TEST REPORT

DT&C Co., Ltd.
42, Yurim-ro, 154Beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea, 17042
Tel : 031-321-2664, Fax : 031-321-1664

1. Report No : DRTFCC1702-0021(1)
2. Customer
   - Name : Airspan Networks Inc
   - Address : 777 Yamato Rd Suite 310, Boca Raton, Florida, United States
3. Use of Report : FCC Original Grant
4. Product Name / Model Name : LTE indoor CPE / AU-ETH-004-INB00-D-0
   FCC ID : PID41AUETH
5. Test Method Used : ANSI/TIA/EIA-603-C-2004 and KDB 971168
   Test Specification : FCC Part 27
6. Date of Test : 2017.01.19 ~ 2017.02.10
7. Testing Environment : See appended test report.
8. Test Result : Refer to the attached test result.

Affirmation	Tested by Name : JungWoo Kim (Signature)	Technical Manager Name : HyunSu Son (Signature)

2017 . 03 . 08 .

DT&C Co., Ltd.

If this report is required to confirmation of authenticity, please contact to report@dtnc.net

Test Report Version

Test Report No.	Date	Description
DRTFCC1702-0021	Feb. 21, 2017	Initial issue
DRTFCC1702-0021(1)	Mar. 8, 2017	Updated Antenna Information & SUMMARY OF TEST RESULTS

Note : Test report DRTFCC1702-0021(1) issued on Mar. 08, 2017 supercedes previously issued test report DRTFCC1702-0021 on Feb. 21, 2017.

Table of Contents

1. GENERAL INFORMATION

Applicant Name: Airspan Networks Inc

Address: 777 Yamato Road Suite 310 Boca Raton, Florida, United States

FCC ID	:	PID41AUETH
FCC Classification	:	PCS Licensed Transmitter (PCB)
EUT Type	:	LTE indoor CPE
Model Name	:	AU-ETH-004-INB00-D-0
Add Model Name	:	N/A
Supplying power	:	DC 5V
Antenna Information	:	Internal Antenna(1TX 2RX)

Antenna 1	Type: Internal antenna(TX/RX)
Antenna 2	Type: Internal antenna(RX)

Mode	TX Frequency (MHz)	Emission Designator	Modulation	ERP/EIRP	
				Max power(dBm)	Max power(W)
LTE Band 41	2498.5 ~ 2687.5	4M47G7D	QPSK	24.80	0.302
LTE Band 41	2498.5 ~ 2687.5	4M46W7D	16QAM	24.44	0.278
LTE Band 41	2501 ~ 2685	8M86G7D	QPSK	25.28	0.337
LTE Band 41	2501 ~ 2685	8M94W7D	16QAM	25.25	0.335
LTE Band 41	2503.5 ~ 2682.5	13M3G7D	QPSK	25.74	0.375
LTE Band 41	2503.5 ~ 2682.5	13M3W7D	16QAM	25.28	0.337
LTE Band 41	2506 ~ 2680	18M0G7D	QPSK	24.85	0.305
LTE Band 41	2506 ~ 2680	17M9W7D	16QAM	24.73	0.297

2. INTRODUCTION

2.1 EUT DESCRIPTION

The Equipment under Test (EUT) supports Band 41 (20, 15, 10, 5 MHz BW)

2.2 MEASURING INSTRUMENT CALIBRATION

The measuring equipment, which was utilized in performing the tests documented herein, has been calibrated in accordance with the manufacturer's recommendations for utilizing calibration equipment, which is traceable to recognized national standards.

2.3 TEST FACILITY

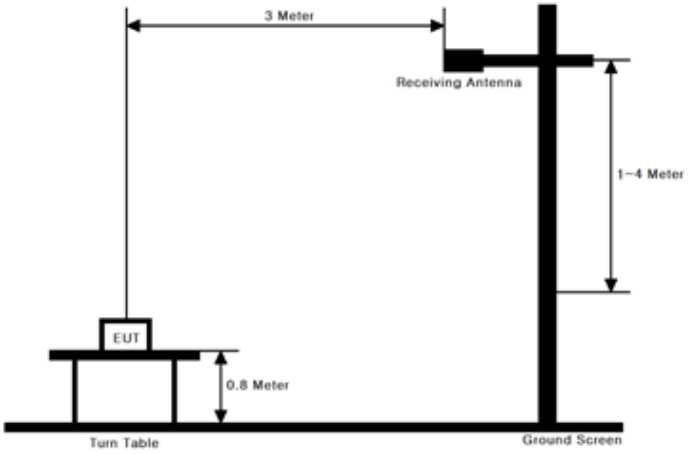
The 3M test site and conducted measurement facility used to collect the radiated data are located at the 42, Yurim-ro, 154beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Korea 449-935. The site is constructed in conformance with the requirements.

- 3M test site registration Number: 165783

3. DESCRIPTION OF TESTS

3.1 ERP&EIRP
(Effective Radiated Power & Equivalent Isotropic Radiated Power)

Test Set-up



Test Procedure

- **ANSI/TIA-603-C-2004 - Section 2.2.17**
- **KDB971168 v02r02 - Section 5.2.1**

These measurements were performed at 3 &10 m test site. The equipment under test is placed on a non-conductive table 0.8-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.

Test setting

1. Set span to at least 1.5 times the OBW.
2. Set RBW = 1-5 % of the OBW, not to exceed 1 MHz.
3. Set VBW ≥ 3 x RBW.
4. Set number of points in sweep ≥ 2 × span / RBW.
5. Sweep time = auto couple.
6. Detector = RMS (power averaging).
7. If the EUT can be configured to transmit continuously (i.e., burst duty cycle ≥ 98 %), then set the trigger to free run.
8. If the EUT cannot be configured to transmit continuously (i.e., burst duty cycle < 98 %), then use a sweep trigger with the level set to enable triggering only on full power bursts and configure the EUT to transmit at full power for the entire duration of each sweep.
   Ensure that the sweep time is less than or equal to the transmission burst duration.
9. Trace average at least 100 traces in power averaging (i.e., RMS) mode.
10. Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function, with the band limits set equal to the OBW band edges. If the instrument does not have a band power function, then sum the spectrum levels (in linear power units) at intervals equal to the RBW extending across the entire OBW of the spectrum.

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.

A half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same receive spectrum analyzer reading. The conducted power at the terminal of the substitute antenna is measured.

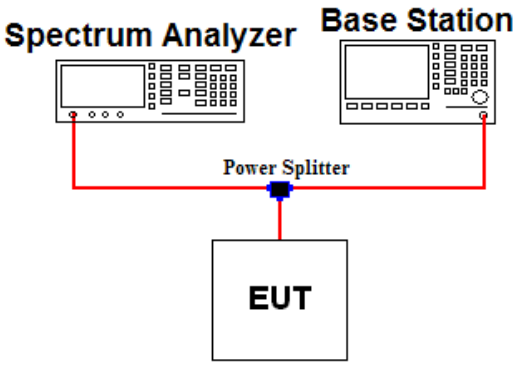
The ERP/EIRP is calculated using the following formula:

ERP/EIRP = The conducted power at the substitute antenna`s terminal [dBm] + Substitute Antenna gain [dBd for ERP , dBi for EIRP]

For readings above 1 GHz, the above procedure is repeated using horn antennas and the difference between the gain of the horn antenna and an isotropic antenna are taken into consideration.

3.2 PEAK TO AVERAGE RATIO

Test set-up



Test Procedure

- **KDB971168 v02r02 - Section 5.7.1**

A peak to average ratio measurement is performed at the conducted port of the EUT.
The spectrum analyzers Complementary Cumulative Distribution Function (CCDF) measurement profile is used to determine the largest deviation between the average and the peak power of the EUT in a given bandwidth. The CCDF curve shows how much time the peak waveform spends at or above a given average power level. The present of time the signal spends at or above the level defines the probability for that particular power level.

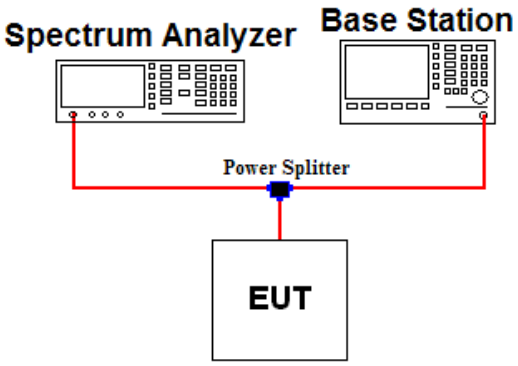
Test setting

The spectrum Analyzer`s CCDF measurement function is enabled.

1. Set resolution/measurement bandwidth ≥ signal`s occupied bandwidth.
2. Set the number of counts to a value that stabilizes the measured CCDF curve
3. Set the measurement interval as follows:
   1) For continuous transmissions, set to 1 ms.
   2) For burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.
4. Record the maximum PAPR level associated with a probability of 0.1 %

3.3 OCCUPIED BANDWIDTH.

Test set-up



Test Procedure

- **KDB971168 v02r02 - Section 4.2**

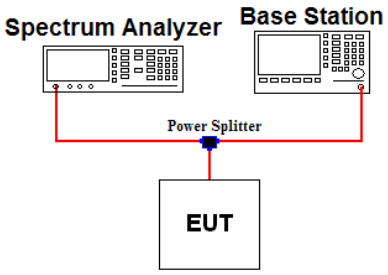
The occupied bandwidth, that is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers radiated are each equal to 0.5 percent of the total mean power of a given emission.

Test setting

1. The signal analyzer`s automatic bandwidth measurement capability was used to perform the 99 % occupied bandwidth and the 26 dB bandwidth. The bandwidth measurement was not influenced by any intermediate power nulls in the fundamental emission.
2. RBW = 1 ~ 5 % of the expected OBW & VBW ≥ 3 X RBW
3. Detector = Peak
4. Trance mode = Max hold
5. Sweep = Auto couple
6. The trace was allowed to stabilize
7. If necessary, step 2 ~ 6 were repeated after changing the RBW such that it would be within 1 ~ 5 % of the 99 % occupied bandwidth observed in step 6.

3.4 BAND EDGE EMISSIONS (Conducted)

Test set-up



Test Procedure

- **KDB971168 v02r02 - Section 6.0**

All out of band emissions are measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its lowest and highest channel with all bandwidths, modulations and RB configurations.

The power of any spurious emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB or requirements on note 2 in case of band 7 and 41.

Test setting

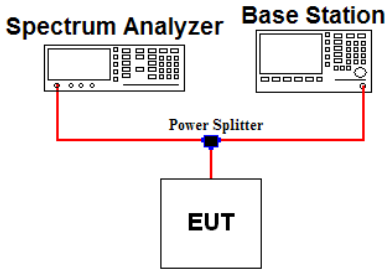
1. Start and stop frequency were set such that the band edge would be placed in the center of the plot
2. Span was set large enough so as to capture all out of band emissions near the band edge
3. RBW ≥ 1 % of the emission bandwidth or 2 % of the emission bandwidth (refer to note 2)
4. VBW ≥ 3 X RBW
5. Detector = RMS & Trace mode = Max hold
6. Sweep time = Auto couple or 1 s for band edge
7. Number of sweep point ≥ 2 X span / RBW
8. The trace was allowed to stabilize

Note 1: 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 to demonstrate compliance with the out-of-band emissions limit. 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 emission are attenuated at least 26 dB below the transmitter power.

Note 2: For part 27.53(m)(4) the attenuation factor shall be not less than 40 + 10 log (P) dB on all frequencies between the channel edge and 5 MHz from the channel edge, 43 + 10 log (P) dB on all frequencies between 5 MHz and X MHz from the channel edge, and 55 + 10 log (P) dB on all frequencies more than X MHz from the channel edge, where X is the greater of 6 MHz 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. For mobile digital stations, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of **at least two percent** may be employed, except when the 1 MHz band is 2495-2496 MHz, in which case a resolution bandwidth of **at least one percent** may be employed.

3.5 SPURIOUS AND HARMONIC EMISSIONS (Conducted)

Test set-up



Test Procedure

- **KDB971168 v02r02 - Section 6.0**

The level of the carrier and the various conducted spurious and harmonic frequencies is measured by means of a calibrated spectrum analyzer. The EUT was setup to maximum output power at its low, middle, high channel with all bandwidths, modulations and RB configurations. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

The power of any spurious emission shall be attenuated below the transmitter power (P) by at least 43 + 10 log(P) dB or 55 + 10 log(P) in case of band 7 and 41.

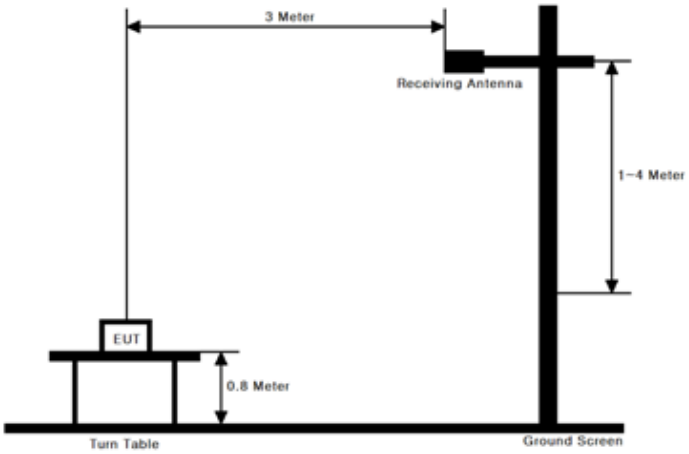
Test setting

1. RBW = 100 KHz or 1 MHz & VBW ≥ 3 X RBW (Refer to Note 1)
2. Detector = RMS & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point ≥ 2 X span / RBW
5. The trace was allowed to stabilize

Note 1: Compliance with these provisions is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater for Part 22 and 1 MHz or greater for Part 24, 27.

3.6 UNDESIRABLE EMISSIONS (Radiated)

Test Set-up



Test Procedure

- **ANSI/TIA-603-C-2004 - Section 2.2.12**
- **KDB971168 v02r02 - Section 5.8**

These measurements were performed at 3 & 10m test site. The equipment under test is placed on a non-conductive table 0.8-meters above a turntable which is flush with the ground plane and 3 meters from the receive antenna.

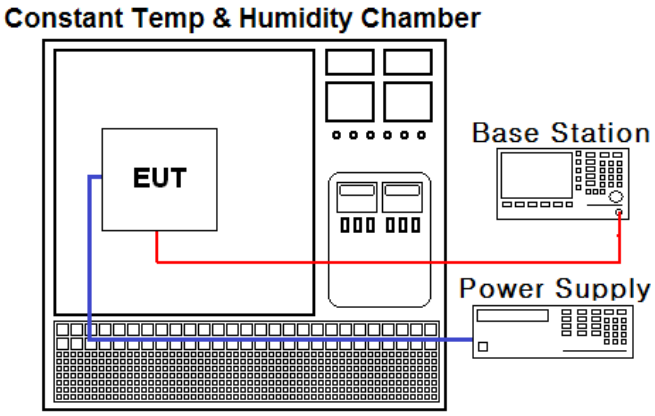
Test setting

1. RBW = 100 kHz for below 1 GHz and 1 MHz for above 1 GHz / VBW ≥ 3 X RBW
2. Detector = Peak & Trace mode = Max hold
3. Sweep time = Auto couple
4. Number of sweep point ≥ 2 X span / RBW
5. The trace was allowed to stabilize

The receive antenna height and turntable rotations were adjusted for the highest reading on the receive spectrum analyzer.
For radiated power measurements below 1 GHz, a half-wave dipole was substituted in place of the EUT. This dipole antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading.
For radiated power measurements above 1 GHz, a Horn antenna was substituted in place of the EUT. This Horn antenna was driven by a signal generator and the level of the signal generator was adjusted to obtain the same spectrum analyzer reading. The difference between the gain of the horn and an isotropic antenna are taken into consideration.
This measurement was performed with the EUT oriented in 3 orthogonal axis.

