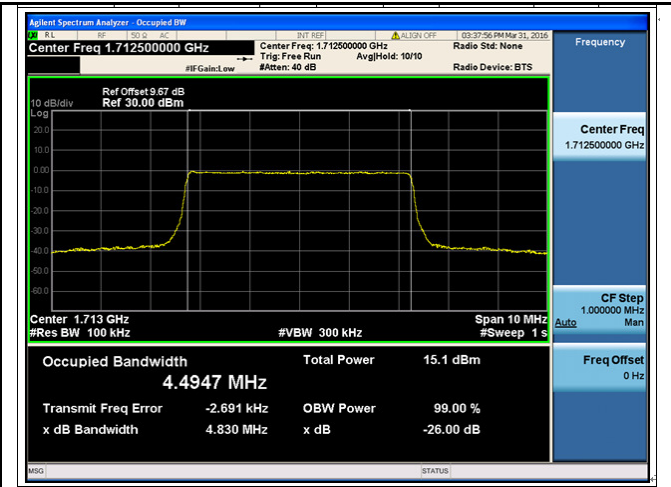
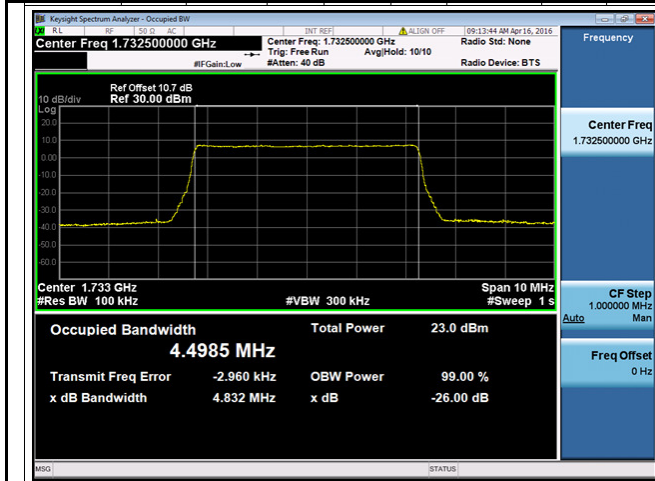


