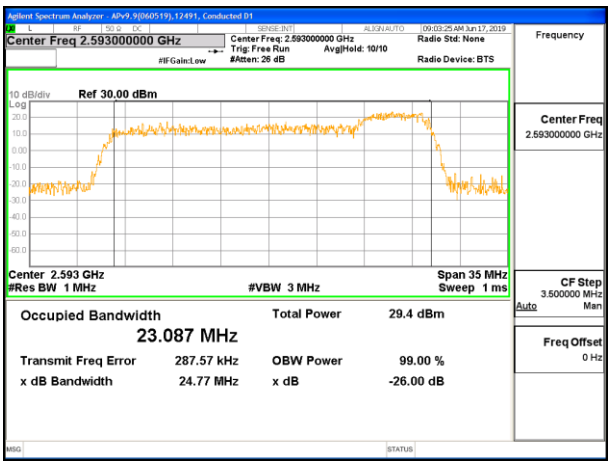
LTE B41 5MHz + 20MHz 64QAM RB25-0 + RB100-0



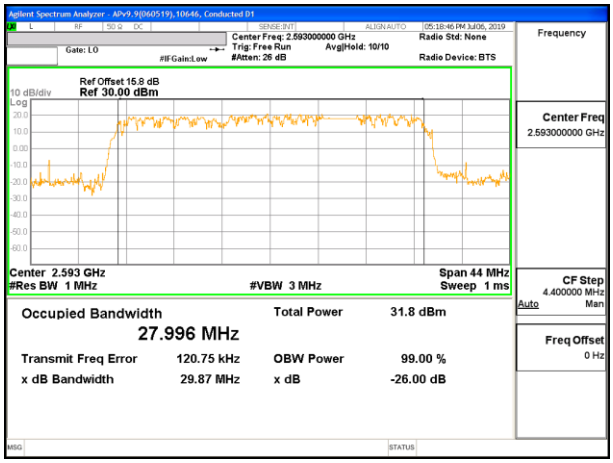
LTE B41 20MHz + 5MHz QPSK RB100-0 + RB25-0



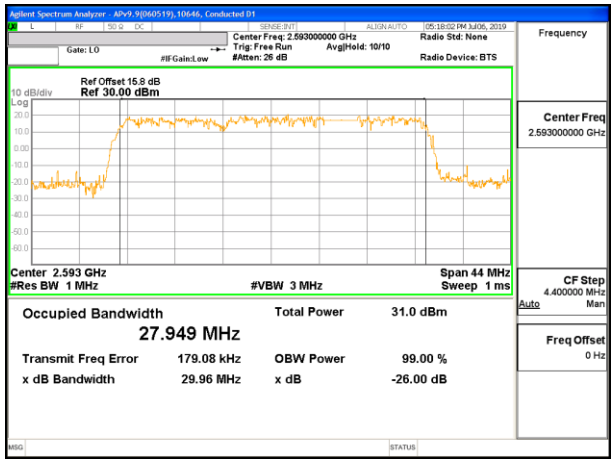
LTE B41 20MHz + 5MHz 16QAM RB100-0 + RB25-0



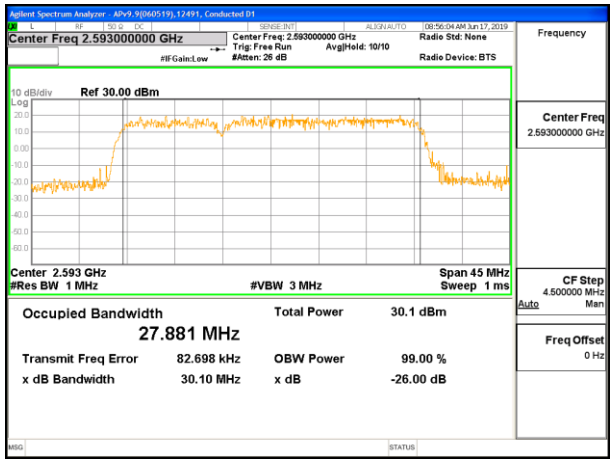
LTE B41 20MHz + 5MHz 64QAM RB100-0 + RB25-0



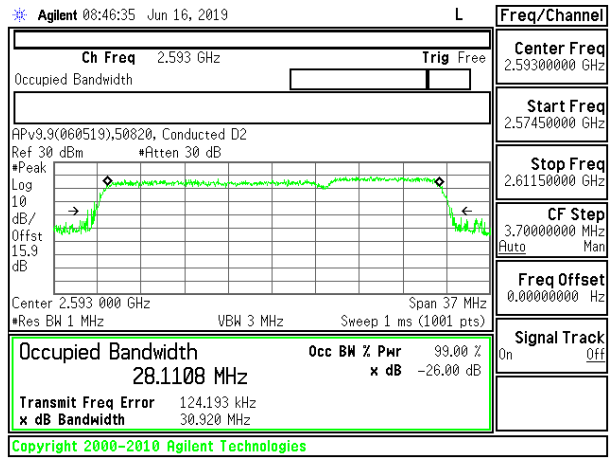
LTE B41 10MHz + 20MHz QPSK RB50-0 + RB100-0



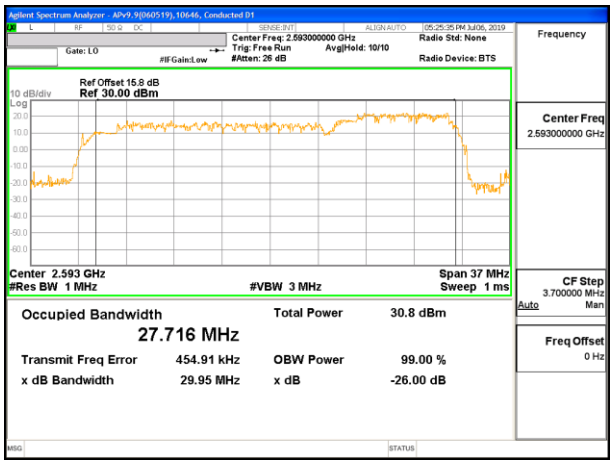
LTE B41 10MHz + 20MHz 16QAM RB50-0 + RB100-0



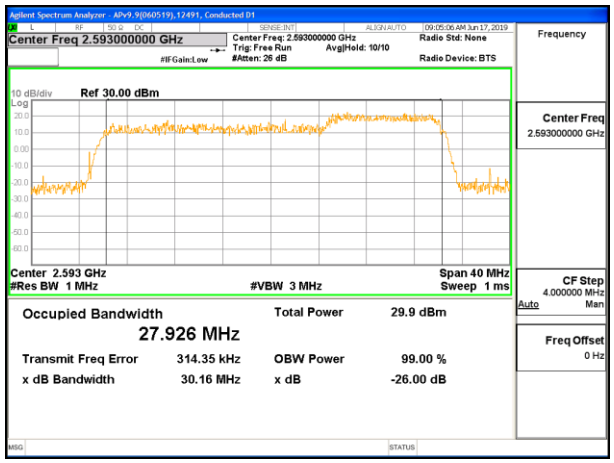
LTE B41 10MHz + 20MHz 64QAM RB50-0 + RB100-0



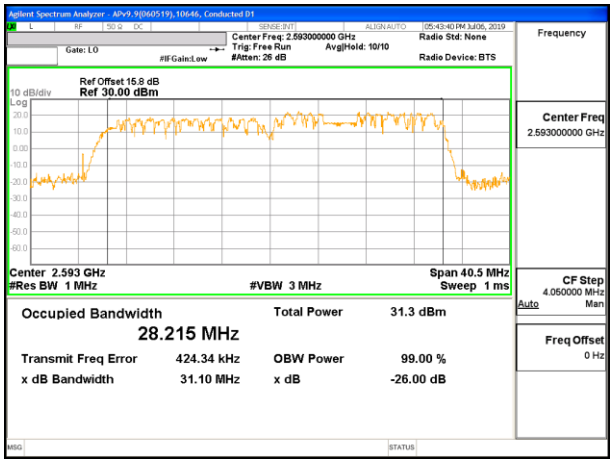
LTE B41 20MHz + 10MHz QPSK RB100-0 + RB50-0



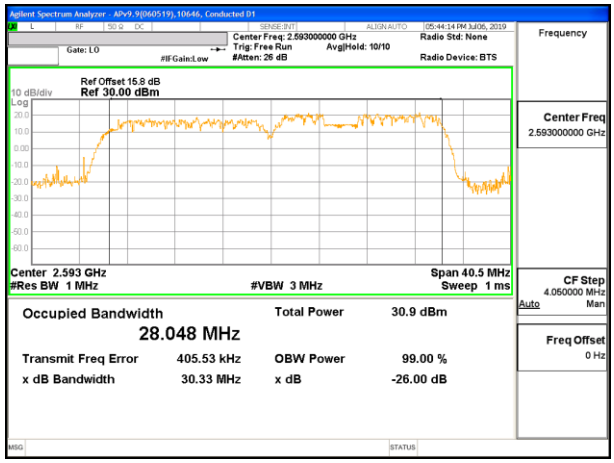
LTE B41 20MHz + 10MHz 16QAM RB100-0 + RB50-0



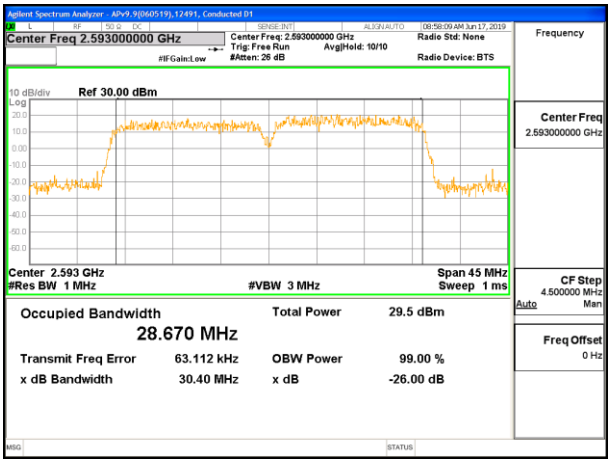
LTE B41 20MHz + 10MHz 64QAM RB100-0 + RB50-0



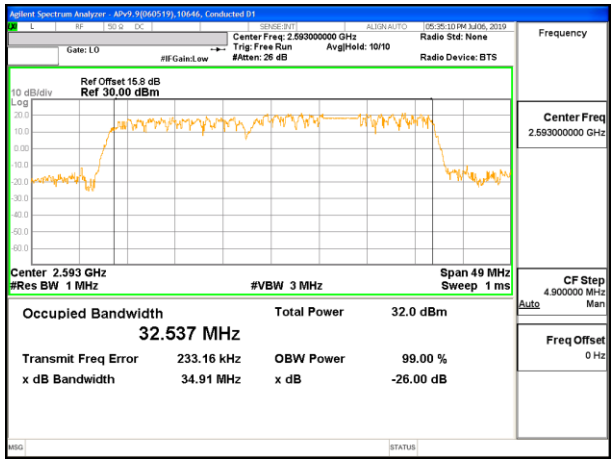
LTE B41 15MHz + 15MHz QPSK RB75-0 + RB75-0



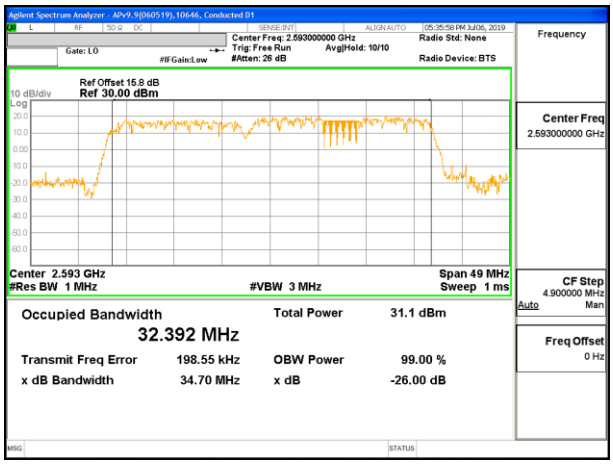
LTE B41 15MHz + 15MHz 16QAM RB75-0 + RB75-0



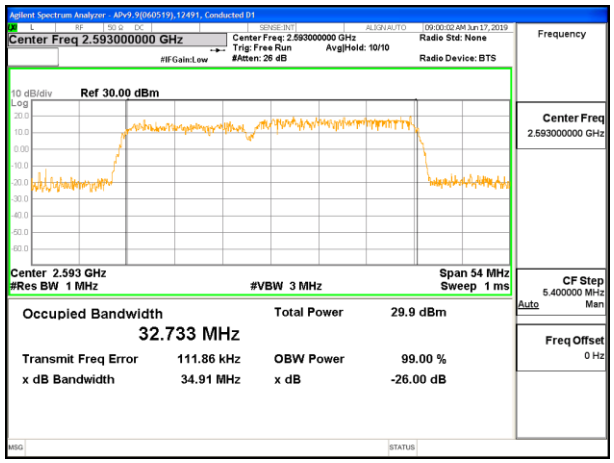
LTE B41 15MHz + 15MHz 64QAM RB75-0 + RB75-0



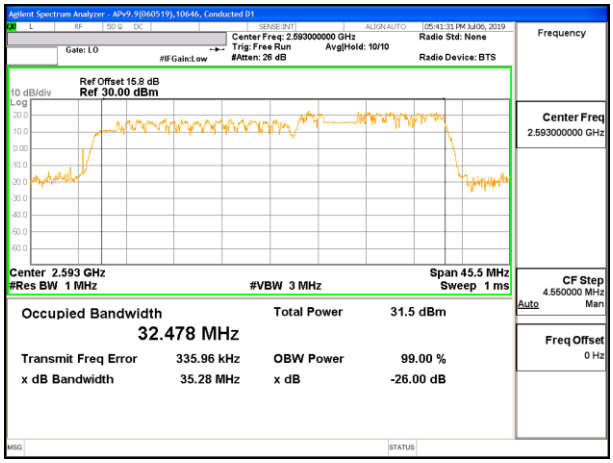
LTE B41 15MHz + 20MHz QPSK RB75-0 + RB100-0



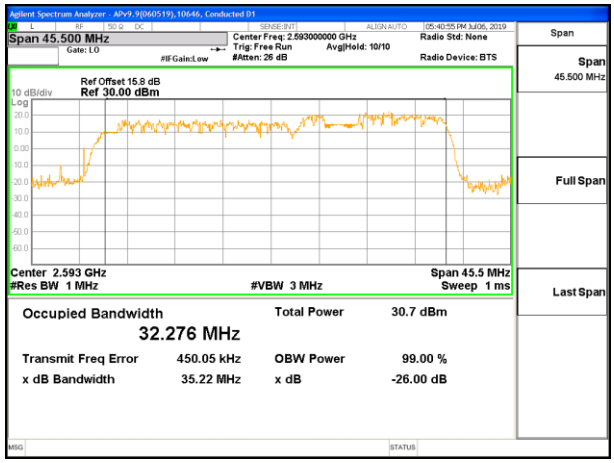
LTE B41 15MHz + 20MHz 16QAM RB75-0 + RB100-0



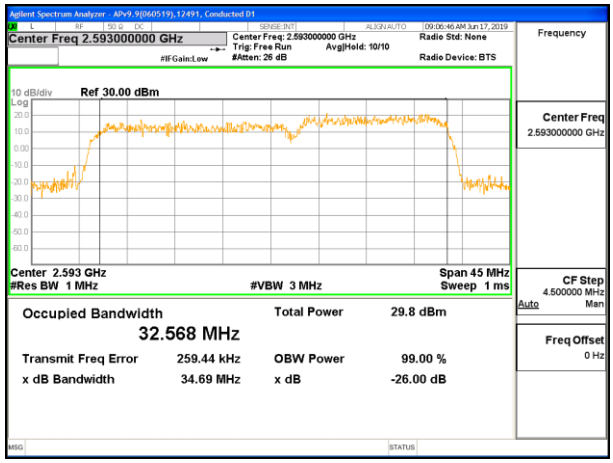
LTE B41 15MHz + 20MHz 64QAM RB75-0 + RB100-0



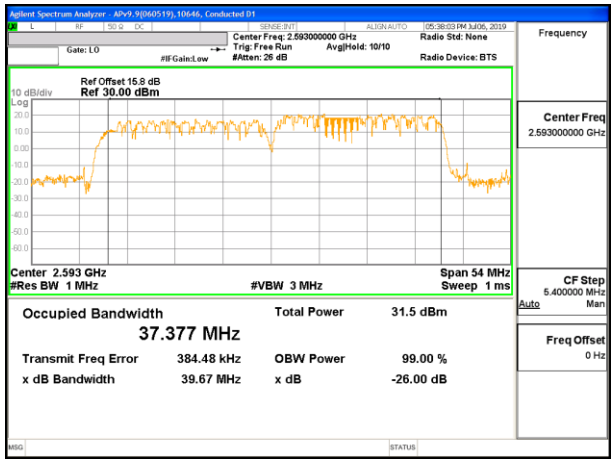
LTE B41 20MHz + 15MHz QPSK RB100-0 + RB75-0



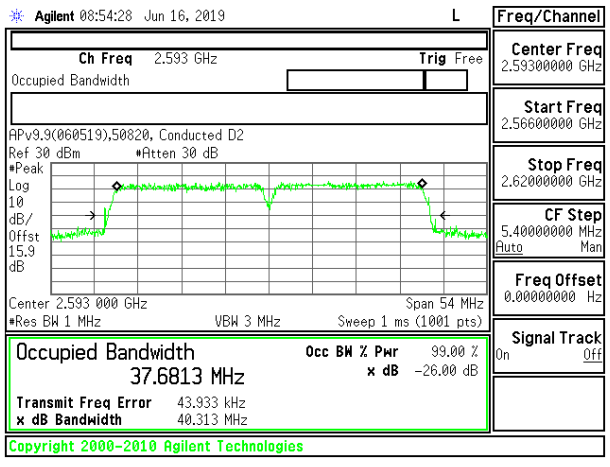
LTE B41 20MHz + 15MHz 16QAM RB100-0 + RB75-0



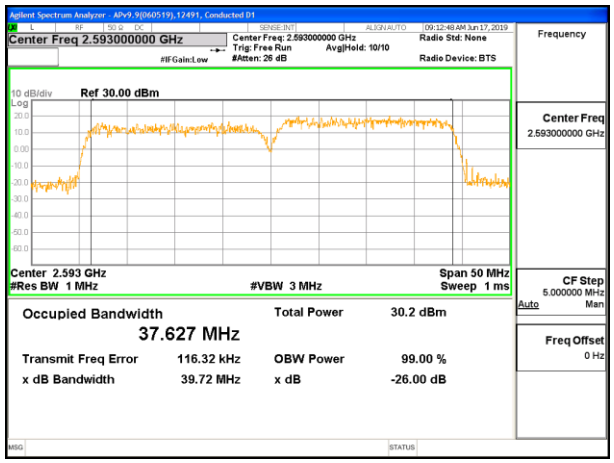
LTE B41 20MHz + 15MHz 64QAM RB100-0 + RB75-0



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



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



LTE B41 20MHz + 20MHz 64QAM RB100-0 + RB100-0

8.2. BAND EDGE AND EMISSION MASK

RULE PART(S)

FCC: §2.1051, §22.917, §27.53

LIMITS

FCC: §22.917, §24.238, §27.53(h)
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: §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.