3.7 FREQUENCY STABILITY

Test Set-up



Test Procedure

- **ANSI/TIA-603-C-2004**
- **KDB971168 v02r02 - Section 9.0**

The frequency stability of the transmitter is measured by:

a.) **Temperature:**
The temperature is varied from - 30 °C to + 50 °C using an environmental chamber.

b.) **Primary Supply Voltage:**
The primary supply voltage is varied from 85 % to 115 % of the nominal value for non hand-carried battery and AC powered equipment. For hand-carried, battery-powered equipment, primary supply voltage is reduced to the battery operating end point which shall be specified by the manufacturer.

Specification:

The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block for Part 24. The frequency stability of the transmitter shall be maintained within ± 0.000 25 % (± 2.5 ppm) of the center frequency for Part 22.

Time Period and Procedure:

1. The carrier frequency of the transmitter is measured at room temperature.
   (25 °C to provide a reference)

2. The equipment is turned on in a “standby” condition for one minute before applying power to the transmitter. Measurement of the carrier frequency of the transmitter is made within one minute after applying power to the transmitter.

3. Frequency measurements are made at 10 °C intervals ranging from -30 °C to +50 °C.
   A period of at least one half-hour is provided to allow stabilization of the equipment at each temperature level.

4. LIST OF TEST EQUIPMENT

Type	Manufacturer	Model	Cal.Date (yy/mm/dd)	Next.Cal. Date (yy/mm/dd)	S/N
MXA Signal Analyzer	Agilent Technologies	N9030A	16/10/18	17/10/18	MY53310140
MXA Signal Analyzer	Agilent Technologies	N9020A	16/09/09	17/09/09	MY50200834
DC Power Supply	SM techno	SDP30-5D	17/01/05	18/01/05	305DLJ204
DIGITAL MULTIMETER	Agilent	34401A	17/01/04	18/01/04	US36099541
Temp & Humi Test Chamber	SJ Science	SJ-TH-S50	16/09/09	17/09/09	U5542113
Thermohygrometer	BODYCOM	BJ5478	16/04/22	17/04/22	120612-2
Radio Communication Analyzer	Anritsu	MT8820C	17/01/03	18/01/03	6201274519
Power Splitter	Anritsu	K241B	16/09/08	17/09/08	020611
Vector Signal Generator	Rohde Schwarz	SMBV100A	17/01/04	18/01/04	255571
Signal Generator	Rohde Schwarz	SMF100A	16/06/23	17/06/23	102341
Loop Antenna	Schwarzbeck	FMZB1513	16/04/22	18/04/22	1513-128
TRILOG Broadband Test-Antenna(30MHz-1GHz)	SCHWARZBECK	VULB9160	16/05/13	18/05/13	3358
Double-Ridged Guide Antenna(1~18GHz)	ETS-LINDGREN	3117	16/05/03	18/05/03	00140394
Horn Antenna(1~18GHz)	ETS-LINDGREN	3115	17/01/13	19/01/13	9202-3820
Horn Antenna(18~40GHz)	A.H.Systems Inc.	SAS-574	15/04/30	17/04/30	154
Horn Antenna(18~40GHz)	A.H.Systems Inc.	SAS-574	15/09/03	17/09/03	155
Low Noise Pre Amplifier(10kHz-1GHz)	tsj	MLA-010K01-B01-27	16/03/10	17/03/10	1844539
PreAmplifier	Agilent Technologies	8449B	16/10/19	17/10/19	3008A02108
PreAmplifier	A.H.Systems Inc.	PAM-1840VH	16/12/04	17/12/04	163
Amplifier	EMPOWER	BBS3Q7ELU	16/09/08	17/09/08	1020
Highpass Filter	Wainwright Instruments	WHKX3.0	17/01/04	18/01/04	12

5. SUMMARY OF TEST RESULTS

FCC Part Section(s)	Test Description	Test Limit	Test Condition	Status Note 1
2.1046	Conducted Output Power	N/A	Conducted	C
2.1049	Occupied Bandwidth	N/A		C
27.53(m)	Band Edge / conducted Spurious Emissions	> 40 + 10log$_{10}$ (P) dB at channel edge and 5 MHz from the channel edge > 43 + 10log$_{10}$ (P) dB at 5 MHz and X MHz from the channel edge > 55 + 10log$_{10}$ (P) dB at all frequencies more than X MHz from the channel edge		C Note2
2.1055 27.54	Frequency Stability	Fundamental emissions must stay within Authorized frequency block		C
27.50(h.2)	Equivalent Isotropic Radiated Power	< 2 Watts max. EIRP	Radiated	C
27.53(m)	Undesirable Emissions	> 40 + 10log$_{10}$ (P) dB at channel edge and 5 MHz from the channel edge > 43 + 10log$_{10}$ (P) dB at 5 MHz and X MHz from the channel edge > 55 + 10log$_{10}$ (P) dB at all frequencies more than X MHz from the channel edge		C

Note 1: **C**=Comply **NC**=Not Comply **NT**=Not Tested **NA**=Not Applicable
Note 2: where X is the greater of 6 MHz or the actual emission bandwidth as defined in paragraph (m)(6) of this section.
Note 3: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported.

The sample was tested according to the following specification:
ANSI/TIA/EIA-603-C-2004 and KDB 971168 D01 v02r02

6. SAMPLE CALCULATION

A. Emission Designator

LTE Band 41 (QPSK)

Emission Designator = **18M0G7D**
LTEOBW = 17.958 MHz
G = Phase Modulation
7 = Quantized/Digital Info
D = Data Transmission

LTE Band 41 (16QAM)

Emission Designator = **17M9W7D**
LTEOBW = 17.855 MHz
W = Amplitude/Angle Modulated
7 = Quantized/Digital Info
D = Data Transmission

B. EIRP Sample Calculation

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	Spectrum Reading Value(dBm)	EUT Axis	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
10	2501	QPSK	1/0	-22.36	Z	V	15.52	9.76	25.28	0.337

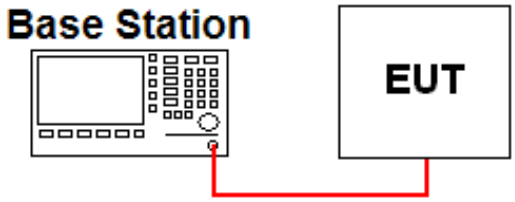
EIRP = @ Ant Terminal LEVEL(dBm) + Ant. Gain

1) The EUT mounted on a non-conductive turntable is 0.8 meter above test site ground level.
2) During the test, the turn table is rotated until the maximum signal is found.
3) Record the field strength meter's level.
4) Replace the EUT with dipole/Horn antenna that is connected to a calibrated signal generator.
5) Increase the signal generator output till the field strength meter's level is equal to the item (3).
6) The signal generator output level with Ant. Gain is the rating of effective isotropic radiated power (EIRP).

7. TEST DATA

7.1 CONDUCTED OUTPUT POWER

A base station simulator was used to establish communication with the EUT. The base station simulator parameters were set to produce the maximum power from the EUT. This device was tested under all configurations and the highest power is reported. Conducted Output Powers of EUT are reported below.



▪ Band 41

Conducted Power [dBm]									
RB Alloc			1 RB			MID RB			FULL RB
B.W(MHz)	Freq.(MHz)	Modulation	LOW	MID	HIGH	LOW	MID	HIGH	
20	2506	QPSK	22.580	22.910	22.650	22.930	22.910	22.870	22.900
		16QAM	23.000	23.210	22.960	23.000	23.180	23.130	23.120
	2593	QPSK	23.040	23.360	23.180	23.240	23.350	23.400	23.300
		16QAM	23.370	23.660	23.490	23.410	23.540	23.590	23.510
	2680	QPSK	23.750	23.930	23.950	24.000	24.050	24.030	23.990
		16QAM	24.170	24.430	24.350	24.340	24.350	24.390	24.290
15	2503.5	QPSK	22.960	23.140	23.410	23.130	23.200	23.210	23.120
		16QAM	23.340	23.860	23.440	23.230	23.310	23.250	23.300
	2593	QPSK	23.520	23.620	23.610	23.620	23.670	23.600	23.600
		16QAM	24.120	24.220	23.880	23.700	23.780	23.740	23.780
	2682.5	QPSK	24.330	24.430	24.550	24.270	24.330	24.410	24.400
		16QAM	24.880	24.740	24.880	24.510	24.470	24.550	24.580
10	2501	QPSK	22.800	22.820	22.970	22.850	22.770	22.870	22.900
		16QAM	23.000	23.280	23.150	22.900	22.830	22.950	22.970
	2593	QPSK	23.270	23.260	23.440	23.260	23.250	23.380	23.320
		16QAM	23.540	23.440	23.740	23.460	23.300	23.450	23.420
	2685	QPSK	24.170	24.070	24.270	24.080	24.110	24.210	24.160
		16QAM	24.430	24.380	24.570	24.290	24.280	24.410	24.380
5	2498.5	QPSK	22.720	22.860	22.770	22.760	22.900	22.870	22.910
		16QAM	22.860	22.950	22.950	22.740	22.870	22.880	22.940
	2593	QPSK	23.150	23.420	23.310	23.320	23.420	23.360	23.440
		16QAM	23.300	23.530	23.430	23.340	23.380	23.390	23.480
	2687.5	QPSK	24.110	24.240	24.140	24.000	24.290	24.140	24.300
		16QAM	24.200	24.360	24.350	24.150	24.390	24.330	24.420

Note 1: The conducted output power was measured using the Anritsu MT8820C
Note 2: The number of Mid RB are used 50,36,25,12 for 20,15,10,5MHz B.W

7.2 OCCUPIED BANDWIDTH

- Plots of the EUT's Occupied Bandwidth are shown in Clause 8.1

7.3 BAND EDEG EMISSIONS (Conducted)

- Plots of the EUT's Band Edge Emissions are shown in Clause 8.2

7.4 SPURIOUS AND HARMONICS EMISSIONS (Conducted)

- Plots of the EUT's Spurious Emissions are shown in Clause 8.3

7.5 EQUIVALENT ISOTROPIC RADIATED POWER

7.5.1 LTE Band 41

Channel Bandwidth (MHz)	Test Frequency (MHz)	Test Mode	RB Size/ Offset	EUT Axis	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain (dBi)	EIRP (dBm)	EIRP (W)
20	2506	QPSK	1/99	Z	V	15.09	9.76	24.85	0.305
		16QAM	1/99	Z	V	14.97	9.76	24.73	0.297
	2593	QPSK	1/99	Z	V	14.78	9.75	24.53	0.284
		16QAM	1/99	Z	V	14.65	9.75	24.40	0.275
	2680	QPSK	1/99	Z	V	12.60	9.73	22.33	0.171
		16QAM	1/99	Z	V	12.39	9.73	22.12	0.163
15	2503.5	QPSK	1/0	Z	V	15.98	9.76	25.74	0.375
		16QAM	1/0	Z	V	15.52	9.76	25.28	0.337
	2593	QPSK	1/0	Z	V	15.59	9.75	25.34	0.342
		16QAM	1/0	Z	V	14.89	9.75	24.64	0.291
	2682.5	QPSK	1/0	Z	V	14.85	9.73	24.58	0.287
		16QAM	1/0	Z	V	14.12	9.73	23.85	0.243
10	2501	QPSK	1/0	Z	V	15.52	9.76	25.28	0.337
		16QAM	1/0	Z	V	15.49	9.76	25.25	0.335
	2593	QPSK	1/0	Z	V	15.02	9.75	24.77	0.300
		16QAM	1/0	Z	V	14.53	9.75	24.28	0.268
	2685	QPSK	1/0	Z	V	14.31	9.73	24.04	0.254
		16QAM	1/0	Z	V	13.96	9.73	23.69	0.234
5	2498.5	QPSK	1/12	Z	V	13.64	9.76	23.40	0.219
		16QAM	1/12	Z	V	12.89	9.76	22.65	0.184
	2593	QPSK	1/12	Z	V	15.05	9.75	24.80	0.302
		16QAM	1/12	Z	V	14.69	9.75	24.44	0.278
	2687.5	QPSK	1/12	Z	V	13.91	9.73	23.64	0.231
		16QAM	1/12	Z	V	13.29	9.73	23.02	0.200

Note: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

7.6 UNDESIRABLE EMISSIONS (Radiated)

7.6.1 LTE Band 41

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	EUT Axis	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
									(dBm)	(dBc)	
20	2506	1/0	QPSK	4994.11	Z	V	-43.73	8.53	-35.20	60.05	49.85
		1/99		7544.64	Z	V	-45.52	9.35	-36.17	61.02	
		1/0	16QAM	4994.18	Z	V	-43.16	8.53	-34.63	59.36	49.73
		1/99		7544.72	Z	V	-44.60	9.35	-35.25	59.98	
	2593	1/0	QPSK	5168.26	Z	V	-42.31	8.60	-33.71	58.24	49.53
		1/99		7805.72	Z	V	-46.47	9.25	-37.22	61.75	
		1/0	16QAM	5168.29	Z	V	-41.89	8.60	-33.29	57.69	49.40
		1/99		7805.74	Z	V	-45.73	9.25	-36.48	60.88	
	2680	1/0	QPSK	5342.26	Z	V	-38.70	8.68	-30.02	52.35	47.33
		1/99		8066.85	Z	V	-46.07	9.18	-36.89	59.22	
		1/0	16QAM	5342.19	Z	V	-38.54	8.68	-29.86	51.98	47.12
		1/0		8066.77	Z	V	-45.39	9.18	-36.21	58.33	

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	EUT Axis	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
									(dBm)	(dBc)	
15	2503.5	1/74	QPSK	5020.18	Z	V	-43.97	8.54	-35.43	61.17	50.74
		1/74		7530.54	Z	V	-46.04	9.36	-36.68	62.42	
		1/74	16QAM	5020.20	Z	V	-43.80	8.54	-35.26	60.54	50.28
		1/74		7530.55	Z	V	-44.38	9.36	-35.02	60.30	
	2593	1/36	QPSK	5185.90	Z	V	-41.28	8.61	-32.67	58.01	50.34
		1/74		7799.24	Z	V	-46.29	9.26	-37.03	62.37	
		1/36	16QAM	5185.92	Z	V	-40.95	8.61	-32.34	56.98	49.64
		1/74		7799.06	Z	V	-45.45	9.26	-36.19	60.83	
	2682.5	1/0	QPSK	5351.62	Z	V	-38.25	8.68	-29.57	54.15	49.58
		1/74		8067.48	Z	V	-45.34	9.18	-36.16	60.74	
		1/0	16QAM	5351.67	Z	V	-38.12	8.68	-29.44	53.29	48.85
		1/74		8067.45	Z	V	-44.72	9.18	-35.54	59.39	

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	EUT Axis	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
									(dBm)	(dBc)	
10	2501	1/0	QPSK	4993.26	Z	V	-43.83	8.53	-35.30	60.58	50.28
		1/49		7516.15	Z	V	-44.07	9.36	-34.71	59.99	
		1/0	16QAM	4993.13	Z	V	-45.05	8.53	-36.52	61.77	50.25
		1/49		7516.25	Z	V	-42.99	9.36	-33.63	58.88	
	2593	1/0	QPSK	5177.24	Z	V	-42.23	8.61	-33.62	58.39	49.77
		1/49		7792.40	Z	V	-41.98	9.26	-32.72	57.49	
		1/0	16QAM	5177.28	Z	V	-43.18	8.61	-34.57	58.85	49.28
		1/49		7792.37	Z	V	-41.94	9.26	-32.68	56.96	
	2685	1/0	QPSK	5361.22	Z	V	-40.36	8.69	-31.67	55.71	49.04
		1/49		8068.14	Z	V	-43.35	9.18	-34.17	58.21	
		1/0	16QAM	5361.20	Z	V	-39.90	8.69	-31.21	54.90	48.69
		1/49		8068.21	Z	V	-42.43	9.18	-33.25	56.94	

B.W (MHz)	Test Freq. (MHz)	RB Size/ Offset	Test Mode	Freq.(MHz)	EUT Axis	Ant Pol (H/V)	Level(dBm) @ Ant Terminal	TX Ant Gain(dBi)	Result		Limit (dBc)
									(dBm)	(dBc)	
5	2498.5	1/0	QPSK	4992.75	Z	V	-45.08	8.53	-36.55	59.95	48.40
		1/24		7501.95	Z	V	-44.27	9.37	-34.90	58.30	
		1/0	16QAM	4992.95	Z	V	-45.27	8.53	-36.74	59.39	47.65
		1/24		7502.02	Z	V	-44.65	9.37	-35.28	57.93	
	2593	1/0	QPSK	5181.68	Z	V	-42.48	8.61	-33.87	58.67	49.80
		1/24		7785.48	Z	V	-43.14	9.26	-33.88	58.68	
		1/0	16QAM	5181.66	Z	V	-42.57	8.61	-33.96	58.40	49.44
		1/24		7785.51	Z	V	-42.71	9.26	-33.45	57.89	
	2687.5	1/0	QPSK	5370.68	Z	V	-39.62	8.69	-30.93	54.57	48.64
		1/24		8069.00	Z	V	-42.26	9.18	-33.08	56.72	
		1/0	16QAM	5370.72	Z	V	-38.55	8.69	-29.86	52.88	48.02
		1/24		8068.90	Z	V	-41.82	9.18	-32.64	55.66	

Note 1: Limit Calculation = 43 + $10\log_{10}$ (P[Watts])

Note 2: This device was tested under all bandwidths, modulations and RB configurations and the worst case data are reported in the table above.