LTE band 4 - Low CH QPSK-5



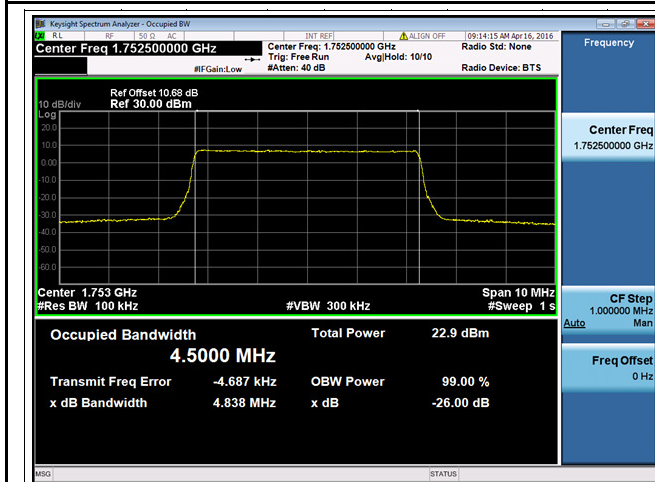
LTE band 4 - Low CH 16QAM-5



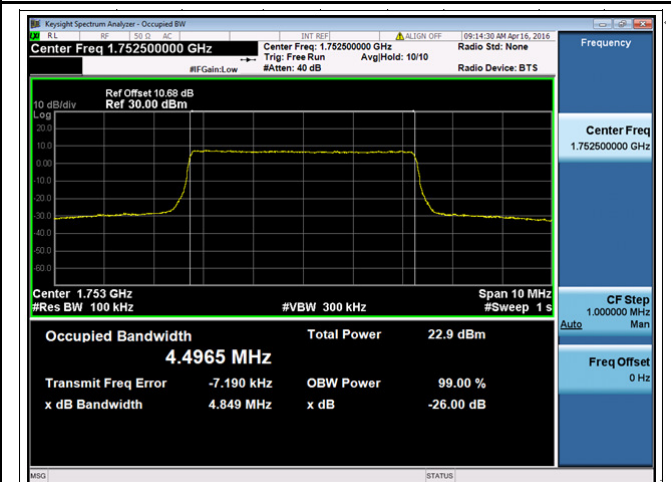
LTE band 4 - Middle CH QPSK-5



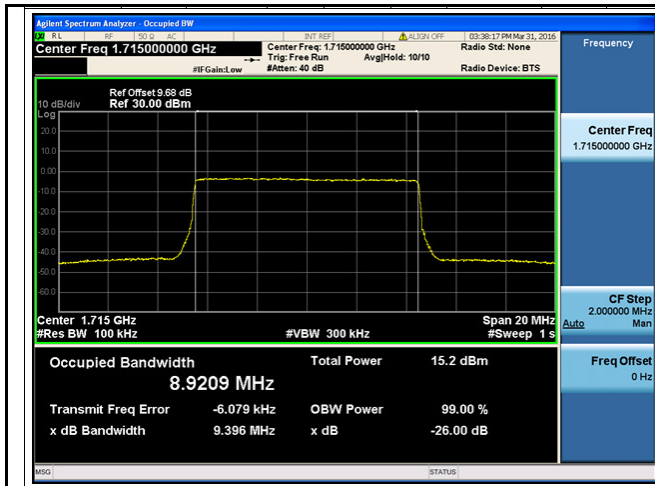
LTE band 4 - Middle CH 16QAM-5



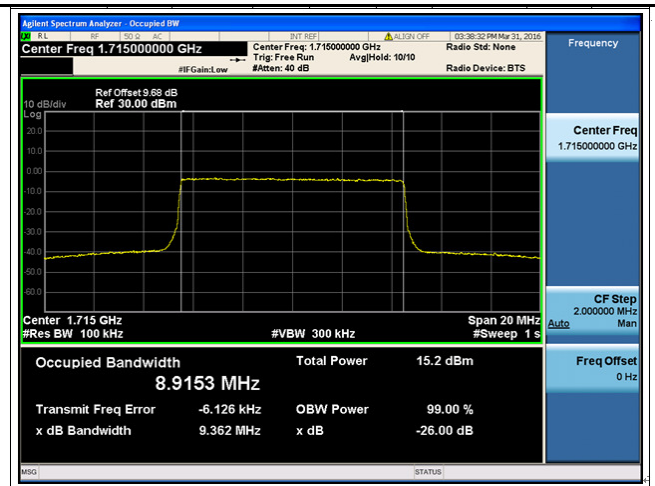
LTE band 4 - High CH QPSK-5



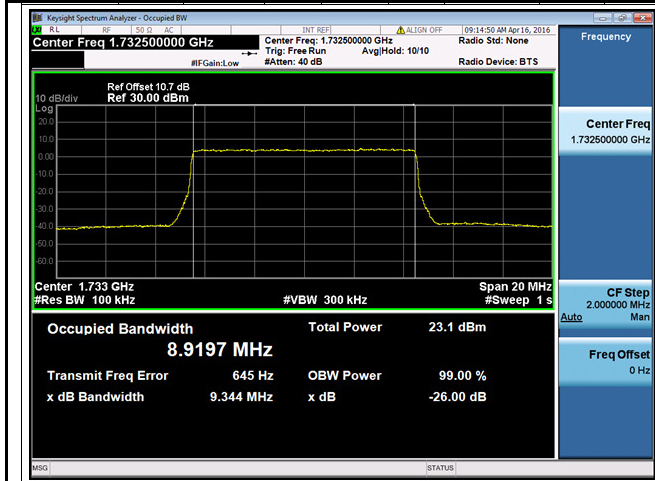
LTE band 4 - High CH 16QAM-5



LTE band 4 - Low CH QPSK-10



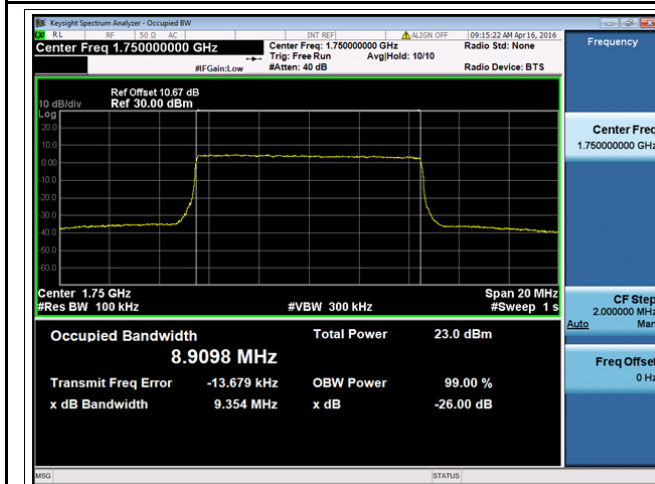
LTE band 4 - Low CH 16QAM-10



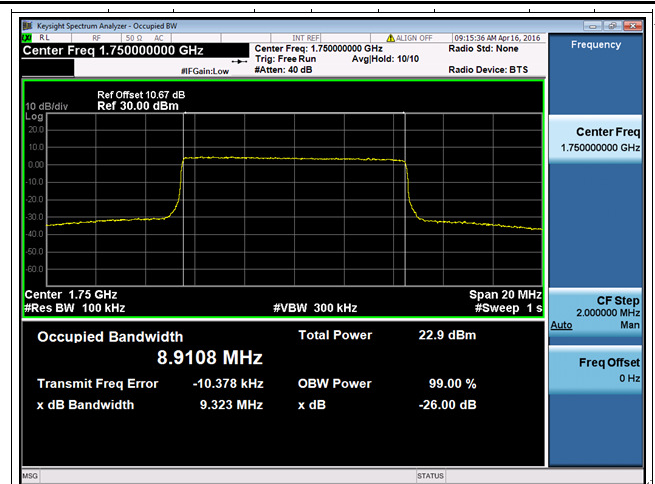