TEST PROCEDURE FOR FCC PART 27

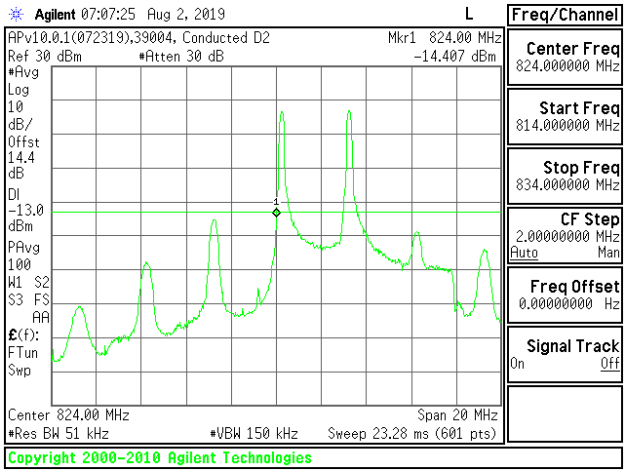
(m)(6) Measurement procedure. Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 megahertz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of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

MODES TESTED

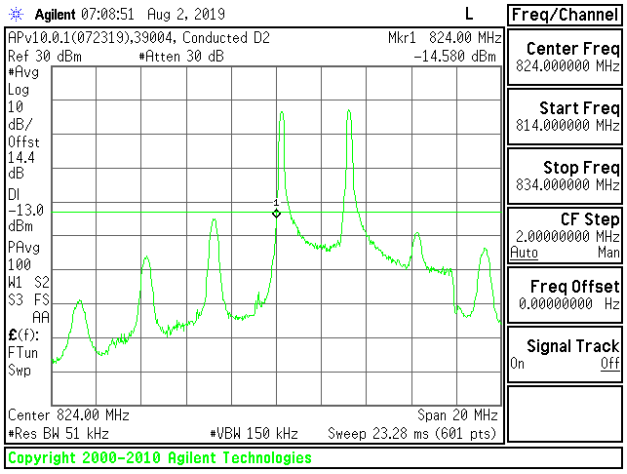
- LTE Band 5
- LTE Band 7
- LTE Band 41

RESULTS

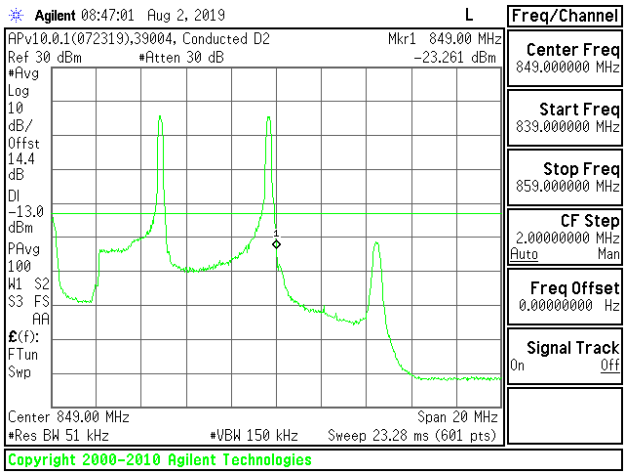
8.2.1. LTE BAND 5



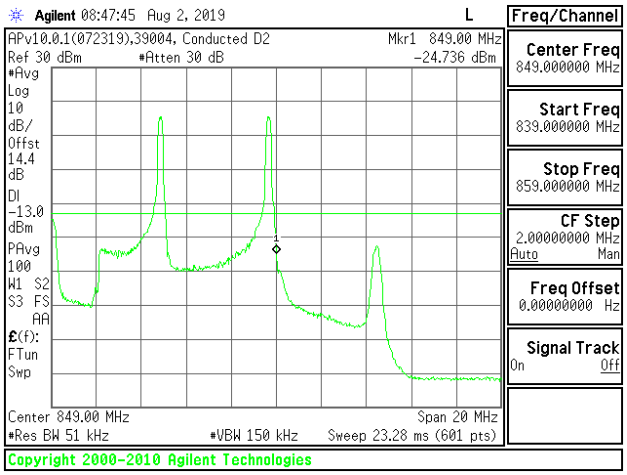
LTE B5 3MHz + 5MHz QPSK Low Ch RB1-0 + RB1-0



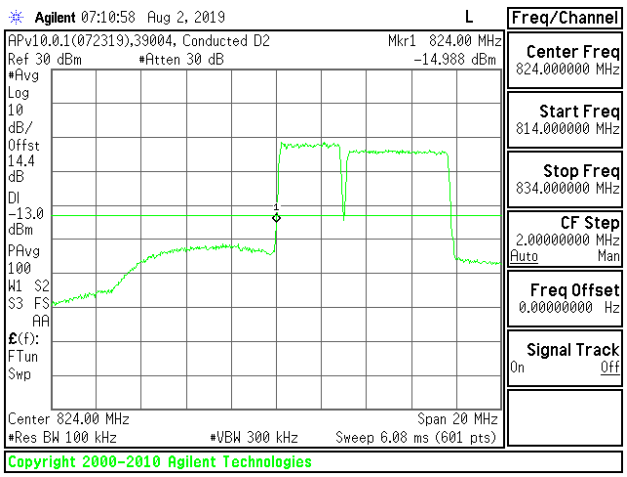
LTE B5 3MHz + 5MHz 16QAM Low Ch RB1-0 + RB1-0



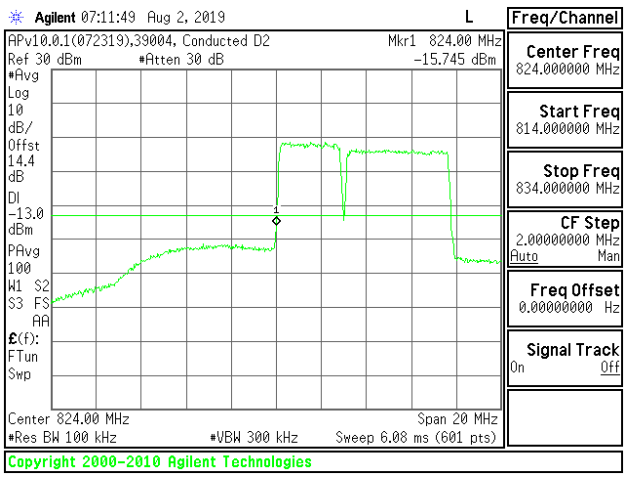
LTE B5 3MHz + 5MHz QPSK High Ch RB1-14 + RB1-24



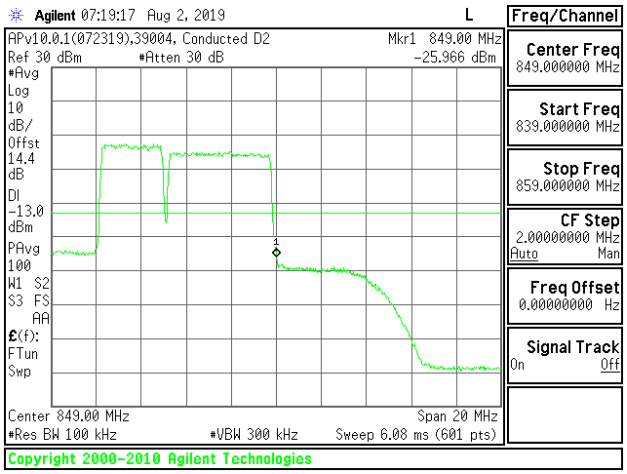
LTE B5 3MHz + 5MHz 16QAM High Ch RB1-14 + RB1-24



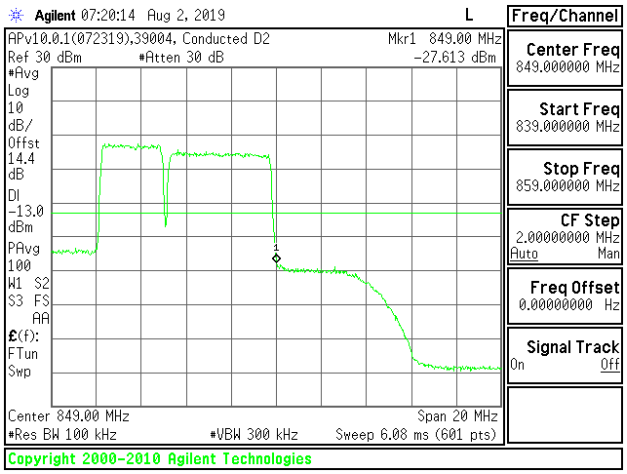
LTE B5 3MHz + 5MHz QPSK Low Ch RB15-0 + RB25-0



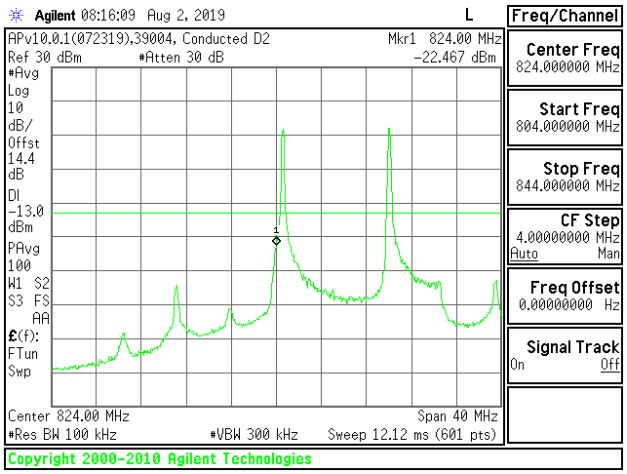
LTE B5 3MHz + 5MHz 16QAM Low Ch RB15-0 + RB25-0



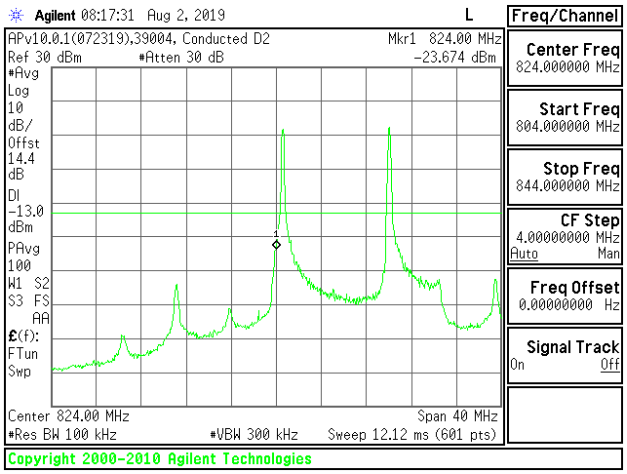
LTE B5 3MHz + 5MHz QPSK High Ch RB15-0 + RB25-0



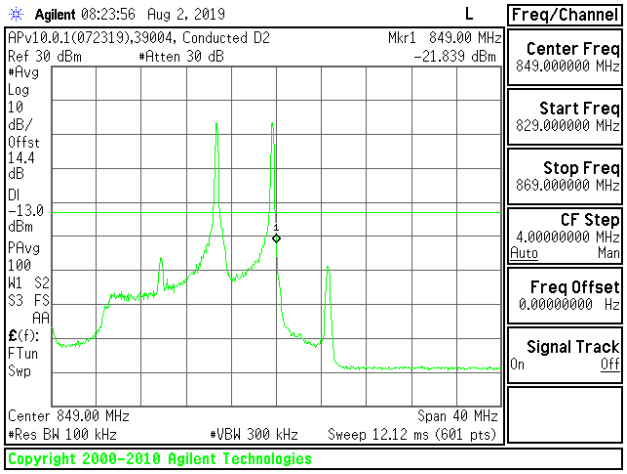
LTE B5 3MHz + 5MHz 16QAM High Ch RB15-0 + RB25-0



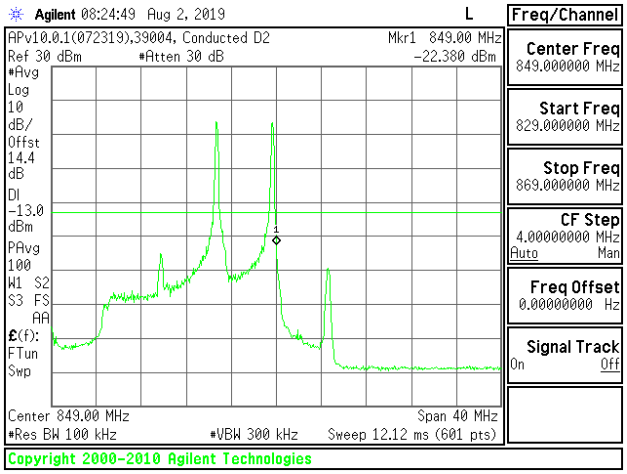
LTE B5 10MHz + 5MHz QPSK Low Ch RB1-0 + RB1-0



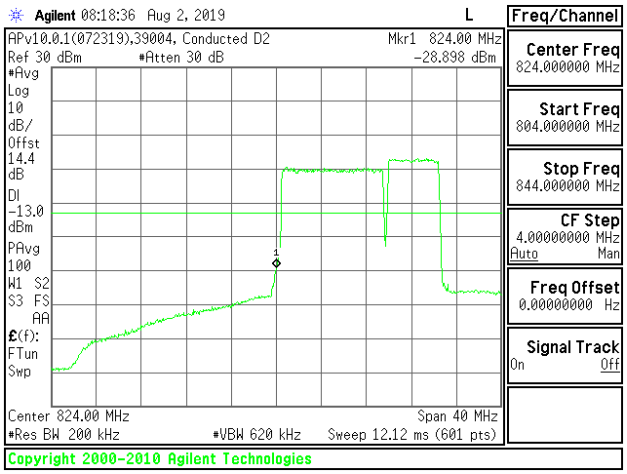
LTE B5 10MHz + 5MHz 16QAM Low Ch RB1-0 + RB1-0



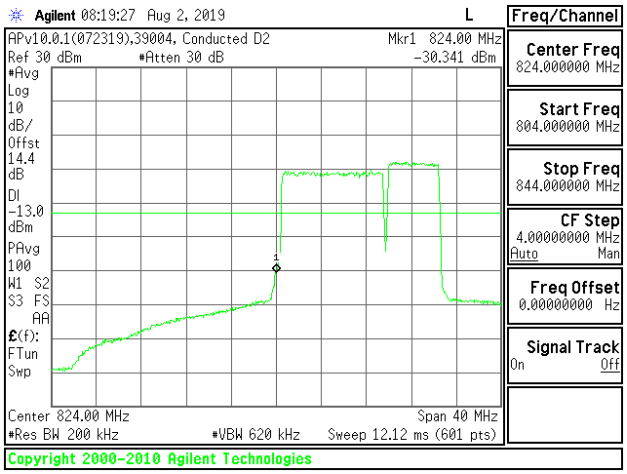
LTE B5 10MHz + 5MHz QPSK High Ch RB1-49 + RB1-24



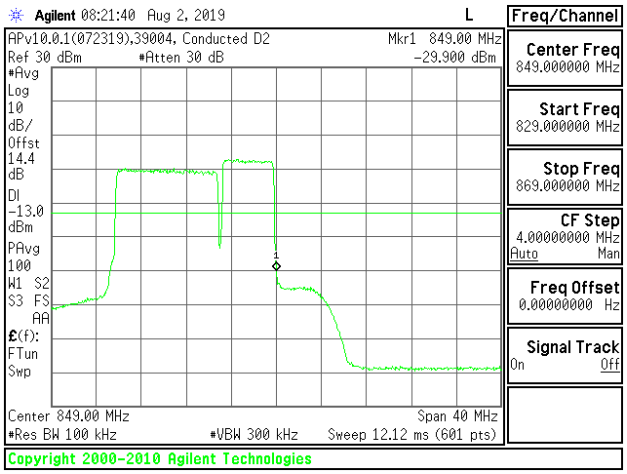
LTE B5 10MHz + 5MHz 16QAM High Ch RB1-49 + RB1-24



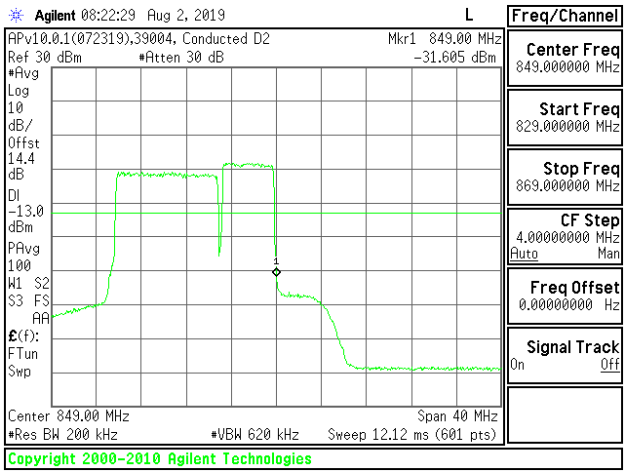
LTE B5 10MHz + 5MHz QPSK Low Ch RB50-0 + RB25-0



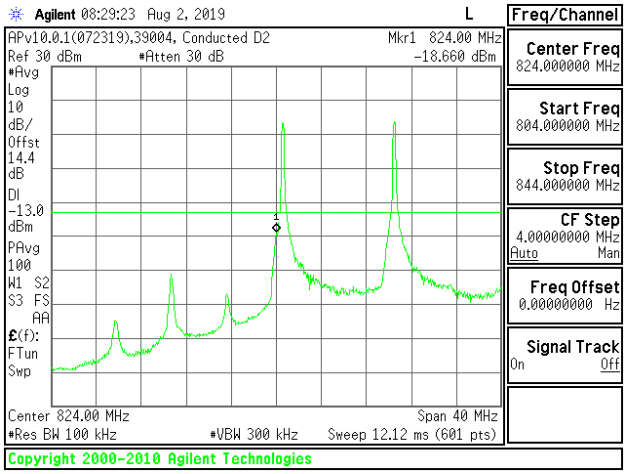
LTE B5 10MHz + 5MHz 16QAM Low Ch RB50-0 + RB25-0



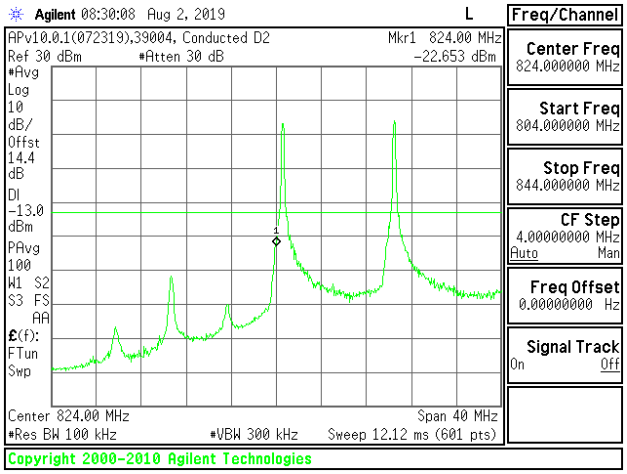
LTE B5 10MHz + 5MHz QPSK High Ch RB50-0 + RB25-0



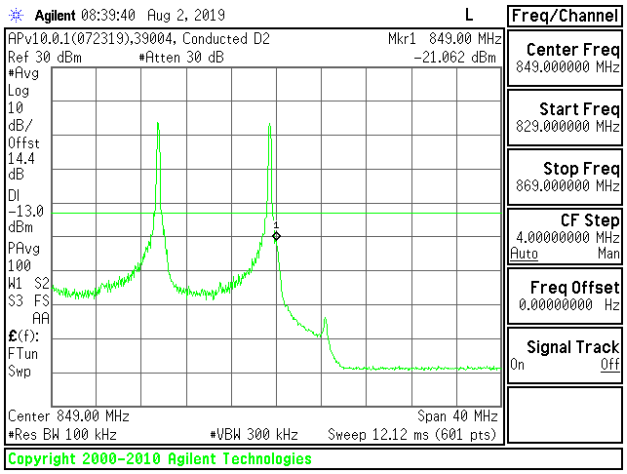
LTE B5 10MHz + 5MHz 16QAM High Ch RB50-0 + RB25-0



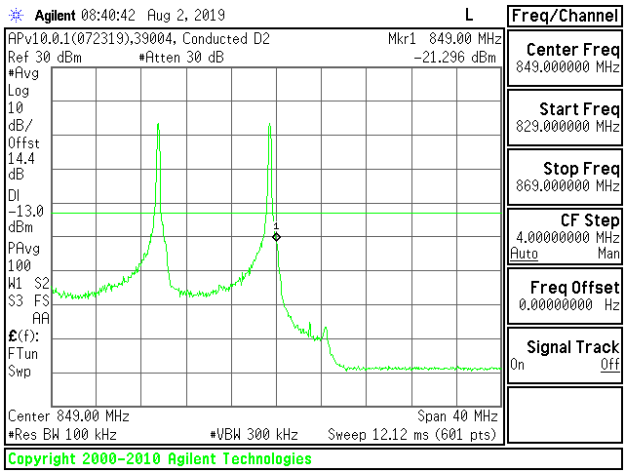
LTE B5 10MHz + 10MHz QPSK Low Ch RB1-0 + RB1-0



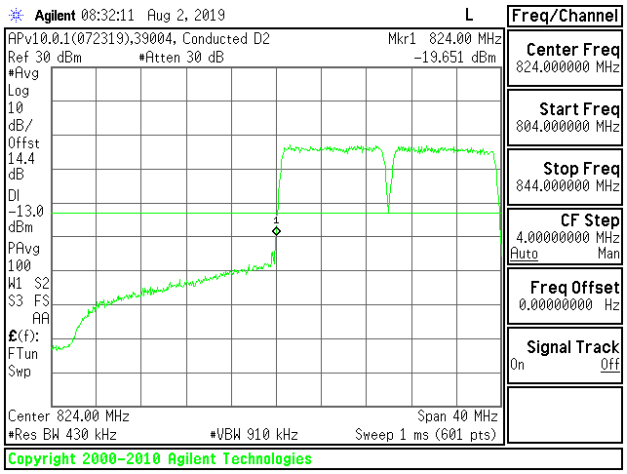
LTE B5 10MHz + 10MHz 16QAM Low Ch RB1-0 + RB1-0



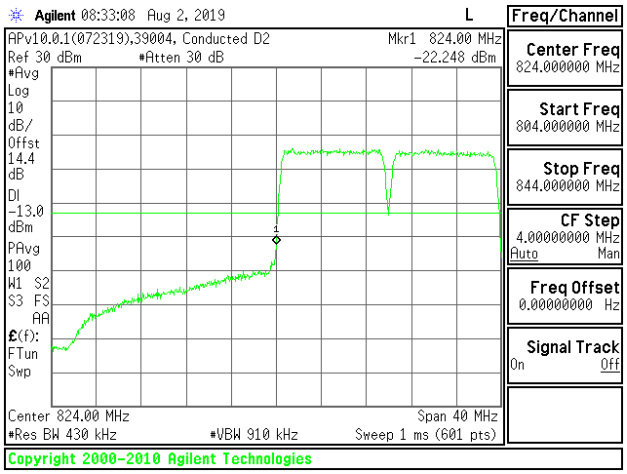
LTE B5 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-49



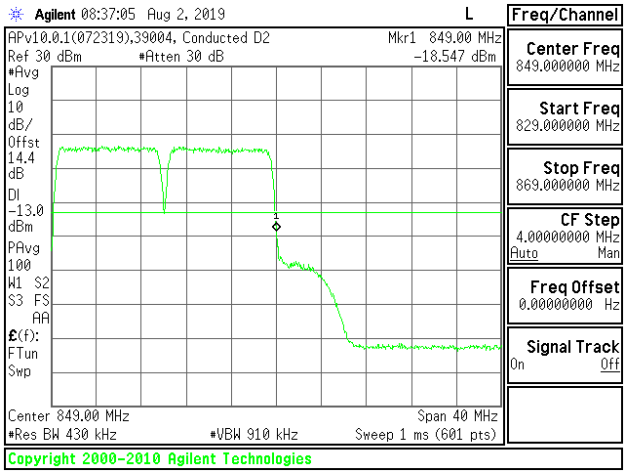
LTE B5 10MHz + 10MHz 16QAM High Ch RB1-49 + RB1-49



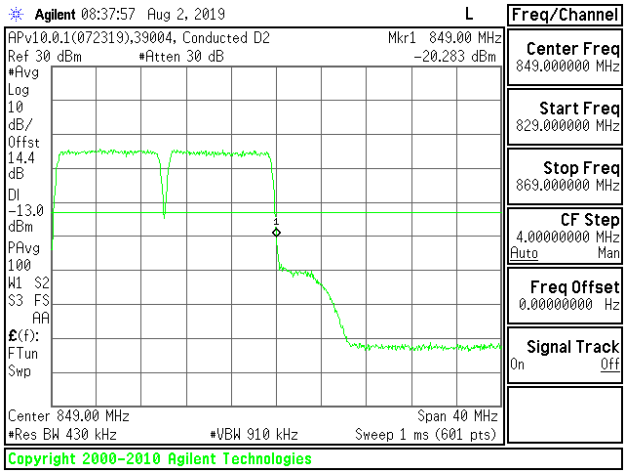
LTE B5 10MHz + 10MHz QPSK Low Ch RB50-0 + RB50-0