Note 3: The frequency spectrum is examined from 9 kHz to the 10th harmonic of the fundamental frequency of the transmitter. No other spurious and harmonic emissions were reported greater than listed emissions above table.

7.7 FREQUENCY STABILITY

7.7.1 LTE Band 41

OPERATING FREQUENCY : 2593 MHz
CHANNEL : 40620
REFERENCE VOLTAGE : 5.0 VDC
LIMIT : The frequency stability shall be sufficient to ensure that the fundamental emission stays wthin the authorized frequency block.

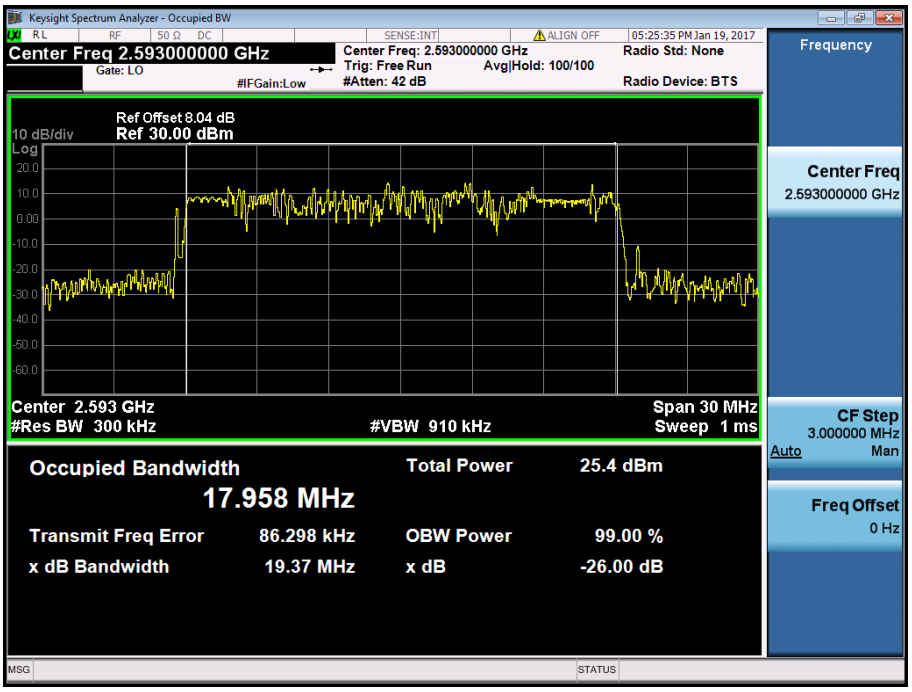
VOLTAGE (%)	POWER (V DC)	TEMP (℃)	FREQUENCY (Hz)	FREQ.Dev (Hz)	Deviation	
					(ppm)	(%)
100%	5	+25(Ref)	2,592,999,853	-147	-0.0567	-0.000005669
100%		-30	2,592,999,892	-108	-0.0417	-0.000004165
100%		-20	2,592,999,879	-121	-0.0467	-0.000004666
100%		-10	2,592,999,876	-124	-0.0478	-0.000004782
100%		0	2,592,999,863	-137	-0.0528	-0.000005283
100%		10	2,592,999,862	-138	-0.0532	-0.000005322
100%		20	2,592,999,858	-142	-0.0548	-0.000005476
100%		30	2,592,999,816	-184	-0.0710	-0.000007096
100%		40	2,592,999,829	-171	-0.0659	-0.000006595
100%		50	2,592,999,807	-193	-0.0744	-0.000007443
115%	5.75	25	2,592,999,841	-159	-0.0613	-0.000006132
85%	4.25	25	2,592,999,873	-127	-0.0490	-0.000004898

8. TEST PLOTS

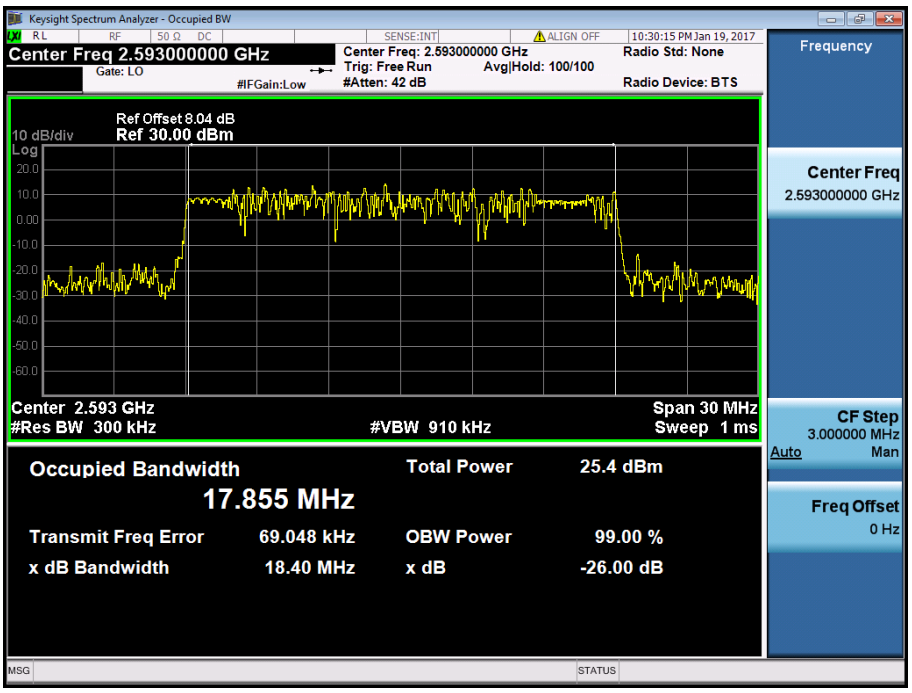
Note: All bandwidths, RB configurations, and modulations were investigated. The worst case test results are reported below.

8.1 OCCUPIED BANDWIDTH

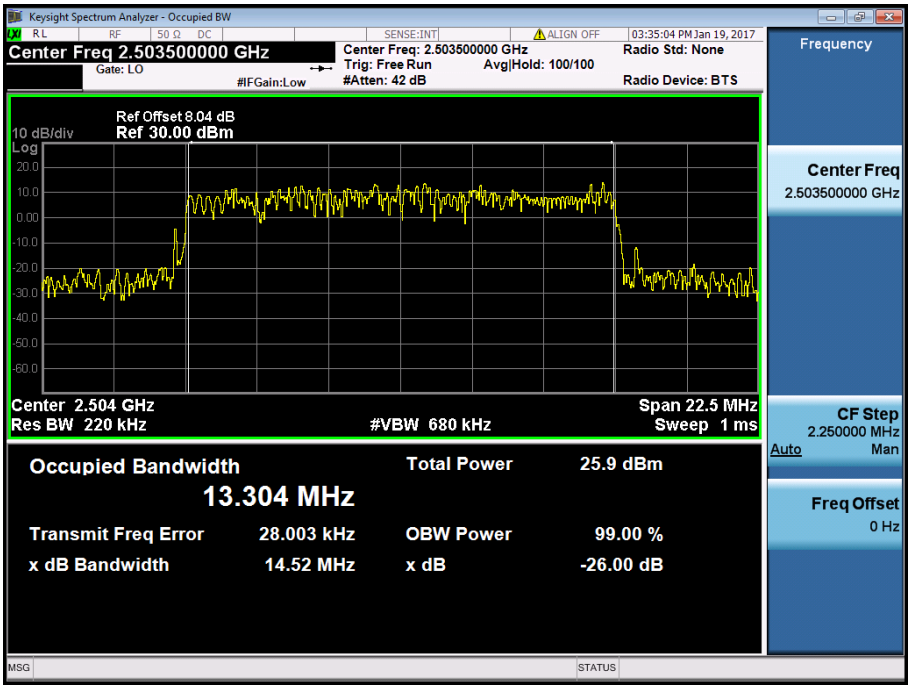
8.1.1 LTE Band 41



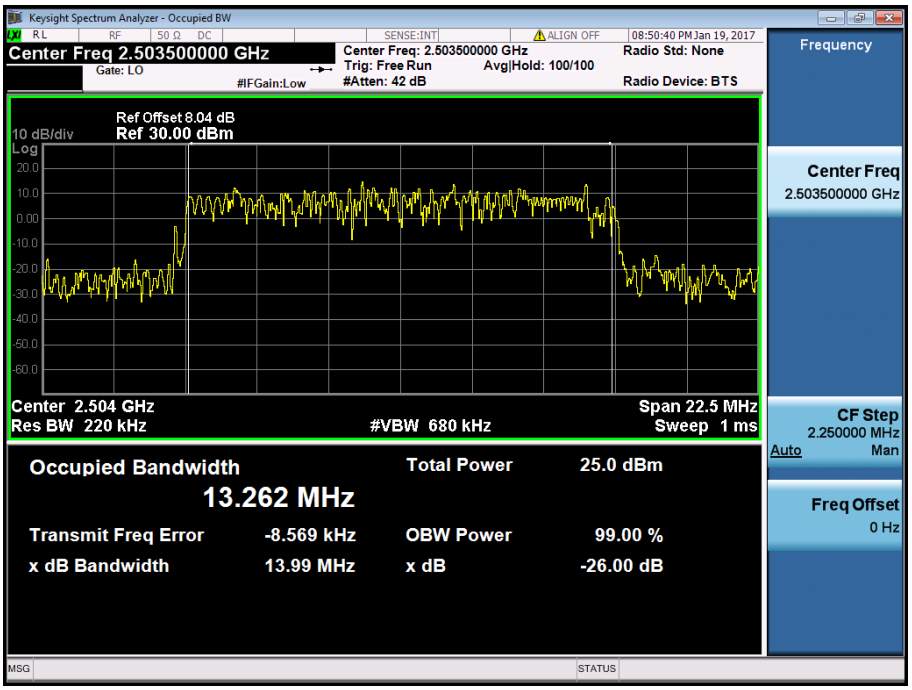
LTE Band 41 / 20MHz / QPSK - RB Size 100



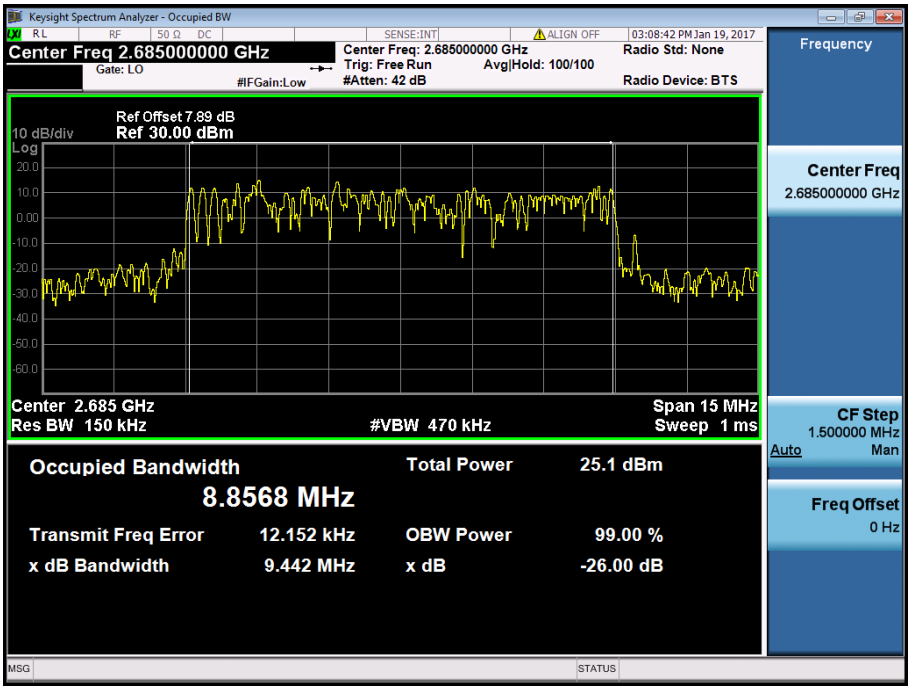
LTE Band 41 / 20MHz / 16QAM - RB Size 100



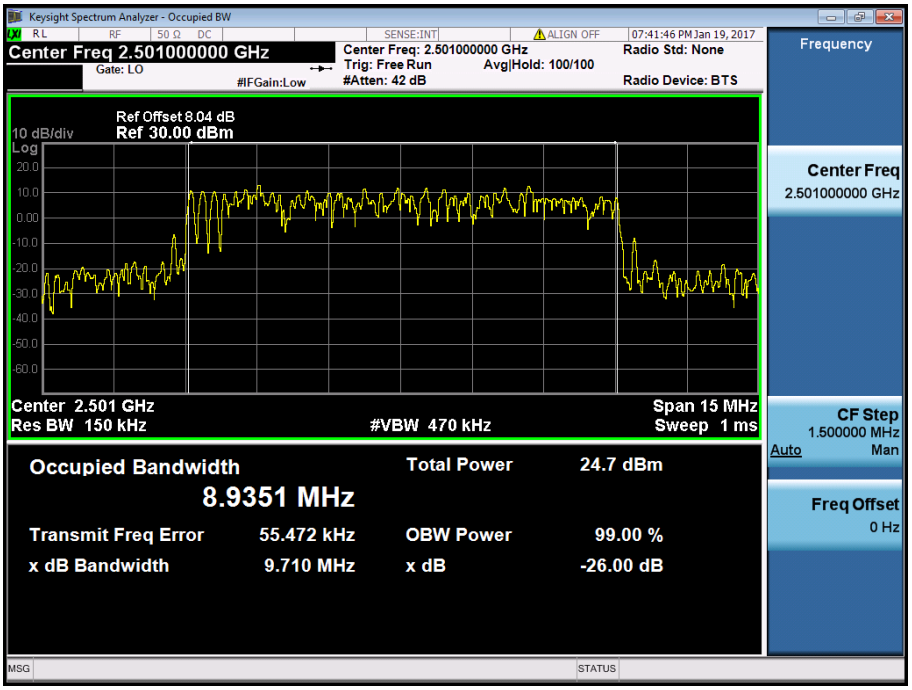
LTE Band 41 / 15MHz / QPSK - RB Size 75



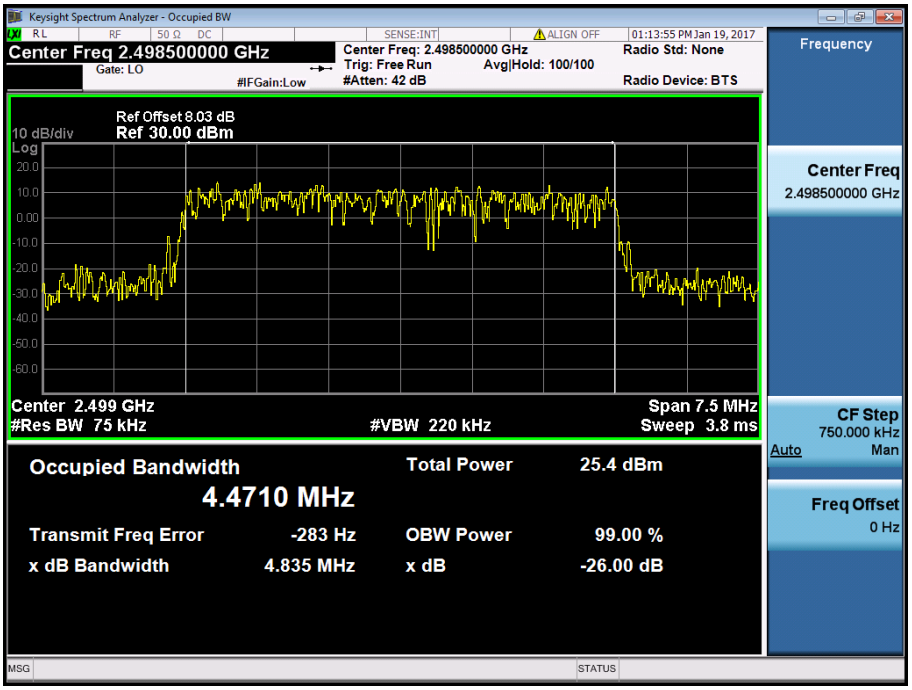
LTE Band 41 / 15MHz / 16QAM - RB Size 75