LTE band 4 - Middle CH QPSK-10



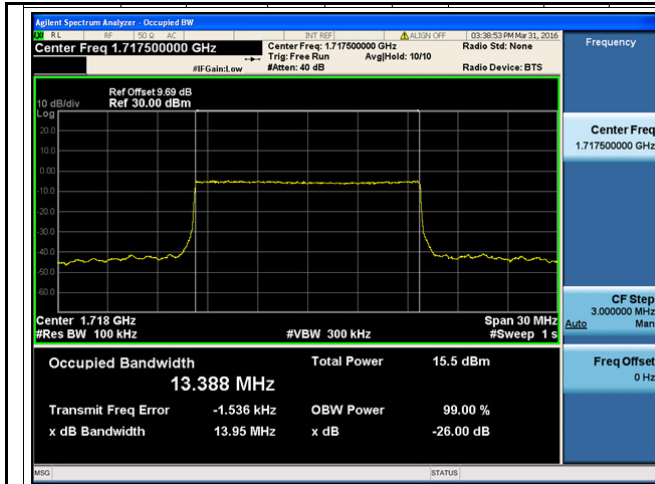
LTE band 4 - Middle CH 16QAM-10



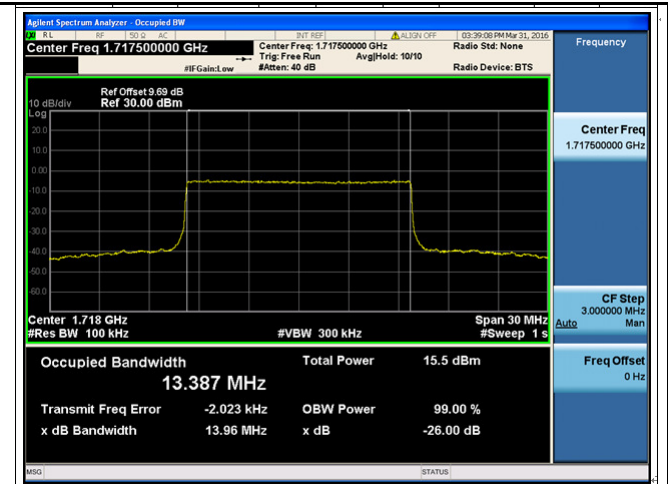
LTE band 4 - High CH QPSK-10



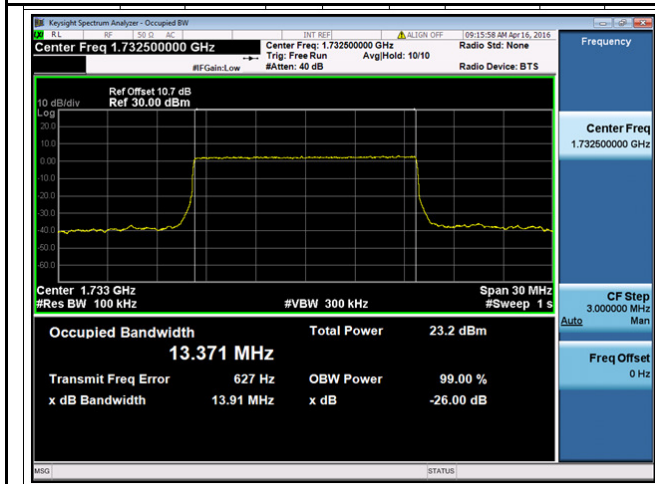
LTE band 4 - High CH 16QAM-10



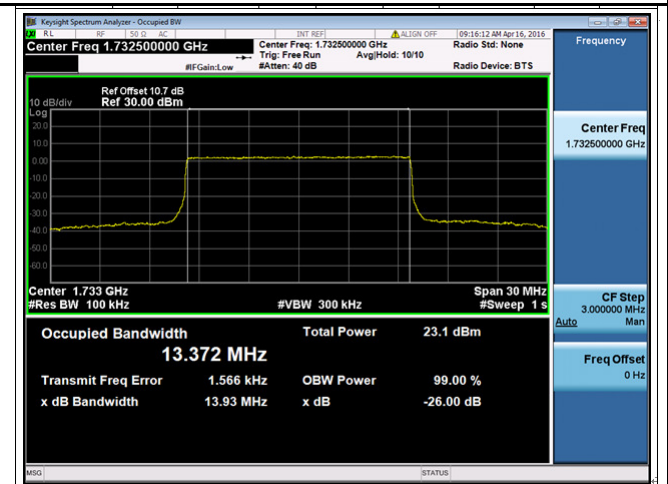
LTE band 4 - Low CH QPSK-15



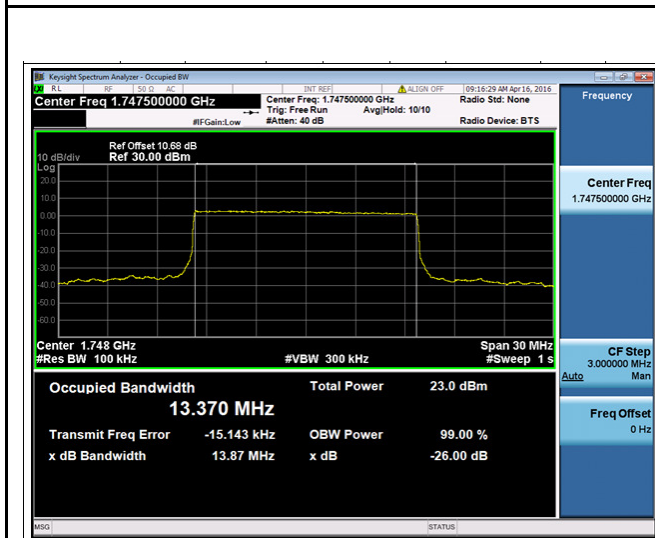
LTE band 4 - Low CH 16QAM-15



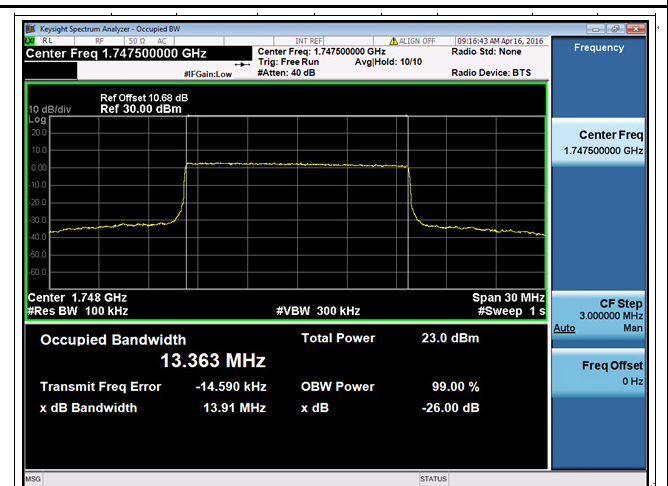
LTE band 4 - Middle CH QPSK-15



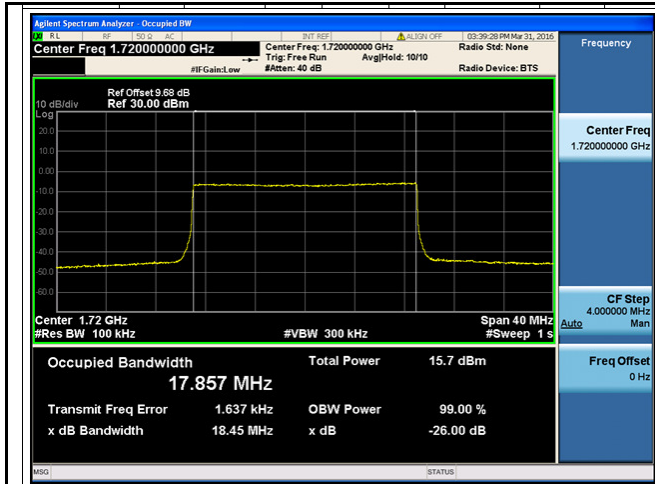