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

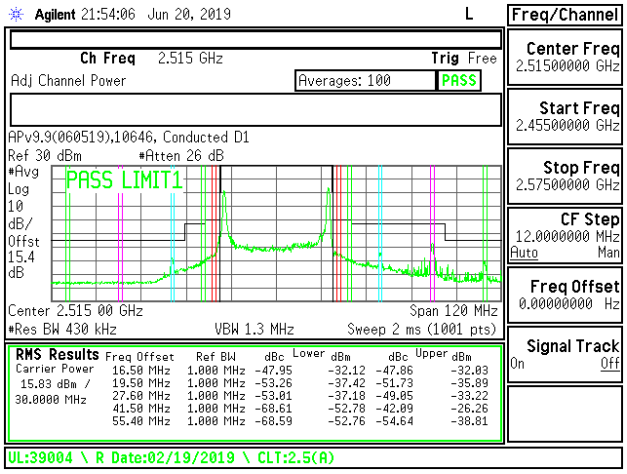


LTE B5 10MHz + 10MHz QPSK High Ch RB50-0 + RB50-0

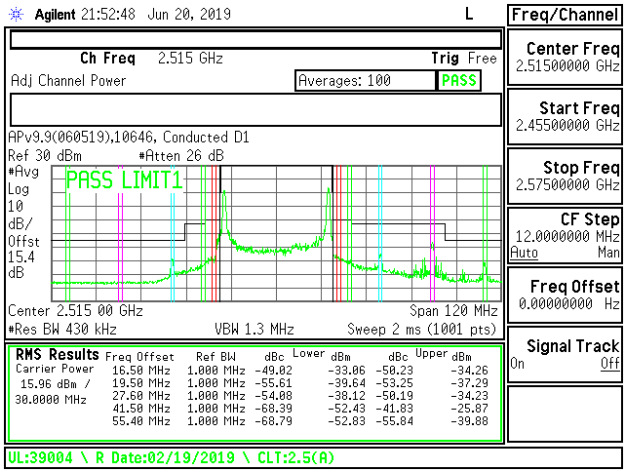


LTE B5 10MHz + 10MHz 16QAM High Ch RB50-0 + RB50-0

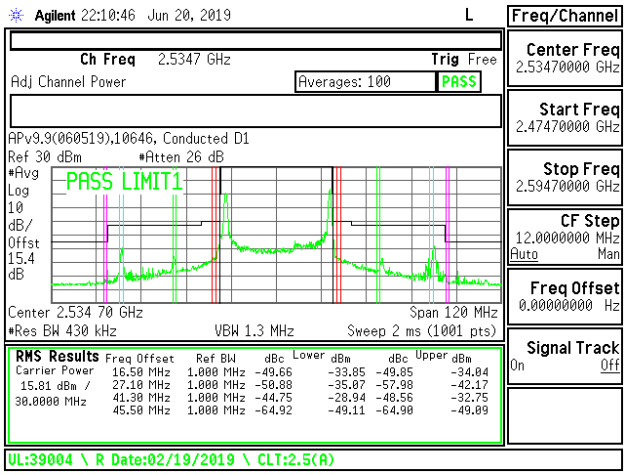
8.2.2. LTE BAND 7



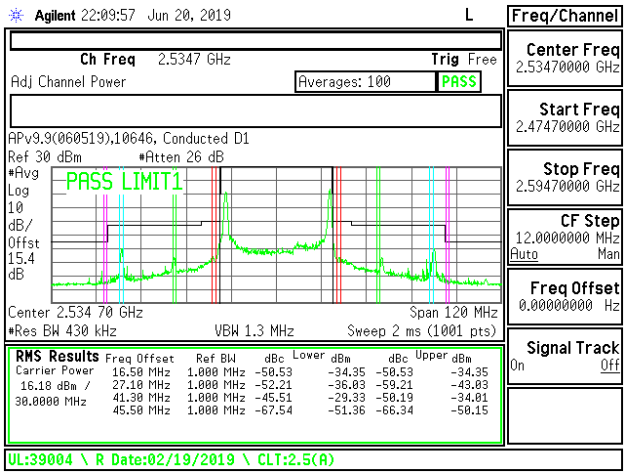
LTE B7 20MHz + 10MHz QPSK Low Ch RB1-0 + RB1-49



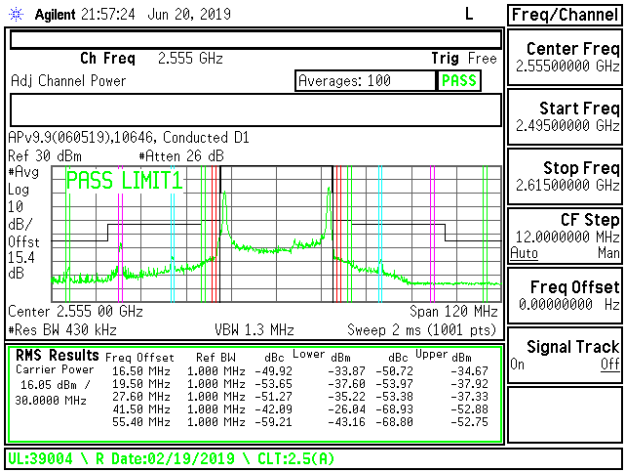
LTE B7 20MHz + 10MHz 16QAM Low Ch RB1-0 + RB1-49



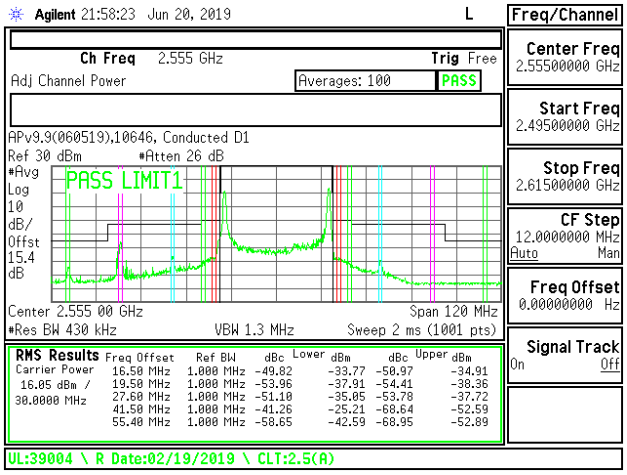
LTE B7 20MHz + 10MHz QPSK Mid Ch RB1-0 + RB1-49



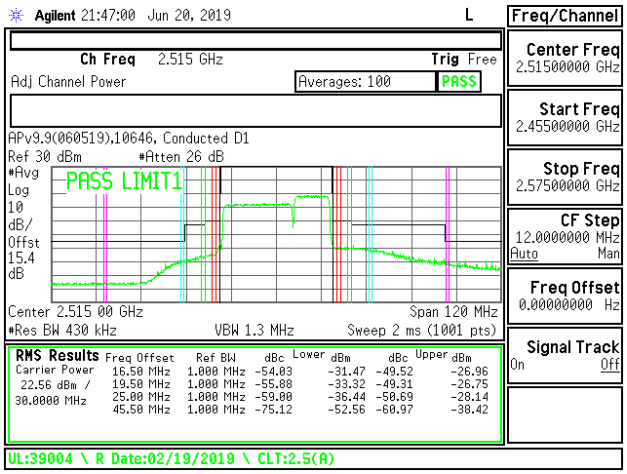
LTE B7 20MHz + 10MHz 16QAM Mid Ch RB1-0 + RB1-49



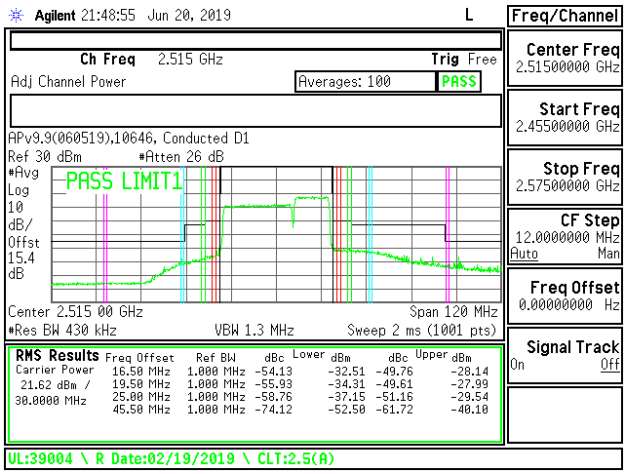
LTE B7 20MHz + 10MHz QPSK High Ch RB1-0 + RB1-49



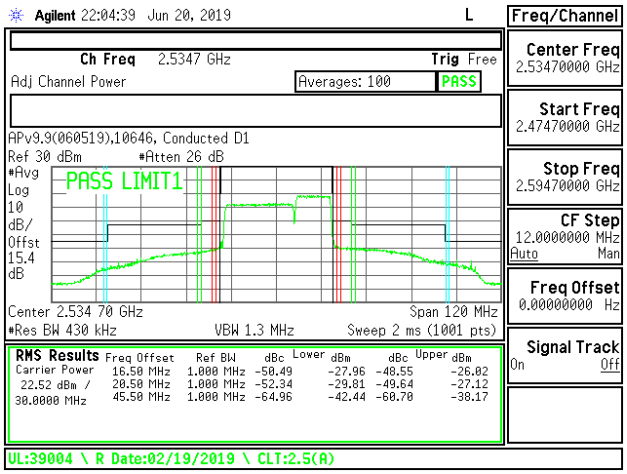
LTE B7 20MHz + 10MHz 16QAM High Ch RB1-0 + RB1-49



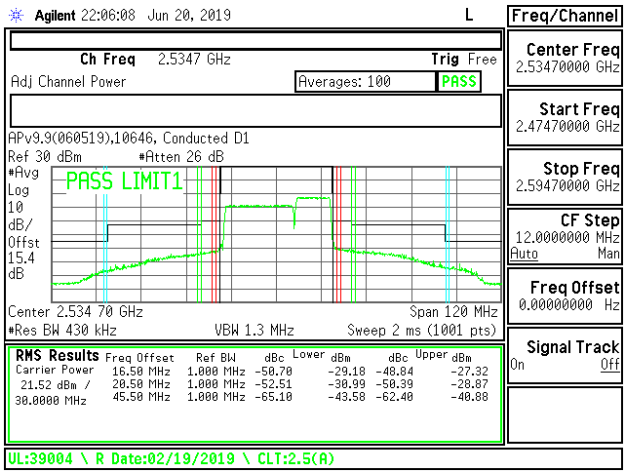
LTE B7 20MHz + 10MHz QPSK Low Ch RB100-0 + RB50-0



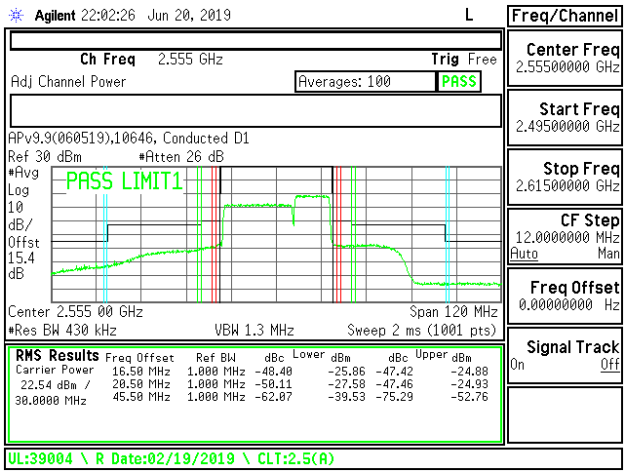
LTE B7 20MHz + 10MHz 16QAM Low Ch RB100-0 + RB50-0



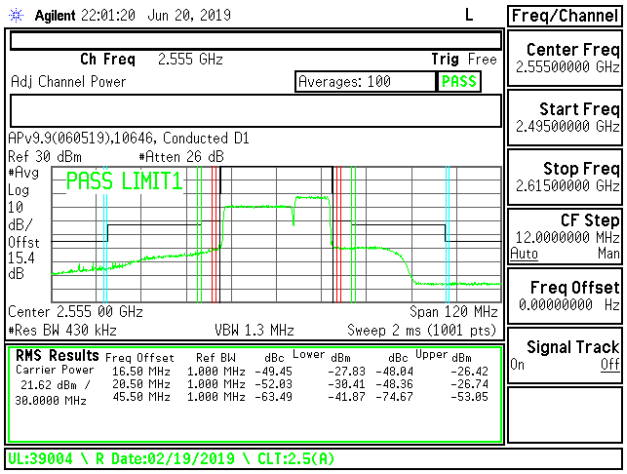
LTE B7 20MHz + 10MHz QPSK Mid Ch RB100-0 + RB50-0



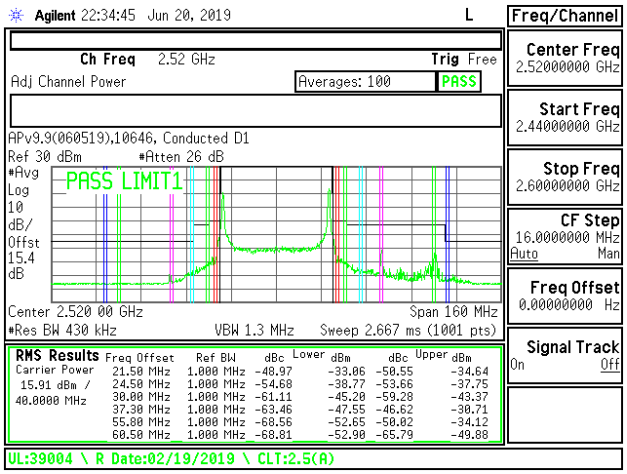
LTE B7 20MHz + 10MHz 16QAM Mid Ch RB100-0 + RB50-0



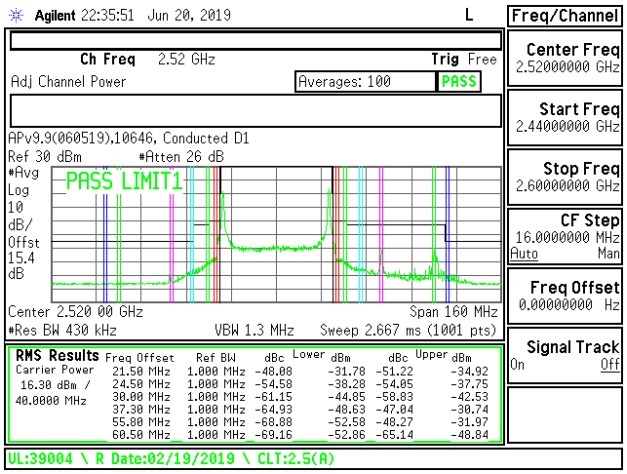
LTE B7 20MHz + 10MHz QPSK High Ch RB100-0 + RB50-0



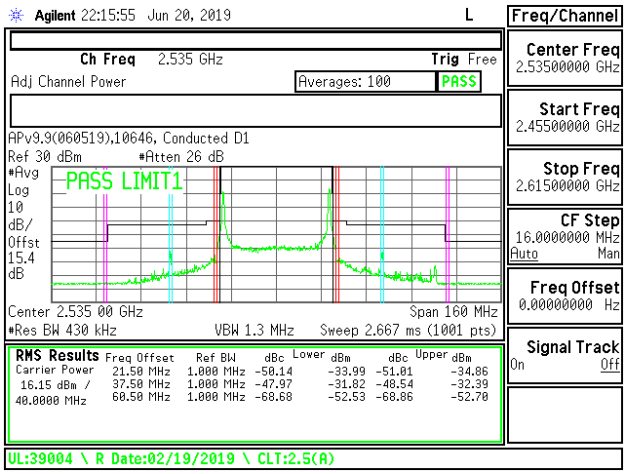
LTE B7 20MHz + 10MHz 16QAM High Ch RB100-0 + RB50-0



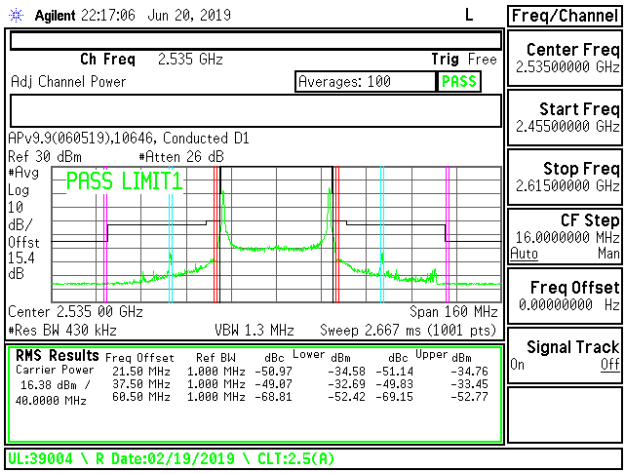
LTE B7 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



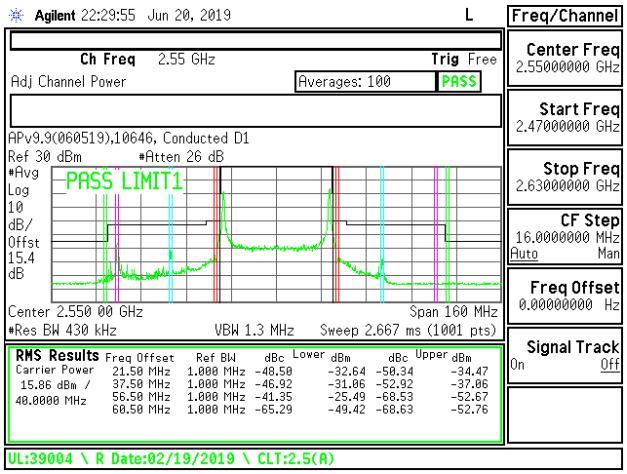
LTE B7 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



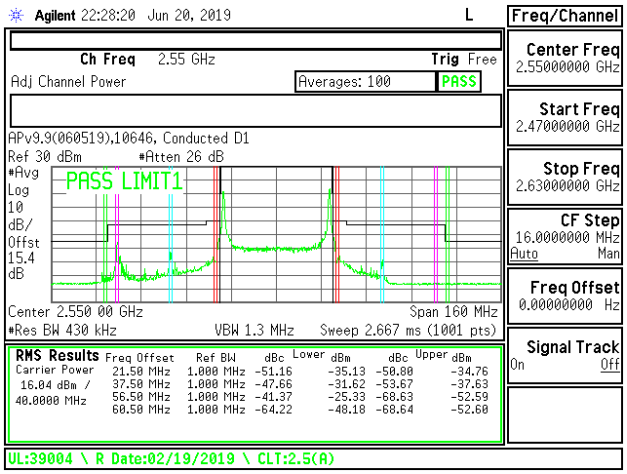
LTE B7 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



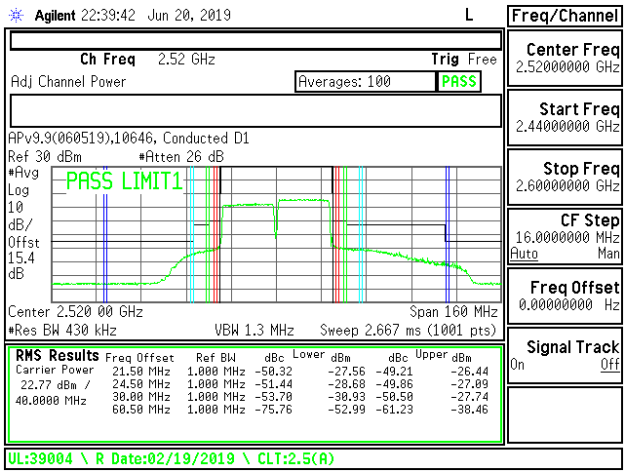
LTE B7 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



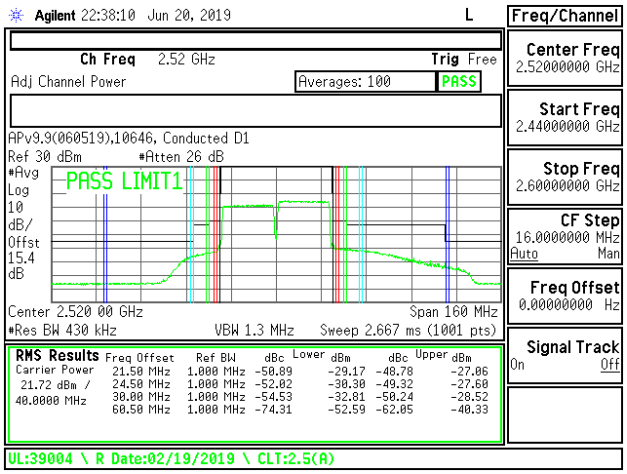
LTE B7 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



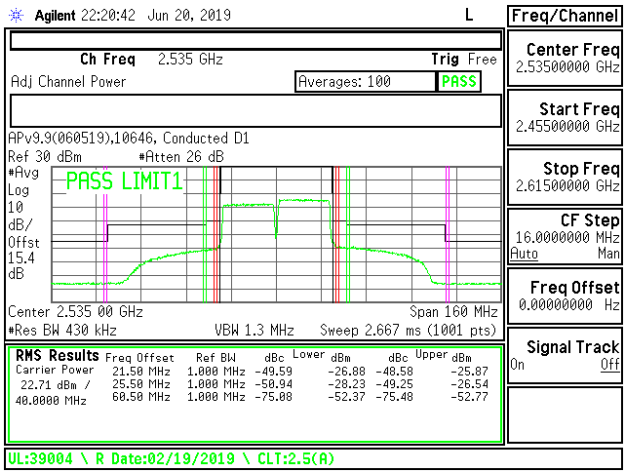
LTE B7 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



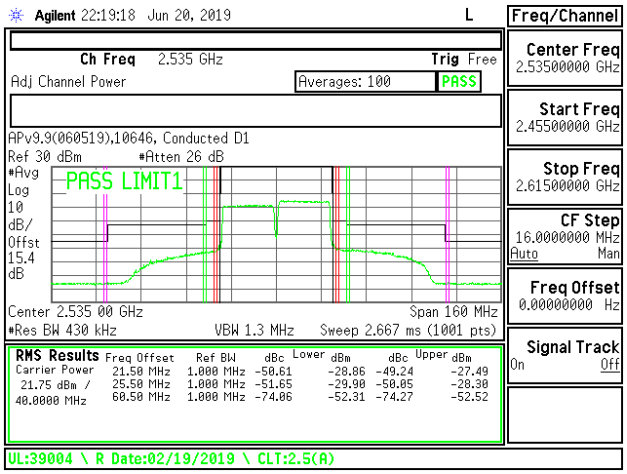
LTE B7 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