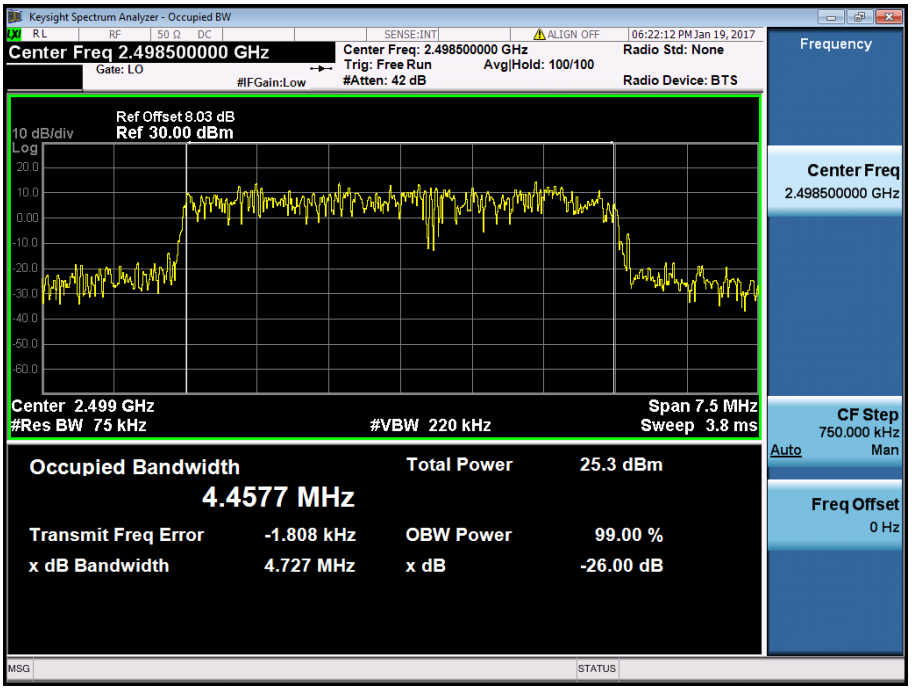
LTE Band 41 / 10MHz / QPSK - RB Size 50



LTE Band 41 / 10MHz / 16QAM - RB Size 50



LTE Band 41 / 5MHz / QPSK - RB Size 25

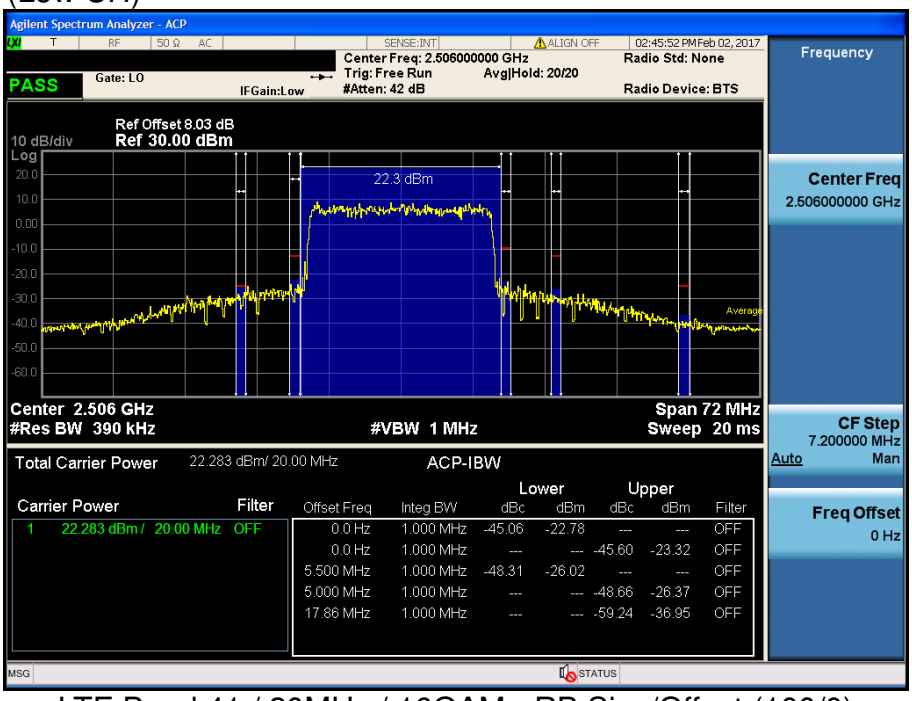


LTE Band 41 / 5MHz / 16QAM - RB Size 25

8.2 BAND EDGE EMISSIONS(Conducted)

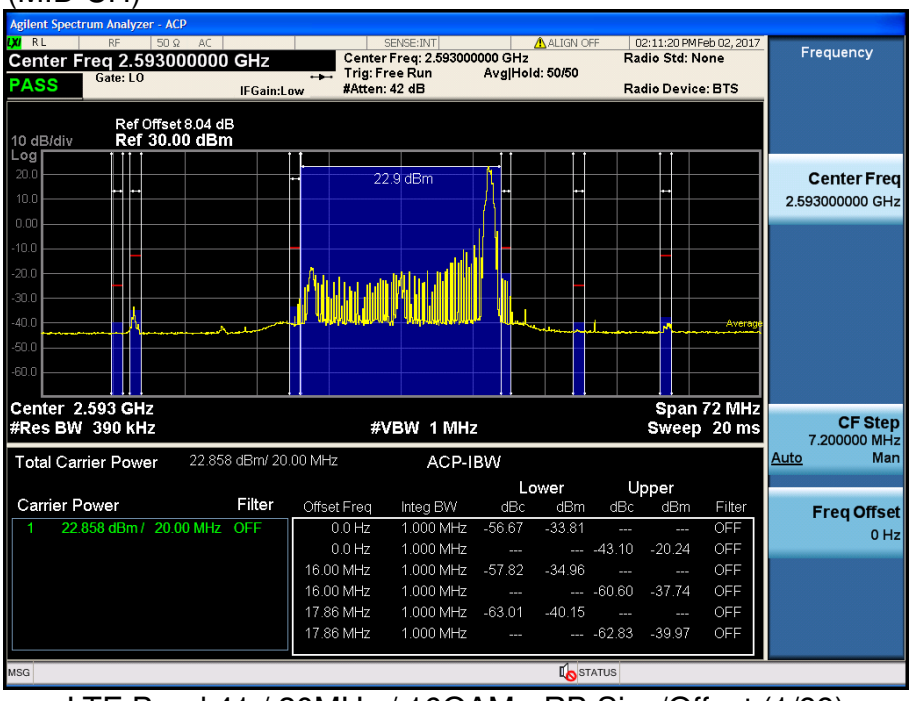
8.2.1 LTE Band 41

- Band Edge (Low CH)



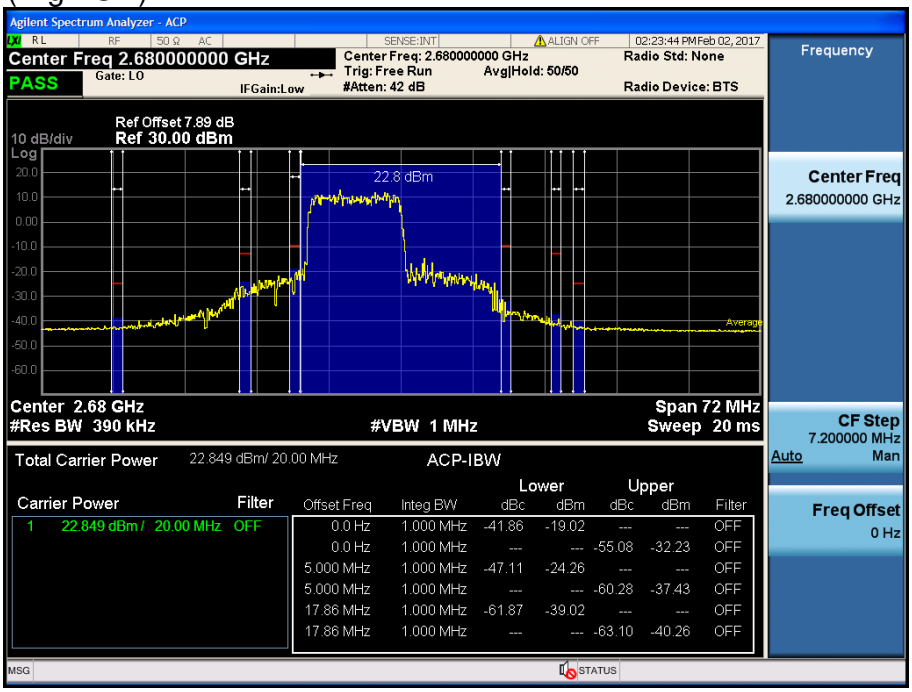
LTE Band 41 / 20MHz / 16QAM - RB Size/Offset (100/0)

- Band Edge (MID CH)



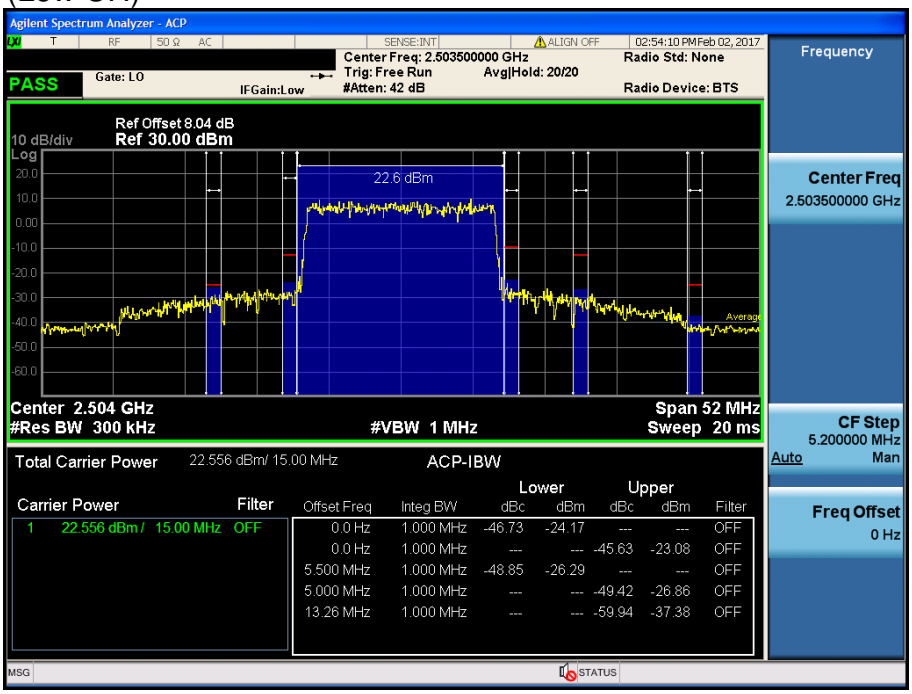
LTE Band 41 / 20MHz / 16QAM - RB Size/Offset (1/99)

- Band Edge (High CH)



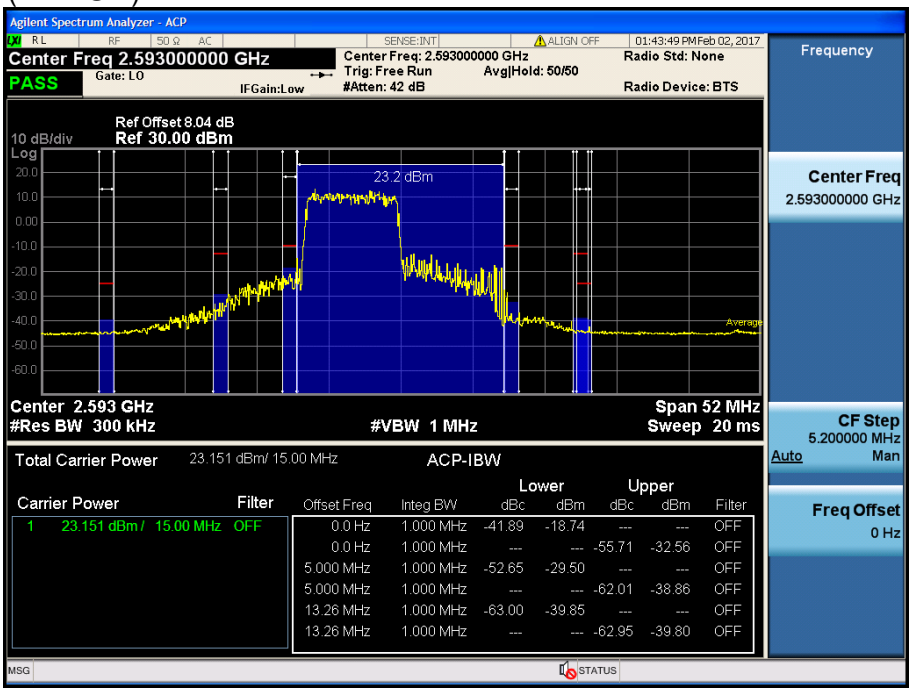
LTE Band 41 / 20MHz / 16QAM - RB Size/Offset (50/0)

- Band Edge (Low CH)



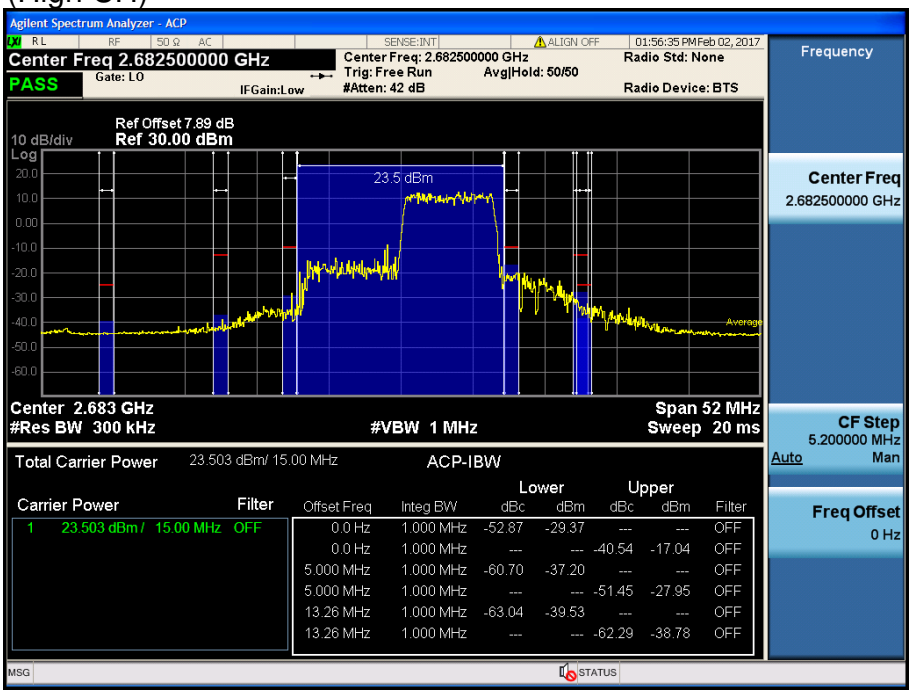
LTE Band 41 / 15MHz / 16QAM - RB Size/Offset (75/0)