LTE band 4 - Middle CH 16QAM-15



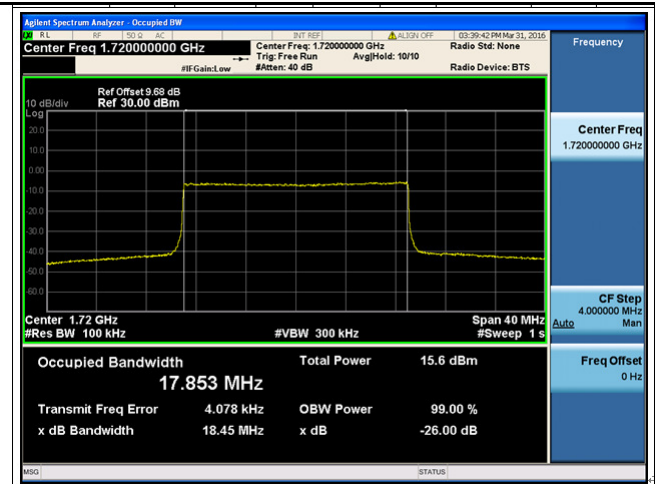
LTE band 4 - High CH QPSK-15



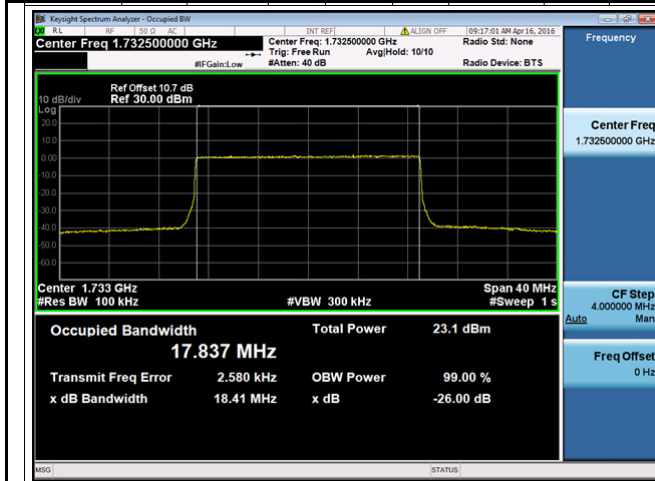
LTE band 4 - High CH 16QAM-15



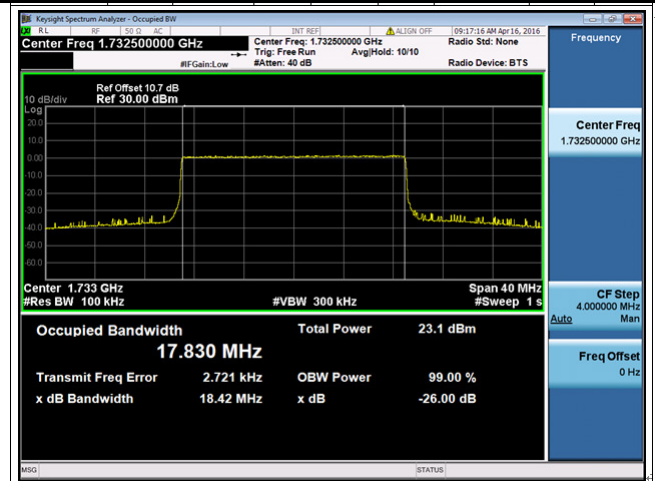
LTE band 4 - Low CH QPSK-20



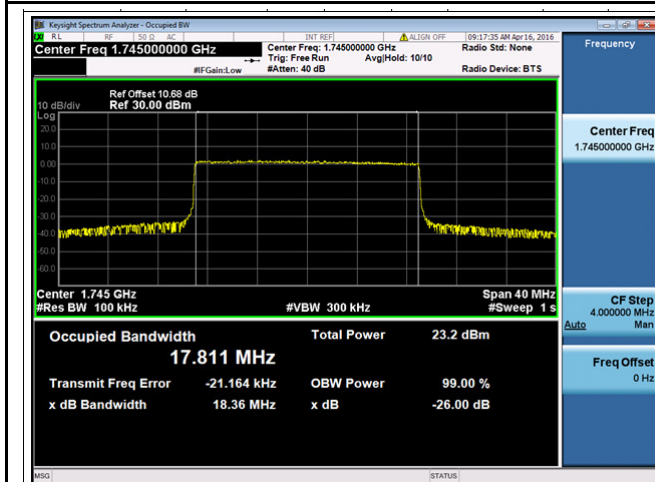
LTE band 4 - Low CH 16QAM-20



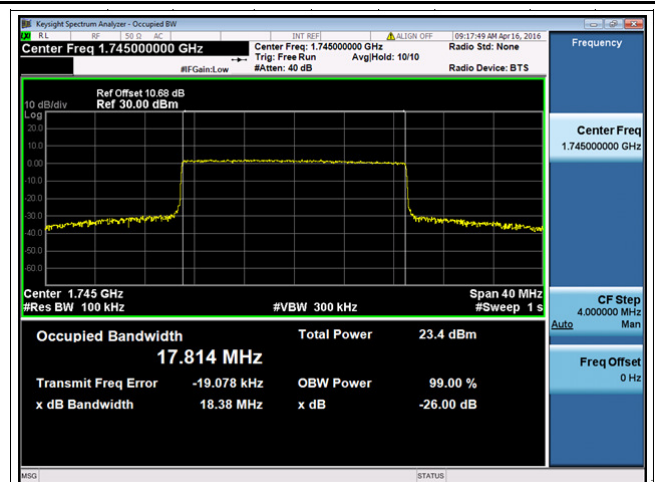
LTE band 4 - Middle CH QPSK-20



LTE band 4 - Middle CH 16QAM-20

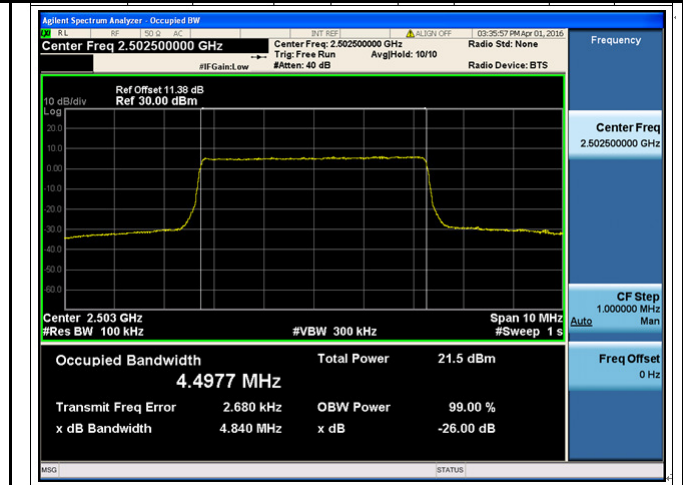
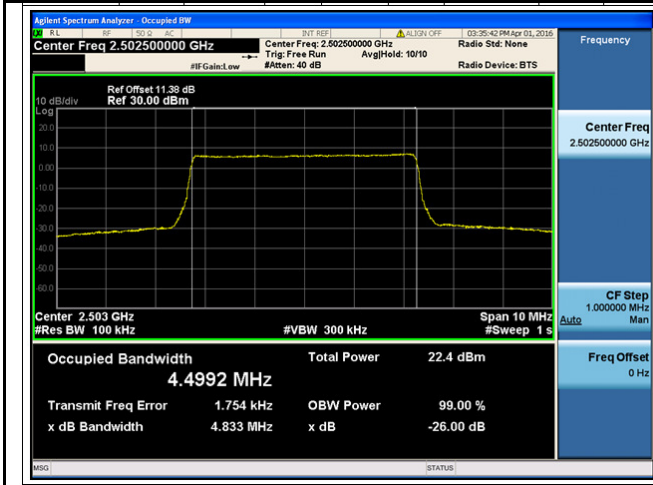