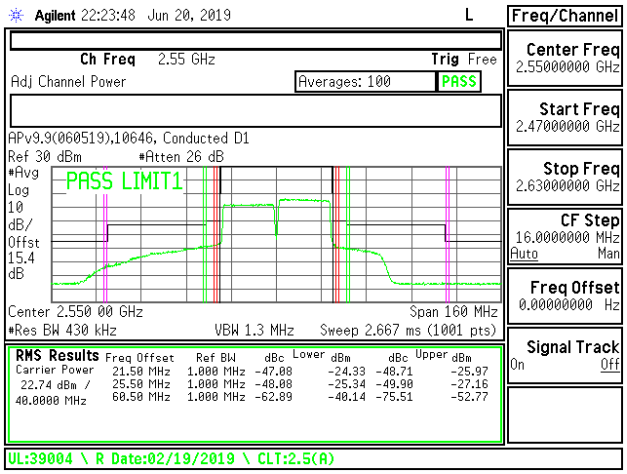
LTE B7 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



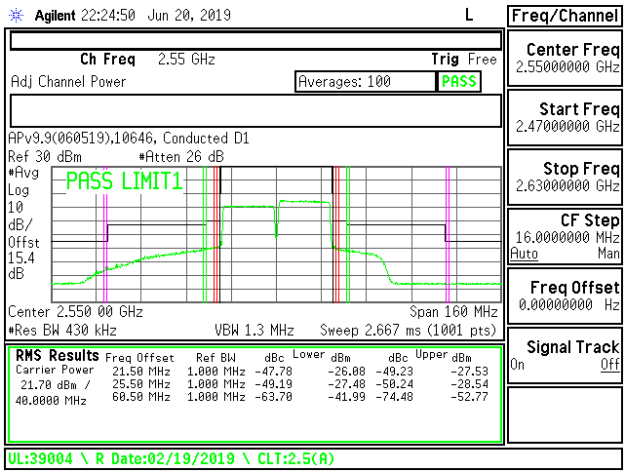
LTE B7 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



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

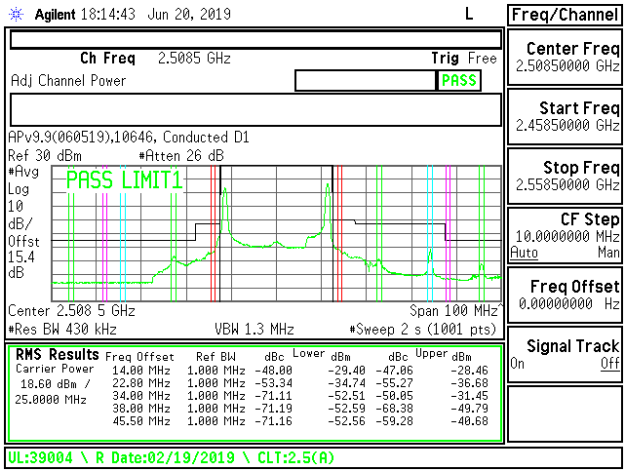


LTE B7 20MHz + 20MHz QPSK High Ch RB100-0 + RB100-0

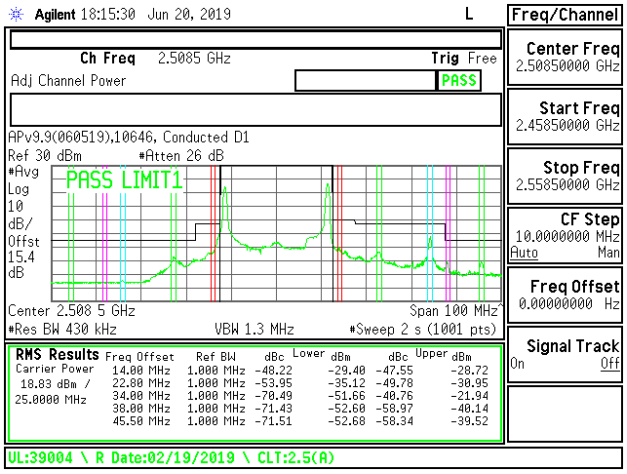


LTE B7 20MHz + 20MHz 16QAM High Ch RB100-0 + RB100-0

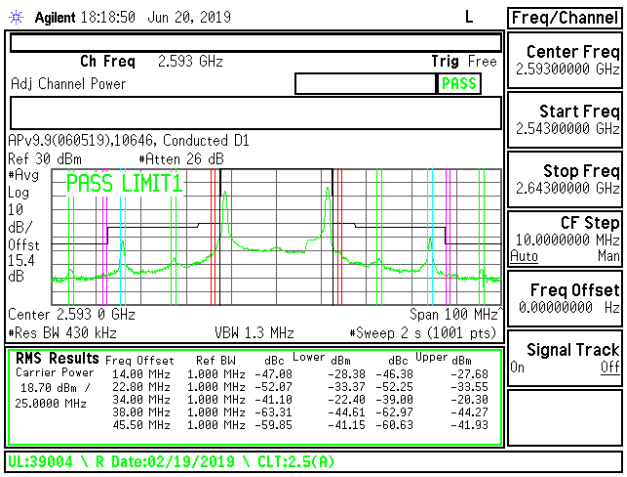
8.2.3. LTE BAND 41



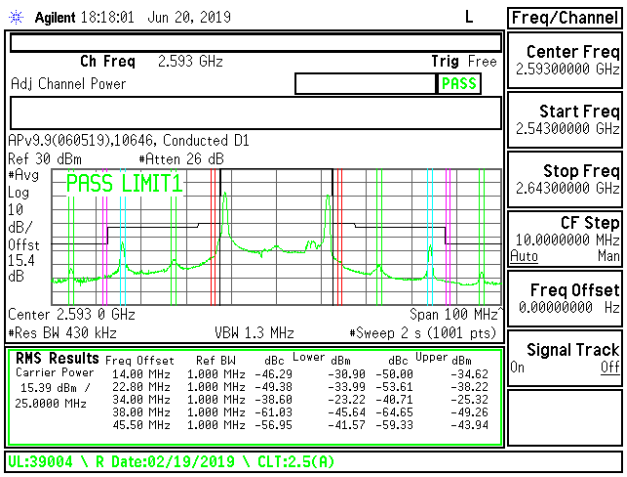
LTE B41 20MHz + 5MHz QPSK Low Ch RB1-0 + RB1-24



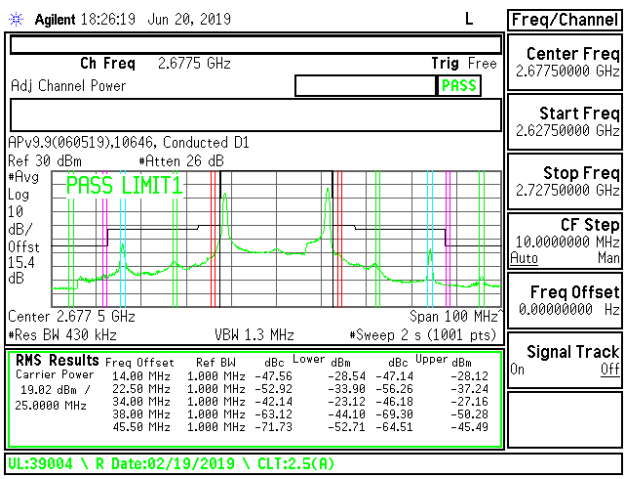
LTE B41 20MHz + 5MHz 16QAM Low Ch RB1-0 + RB1-24



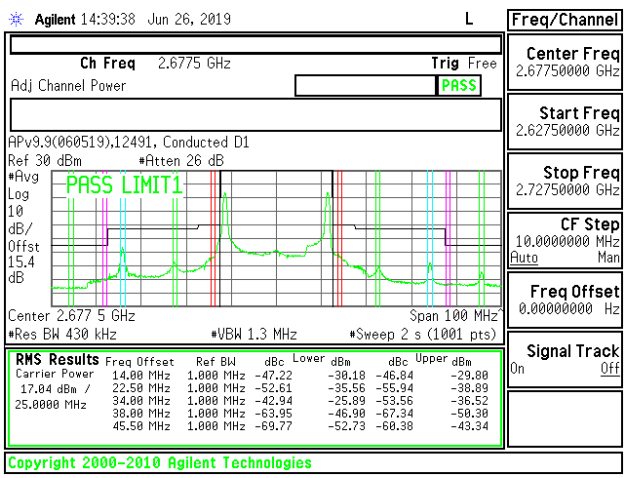
LTE B41 20MHz + 5MHz QPSK Mid Ch RB1-0 + RB1-24



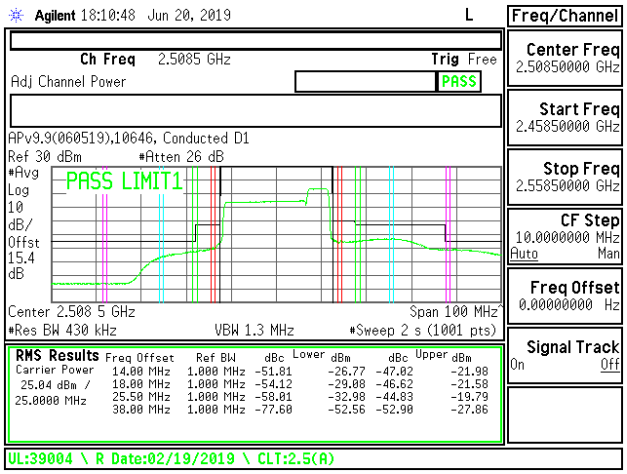
LTE B41 20MHz + 5MHz 16QAM Mid Ch RB1-0 + RB1-24



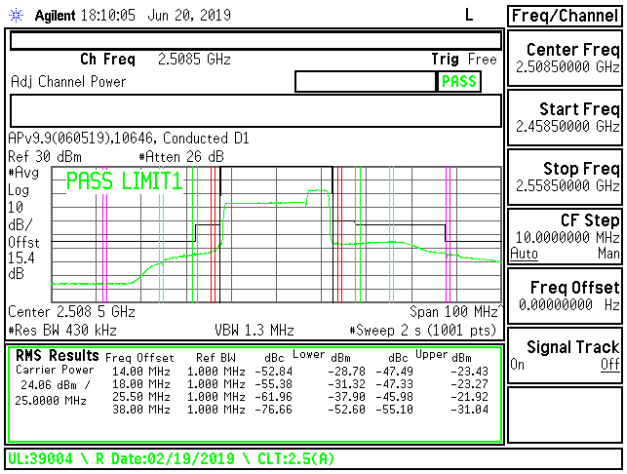
LTE B41 20MHz + 5MHz QPSK High Ch RB1-0 + RB1-24



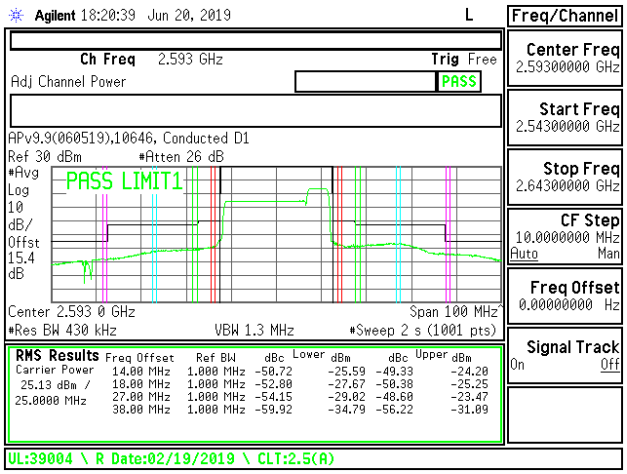
LTE B41 20MHz + 5MHz 16QAM High Ch RB1-0 + RB1-24



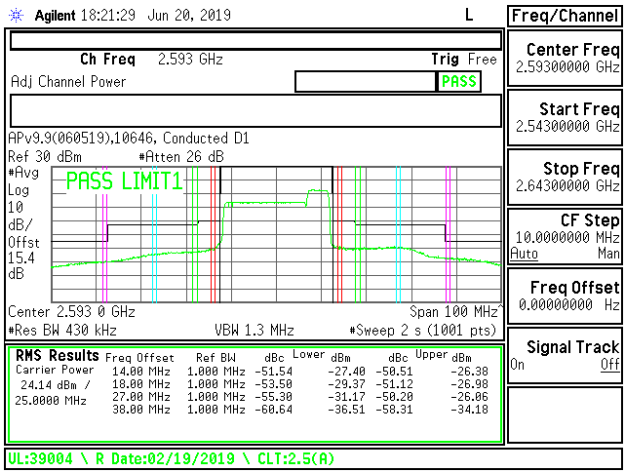
LTE B41 20MHz + 5MHz QPSK Low Ch RB100-0 + RB25-0



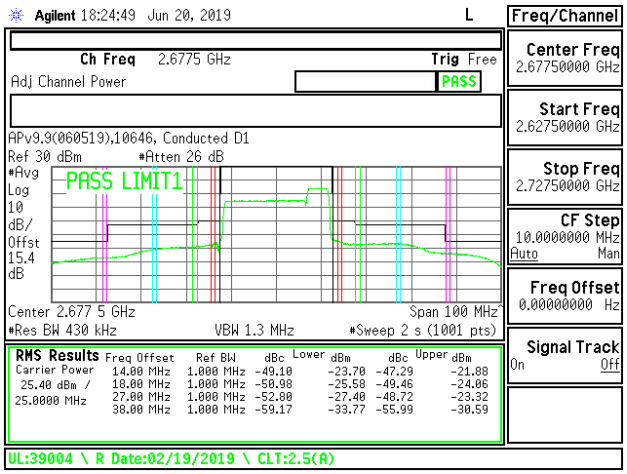
LTE B41 20MHz + 5MHz 16QAM Low Ch RB100-0 + RB25-0



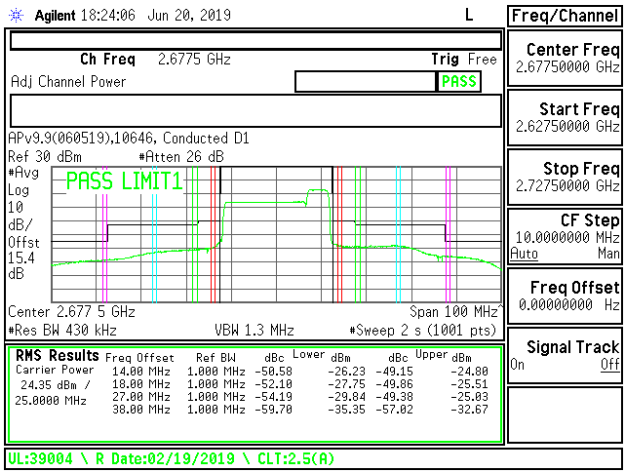
LTE B41 20MHz + 5MHz QPSK Mid Ch RB100-0 + RB25-0



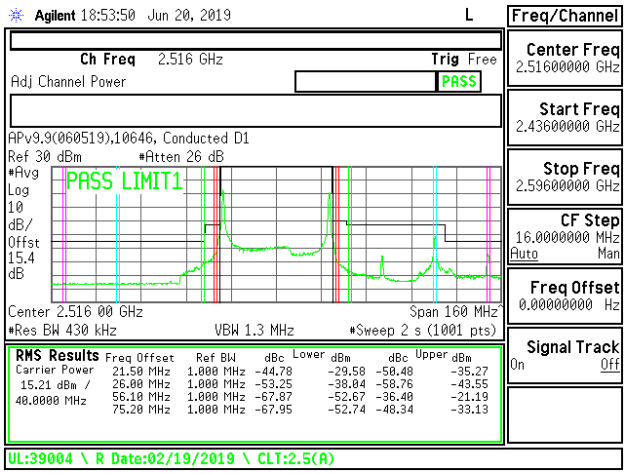
LTE B41 20MHz + 5MHz 16QAM Mid Ch RB100-0 + RB25-0



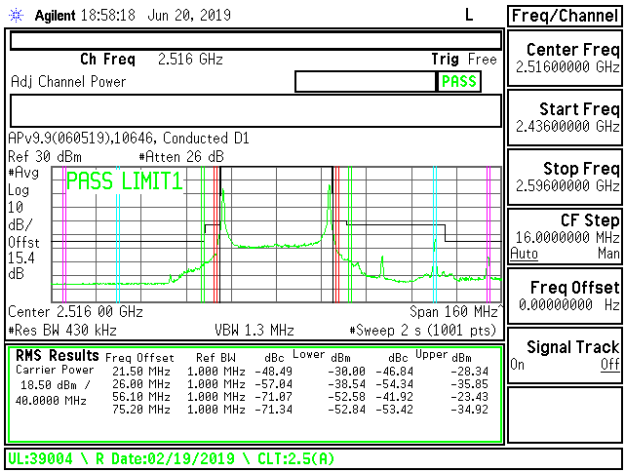
LTE B41 20MHz + 5MHz QPSK High Ch RB100-0 + RB25-0



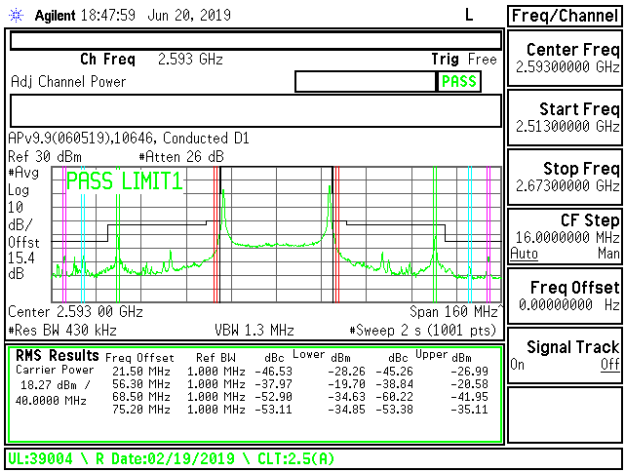
LTE B41 20MHz + 5MHz 16QAM High Ch RB100-0 + RB25-0



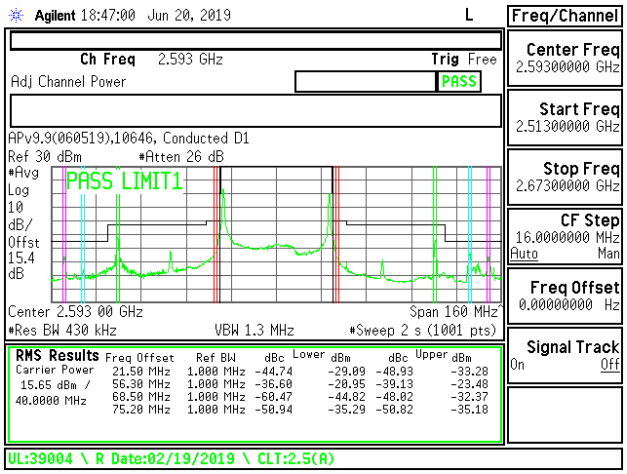
LTE B41 20MHz + 20MHz QPSK Low Ch RB1-0 + RB1-99



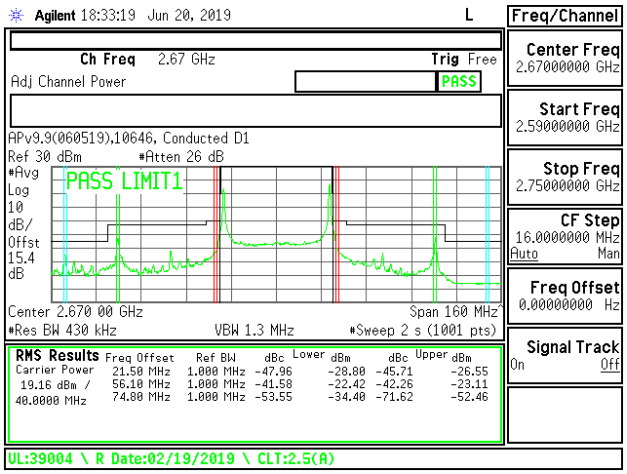
LTE B41 20MHz + 20MHz 16QAM Low Ch RB1-0 + RB1-99



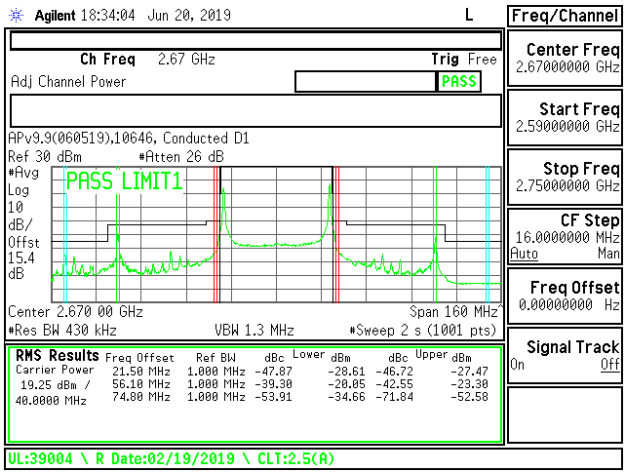
LTE B41 20MHz + 20MHz QPSK Mid Ch RB1-0 + RB1-99



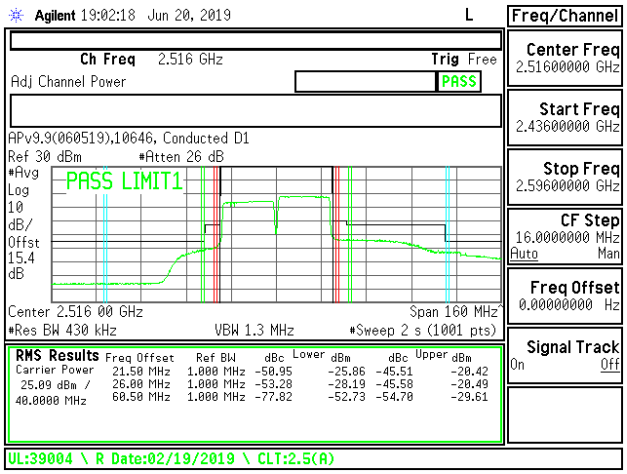
LTE B41 20MHz + 20MHz 16QAM Mid Ch RB1-0 + RB1-99



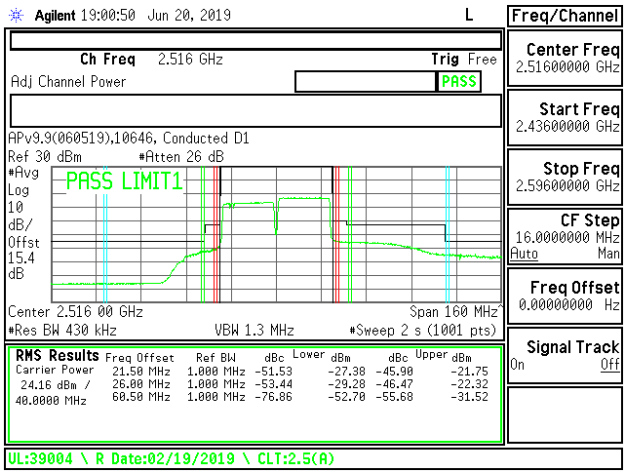
LTE B41 20MHz + 20MHz QPSK High Ch RB1-0 + RB1-99