- Band Edge (MID CH)



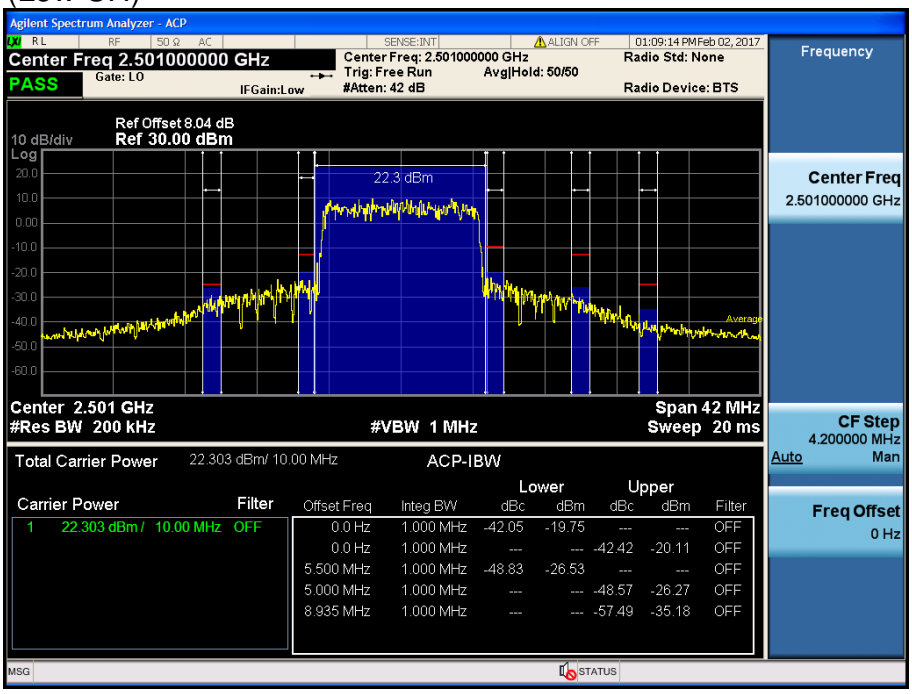
LTE Band 41 / 15MHz / 16QAM - RB Size/Offset (36/0)

- Band Edge (High CH)



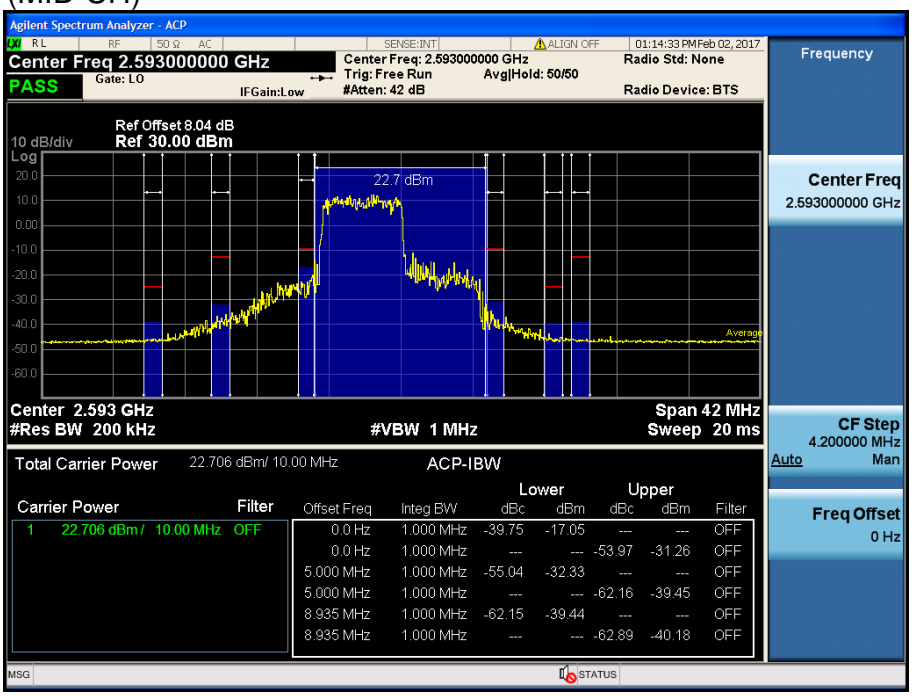
LTE Band 41 / 15MHz / 16QAM - RB Size/Offset (36/39)

- Band Edge (Low CH)



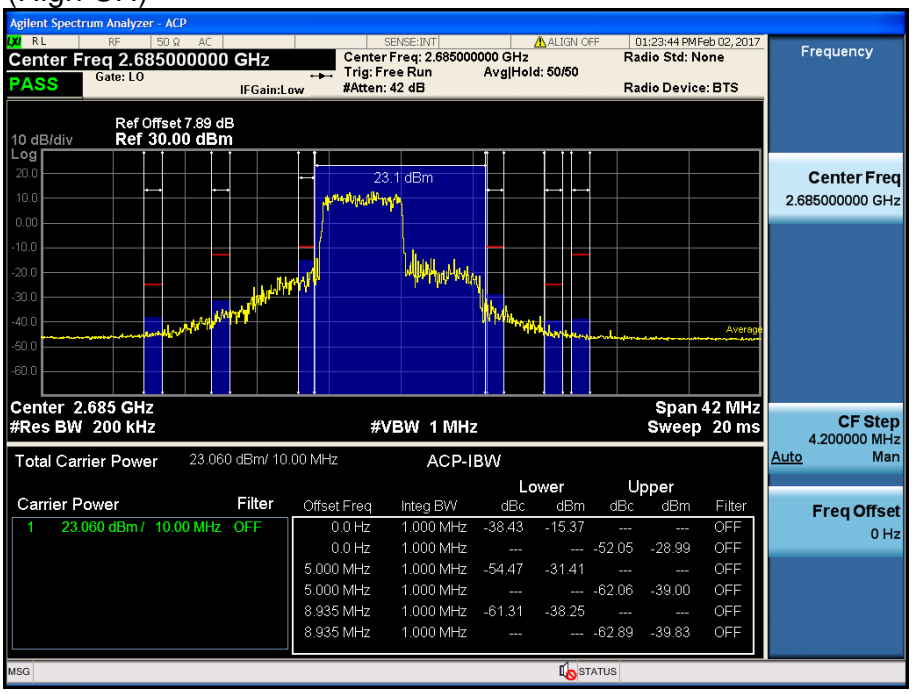
LTE Band 41 / 10MHz / 16QAM - RB Size/Offset (50/0)

- Band Edge (MID CH)



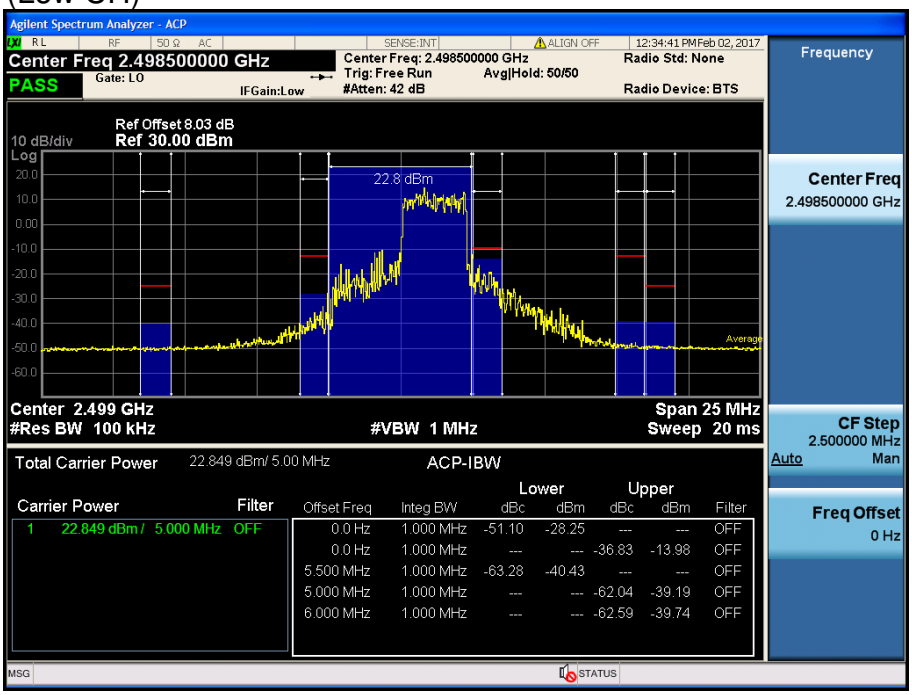
LTE Band 41 / 10MHz / 16QAM - RB Size/Offset (25/0)

- Band Edge (High CH)



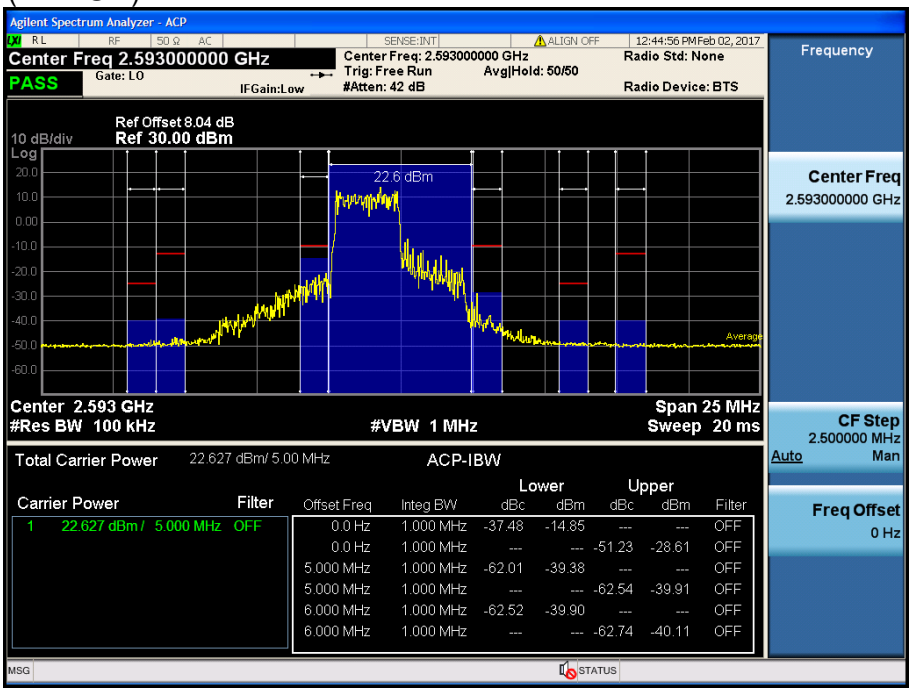
LTE Band 41 / 10MHz / 16QAM - RB Size/Offset (25/0)

- Band Edge (Low CH)



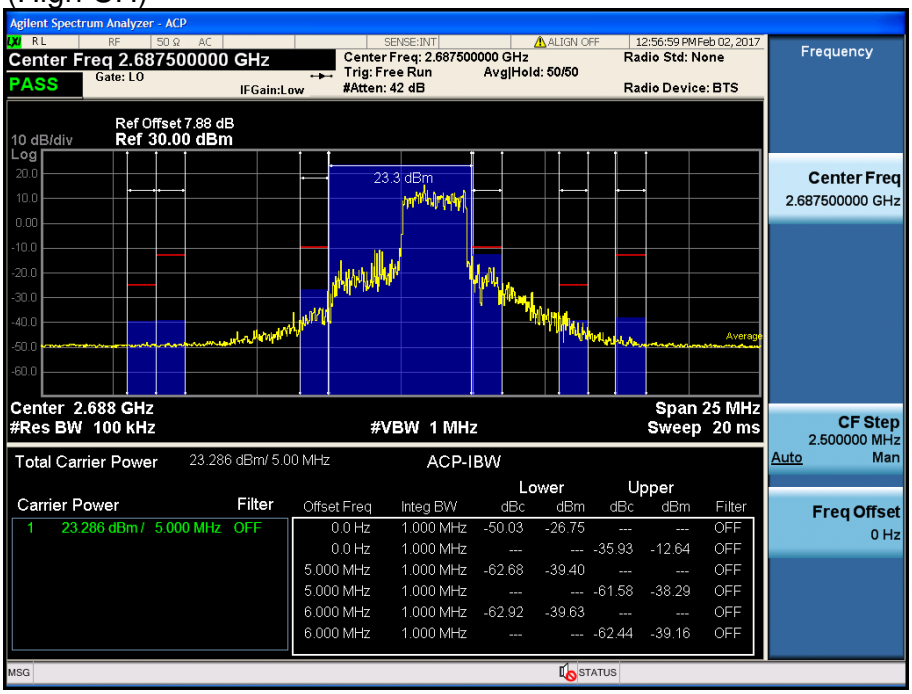
LTE Band 41 / 5MHz / 16QAM - RB Size/Offset (12/13)

- Band Edge (MID CH)



LTE Band 41 / 5MHz / 16QAM - RB Size/Offset (12/0)

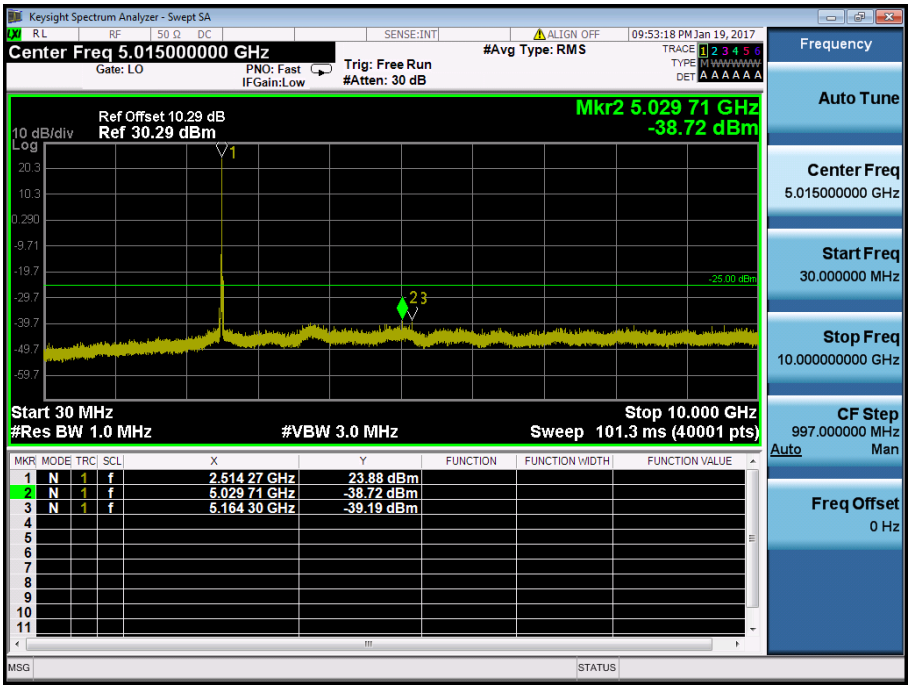
- Band Edge (High CH)