LTE band 4 - High CH QPSK-20



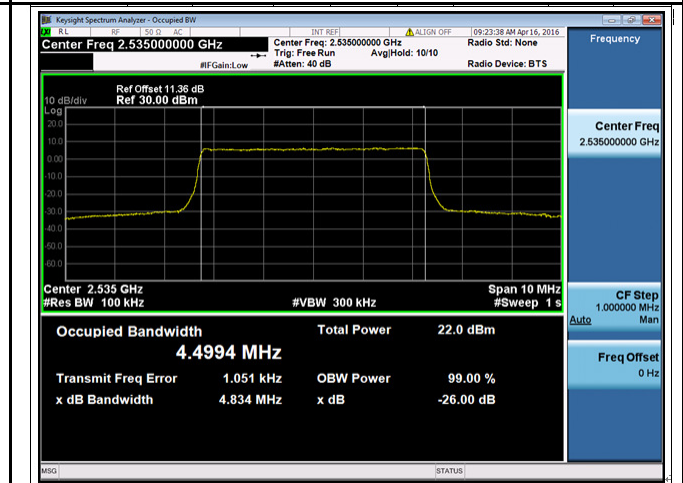
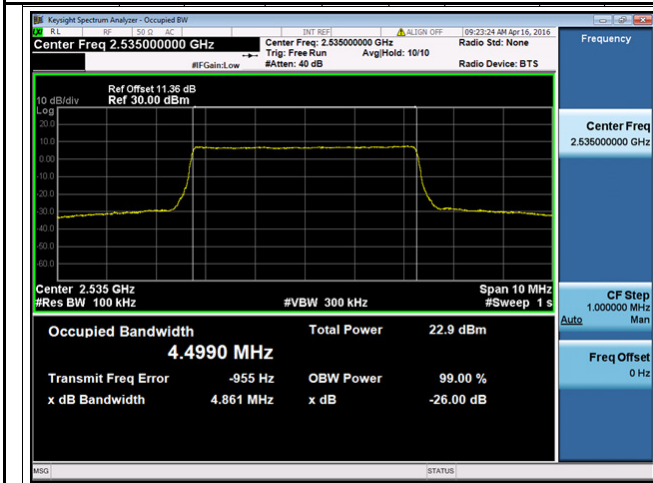
LTE band 4 - High CH 16QAM-20

**LTE Band 7 (Part 27)**



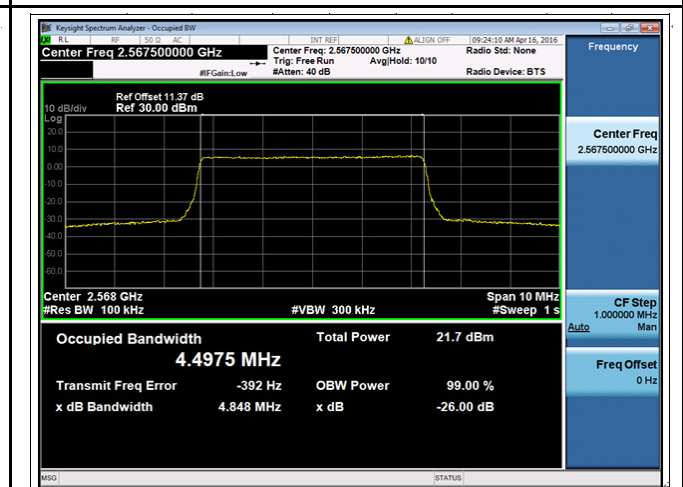
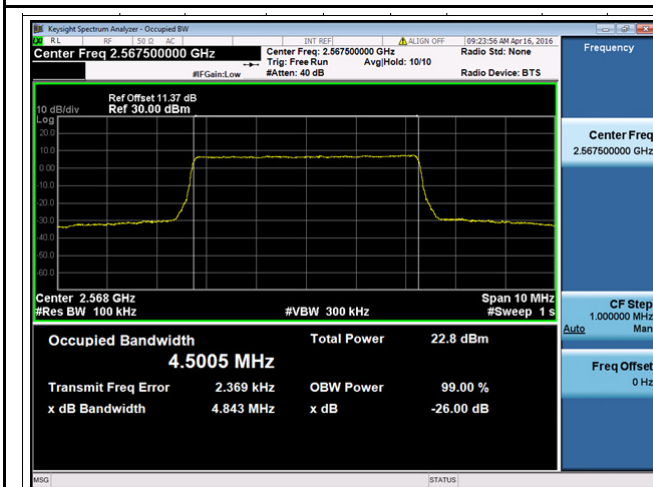
LTE band 7 - Low CH QPSK-5