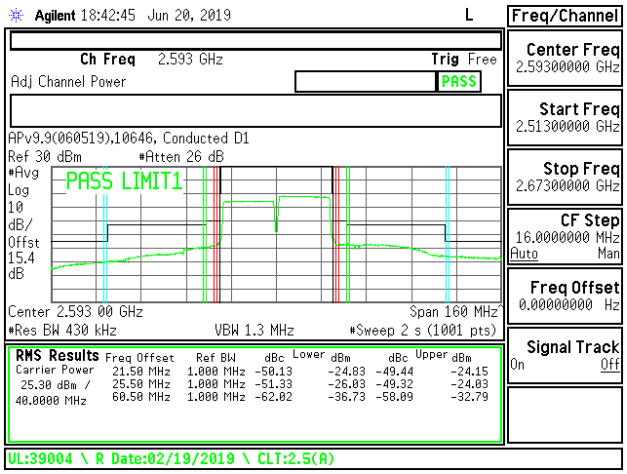
LTE B41 20MHz + 20MHz 16QAM High Ch RB1-0 + RB1-99



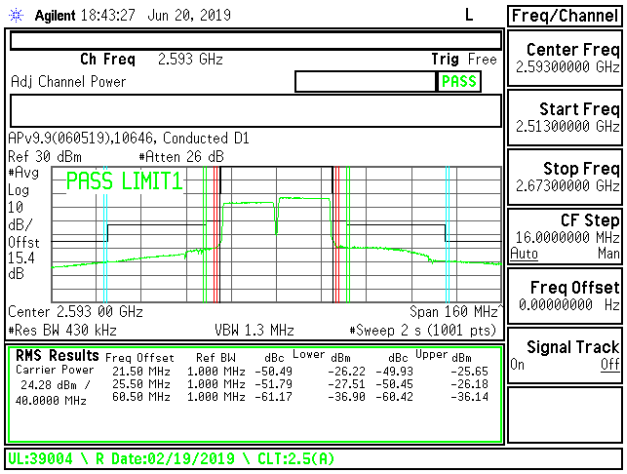
LTE B41 20MHz + 20MHz QPSK Low Ch RB100-0 + RB100-0



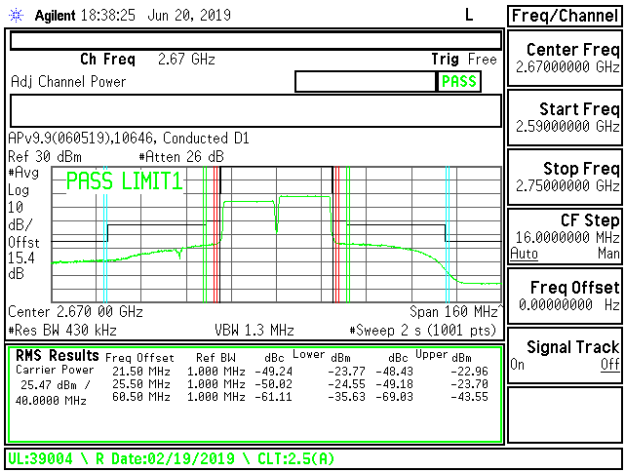
LTE B41 20MHz + 20MHz 16QAM Low Ch RB100-0 + RB100-0



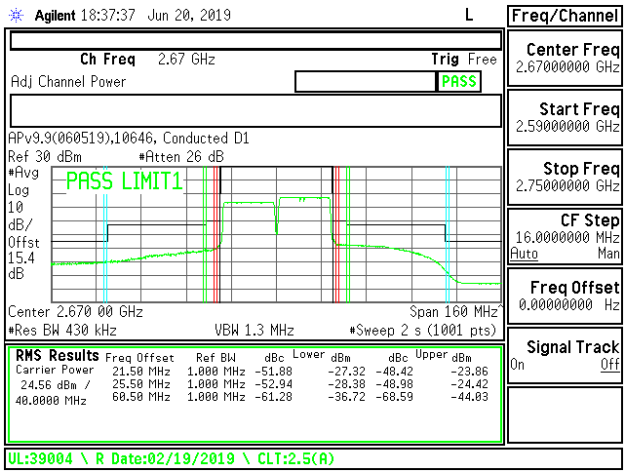
LTE B41 20MHz + 20MHz QPSK Mid Ch RB100-0 + RB100-0



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



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



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

8.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.917, §27.53

LIMITS

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

TEST PROCEDURE

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

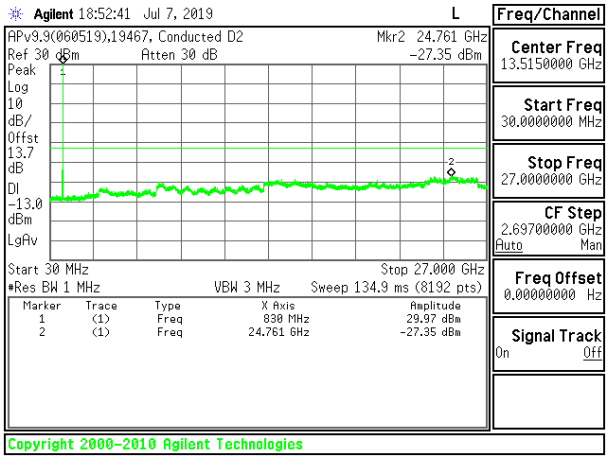
For each out of band emissions measurement:

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

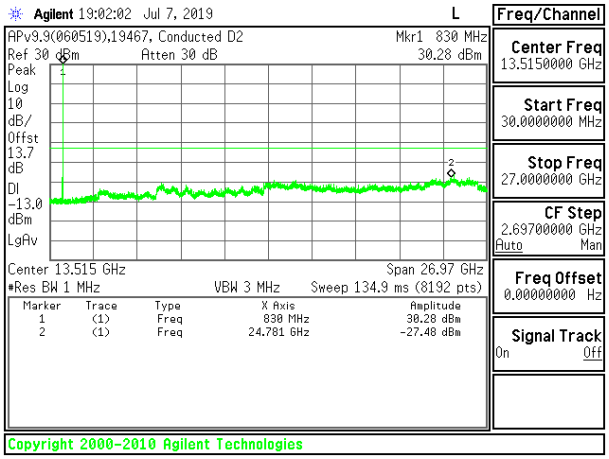
MODES TESTED

- LTE Band 5
- LTE Band 7
- LTE Band 41

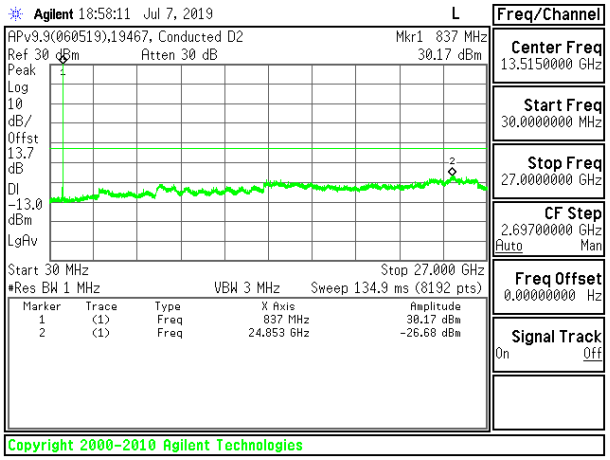
8.3.1. LTE BAND 5



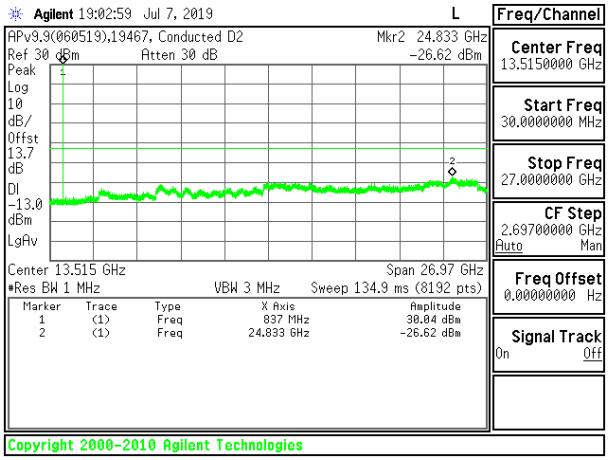
LTE B5 5MHz + 3MHz QPSK Low Ch RB1-24 + RB1-0



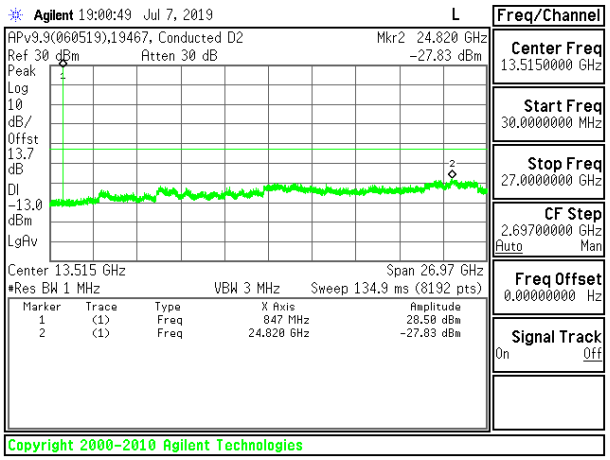
LTE B5 5MHz + 3MHz 16QAM Low Ch RB1-24 + RB1-0



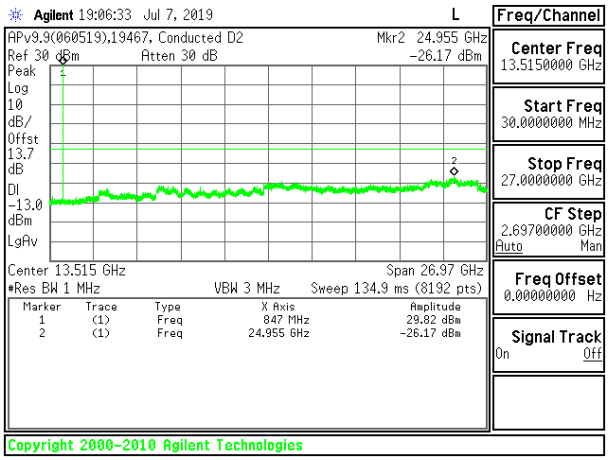
LTE B5 5MHz + 3MHz QPSK Middle Ch RB1-24 + RB1-0



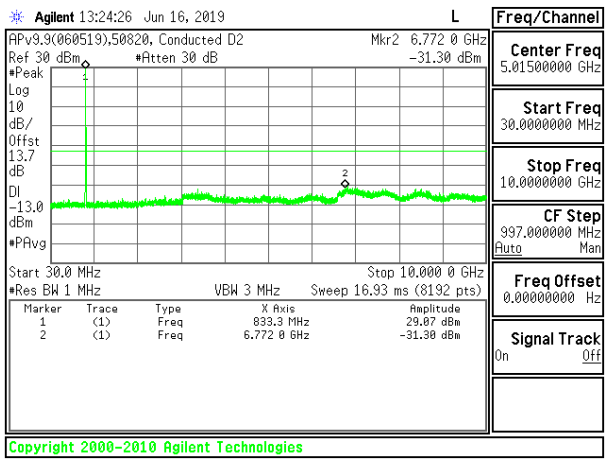
LTE B5 5MHz + 3MHz 16QAM Middle Ch RB1-24 + RB1-0



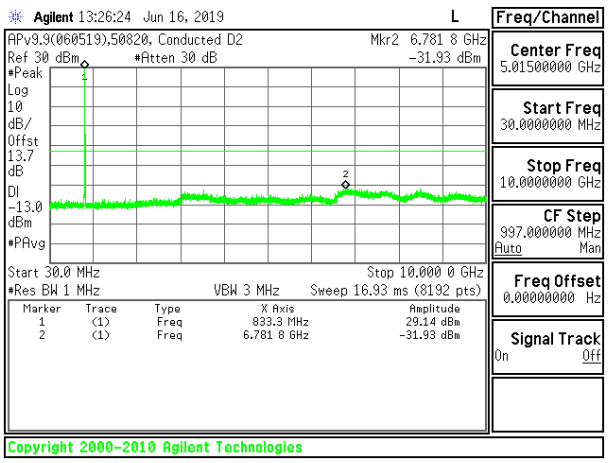
LTE B5 5MHz + 3MHz QPSK High Ch RB1-24 + RB1-0



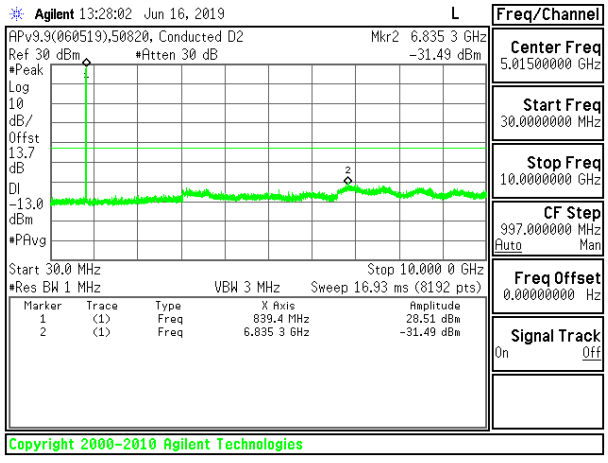
LTE B5 5MHz + 3MHz 16QAM High Ch RB1-24 + RB1-0



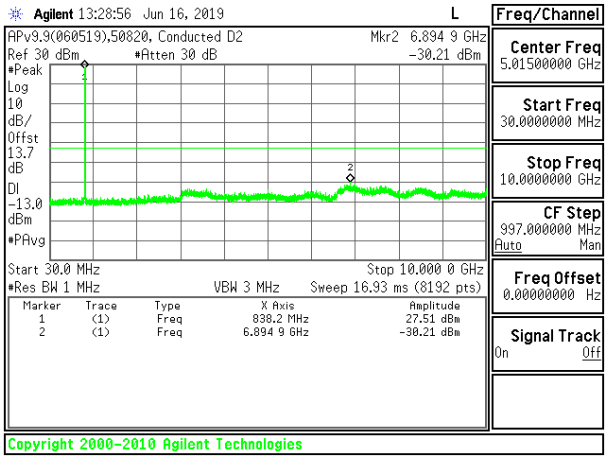
LTE B5 10MHz + 5MHz QPSK Low Ch RB1-49 + RB1-0



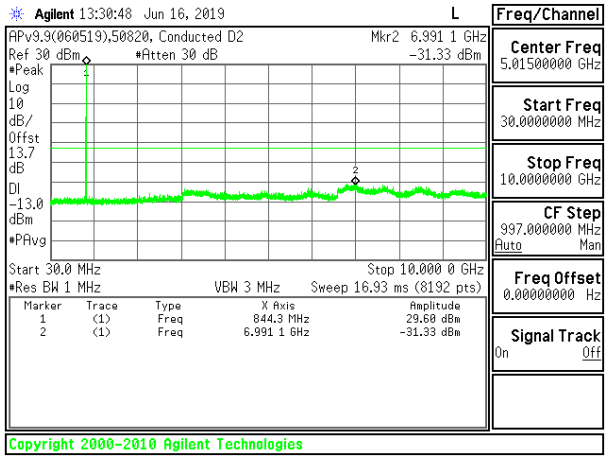
LTE B5 10MHz + 5MHz 16QAM Low Ch RB1-49 + RB1-0



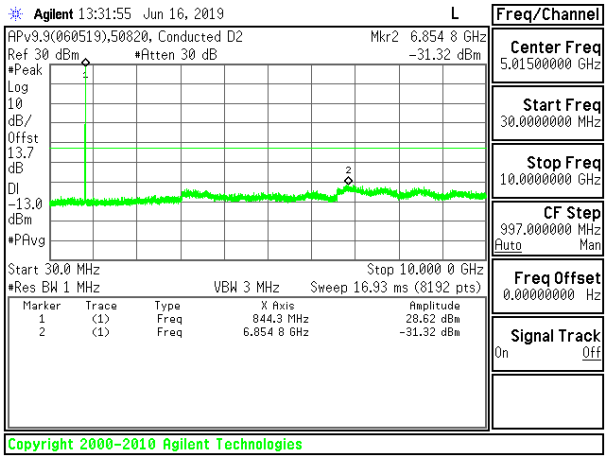
LTE B5 10MHz + 5MHz QPSK Middle Ch RB1-49 + RB1-0



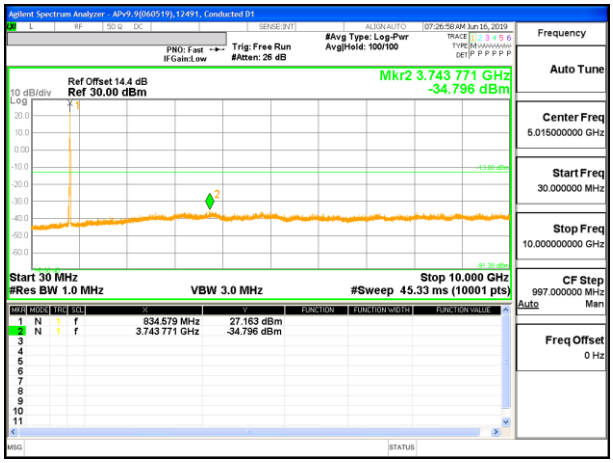
LTE B5 10MHz + 5MHz 16QAM Middle Ch RB1-49 + RB1-0



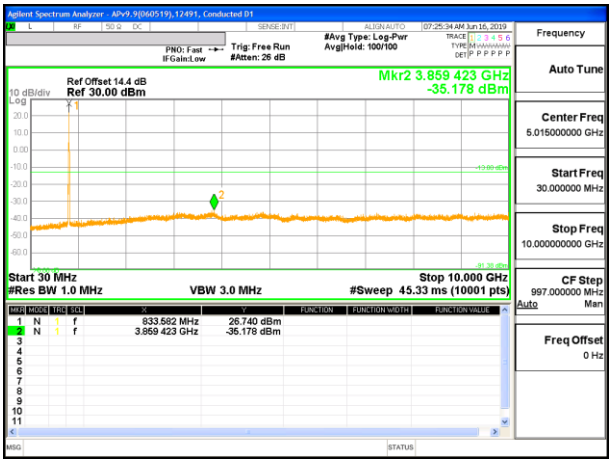
LTE B5 10MHz + 5MHz QPSK High Ch RB1-49 + RB1-0



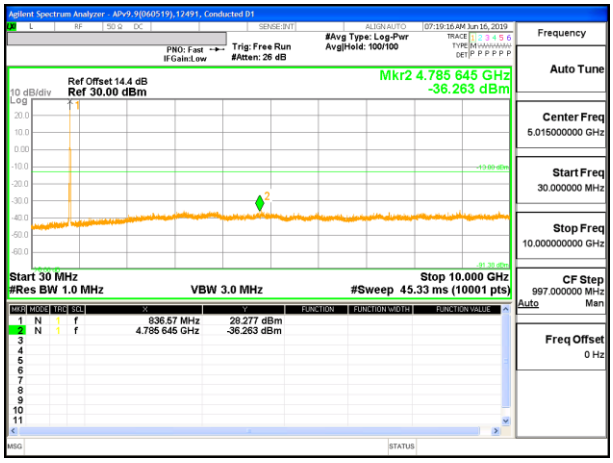
LTE B5 10MHz + 5MHz 16QAM High Ch RB1-49 + RB1-0



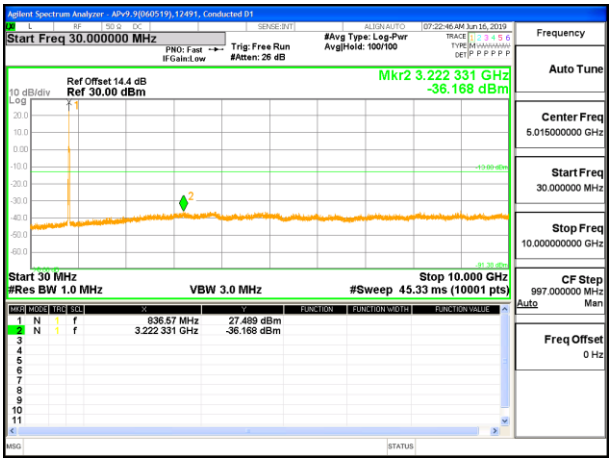
LTE B5 10MHz + 10MHz QPSK Low Ch RB1-49 + RB1-0



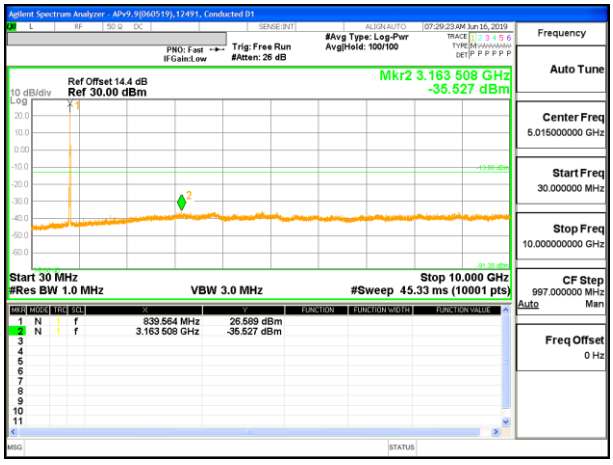
LTE B5 10MHz + 10MHz 16QAM Low Ch RB1-49 + RB1-0



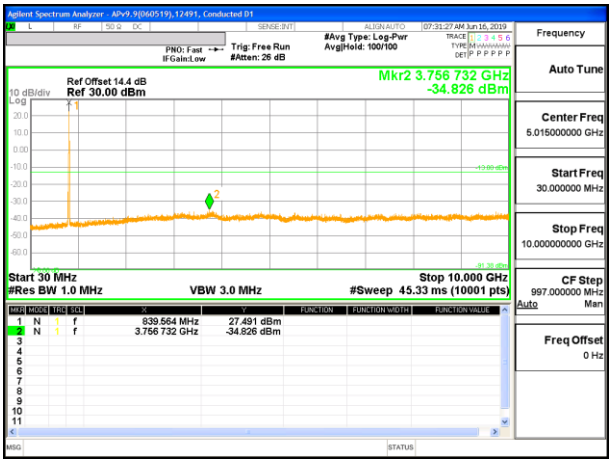
LTE B5 10MHz + 10MHz QPSK Middle Ch RB1-49 + RB1-0