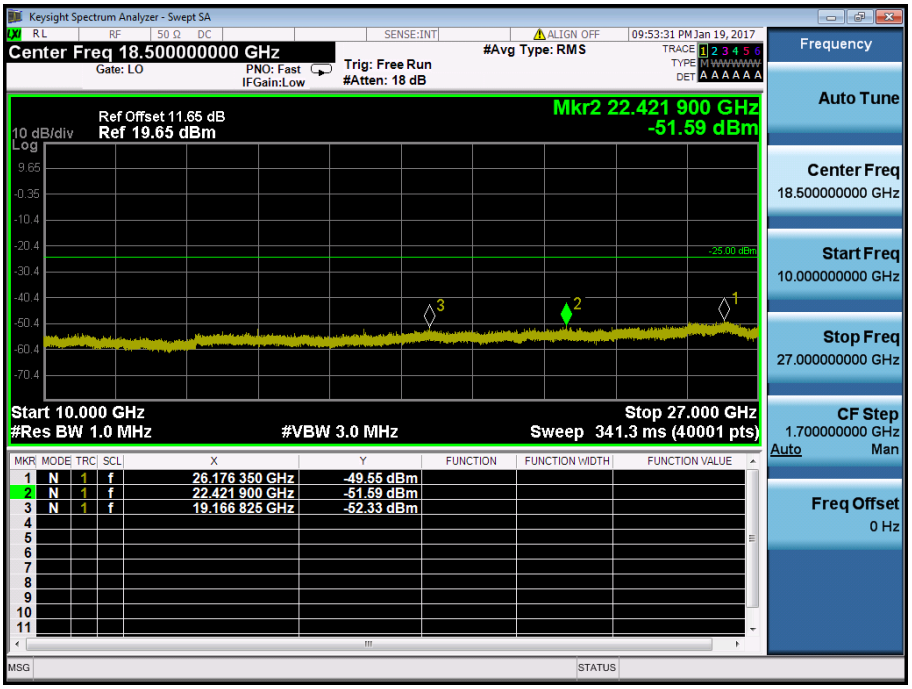
LTE Band 41 / 5MHz / 16QAM - RB Size/Offset (12/13)

8.3 SPURIOUS AND HARMONICS EMISSIONS(Conducted)

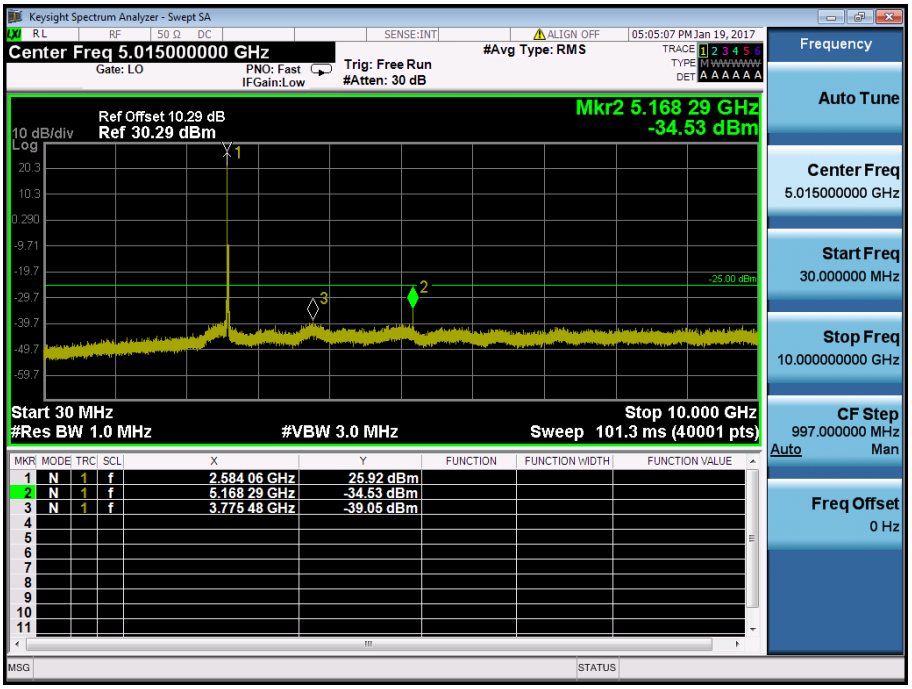
8.3.1 LTE Band 41



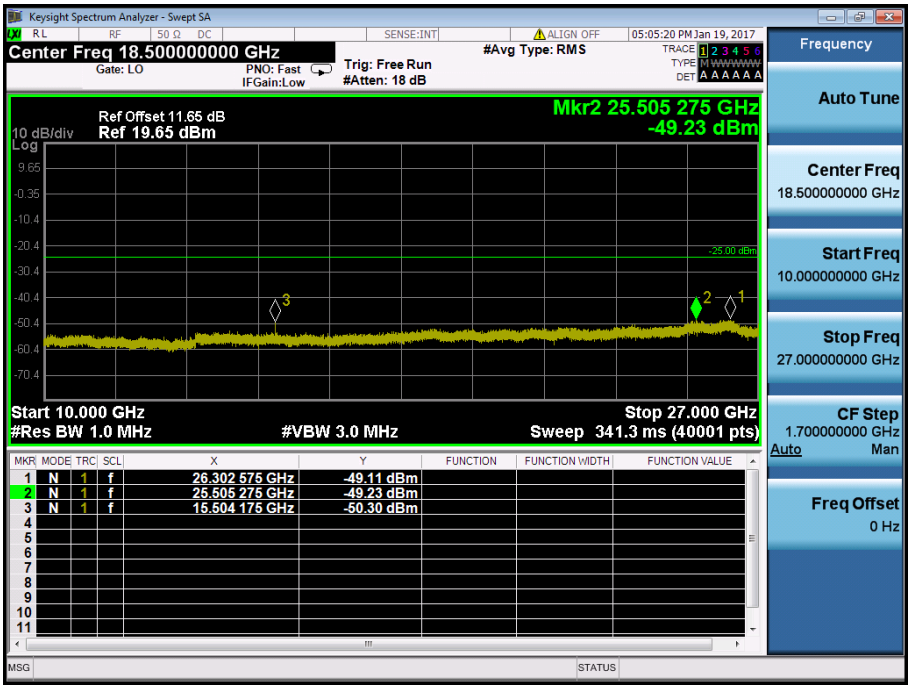
LTE Band 41 / 20MHz / 16QAM - RB Size/Offset (1/99) – Low Channel



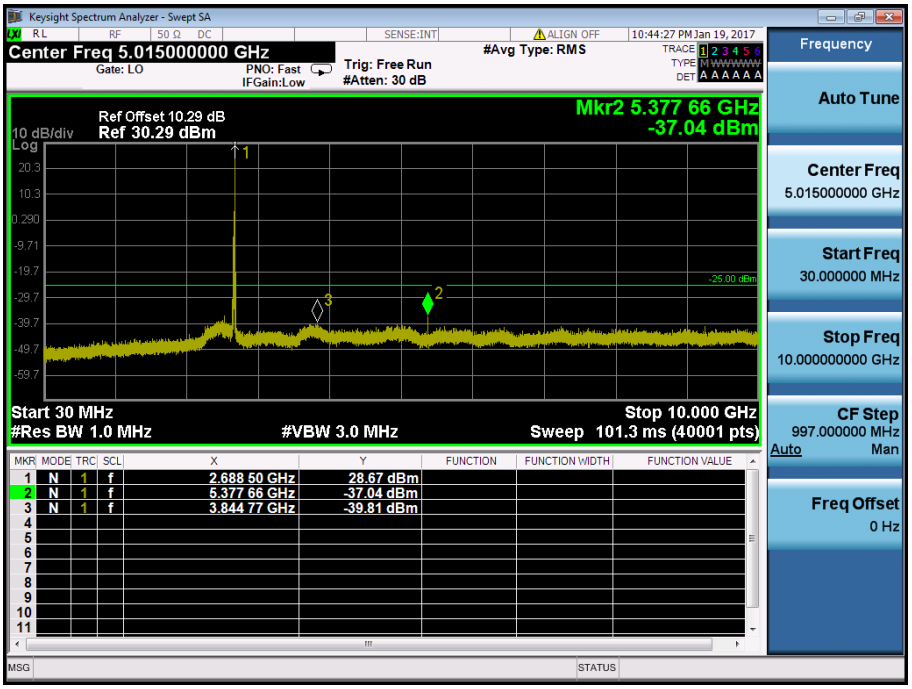
LTE Band 41 / 20MHz / 16QAM - RB Size/Offset (1/99) – Low Channel



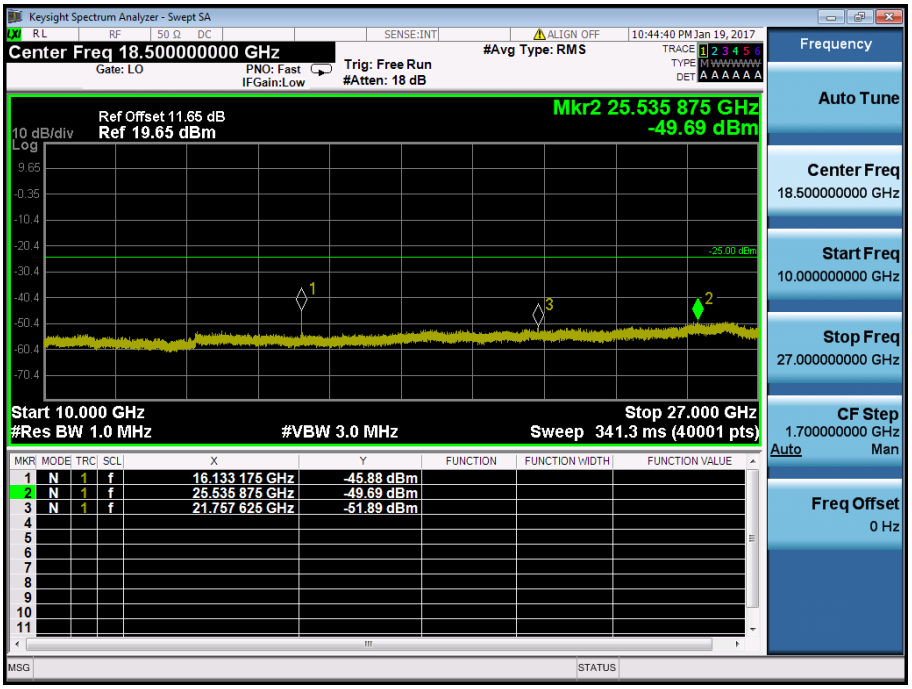
LTE Band 41 / 20MHz / QPSK - RB Size/Offset (1/0) – Mid Channel



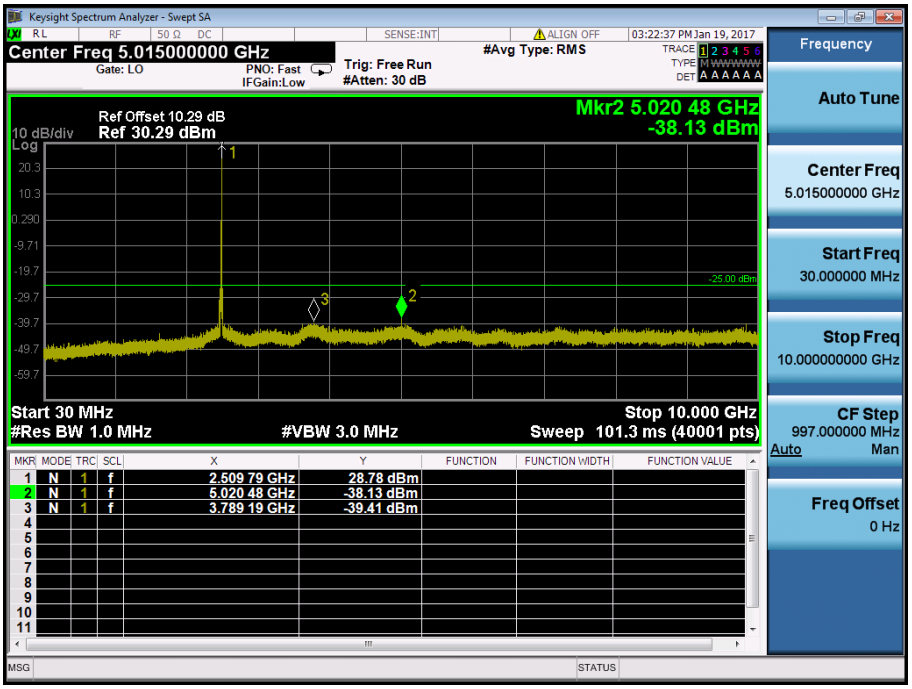
LTE Band 41 / 20MHz / QPSK - RB Size/Offset (1/0) – Mid Channel



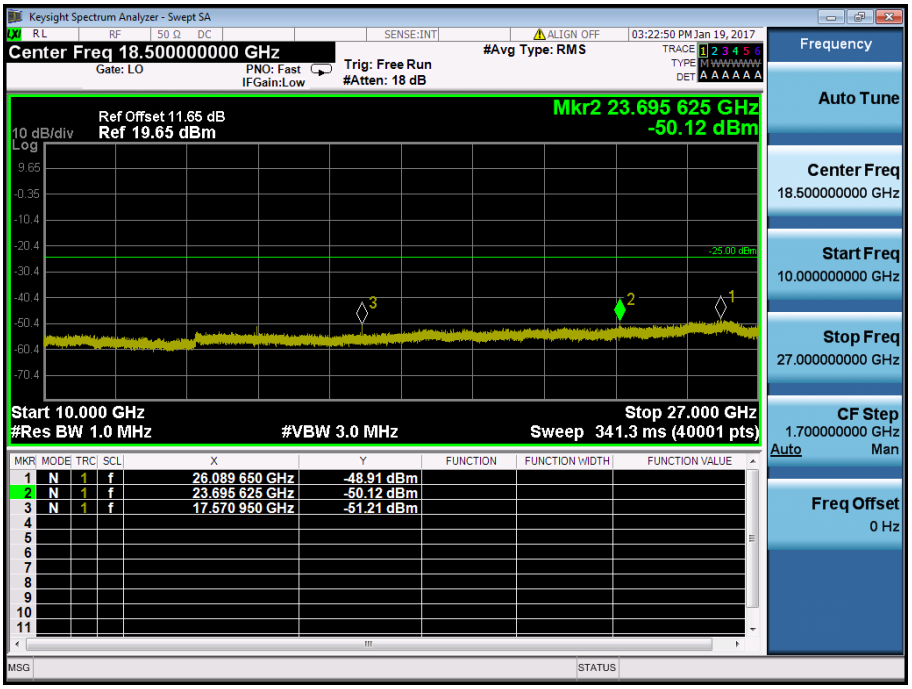
LTE Band 41 / 20MHz / 16QAM - RB Size/Offset (1/99) – High Channel



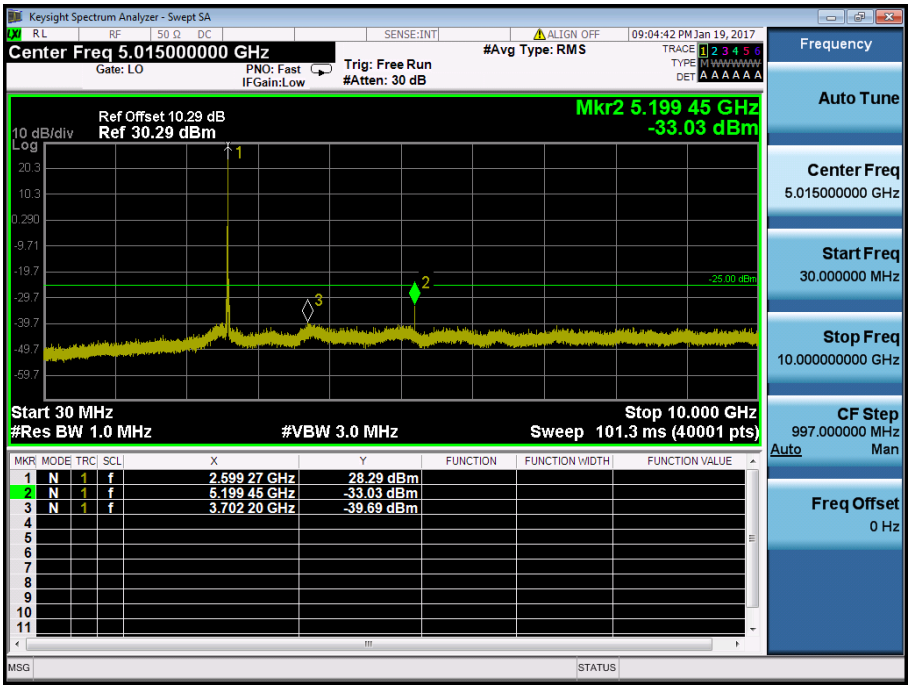
LTE Band 41 / 20MHz / 16QAM - RB Size/Offset (1/99) – High Channel