LTE band 7 - Low CH 16QAM-5



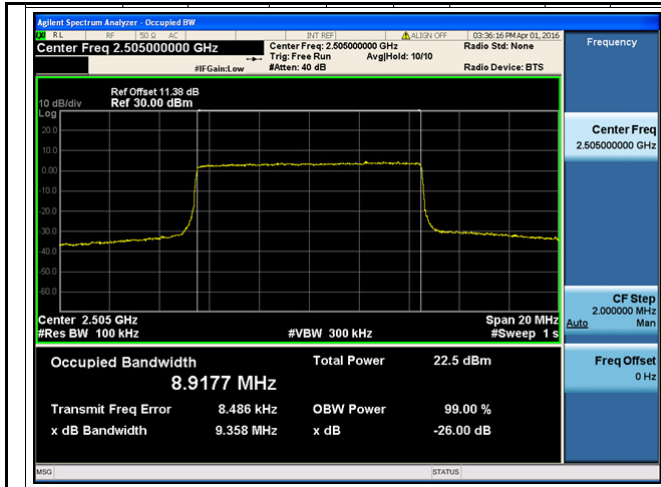
LTE band 7 - Middle CH QPSK-5

LTE band 7 - Middle CH 16QAM-5

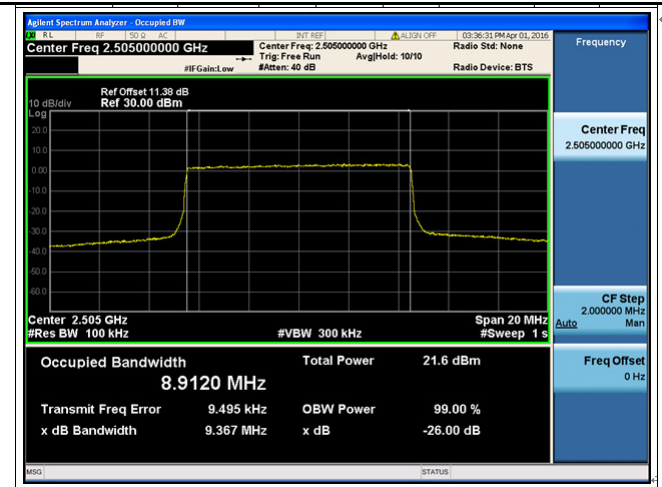


LTE band 7 - High CH QPSK-5

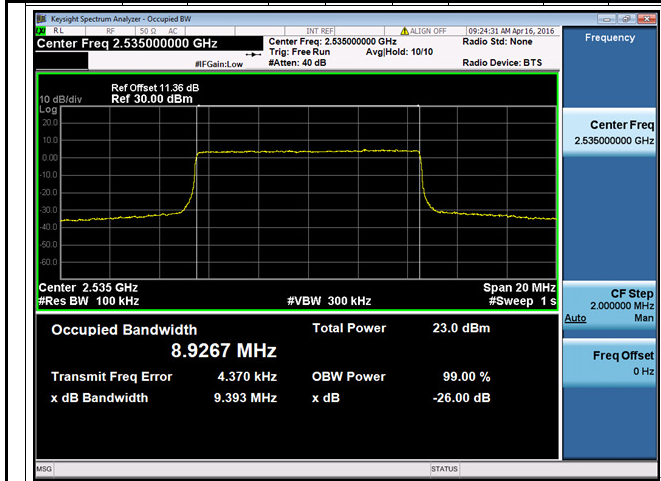
LTE band 7 - High CH 16QAM-5



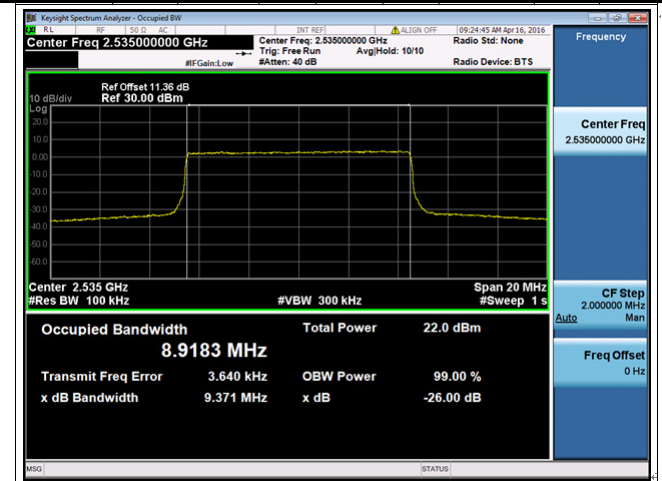
LTE band 7 - Low CH QPSK-10



LTE band 7 - Low CH 16QAM-10



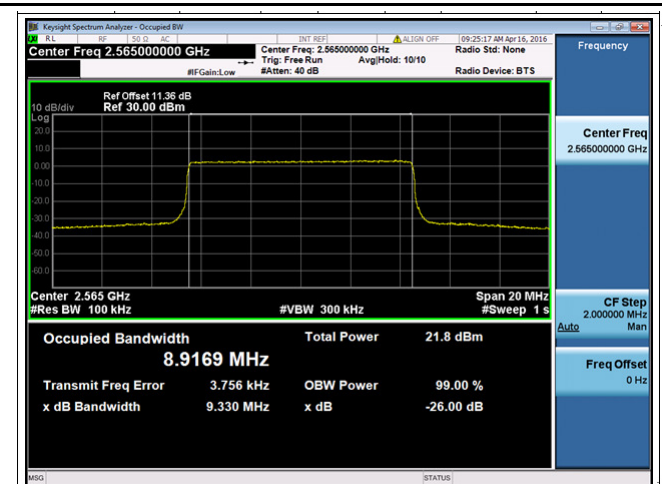
LTE band 7 - Middle CH QPSK-10



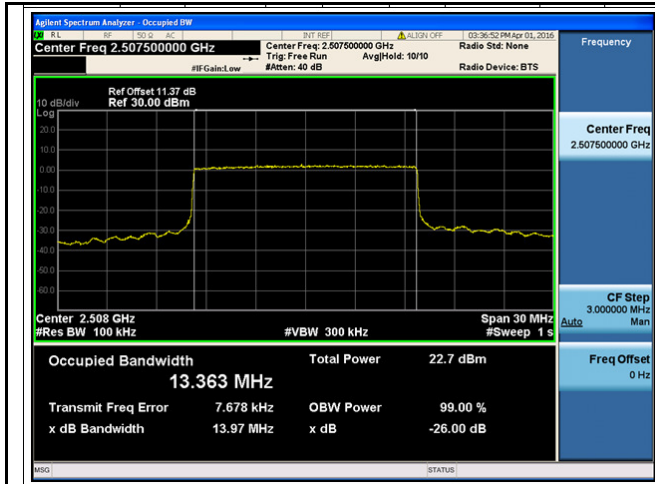
LTE band 7 - Middle CH 16QAM-10



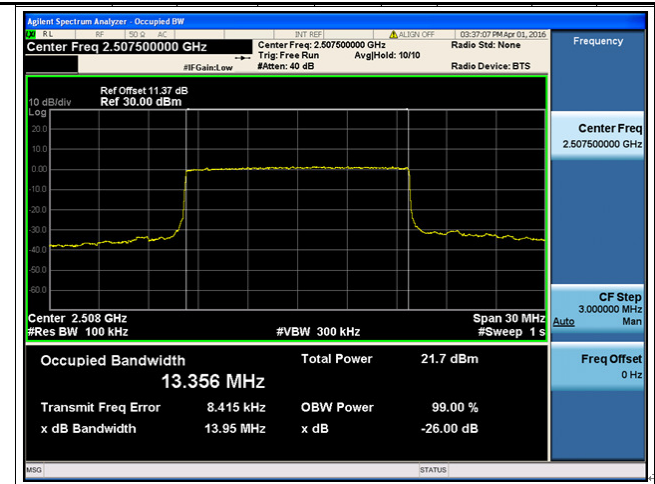
LTE band 7 - High CH QPSK-10



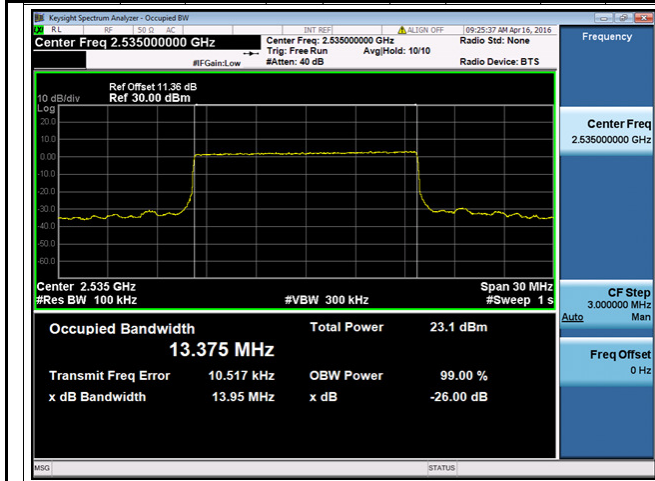
LTE band 7 - High CH 16QAM-10



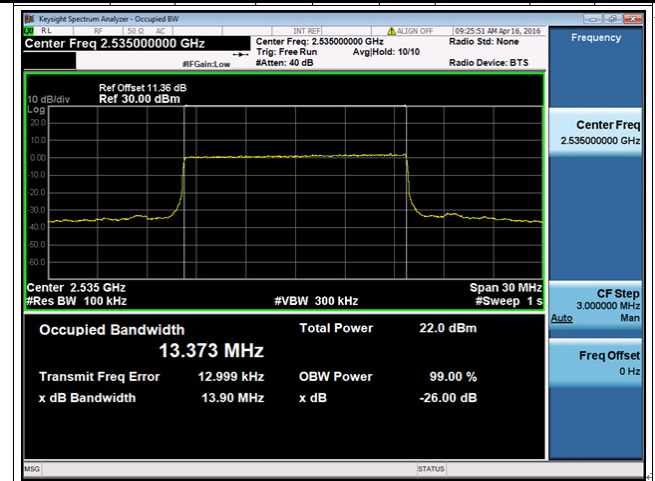