LTE B5 10MHz + 10MHz 16QAM Middle Ch RB1-49 + RB1-0

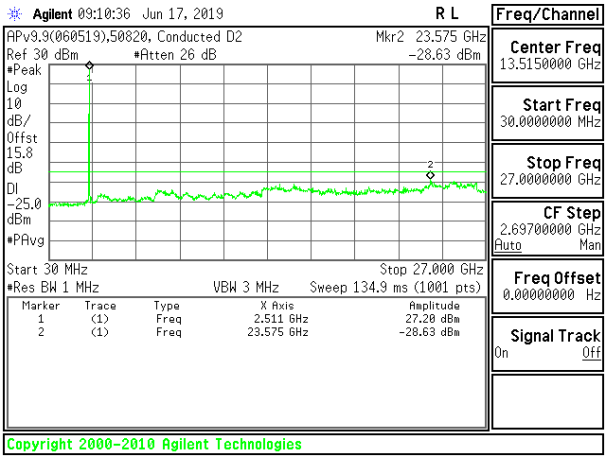


LTE B5 10MHz + 10MHz QPSK High Ch RB1-49 + RB1-0

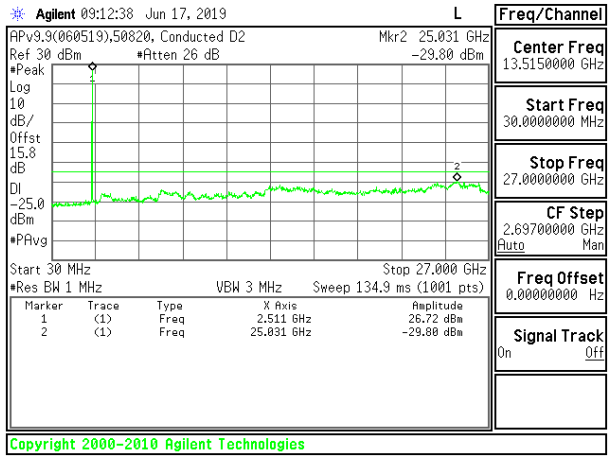


LTE B5 10MHz + 10MHz 16QAM High Ch RB1-49 + RB1-0

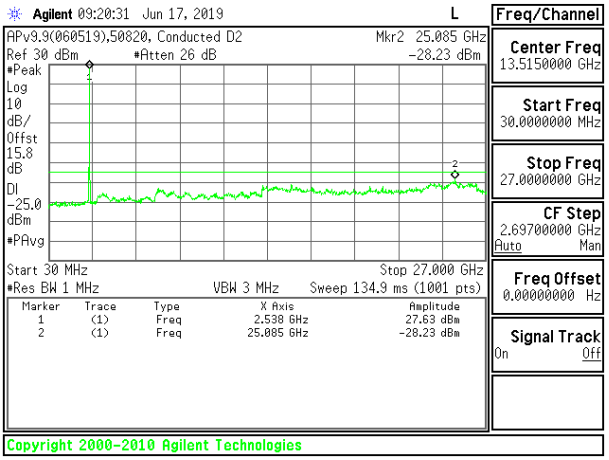
8.3.2. LTE BAND 7



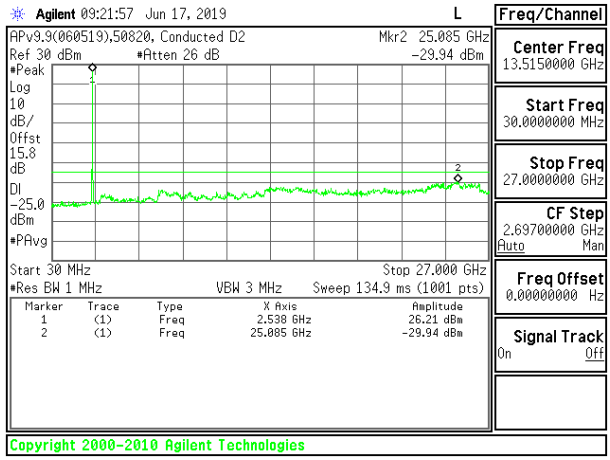
LTE B7 20MHz + 10MHz QPSK Low Ch RB1-99 + RB1-0



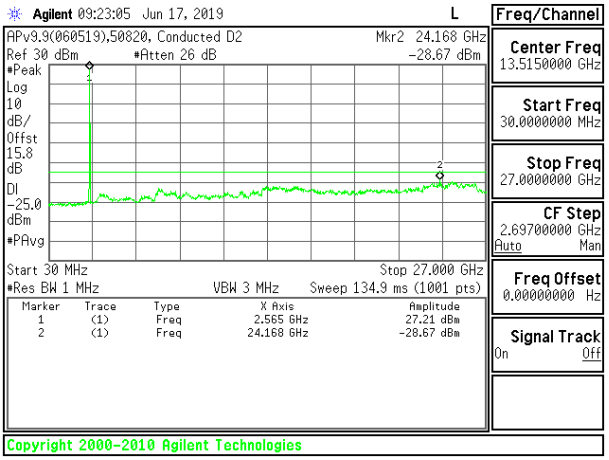
LTE B7 20MHz + 10MHz 16QAM Low Ch RB1-99 + RB1-0



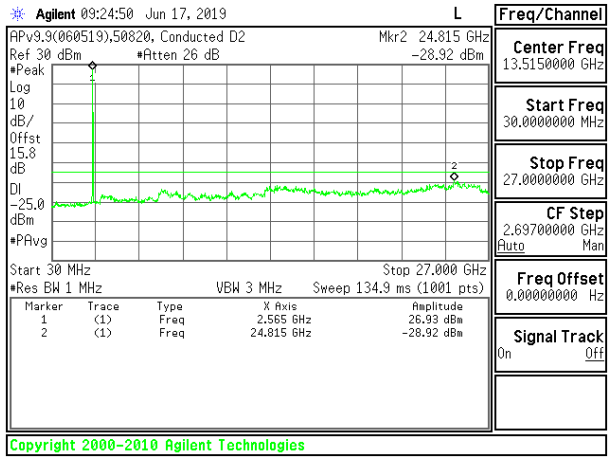
LTE B7 20MHz + 10MHz QPSK Middle Ch RB1-99 + RB1-0



LTE B7 20MHz + 10MHz 16QAM Middle Ch RB1-99 + RB1-0



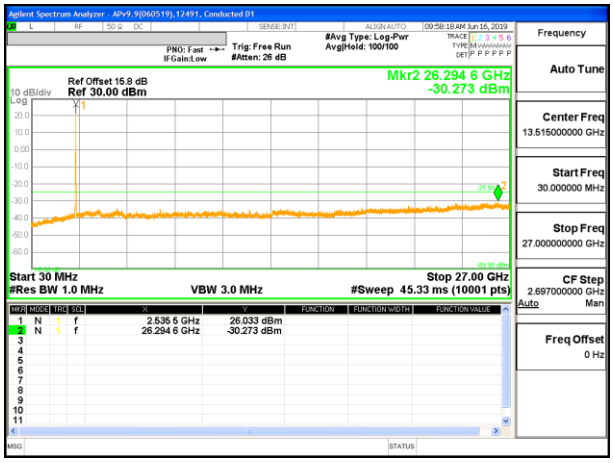
LTE B7 20MHz + 10MHz QPSK High Ch RB1-99 + RB1-0



LTE B7 20MHz + 10MHz 16QAM High Ch RB1-99 + RB1-0

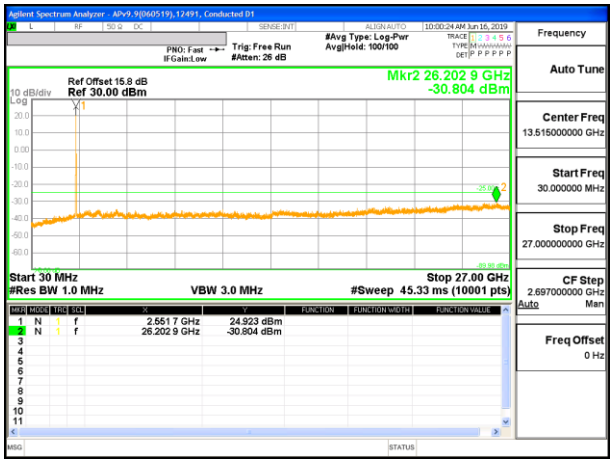
LTE B7 20MHz + 20MHz QPSK Low Ch RB1-99 + RB1-0

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

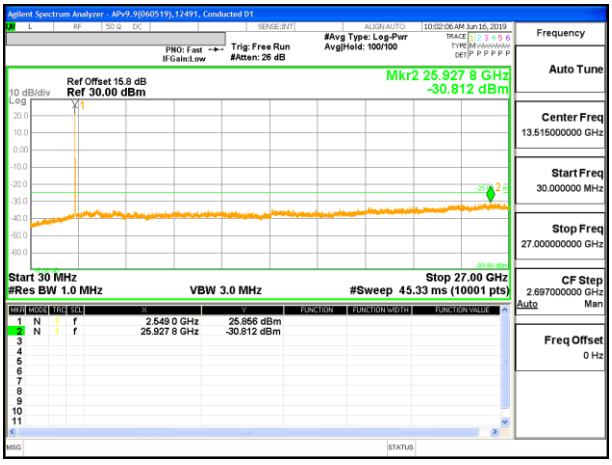


LTE B7 20MHz + 20MHz QPSK Middle Ch RB1-99 + RB1-0

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

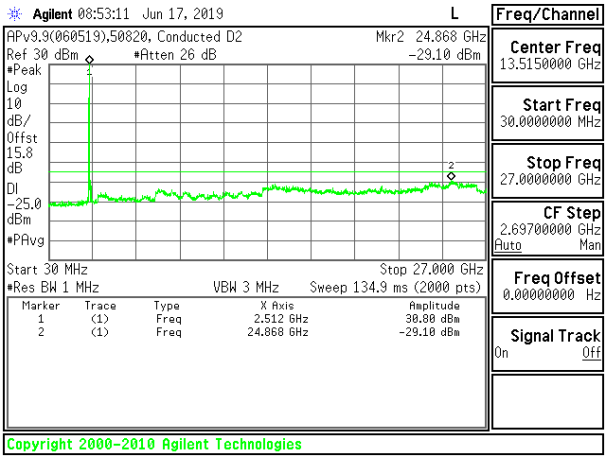


LTE B7 20MHz + 20MHz QPSK High Ch RB1-99 + RB1-0

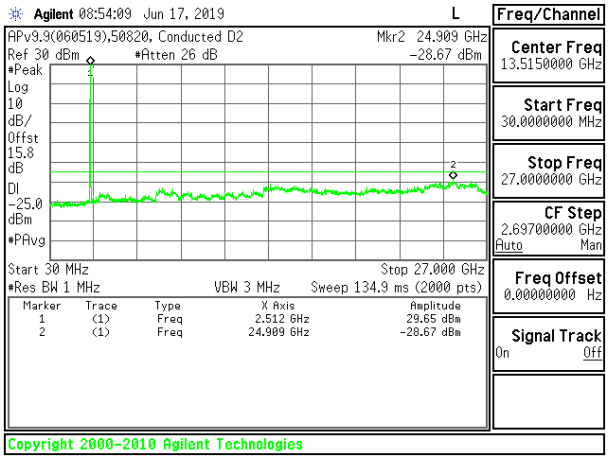


LTE B7 20MHz + 20MHz 16QAM High Ch RB1-99 + RB1-0

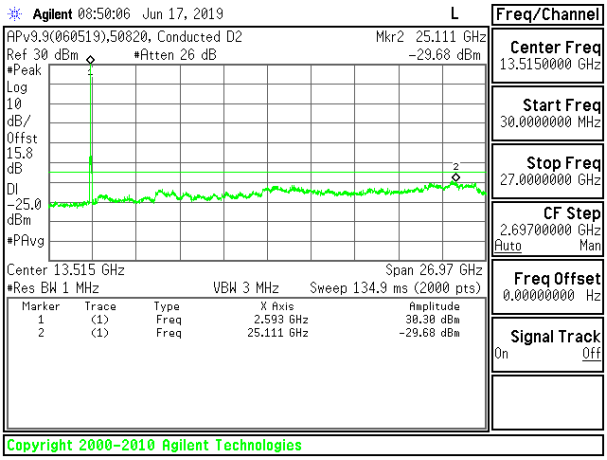
8.3.3. LTE BAND 41



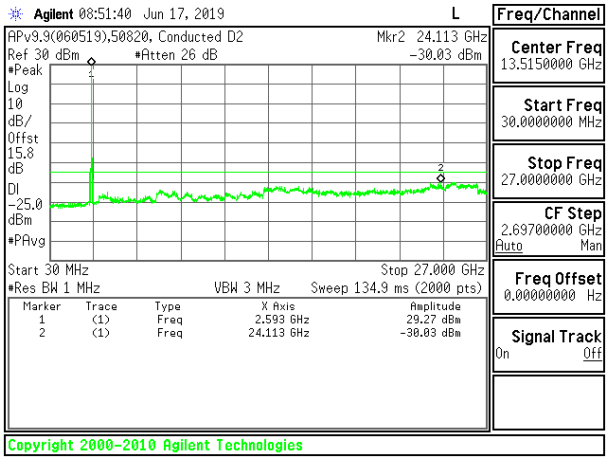
LTE B41 20MHz + 5MHz QPSK Low Ch RB1-99 + RB1-0



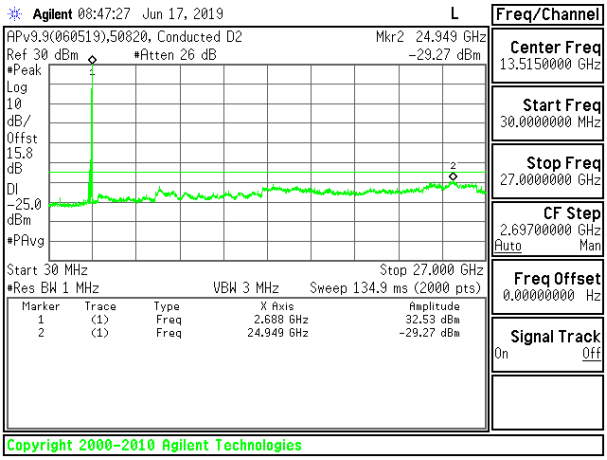
LTE B41 20MHz + 5MHz 16QAM Low Ch RB1-99 + RB1-0



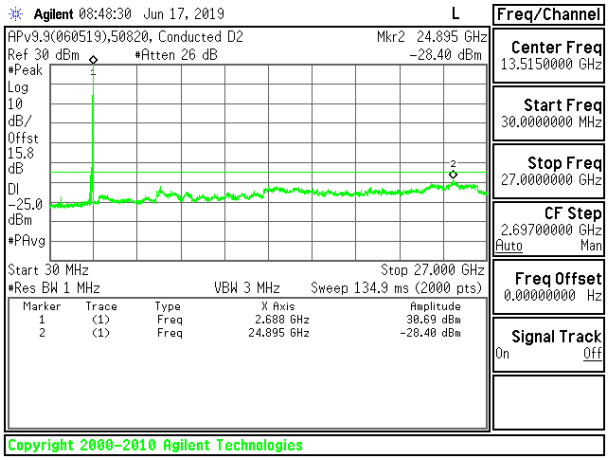
LTE B41 20MHz + 5MHz QPSK Middle Ch RB1-99 + RB1-0



LTE B41 20MHz + 5MHz 16QAM Middle Ch RB1-99 + RB1-0



LTE B41 20MHz + 5MHz QPSK High Ch RB1-99 + RB1-0



LTE B41 20MHz + 5MHz 16QAM High Ch RB1-99 + RB1-0

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

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

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

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

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

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

8.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §27.54

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

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

  Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
  End Voltage, 3.2VDC.

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

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

MODES TESTED

- LTE Band 5
- LTE Band 7
- LTE Band 41

RESULTS

See the following pages.

8.4.1. LTE BAND 5

ID:	38602	Date:	5/17/19

QPSK, (10MHz + 5MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	824.1093	848.9854		
Extreme (50C)		824.1093	848.9854	15.0	0.018
Extreme (40C)		824.1093	848.9854	14.1	0.017
Extreme (30C)		824.1093	848.9854	12.8	0.015
Extreme (10C)		824.1093	848.9854	11.4	0.014
Extreme (0C)		824.1093	848.9854	2.3	0.003
Extreme (-10C)		824.1093	848.9854	-4.2	-0.005
Extreme (-20C)		824.1093	848.9854	-11.3	-0.014
Extreme (-30C)		824.1093	848.9854	-13.6	-0.016
20C	15%	824.1093	848.9854	9.3	0.011
	-15%	824.1093	848.9854	-13.1	-0.016
	End Point	824.1093	848.9854	-12.6	-0.015

QPSK, (10MHz + 10MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	824.3583	848.5910		
Extreme (50C)		824.3583	848.5910	33.6	0.040
Extreme (40C)		824.3583	848.5910	29.8	0.036
Extreme (30C)		824.3583	848.5910	24.4	0.029
Extreme (10C)		824.3583	848.5910	20.3	0.024
Extreme (0C)		824.3583	848.5910	8.5	0.010
Extreme (-10C)		824.3583	848.5910	1.7	0.002
Extreme (-20C)		824.3583	848.5910	-16.6	-0.020
Extreme (-30C)		824.3583	848.5910	-19.7	-0.024
20C	15%	824.3583	848.5910	8.8	0.011
	-15%	824.3583	848.5910	-10.2	-0.012
	End Point	824.3583	848.5910	-12.6	-0.015

8.4.2. LTE BAND 7

ID:	38602	Date:	5/17/19

QPSK, (20MHz + 10MHz BANDWIDTH)

Limit		2500	2570	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)		2501.0710	2568.9440		
Extreme (50C)		2501.0710	2568.9440	27.2	0.011
Extreme (40C)		2501.0710	2568.9440	29.8	0.012
Extreme (30C)		2501.0710	2568.9440	27.7	0.011
Extreme (10C)	Normal	2501.0710	2568.9440	22.5	0.009
Extreme (0C)		2501.0710	2568.9440	9.8	0.004
Extreme (-10C)		2501.0710	2568.9440	-5.4	-0.002
Extreme (-20C)		2501.0710	2568.9440	-20.7	-0.008
Extreme (-30C)		2501.0710	2568.9440	-28.8	-0.011
	15%	2501.0710	2568.9440	7.8	0.003
20C	-15%	2501.0710	2568.9440	-25.1	-0.010
	End Point	2501.0710	2568.9440	-28.2	-0.011

QPSK, (20MHz + 20MHz BANDWIDTH)

Limit		2500	2570	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)		2501.0780	2568.9450		
Extreme (50C)		2501.0780	2568.9450	57.2	0.023
Extreme (40C)		2501.0780	2568.9450	50.5	0.020
Extreme (30C)		2501.0780	2568.9450	39.9	0.016
Extreme (10C)	Normal	2501.0780	2568.9450	40.1	0.016
Extreme (0C)		2501.0780	2568.9450	28.2	0.011
Extreme (-10C)		2501.0780	2568.9450	10.3	0.004
Extreme (-20C)		2501.0780	2568.9450	-39.3	-0.016
Extreme (-30C)		2501.0780	2568.9450	-43.1	-0.017
	15%	2501.0780	2568.9450	-17.5	-0.007
20C	-15%	2501.0780	2568.9450	-33.4	-0.013
	End Point	2501.0780	2568.9450	-52.2	-0.021

8.4.3. LTE BAND 41

ID:	30606	Date:	5/16/10

QPSK, (20MHz + 5MHz BANDWIDTH)

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.6210	2689.4350		
Extreme (50C)		2496.6210	2689.4350	70.2	0.027
Extreme (40C)		2496.6210	2689.4350	78.3	0.030
Extreme (30C)		2496.6210	2689.4350	63.9	0.025
Extreme (10C)		2496.6210	2689.4350	45.3	0.017
Extreme (0C)		2496.6210	2689.4350	-11.3	-0.004
Extreme (-10C)		2496.6210	2689.4350	-41.9	-0.016
Extreme (-20C)		2496.6210	2689.4350	-44.8	-0.017
Extreme (-30C)		2496.6210	2689.4350	-38.1	-0.015
20C	15%	2496.6210	2689.4350	12.7	0.005
	-15%	2496.6210	2689.4350	-5.5	-0.002
	End Point	2496.6210	2689.4350	-26.6	-0.010

QPSK, (20MHz + 20MHz BANDWIDTH)

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	2496.6380	2689.3360		
Extreme (50C)		2496.6380	2689.3360	80.1	0.031
Extreme (40C)		2496.6380	2689.3360	63.7	0.025
Extreme (30C)		2496.6380	2689.3360	59.8	0.023
Extreme (10C)		2496.6380	2689.3360	72.3	0.028
Extreme (0C)		2496.6380	2689.3360	66.9	0.026
Extreme (-10C)		2496.6380	2689.3360	55.2	0.021
Extreme (-20C)		2496.6380	2689.3360	62.7	0.024
Extreme (-30C)		2496.6380	2689.3360	54.2	0.021
20C	15%	2496.6380	2689.3360	-40.3	-0.016
	-15%	2496.6380	2689.3360	-57.5	-0.022
	End Point	2496.6380	2689.3360	-51.1	-0.020

8.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

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

RESULT

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

8.5.1. LTE BAND 5

ID:	39004	Date:	6/7/19

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 5	3MHz / 5MHz	834.0	837.9	QPSK	32.67	22.44	10.23
				16QAM	32.35	22.46	9.89
	5 MHz / 3MHz	835.0	838.9	QPSK	31.94	23.07	8.87
				16QAM	31.63	22.22	9.41
	5MHz / 10MHz	831.6	838.8	QPSK	32.49	23.10	9.39
				16QAM	32.28	22.13	10.15
	10MHz / 5MHz	834.1	841.3	QPSK	32.48	23.05	9.43
				16QAM	32.04	22.07	9.97
	10MHz / 10MHz	831.5	841.4	QPSK	32.16	23.08	9.08
				16QAM	32.03	22.05	9.98
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