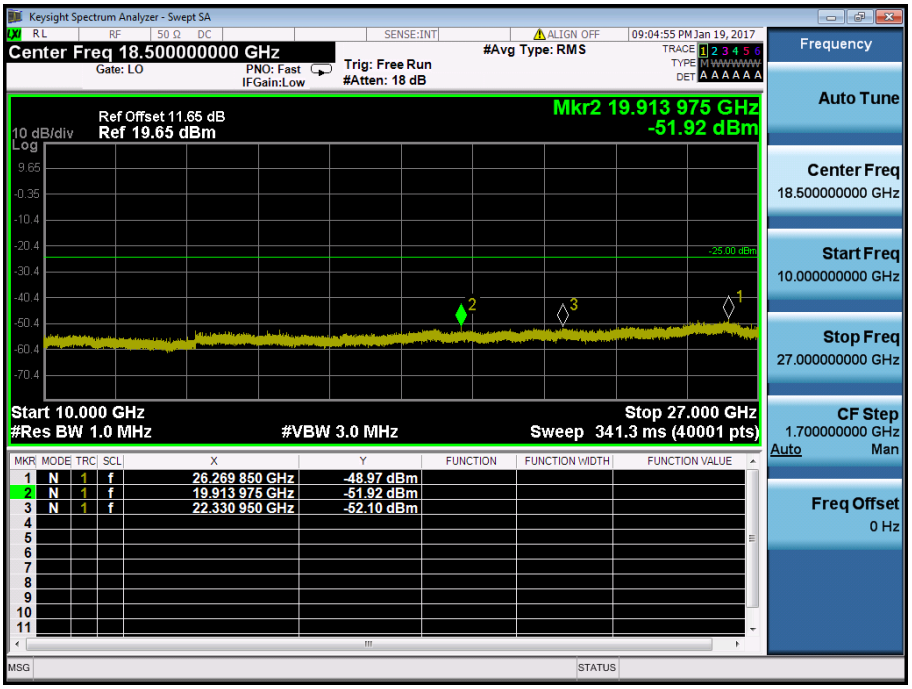
LTE Band 41 / 15MHz / QPSK - RB Size/Offset (1/74) – Low Channel



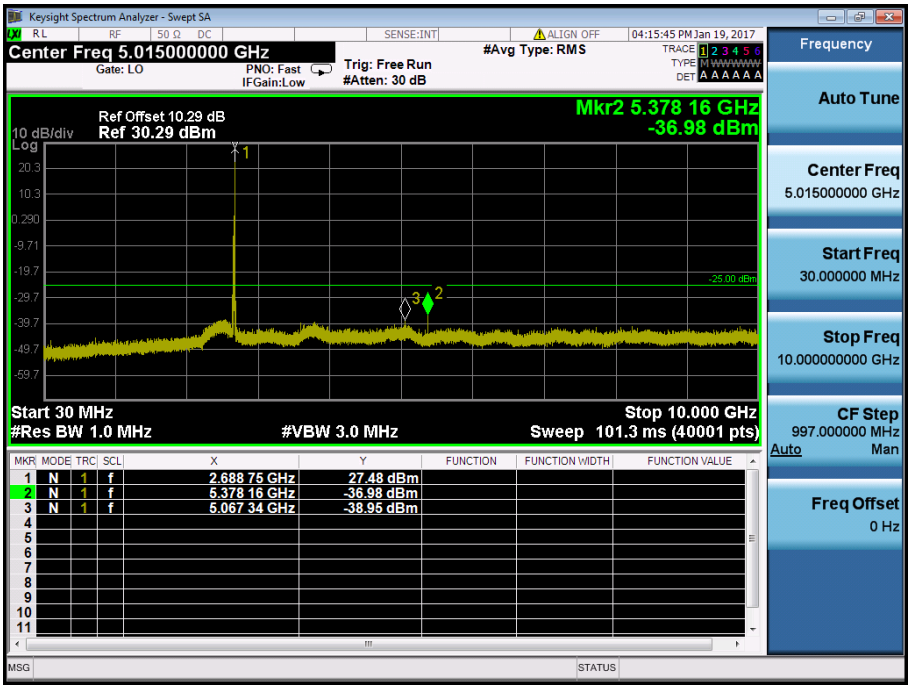
LTE Band 41 / 15MHz / QPSK - RB Size/Offset (1/74) – Low Channel



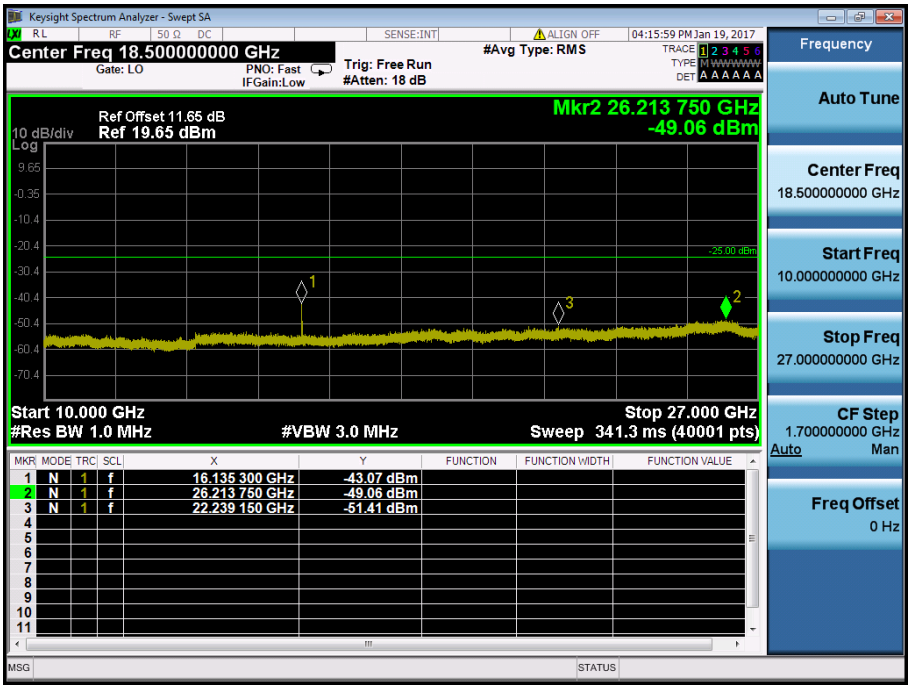
LTE Band 41 / 15MHz / 16QAM - RB Size/Offset (1/74) – Mid Channel



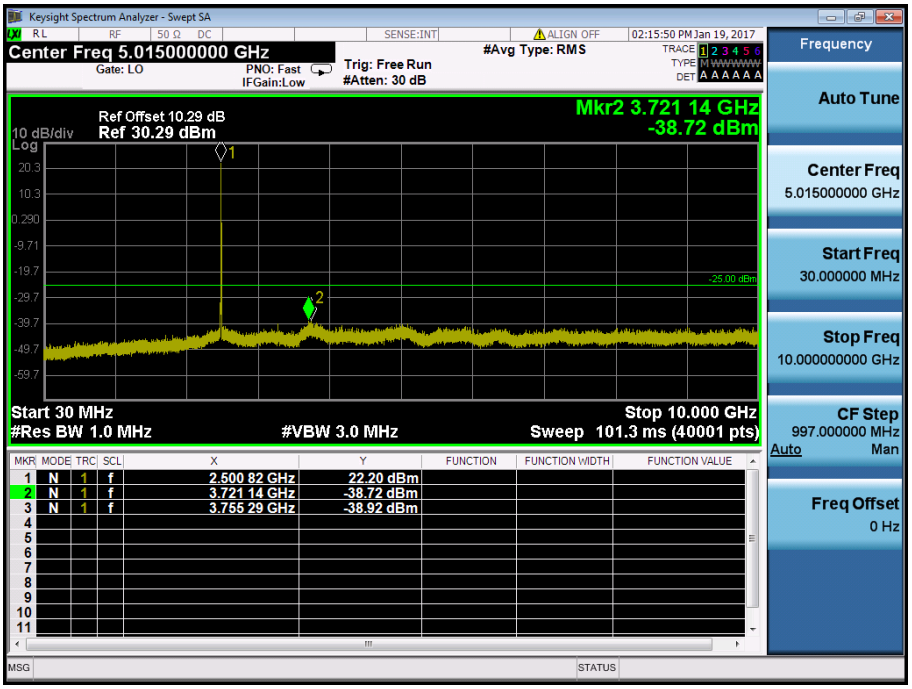
LTE Band 41 / 15MHz / 16QAM - RB Size/Offset (1/74) – Mid Channel



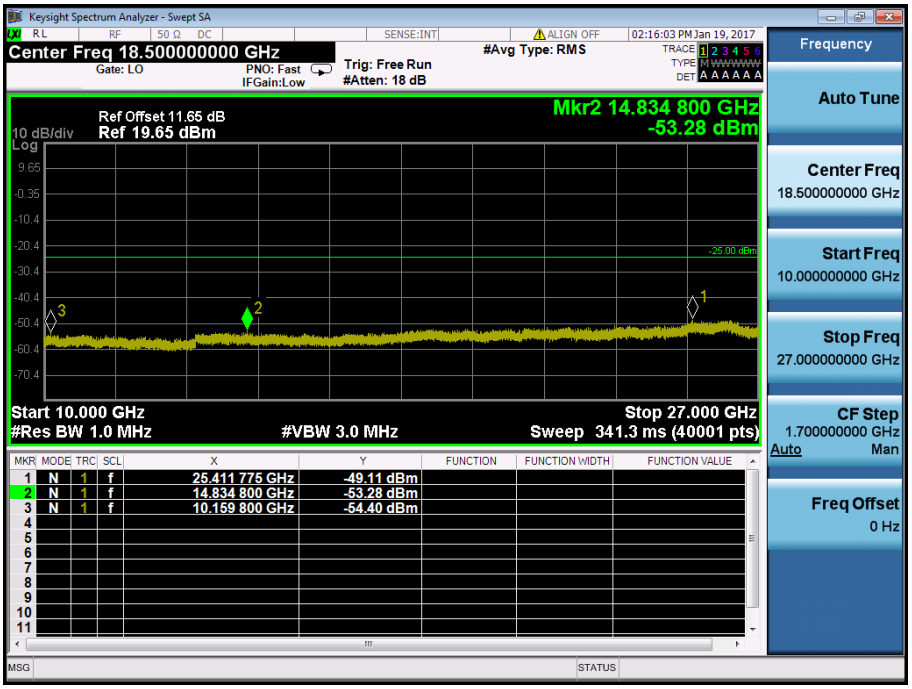
LTE Band 41 / 15MHz / QPSK - RB Size/Offset (1/74) – High Channel



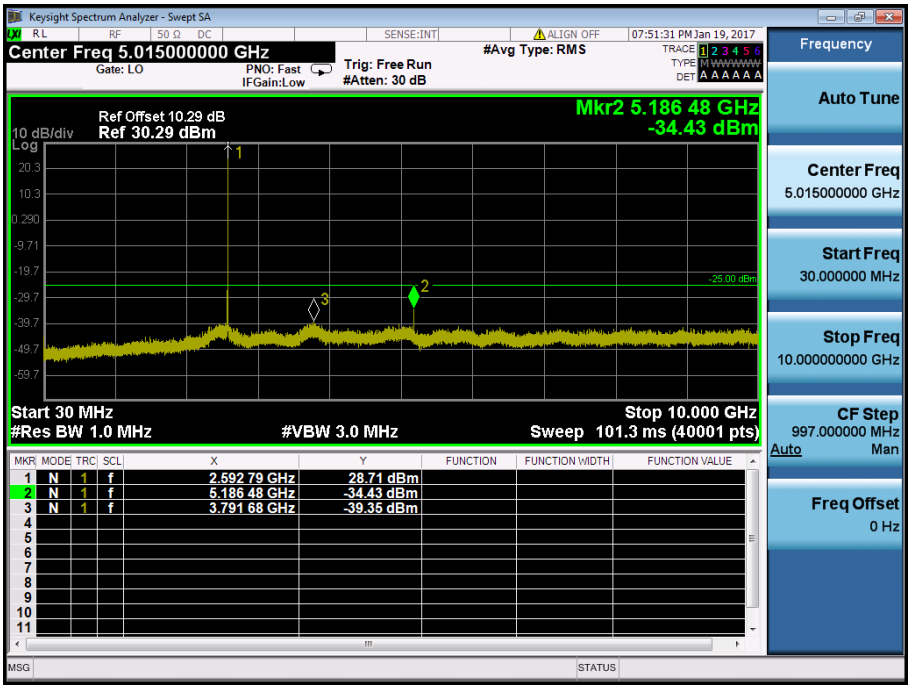
LTE Band 41 / 15MHz / QPSK - RB Size/Offset (1/74) – High Channel



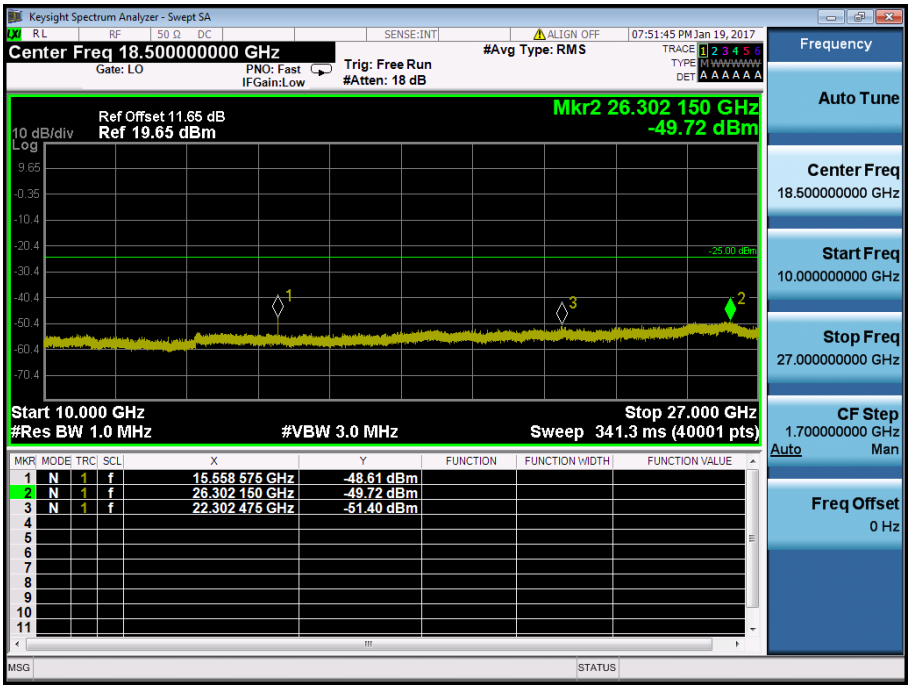
LTE Band 41 / 10MHz / QPSK - RB Size/Offset (25/12) – Low Channel



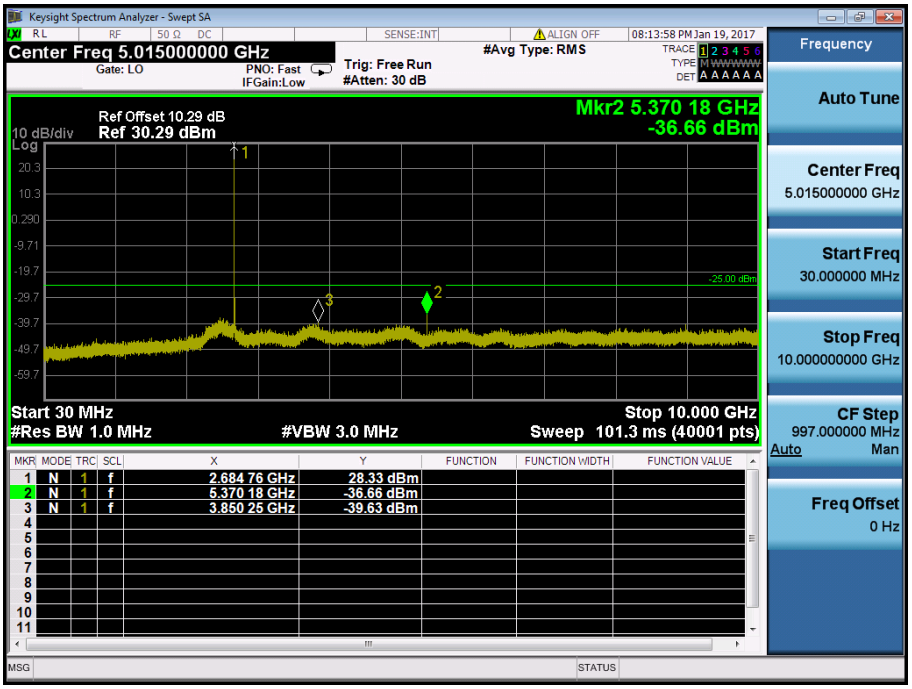
LTE Band 41 / 10MHz / QPSK - RB Size/Offset (25/12) – Low Channel