LTE band 7 - Low CH QPSK-15



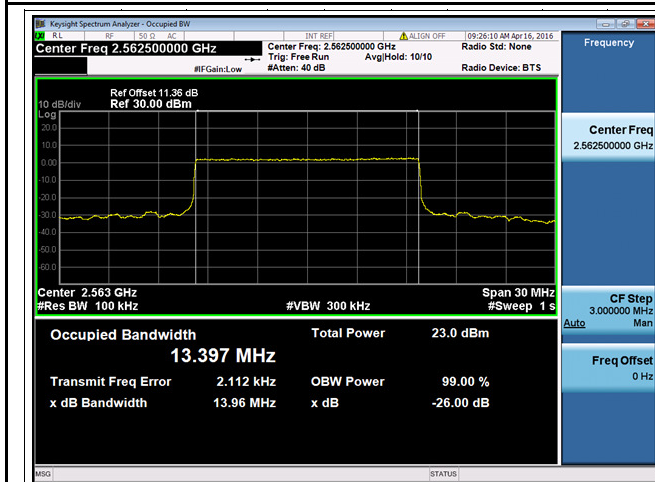
LTE band 7 - Low CH 16QAM-15



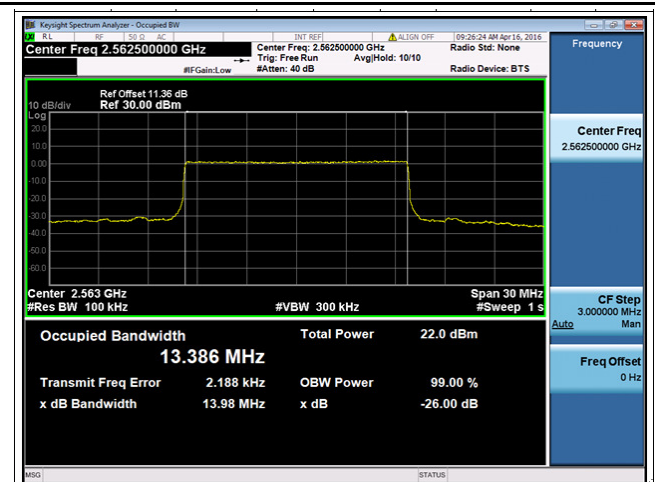
LTE band 7 - Middle CH QPSK-15



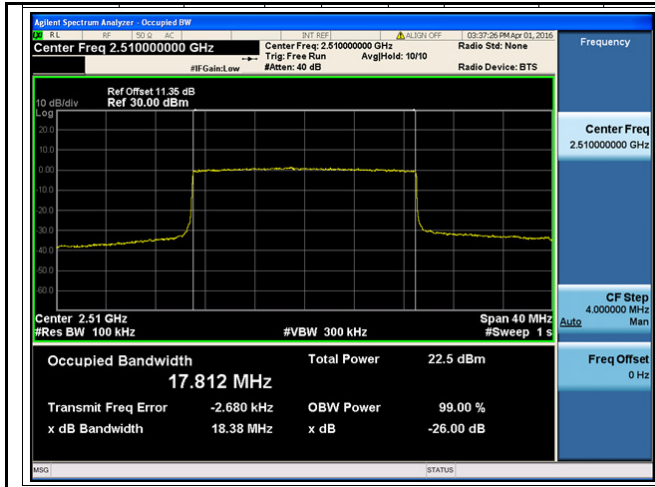
LTE band 7 - Middle CH 16QAM-15



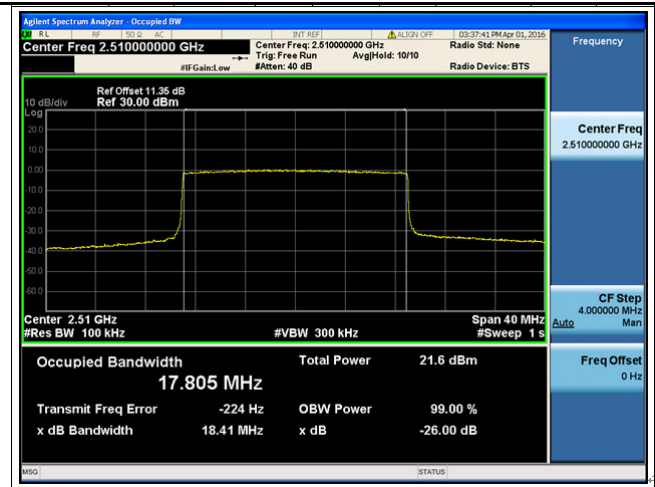
LTE band 7 - High CH QPSK-15



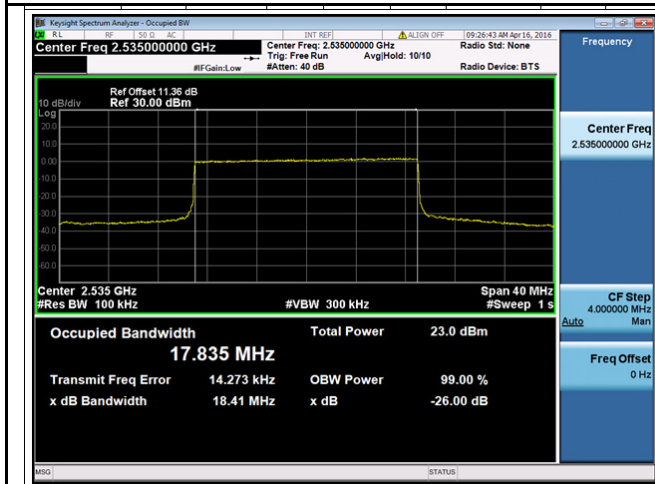
LTE band 7 - High CH 16QAM-15



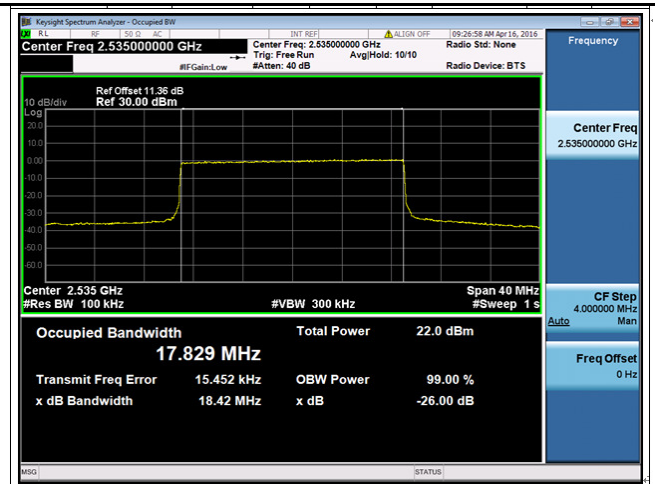
LTE band 7 - Low CH QPSK-20



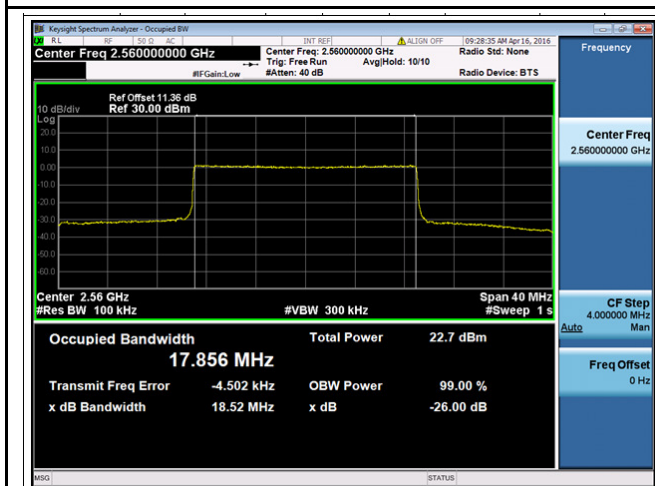
LTE band 7 - Low CH 16QAM-20



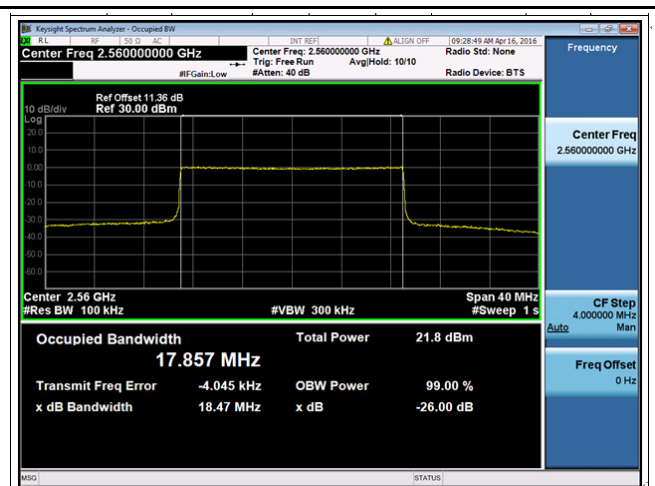
LTE band 7 - Middle CH QPSK-20



LTE band 7 - Middle CH 16QAM-20



LTE band 7 - High CH QPSK-20



LTE band 7 - High CH 16QAM-20