8.5.2. LTE BAND 7

ID:	39004	Date:	6/7/19

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 7	10MHz / 20MHz	2525.6	2540.0	QPSK	32.44	23.64	8.80
				16QAM	32.31	22.69	9.62
	15 MHz / 15MHz	2527.5	2542.5	QPSK	32.19	23.63	8.56
				16QAM	31.99	22.62	9.37
	15MHz / 20MHz	2525.3	2542.4	QPSK	32.34	23.72	8.62
				16QAM	32.33	22.70	9.63
	20MHz / 10MHz	2530.1	2544.5	QPSK	32.27	23.60	8.67
				16QAM	32.27	22.63	9.64
	20MHz / 15MHz	2527.6	2544.7	QPSK	32.28	23.71	8.57
				16QAM	32.31	22.71	9.60
	20MHz / 20MHz	2525.1	2544.9	QPSK	32.21	23.66	8.55
				16QAM	32.23	22.72	9.51
Duty Cycle Correction Factor (dB) =			0.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

8.5.3. LTE BAND 41

ID:	39004	Date:	6/7/19

Band	Bandwidth (MHz)	PCC f (MHz)	SCC1 f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Power Ratio (dB)
					Peak	Average	
Band 41 (FCC)	5MHz / 20MHz	2583.8	2595.5	QPSK	33.00	15.96	10.04
				16QAM	32.41	14.92	10.49
	10MHz / 20MHz	2583.6	2598.0	QPSK	32.59	15.89	9.70
				16QAM	32.18	14.86	10.32
	15MHz / 15MHz	2585.5	2600.5	QPSK	31.96	15.81	9.15
				16QAM	32.31	14.91	10.40
	15MHz / 20MHz	2583.3	2600.4	QPSK	32.86	15.98	9.88
				16QAM	32.52	15.00	10.52
	20MHz / 5MHz	2590.5	2602.2	QPSK	32.47	15.91	9.56
				16QAM	32.31	14.93	10.38
	20MHz / 10MHz	2588.1	2602.5	QPSK	32.62	15.88	9.74
				16QAM	32.14	14.90	10.24
	20MHz / 15MHz	2585.6	2602.7	QPSK	32.50	15.97	9.53
				16QAM	32.19	14.96	10.23
	20MHz / 20MHz	2583.1	2602.9	QPSK	31.74	15.91	8.83
				16QAM	32.46	14.96	10.50
Duty Cycle Correction Factor (dB) =			7.00				
Peak-to-Average Power Ratio= Peak Reading - Average Reading - Duty Cycle Correction Factor							

9. RADIATED TEST RESULTS

9.1. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 1

RULE PART(S)

FCC: §2.1053, §22.917, §27.53

LIMIT

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

TEST PROCEDURE

KDB 971168 D01/D02 v03r01/v02r01

MODES TESTED

- LTE Band 5
- LTE Band 7
- LTE Band 41

9.1.1. LTE BAND 5

Company:	
Project #:	12901678
Date:	6/17/2019
Test Engineer:	23509
Configuration:	EUT Only
Mode:	LTE 5 QPSK 10MHz + 10MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 829MHz + 838.9MHz									
2.489	-71.2	Pk	32.3	-28.4	8.7	-58.6	-13	-45.6	H
1.698	-70.91	Pk	28.7	-29.7	9.3	-62.61	-13	-49.61	V
1.652	-71.62	Pk	28.5	-29.8	10.8	-62.12	-13	-49.12	H
2.51	-71.79	Pk	32.4	-28.5	9.3	-58.59	-13	-45.59	V
3.304	-73.56	Pk	32.9	-27.1	9.7	-58.06	-13	-45.06	H
3.313	-72.21	Pk	32.8	-27.1	9.8	-56.71	-13	-43.71	V
Mid Channel 831.6MHz + 841.5MHz									
1.661	-70.58	Pk	28.6	-29.8	10.3	-61.48	-13	-48.48	H
1.658	-72.16	Pk	28.6	-29.9	9.4	-64.06	-13	-51.06	V
2.523	-72.43	Pk	32.3	-28.5	9.2	-59.43	-13	-46.43	H
2.527	-72.66	Pk	32.4	-28.5	9.5	-59.26	-13	-46.26	V
3.278	-73.74	Pk	32.9	-27.3	9.1	-59.04	-13	-46.04	V
3.285	-73.36	Pk	32.8	-27.2	9.6	-58.16	-13	-45.16	H
High Channel 834.1MHz + 844MHz									
1.648	-71.87	Pk	28.5	-29.9	10.4	-62.87	-13	-49.87	V
1.659	-71.23	Pk	28.6	-29.8	10.6	-61.83	-13	-48.83	H
2.5	-73.23	Pk	32.4	-28.5	8.9	-60.43	-13	-47.43	H
2.512	-71.89	Pk	32.4	-28.6	9.4	-58.69	-13	-45.69	V
3.327	-72.63	Pk	32.8	-27.3	9.2	-57.93	-13	-44.93	V
3.328	-72.6	Pk	32.8	-27.3	9	-58.1	-13	-45.1	H

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/17/2019
Test Engineer:	23509
Configuration:	EUT Only
Mode:	LTE 5 16QAM 10MHz + 10MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 829MHz + 838.9MHz									
2.379	-72.78	Pk	31.8	-28.6	9.5	-60.08	-13	-47.08	V
1.827	-71.62	Pk	30.3	-29.5	10.3	-60.52	-13	-47.52	V
1.833	-71.42	Pk	30.4	-29.4	10.8	-59.62	-13	-46.62	H
2.391	-71.11	Pk	31.9	-28.8	10.2	-57.81	-13	-44.81	H
3.273	-71.34	Pk	32.9	-27.2	10	-55.64	-13	-42.64	H
3.286	-73.56	Pk	32.8	-27.1	9.2	-58.66	-13	-45.66	V
Mid Channel 831.6MHz + 841.5MHz									
1.663	-70.33	Pk	28.6	-29.8	10.2	-61.33	-13	-48.33	H
1.663	-71.44	Pk	28.6	-29.8	8.6	-64.04	-13	-51.04	V
2.443	-72.47	Pk	32.2	-28.7	9.4	-59.57	-13	-46.57	V
2.446	-72.22	Pk	32.2	-28.7	8.7	-60.02	-13	-47.02	H
3.27	-72.85	Pk	32.9	-27.3	9	-58.25	-13	-45.25	V
3.283	-73.17	Pk	32.9	-27.3	9.6	-57.97	-13	-44.97	H
High Channel 834.1MHz + 844MHz									
1.674	-71.75	Pk	28.7	-29.9	10.5	-62.45	-13	-49.45	H
2.669	-71.86	Pk	32.3	-28	9.9	-57.66	-13	-44.66	H
3.264	-72.69	Pk	32.9	-27.3	10.4	-56.69	-13	-43.69	H
1.672	-72.81	Pk	28.7	-29.9	9	-65.01	-13	-52.01	V
2.66	-71.51	Pk	32.3	-28.1	9.8	-57.51	-13	-44.51	V
3.276	-73.59	Pk	32.9	-27.2	9.1	-58.79	-13	-45.79	V

Pk - Peak detector

9.1.2. LTE BAND 7

Company:	
Project #:	12901678
Date:	6/14/2019
Test Engineer:	50822
Configuration:	EUT Only
Mode:	LTE 7 QPSK 20MHz + 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
4.998	-73.87	Pk	34.1	-28.4	10.8	-57.37	-25	-32.37	V
5.017	-73.88	Pk	34.1	-28.9	10.4	-58.28	-25	-33.28	H
7.516	-74.52	Pk	35.6	-24.5	10.8	-52.62	-25	-27.62	V
7.529	-75.22	Pk	35.6	-24.5	10.5	-53.62	-25	-28.62	H
10.003	-77.8	Pk	36.9	-22.2	10.7	-52.4	-25	-27.4	V
10.037	-76.87	Pk	36.9	-22.1	10.4	-51.67	-25	-26.67	H
Mid Channel 2525.1MHz + 2544.9MHz									
5.049	-73.6	Pk	34.2	-28.5	11.2	-56.7	-25	-31.7	H
5.063	-73.16	Pk	34.2	-28.8	10.9	-56.86	-25	-31.86	V
7.576	-76.35	Pk	35.4	-24.3	10.9	-54.35	-25	-29.35	V
7.582	-75.43	Pk	35.5	-24.3	10.5	-53.73	-25	-28.73	H
10.074	-77.75	Pk	36.9	-21.9	10.4	-52.35	-25	-27.35	V
10.084	-76.78	Pk	36.9	-22	10.2	-51.68	-25	-26.68	H
High Channel 2540.2MHz + 2560MHz									
5.072	-73.1	Pk	34.1	-28.7	10.9	-56.8	-25	-31.8	H
5.075	-73.48	Pk	34.2	-28.7	10.8	-57.18	-25	-32.18	V
7.606	-74.91	Pk	35.6	-24.4	10.8	-52.91	-25	-27.91	H
7.635	-76.18	Pk	35.6	-24.5	11.2	-53.88	-25	-28.88	V
10.159	-76.74	Pk	37.2	-21.6	10.1	-51.04	-25	-26.04	H
10.162	-76.52	Pk	37.2	-21.6	10.4	-50.52	-25	-25.52	V

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/14/2019
Test Engineer:	50822
Configuration:	EUT Only
Mode:	LTE 7 16QAM 20MHz + 20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
4.991	-72.3	Pk	34.1	-28.5	10.9	-55.8	-25	-30.8	V
5.01	-73.77	Pk	34.1	-28.9	10.6	-57.97	-25	-32.97	H
7.515	-75.12	Pk	35.6	-24.5	10.5	-53.52	-25	-28.52	H
7.527	-74.82	Pk	35.6	-24.6	10.6	-53.22	-25	-28.22	V
10.034	-77.67	Pk	36.9	-22.1	10.7	-52.17	-25	-27.17	V
10.041	-76.67	Pk	37	-22.1	10.4	-51.37	-25	-26.37	H
Mid Channel 2525.1MHz + 2544.9MHz									
5.021	-73.94	Pk	34.1	-28.9	10.7	-58.04	-25	-33.04	V
5.04	-74.37	Pk	34.1	-28.8	10.9	-58.17	-25	-33.17	H
7.563	-74.58	Pk	35.6	-24.5	10.9	-52.58	-25	-27.58	H
7.565	-74.26	Pk	35.6	-24.4	11.3	-51.76	-25	-26.76	V
10.088	-77.09	Pk	36.9	-22.1	10.3	-51.99	-25	-26.99	H
10.104	-75.87	Pk	37	-21.8	10.7	-49.97	-25	-24.97	V
High Channel 2540.2MHz + 2560MHz									
5.055	-73.73	Pk	34.1	-28.5	11.2	-56.93	-25	-31.93	V
5.067	-73.16	Pk	34.1	-28.7	10.7	-57.06	-25	-32.06	H
7.606	-75.61	Pk	35.6	-24.4	10.8	-53.61	-25	-28.61	H
7.632	-74.42	Pk	35.6	-24.4	11.3	-51.92	-25	-26.92	V
10.156	-75.73	Pk	37.2	-21.6	10	-50.13	-25	-25.13	H
10.173	-76.24	Pk	37.2	-21.5	10.6	-49.94	-25	-24.94	V

Pk - Peak detector

9.1.3. LTE BAND 41

Company:	
Project #:	12901678
Date:	6/15/2019
Test Engineer:	50822
Configuration:	EUT Only
Mode:	LTE 41 QPSK 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
5.016	-73.88	Pk	34.2	-25.1	8.7	-56.08	-25	-31.08	V
5.018	-73.81	Pk	34.2	-25.1	8.5	-56.21	-25	-31.21	H
7.514	-75.6	Pk	35.6	-22.8	7.6	-55.2	-25	-30.2	V
7.537	-75.33	Pk	35.6	-22.9	7.3	-55.33	-25	-30.33	H
10.04	-77.98	Pk	37.1	-18.8	7.9	-51.78	-25	-26.78	V
10.053	-75.58	Pk	37.1	-18.8	7.9	-49.38	-25	-24.38	H
Mid Channel 2583.1MHz + 2602.9MHz									
5.162	-73.14	Pk	34.2	-28.5	11.5	-55.94	-25	-30.94	V
5.185	-73.25	Pk	34.2	-28.5	10.9	-56.65	-25	-31.65	H
7.78	-75.5	Pk	35.6	-24.4	11	-53.3	-25	-28.3	H
7.814	-75.96	Pk	35.6	-24.3	11.5	-53.16	-25	-28.16	V
10.355	-77.34	Pk	37.5	-21.2	10.1	-50.94	-25	-25.94	H
10.442	-76.93	Pk	37.7	-21.6	10.4	-50.43	-25	-25.43	V
High Channel 2660.2MHz + 2680MHz									
5.331	-74.81	Pk	34.4	-28.1	11	-57.51	-25	-32.51	V
5.342	-73.42	Pk	34.4	-28.1	10.9	-56.22	-25	-31.22	H
7.993	-74.51	Pk	35.7	-24.1	11.7	-51.21	-25	-26.21	V
8.003	-74.78	Pk	35.6	-24.2	11.2	-52.18	-25	-27.18	H
10.679	-76.73	Pk	38	-21.1	10.7	-49.13	-25	-24.13	H
10.716	-77.43	Pk	38	-21.3	10.6	-50.13	-25	-25.13	V

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/15/2019
Test Engineer:	50822
Configuration:	EUT only
Mode:	LTE 41 16QAM 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
4.998	-74.62	Pk	34.1	-24.9	9.9	-55.52	-25	-30.52	V
5.032	-73.79	Pk	34.2	-25	8.5	-56.09	-25	-31.09	H
7.546	-75.37	Pk	35.6	-22.8	7.4	-55.17	-25	-30.17	H
7.571	-75.74	Pk	35.6	-22.9	7.3	-55.74	-25	-30.74	V
10.058	-77.28	Pk	37.1	-18.9	8	-51.08	-25	-26.08	H
10.084	-77.23	Pk	37.2	-18.9	7.8	-51.13	-25	-26.13	V
Mid Channel 2583.1MHz + 2602.9MHz									
5.176	-72.29	Pk	34.2	-28.6	11.3	-55.39	-25	-30.39	V
5.181	-73.67	Pk	34.2	-28.5	11.1	-56.87	-25	-31.87	H
7.779	-76.6	Pk	35.6	-24.4	11	-54.4	-25	-29.4	H
7.786	-74.83	Pk	35.6	-24.4	11.3	-52.33	-25	-27.33	V
10.352	-76.98	Pk	37.5	-21.2	9.9	-50.78	-25	-25.78	H
10.363	-77.43	Pk	37.6	-21.2	10.5	-50.53	-25	-25.53	V
High Channel 2660.2MHz + 2680MHz									
5.345	-73.97	Pk	34.4	-25.6	8.1	-57.07	-25	-32.07	H
5.355	-74.75	Pk	34.5	-25.6	8	-57.85	-25	-32.85	V
8.006	-75.39	Pk	35.7	-22	7.7	-53.99	-25	-28.99	V
8.008	-75.55	Pk	35.7	-22.1	7.7	-54.25	-25	-29.25	H
10.653	-76.88	Pk	37.9	-18.6	7.4	-50.18	-25	-25.18	V
10.673	-77.14	Pk	37.9	-18.6	8.1	-49.74	-25	-24.74	H

Pk - Peak detector

9.1. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 2

9.1.1. LTE BAND 5

Company:	
Project #:	12901678
Date:	6/17/2019
Test Engineer:	23509
Configuration:	EUT Only
Mode:	LTE QPSK 10MHz +10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 829MHz + 838.9MHz									
1.669	-71.51	Pk	28.6	-29.8	10.7	-62.01	-13	-49.01	H
2.493	-67.89	Pk	32.3	-28.5	8.4	-55.69	-13	-42.69	H
1.675	-70.58	Pk	28.7	-29.9	9	-62.78	-13	-49.78	V
2.507	-72.18	Pk	32.4	-28.5	9.3	-58.98	-13	-45.98	V
3.277	-72.25	Pk	32.9	-27.2	9.7	-56.85	-13	-43.85	H
3.287	-73.6	Pk	32.8	-27.1	9.7	-58.2	-13	-45.2	H
Mid Channel 831.6MHz + 841.5MHz									
2.494	-69.05	Pk	32.3	-28.5	8.4	-56.85	-13	-43.85	H
1.645	-70.68	Pk	28.5	-29.9	11	-61.08	-13	-48.08	H
1.655	-71.61	Pk	28.6	-29.9	9.6	-63.31	-13	-50.31	V
2.517	-71.49	Pk	32.4	-28.5	9.4	-58.19	-13	-45.19	V
3.304	-73.04	Pk	32.9	-27.1	9.7	-57.54	-13	-44.54	H
3.323	-72.73	Pk	32.8	-27.2	9.1	-58.03	-13	-45.03	V
High Channel 834.1MHz + 844MHz									
1.662	-70.41	Pk	28.6	-29.8	10.2	-61.41	-13	-48.41	H
2.496	-71.2	Pk	32.3	-28.4	8.5	-58.8	-13	-45.8	H
1.647	-71.77	Pk	28.5	-29.9	10.5	-62.67	-13	-49.67	V
2.501	-71.53	Pk	32.4	-28.6	9.4	-58.33	-13	-45.33	V
3.316	-72.97	Pk	32.8	-27.2	9.7	-57.67	-13	-44.67	V
3.327	-72.01	Pk	32.8	-27.3	9	-57.51	-13	-44.51	H

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/17/2019
Test Engineer:	23509
Configuration:	EUT Only
Mode:	LTE 5 16QAM 10MHz +10MHz
Chamber #:	Chamber A

Frequency (GHz)	Meter Reading (dBm)	Det	AF T346 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 829MHz + 838.9MHz									
2.488	-63.06	Pk	32.3	-28.4	8.7	-50.46	-13	-37.46	H
2.488	-67.77	Pk	32.3	-28.4	8.7	-55.17	-13	-42.17	V
1.643	-71.17	Pk	28.5	-29.9	10.9	-61.67	-13	-48.67	H
1.652	-71.72	Pk	28.5	-29.8	9.8	-63.22	-13	-50.22	V
3.326	-72.06	Pk	32.8	-27.3	9.1	-57.46	-13	-44.46	H
3.326	-73.22	Pk	32.8	-27.3	9.2	-58.52	-13	-45.52	V
Mid Channel 831.6MHz + 841.5MHz									
1.662	-70.46	Pk	28.6	-29.8	10.2	-61.46	-13	-48.46	H
1.649	-71.29	Pk	28.5	-29.8	10.1	-62.49	-13	-49.49	V
2.507	-72.31	Pk	32.4	-28.5	9.3	-59.11	-13	-46.11	V
2.51	-71.44	Pk	32.4	-28.5	9.1	-58.44	-13	-45.44	H
3.275	-73	Pk	32.9	-27.2	10	-57.30	-13	-44.30	H
3.285	-73.28	Pk	32.8	-27.2	9.1	-58.58	-13	-45.58	V
High Channel 834.1MHz + 844MHz									
3.354	-72.58	Pk	32.8	-27.2	9.5	-57.48	-13	-44.48	H
3.264	-71.94	Pk	32.9	-27.2	9.6	-56.64	-13	-43.64	V
1.638	-71.4	Pk	28.4	-29.9	10.6	-62.30	-13	-49.30	V
1.657	-69.84	Pk	28.6	-29.9	10.7	-60.44	-13	-47.44	H
2.519	-70.32	Pk	32.3	-28.5	9.3	-57.22	-13	-44.22	V
2.524	-69.65	Pk	32.3	-28.5	9.2	-56.65	-13	-43.65	H

Pk - Peak detector

9.1.2. LTE BAND 7

Company:	
Project #:	12901678
Date:	6/15/2019
Test Engineer:	23549
Configuration:	EUT Only
Mode:	LTE 7 QPSK 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
5.014	-73.48	Pk	34.2	-25.2	8.6	-55.88	-25	-30.88	H
7.522	-76.07	Pk	35.6	-22.8	7.5	-55.77	-25	-30.77	H
4.981	-74.75	Pk	34.1	-24.9	9.1	-56.45	-25	-31.45	V
7.503	-75.3	Pk	35.6	-22.7	7.9	-54.50	-25	-29.50	V
9.992	-79.08	Pk	37	-18.8	8	-52.88	-25	-27.88	V
10.023	-77.5	Pk	37.1	-18.6	8.2	-50.80	-25	-25.80	H
Mid Channel 2525.1MHz + 2544.9MHz									
5.05	-73.49	Pk	34.2	-25	9.4	-54.89	-25	-29.89	H
7.568	-73.56	Pk	35.6	-22.9	7.4	-53.46	-25	-28.46	H
5.021	-74.03	Pk	34.1	-25	8.8	-56.13	-25	-31.13	V
7.565	-76.43	Pk	35.6	-23	7.4	-56.43	-25	-31.43	V
10.062	-77.77	Pk	37.1	-18.9	8	-51.57	-25	-26.57	V
10.094	-76.93	Pk	37.2	-18.9	7.4	-51.23	-25	-26.23	H
High Channel 2540.2MHz + 2560MHz									
5.08	-73.24	Pk	34.2	-25.2	8.4	-55.84	-25	-30.84	H
7.6	-75.02	Pk	35.7	-22.8	7.6	-54.52	-25	-29.52	H
5.064	-72.32	Pk	34.2	-25.1	8.7	-54.52	-25	-29.52	H
7.566	-74.77	Pk	35.6	-23	7.4	-54.77	-25	-29.77	H
10.075	-78.23	Pk	37.1	-19	8	-52.13	-25	-27.13	H
10.14	-77.99	Pk	37.2	-18.8	6.4	-53.19	-25	-28.19	H