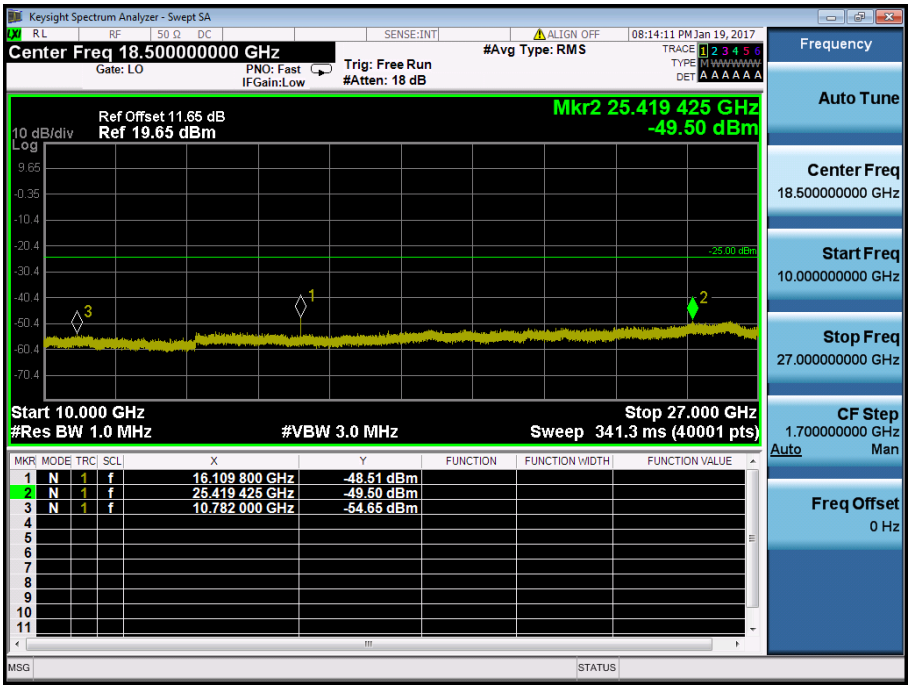
LTE Band 41 / 10MHz / 16QAM - RB Size/Offset (1/25) – Mid Channel



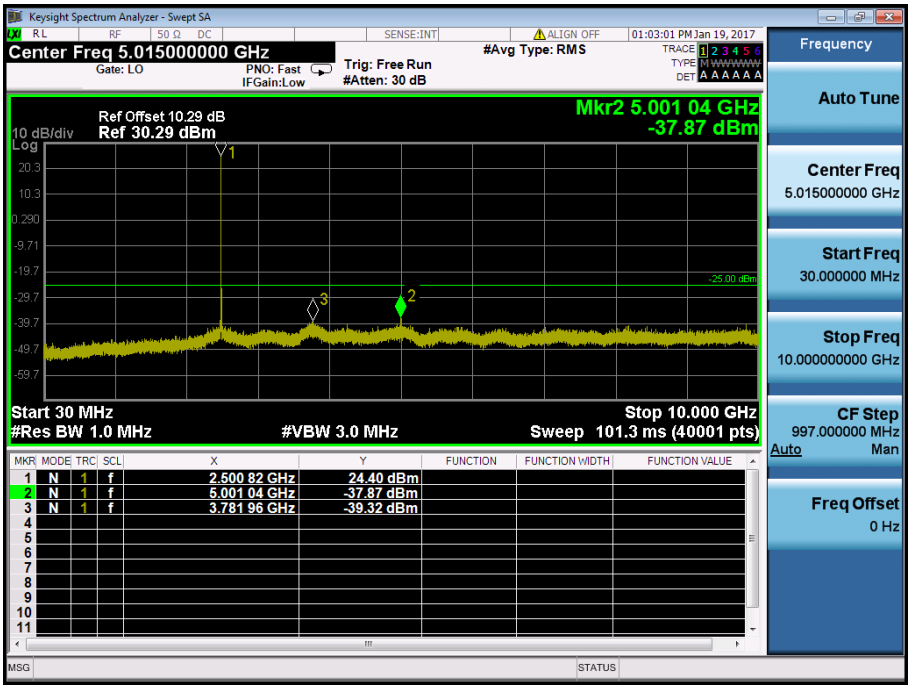
LTE Band 41 / 10MHz / 16QAM - RB Size/Offset (1/25) – Mid Channel



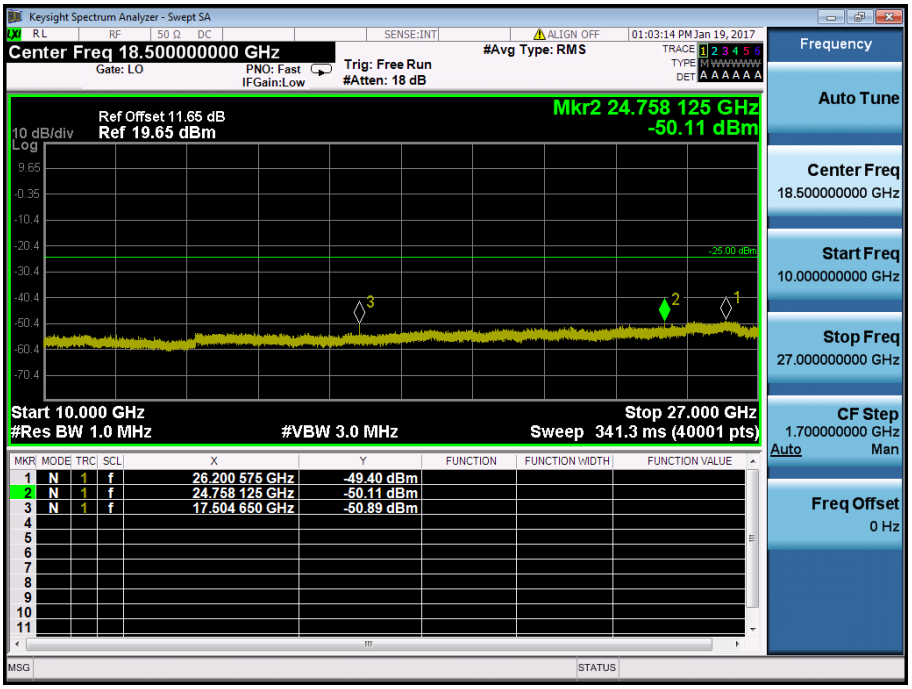
LTE Band 41 / 10MHz / 16QAM - RB Size/Offset (1/25) – High Channel



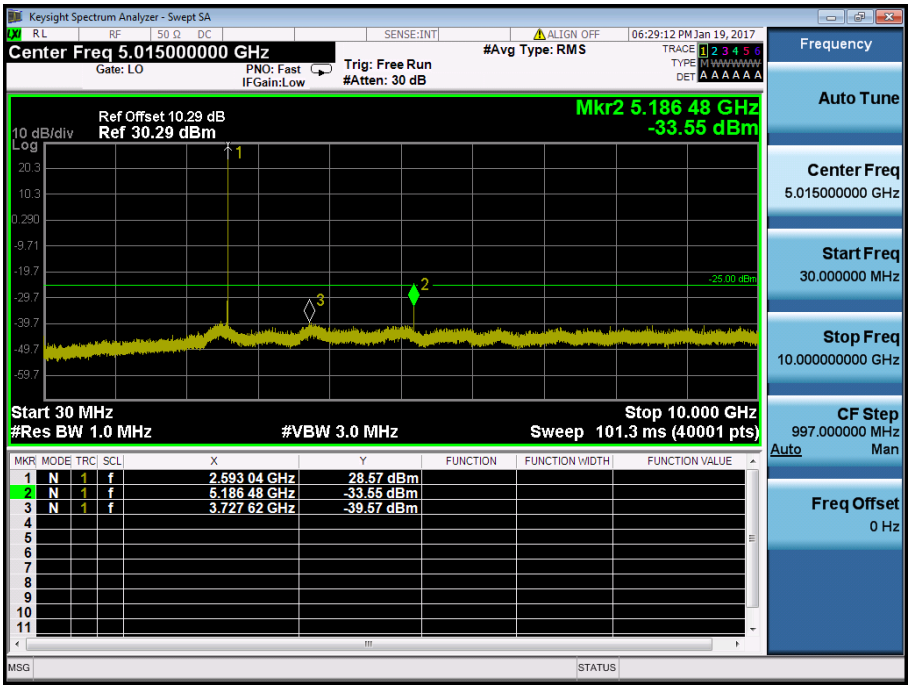
LTE Band 41 / 10MHz / 16QAM - RB Size/Offset (1/25) – High Channel



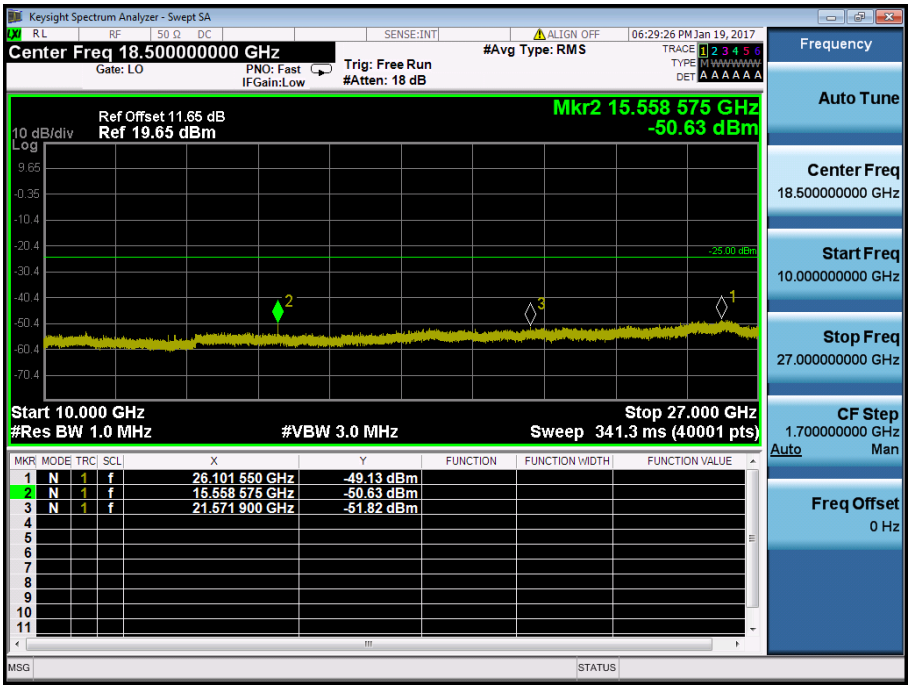
LTE Band 41 / 5MHz / QPSK - RB Size/Offset (1/24) – Low Channel



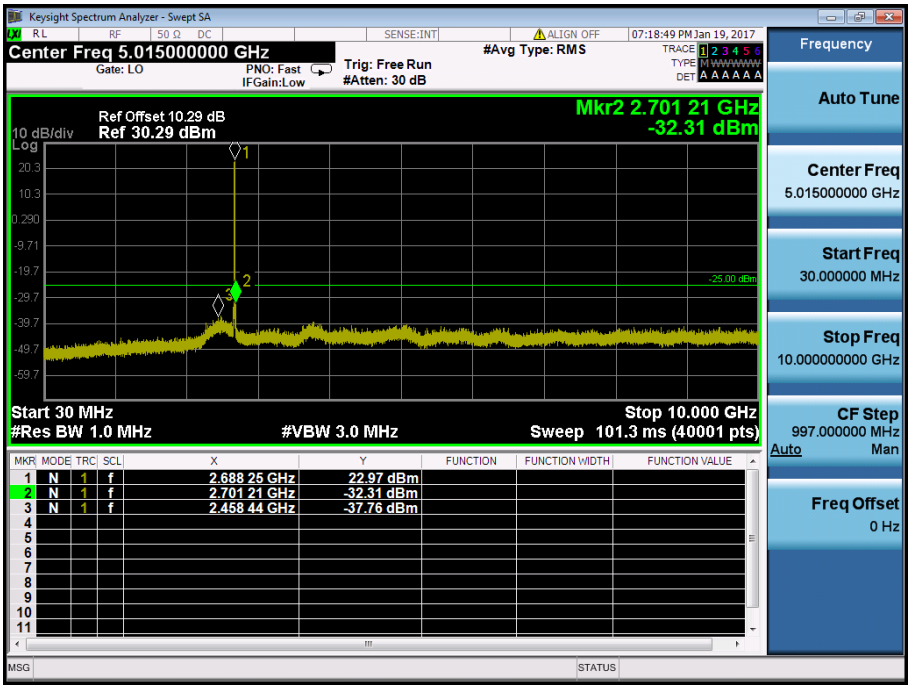
LTE Band 41 / 5MHz / QPSK - RB Size/Offset (1/24) – Low Channel



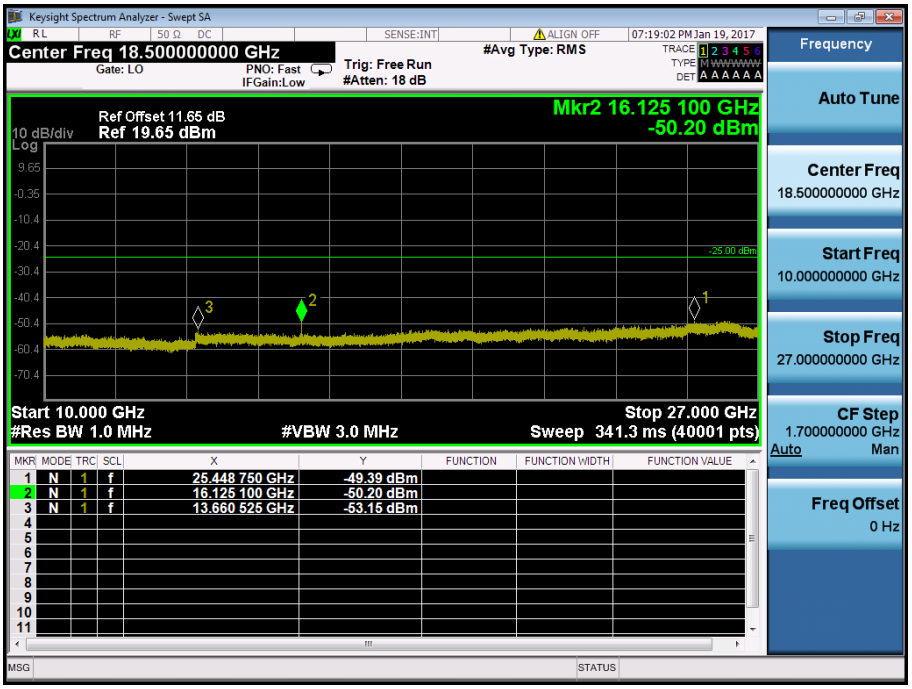
LTE Band 41 / 5MHz / 16QAM - RB Size/Offset (1/12) – Mid Channel



LTE Band 41 / 5MHz / 16QAM - RB Size/Offset (1/12) – Mid Channel



LTE Band 41 / 5MHz / 16QAM - RB Size/Offset (25/0) – High Channel



LTE Band 41 / 5MHz / 16QAM - RB Size/Offset (25/0) – High Channel