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/15/2019
Test Engineer:	23549
Configuration:	EUT Only
Mode:	LTE 7 16QAM 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
5.009	-74.02	Pk	34.2	-25.1	9.1	-55.82	-25	-30.82	H
7.516	-75.87	Pk	35.6	-22.8	7.6	-55.47	-25	-30.47	H
4.965	-74.83	Pk	34.1	-25.3	9.1	-56.93	-25	-31.93	V
7.473	-75.47	Pk	35.6	-22.9	7.4	-55.37	-25	-30.37	V
9.971	-77.19	Pk	37.1	-18.8	8.3	-50.59	-25	-25.59	V
10.022	-77.24	Pk	37.1	-18.6	8.2	-50.54	-25	-25.54	H
Mid Channel 2525.1MHz + 2544.9MHz									
5.049	-74.93	Pk	34.2	-25	9.4	-56.33	-25	-31.33	H
7.569	-76.33	Pk	35.6	-22.9	7.4	-56.23	-25	-31.23	H
5.02	-74.14	Pk	34.2	-25	8.8	-56.14	-25	-31.14	V
7.527	-75.91	Pk	35.7	-22.8	7.3	-55.71	-25	-30.71	V
10.053	-78.39	Pk	37.1	-18.8	8	-52.09	-25	-27.09	V
10.088	-77.56	Pk	37.1	-18.9	7.6	-51.76	-25	-26.76	H
High Channel 2540.2MHz + 2560MHz									
5.074	-73.45	Pk	34.2	-25.2	8.5	-55.95	-25	-30.95	H
7.619	-75.4	Pk	35.6	-22.6	7.6	-54.8	-25	-29.8	H
5.048	-73.45	Pk	34.3	-25	9.4	-54.75	-25	-29.75	V
7.577	-75.93	Pk	35.6	-22.9	7.3	-55.93	-25	-30.93	V
10.107	-76.1	Pk	37.1	-19.1	7.1	-51.00	-25	-26.00	V
10.146	-78.39	Pk	37.2	-18.8	6.4	-53.59	-25	-28.59	H

Pk - Peak detector

9.1.3. LTE BAND 41

Company:	
Project #:	12901678
Date:	6/15/2019
Test Engineer:	19459
Configuration:	EUT Only
Mode:	LTE 41 QPSK 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
5.029	-74.27	Pk	34.2	-25.1	8.3	-56.87	-25	-31.87	H
7.537	-75.93	Pk	35.6	-22.9	7.3	-55.93	-25	-30.93	H
5.038	-72.37	Pk	34.1	-25	8.9	-54.37	-25	-29.37	V
7.505	-74.77	Pk	35.6	-22.7	8	-53.87	-25	-28.87	V
10.058	-77.15	Pk	37.1	-18.9	8	-50.95	-25	-25.95	H
10.086	-77.91	Pk	37.1	-18.9	7.7	-52.01	-25	-27.01	V
Mid Channel 2583.1MHz + 2602.9MHz									
5.187	-73.34	Pk	34.2	-25.4	8.9	-55.64	-25	-30.64	H
5.201	-71.42	Pk	34.2	-25.4	9.4	-53.22	-25	-28.22	V
7.773	-75.89	Pk	35.8	-22.6	8	-54.69	-25	-29.69	V
7.778	-75.71	Pk	35.7	-22.6	7.8	-54.81	-25	-29.81	H
10.357	-77.31	Pk	37.5	-18.5	7.1	-51.21	-25	-26.21	H
10.39	-77.68	Pk	37.5	-18.2	7.6	-50.78	-25	-25.78	V
High Channel 2660.2MHz + 2680MHz									
10.661	-77.16	Pk	37.9	-18.6	7.5	-50.36	-25	-25.36	H
5.36	-75.07	Pk	34.5	-25.7	8.8	-57.47	-25	-32.47	V
10.643	-76.64	Pk	37.9	-18.6	7.4	-49.94	-25	-24.94	V
5.339	-74.26	Pk	34.5	-25.6	7.5	-57.86	-25	-32.86	H
8.008	-76.29	Pk	35.7	-22.1	7.7	-54.99	-25	-29.99	H
8.008	-74.57	Pk	35.7	-22.1	7.5	-53.47	-25	-28.47	V

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/15/2019
Test Engineer:	19459
Configuration:	EUT Only
Mode:	LTE 41 16QAM 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
5.026	-73.75	Pk	34.1	-25.2	8.3	-56.55	-25	-31.55	H
7.545	-75.56	Pk	35.6	-22.8	7.4	-55.36	-25	-30.36	H
5.04	-74.77	Pk	34.1	-25	9	-56.67	-25	-31.67	V
7.555	-75.63	Pk	35.7	-22.8	7.2	-55.53	-25	-30.53	V
10.054	-77.6	Pk	37.1	-18.8	7.9	-51.40	-25	-26.40	H
10.07	-76.95	Pk	37.2	-19	7.9	-50.85	-25	-25.85	V
Mid Channel 2583.1MHz + 2602.9MHz									
5.185	-73.98	Pk	34.2	-25.4	9	-56.18	-25	-31.18	H
5.211	-74.45	Pk	34.3	-25.4	9.3	-56.25	-25	-31.25	V
7.766	-76.63	Pk	35.8	-22.5	7.8	-55.53	-25	-30.53	V
7.775	-75.76	Pk	35.8	-22.6	7.9	-54.66	-25	-29.66	H
10.339	-77.01	Pk	37.5	-18.6	6.8	-51.31	-25	-26.31	V
10.359	-77.96	Pk	37.5	-18.5	7.2	-51.76	-25	-26.76	H
High Channel 2660.2MHz + 2680MHz									
10.659	-76.53	Pk	38	-18.6	7.5	-49.63	-25	-24.63	H
8.037	-76.31	Pk	35.7	-21.8	8.1	-54.31	-25	-29.31	V
10.626	-77.45	Pk	37.9	-18.5	7.8	-50.25	-25	-25.25	V
5.338	-74.29	Pk	34.5	-25.6	7.1	-58.29	-25	-33.29	V
5.343	-74.67	Pk	34.4	-25.6	7.9	-57.97	-25	-32.97	H
8.006	-74.91	Pk	35.7	-22	7.8	-53.41	-25	-28.41	H

Pk - Peak detector

9.2. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 3

9.2.1. LTE BAND 7

Company:	
Project #:	12901678
Date:	6/16/2019
Test Engineer:	23509
Configuration:	EUT Only
Mode:	LTE 7 QPSK 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
3.837	-73.74	Pk	33.6	-26.8	9.5	-57.44	-25	-32.44	H
4.259	-75.29	Pk	33.6	-26.1	9.6	-58.19	-25	-33.19	V
6.439	-73.97	Pk	35.5	-23.9	6.8	-55.57	-25	-30.57	H
7.247	-74.18	Pk	35.5	-22.6	7.6	-53.68	-25	-28.68	V
9.836	-77.37	Pk	37	-19	7.8	-51.57	-25	-26.57	H
14.526	-74.56	Pk	39.7	-20.1	11.4	-43.56	-25	-18.56	V
Mid Channel 2525.1MHz + 2544.9MHz									
4.147	-74.78	Pk	33.6	-26.3	9.3	-58.18	-25	-33.18	H
11.177	-77.73	Pk	38	-18.6	8.7	-49.63	-25	-24.63	H
4.163	-73.85	Pk	33.5	-26.2	8.8	-57.75	-25	-32.75	V
11.217	-78.27	Pk	38	-18.8	8.4	-50.67	-25	-25.67	V
7.2	-75.74	Pk	35.5	-22.8	7.7	-55.34	-25	-30.34	H
7.213	-75.51	Pk	35.5	-22.8	7.7	-55.11	-25	-30.11	V
High Channel 2540.2MHz + 2560MHz									
4.185	-74.47	Pk	33.5	-26.2	9.1	-58.07	-25	-33.07	H
7.556	-76.59	Pk	35.7	-22.8	7.3	-56.39	-25	-31.39	H
12.558	-78.11	Pk	39.1	-19.4	9	-49.41	-25	-24.41	H
4.103	-74.27	Pk	33.7	-26.4	9.7	-57.27	-25	-32.27	V
7.49	-76.65	Pk	35.7	-22.8	7.6	-56.15	-25	-31.15	V
13.045	-78.31	Pk	39.3	-19.5	9.5	-49.01	-25	-24.01	V

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/16/2019
Test Engineer:	23509
Configuration:	EUT Only
Mode:	LTE 7 16QAM 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
4.797	-74.12	Pk	34.1	-26	8.7	-57.32	-25	-32.32	H
11.141	-76.28	Pk	38	-18.5	8.6	-48.18	-25	-23.18	H
4.89	-73.89	Pk	34.1	-25.7	8.9	-56.59	-25	-31.59	V
7.316	-76.66	Pk	35.5	-22.3	7.6	-55.86	-25	-30.86	V
11.274	-77.08	Pk	38	-18.7	8.3	-49.48	-25	-24.48	V
7.204	-75.74	Pk	35.5	-22.8	7.7	-55.34	-25	-30.34	H
Mid Channel 2525.1MHz + 2544.9MHz									
3.979	-74.2	Pk	33.4	-26.8	9.7	-57.90	-25	-32.90	H
3.91	-73.36	Pk	33.5	-26.6	9.7	-56.76	-25	-31.76	V
10.658	-76.87	Pk	38	-18.6	7.5	-49.97	-25	-24.97	V
6.255	-75.58	Pk	35.6	-24.3	7.8	-56.48	-25	-31.48	H
6.347	-76.15	Pk	35.5	-23.5	7.5	-56.65	-25	-31.65	V
10.459	-77.94	Pk	37.7	-18.3	7.2	-51.34	-25	-26.34	H
High Channel 2540.2MHz + 2560MHz									
3.845	-73.88	Pk	33.6	-26.7	9.5	-57.48	-25	-32.48	H
3.8	-73.07	Pk	33.6	-26.8	9.4	-56.87	-25	-31.87	V
11.102	-75.68	Pk	38	-18.4	8.5	-47.58	-25	-22.58	V
5.974	-75.78	Pk	35.3	-24.5	7.9	-57.08	-25	-32.08	H
6.007	-74.75	Pk	35.3	-24.7	7.8	-56.35	-25	-31.35	V
10.551	-75.74	Pk	37.8	-18.6	8.5	-48.04	-25	-23.04	H

Pk - Peak detector

9.2.2. LTE BAND 41

Company:	
Project #:	12901678
Date:	6/15/2019
Test Engineer:	19459
Configuration:	EUT Only
Mode:	LTE 41 QPSK 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
5.033	-74.83	Pk	34.1	-24.9	8.7	-56.93	-25	-31.93	H
5.04	-73.37	Pk	34.1	-25	9	-55.27	-25	-30.27	V
7.525	-74.47	Pk	35.7	-22.8	7.3	-54.27	-25	-29.27	V
7.539	-75.81	Pk	35.6	-22.9	7.3	-55.81	-25	-30.81	H
10.036	-76.44	Pk	37	-18.8	8	-50.24	-25	-25.24	H
10.073	-76.02	Pk	37.1	-19	7.9	-50.02	-25	-25.02	V
Mid Channel 2583.1MHz + 2602.9MHz									
5.185	-74.25	Pk	34.2	-25.5	9	-56.55	-25	-31.55	H
5.213	-73.96	Pk	34.3	-25.4	9.2	-55.86	-25	-30.86	V
7.761	-75.81	Pk	35.7	-22.4	8	-54.51	-25	-29.51	V
7.779	-76.33	Pk	35.8	-22.5	7.7	-55.33	-25	-30.33	H
10.359	-77.72	Pk	37.5	-18.5	7.3	-51.42	-25	-26.42	H
10.377	-77.17	Pk	37.6	-18.5	7.9	-50.17	-25	-25.17	V
High Channel 2660.2MHz + 2680MHz									
5.343	-75.06	Pk	34.4	-25.6	7.9	-58.36	-25	-33.36	H
5.359	-74.71	Pk	34.5	-25.7	8.8	-57.11	-25	-32.11	V
8.024	-77.14	Pk	35.7	-22	7.8	-55.64	-25	-30.64	V
8.03	-75.4	Pk	35.8	-21.9	7.8	-53.70	-25	-28.70	H
10.59	-77.93	Pk	37.8	-18.5	7.9	-50.73	-25	-25.73	V
10.662	-77.1	Pk	38	-18.6	7.5	-50.20	-25	-25.20	H

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/15/2019
Test Engineer:	19459
Configuration:	EUT Only
Mode:	LTE 41 16QAM 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
5.033	-74.06	Pk	34.1	-24.9	8.7	-56.16	-25	-31.16	H
5.047	-74.45	Pk	34.3	-25	9.3	-55.85	-25	-30.85	V
7.542	-76.58	Pk	35.6	-22.9	7.3	-56.58	-25	-31.58	H
7.551	-75.01	Pk	35.7	-22.8	7.3	-54.81	-25	-29.81	V
10.076	-77.72	Pk	37.2	-19	7.9	-51.62	-25	-26.62	H
10.079	-77.94	Pk	37.1	-19	7.9	-51.94	-25	-26.94	V
Mid Channel 2583.1MHz + 2602.9MHz									
5.187	-73.45	Pk	34.2	-25.4	8.9	-55.75	-25	-30.75	H
5.206	-74.09	Pk	34.2	-25.4	9.2	-56.09	-25	-31.09	V
7.774	-76.25	Pk	35.8	-22.6	8	-55.05	-25	-30.05	V
7.775	-75.1	Pk	35.8	-22.6	7.9	-54.00	-25	-29.00	H
10.375	-78.34	Pk	37.5	-18.5	7.8	-51.54	-25	-26.54	H
10.394	-77.85	Pk	37.5	-18.3	7.4	-51.25	-25	-26.25	V
High Channel 2660.2MHz + 2680MHz									
5.344	-74.96	Pk	34.4	-25.6	8	-58.16	-25	-33.16	H
5.361	-75.1	Pk	34.5	-25.7	8.8	-57.50	-25	-32.50	V
7.98	-75.89	Pk	35.7	-22	8	-54.19	-25	-29.19	V
8.005	-75.53	Pk	35.7	-22	7.8	-54.03	-25	-29.03	H
10.643	-77.98	Pk	37.9	-18.6	7.4	-51.28	-25	-26.28	V
10.681	-76.06	Pk	37.9	-18.5	8.2	-48.46	-25	-23.46	H

Pk - Peak detector

9.3. FIELD STRENGTH OF SPURIOUS RADIATION, ANT 4

9.3.1. LTE BAND 7

Company:	
Project #:	12901678
Date:	6/16/2019
Test Engineer:	19459
Configuration:	EUT Only
Mode:	LTE 7 QPSK 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
5.023	-75.01	Pk	34.1	-25	8.5	-57.41	-25	-32.41	H
7.526	-75.93	Pk	35.7	-22.8	7.4	-55.63	-25	-30.63	H
5.044	-74.36	Pk	34.2	-25.1	9.1	-56.16	-25	-31.16	V
7.513	-76.2	Pk	35.6	-22.8	7.6	-55.80	-25	-30.80	V
10.459	-77.97	Pk	37.7	-18.3	7.2	-51.37	-25	-26.37	H
10.466	-76.42	Pk	37.7	-18.3	7.5	-49.52	-25	-24.52	V
Mid Channel 2525.1MHz + 2544.9MHz									
5.046	-75.6	Pk	34.2	-25.1	9.1	-57.40	-25	-32.40	H
7.578	-75.39	Pk	35.6	-22.9	7.2	-55.49	-25	-30.49	H
5.059	-74.74	Pk	34.2	-24.9	9	-56.44	-25	-31.44	V
7.587	-76.28	Pk	35.6	-22.9	6.9	-56.68	-25	-31.68	V
10.071	-75.89	Pk	37.1	-19	7.9	-49.89	-25	-24.89	V
10.089	-76.49	Pk	37.1	-18.9	7.6	-50.69	-25	-25.69	H
High Channel 2540.2MHz + 2560MHz									
5.08	-72.96	Pk	34.2	-25.2	8.4	-55.56	-25	-30.56	H
7.622	-76.34	Pk	35.7	-22.6	7.5	-55.74	-25	-30.74	H
5.067	-74.57	Pk	34.2	-25.1	8.7	-56.77	-25	-31.77	V
7.616	-74.26	Pk	35.6	-22.6	7.4	-53.86	-25	-28.86	V
10.127	-76.67	Pk	37.2	-19	6.6	-51.87	-25	-26.87	V
10.144	-77.38	Pk	37.2	-18.8	6.4	-52.58	-25	-27.58	H

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/16/2019
Test Engineer:	19459
Configuration:	EUT Only
Mode:	LTE 7 16QAM 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2510MHz + 2529.8MHz									
5.021	-74.4	Pk	34.1	-25	8.6	-56.70	-25	-31.70	H
7.531	-76.13	Pk	35.7	-22.8	7.5	-55.73	-25	-30.73	H
5.017	-73.97	Pk	34.2	-25.1	8.7	-56.17	-25	-31.17	V
7.514	-75.44	Pk	35.6	-22.8	7.6	-55.04	-25	-30.04	V
10.008	-77.95	Pk	37	-18.8	8	-51.75	-25	-26.75	V
10.025	-78.43	Pk	37.1	-18.6	8.2	-51.73	-25	-26.73	H
Mid Channel 2525.1MHz + 2544.9MHz									
5.05	-74.85	Pk	34.2	-25	9.4	-56.25	-25	-31.25	H
7.58	-75.23	Pk	35.6	-22.9	7.2	-55.33	-25	-30.33	H
5.053	-74.78	Pk	34.2	-25	9.5	-56.08	-25	-31.08	V
7.591	-75.6	Pk	35.6	-22.9	6.9	-56.00	-25	-31.00	V
10.093	-78.36	Pk	37.2	-18.9	7.4	-52.66	-25	-27.66	H
10.166	-77.64	Pk	37.2	-18.9	7.2	-52.14	-25	-27.14	V
High Channel 2540.2MHz + 2560MHz									
5.083	-74.67	Pk	34.2	-25.3	8.6	-57.17	-25	-32.17	H
7.619	-74.75	Pk	35.6	-22.6	7.6	-54.15	-25	-29.15	H
5.075	-73.47	Pk	34.2	-25.1	8.4	-55.97	-25	-30.97	V
7.576	-76.52	Pk	35.6	-22.9	7.3	-56.52	-25	-31.52	V
10.126	-77.72	Pk	37.2	-19	6.6	-52.92	-25	-27.92	V
10.148	-77.29	Pk	37.2	-18.8	6.4	-52.49	-25	-27.49	H

Pk - Peak detector

9.3.2. LTE BAND 41

Company:	
Project #:	12901678
Date:	6/16/2019
Test Engineer:	23509
Configuration:	EUT Only
Mode:	LTE 41 QPSK 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
4.617	-74.27	Pk	34.1	-26.2	9.6	-56.77	-25	-31.77	H
10.874	-78.11	Pk	38	-18.4	7.6	-50.91	-25	-25.91	H
4.778	-73.91	Pk	34.1	-26.1	9.2	-56.71	-25	-31.71	V
7.359	-76.89	Pk	35.5	-22.6	7.7	-56.29	-25	-31.29	V
11.069	-77.7	Pk	37.9	-18.5	8.5	-49.80	-25	-24.80	V
7.136	-76.38	Pk	35.6	-22.7	7.2	-56.28	-25	-31.28	H
Mid Channel 2583.1MHz + 2602.9MHz									
3.814	-73.98	Pk	33.6	-26.9	9.4	-57.88	-25	-32.88	H
3.811	-73.37	Pk	33.5	-27	9.4	-57.47	-25	-32.47	V
5.611	-74.69	Pk	34.7	-24.8	8.4	-56.39	-25	-31.39	H
5.661	-74.29	Pk	34.7	-24.7	8.5	-55.79	-25	-30.79	V
8.982	-75.82	Pk	36.1	-20.5	7.9	-52.32	-25	-27.32	H
9.264	-77.76	Pk	36.3	-19.8	8.1	-53.16	-25	-28.16	V
High Channel 2660.2MHz + 2680MHz									
3.845	-73.95	Pk	33.6	-26.7	9.5	-57.55	-25	-32.55	H
10.953	-78.28	Pk	38	-18.3	8.4	-50.18	-25	-25.18	H
3.768	-73.57	Pk	33.4	-26.9	9.5	-57.57	-25	-32.57	V
7.09	-75.29	Pk	35.6	-22.8	7.5	-54.99	-25	-29.99	V
7.214	-75.63	Pk	35.6	-22.8	7.5	-55.33	-25	-30.33	H
9.88	-78.16	Pk	37	-19.2	7.9	-52.46	-25	-27.46	V

Pk - Peak detector

Company:	
Project #:	12901678
Date:	6/16/2019
Test Engineer:	23509
Configuration:	EUT Only
Mode:	LTE 41 16QAM 20MHz +20MHz
Chamber #:	Chamber B

Frequency (GHz)	Meter Reading (dBm)	Det	AF T344 (dB/m)	Amp/Cbl (dB)	Amp/Cbl (dB)	Corrected Reading (dBm)	LIMIT	Margin (dB)	Polarity
Low Channel, 2506MHz + 2525.8MHz									
4.591	-74.91	Pk	34.2	-26.1	9.5	-57.31	-25	-32.31	H
10.819	-77.17	Pk	37.9	-18.5	7.2	-50.57	-25	-25.57	H
4.544	-73.77	Pk	34.2	-25.9	9.2	-56.27	-25	-31.27	V
11.044	-77.98	Pk	37.9	-18.6	8.1	-50.58	-25	-25.58	V
7.089	-76.09	Pk	35.6	-22.8	7.5	-55.79	-25	-30.79	H
7.151	-75.39	Pk	35.6	-22.9	8.4	-54.29	-25	-29.29	V
Mid Channel 2583.1MHz + 2602.9MHz									
7.699	-76.21	Pk	35.8	-22.2	7.4	-55.21	-25	-30.21	H
11.119	-77.28	Pk	38	-18.4	8.6	-49.08	-25	-24.08	H
11.121	-77.17	Pk	38	-18.5	8.6	-49.07	-25	-24.07	V
4.481	-74.61	Pk	33.8	-25.8	9.5	-57.11	-25	-32.11	H
4.483	-75.17	Pk	33.8	-25.8	9.7	-57.47	-25	-32.47	V
7.803	-77.42	Pk	35.7	-22.3	7.7	-56.32	-25	-31.32	V
High Channel 2660.2MHz + 2680MHz									
3.786	-73.22	Pk	33.5	-26.8	10.1	-56.42	-25	-31.42	H
3.751	-74.41	Pk	33.3	-26.8	9.9	-58.01	-25	-33.01	V
5.997	-75.09	Pk	35.3	-24.7	7.8	-56.69	-25	-31.69	H
6.029	-74.77	Pk	35.3	-24.7	7.8	-56.37	-25	-31.37	V
12.75	-77.42	Pk	39.1	-19.4	9.3	-48.42	-25	-23.42	H
12.839	-77.62	Pk	39.2	-19.6	9.8	-48.22	-25	-23.22	V

Pk - Peak detector

10. SETUP PHOTOS

Please see setup photo report 12901678-EP1V1

END OF REPORT