## 10 SPURIOUS EMISSIONS AT ANTENNA TERMINALS

Test Requirement:	FCC Part 2.1051, 24.238(a), 27.53(h)
Test Method:	TIA/EIA-603-D:2010
Test Mode:	Transmitting

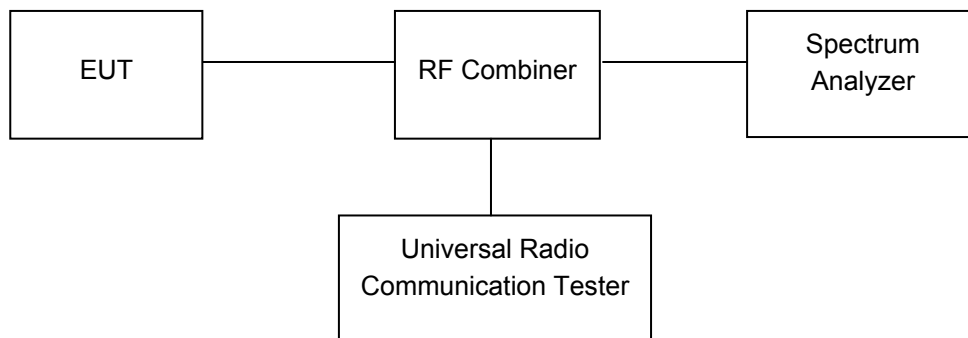
### 10.1 EUT Operation

Operating Environment :

Temperature:	23.5 °C
Humidity:	52.1 % RH
Atmospheric Pressure:	101.3kPa

### 10.2 Test Procedure

The RF output of the transceiver was connected to a spectrum analyzer and simulator through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz. Sufficient scans were taken to show any out of band emissions up to 10th harmonics.



### 10.3 Test Result

PASS

#### LTE Band

Please refer to the Appendix Band 2/4/7 LTE Transmitter Spurious Emissions.

## 11 SPURIOUS RADIATED EMISSIONS

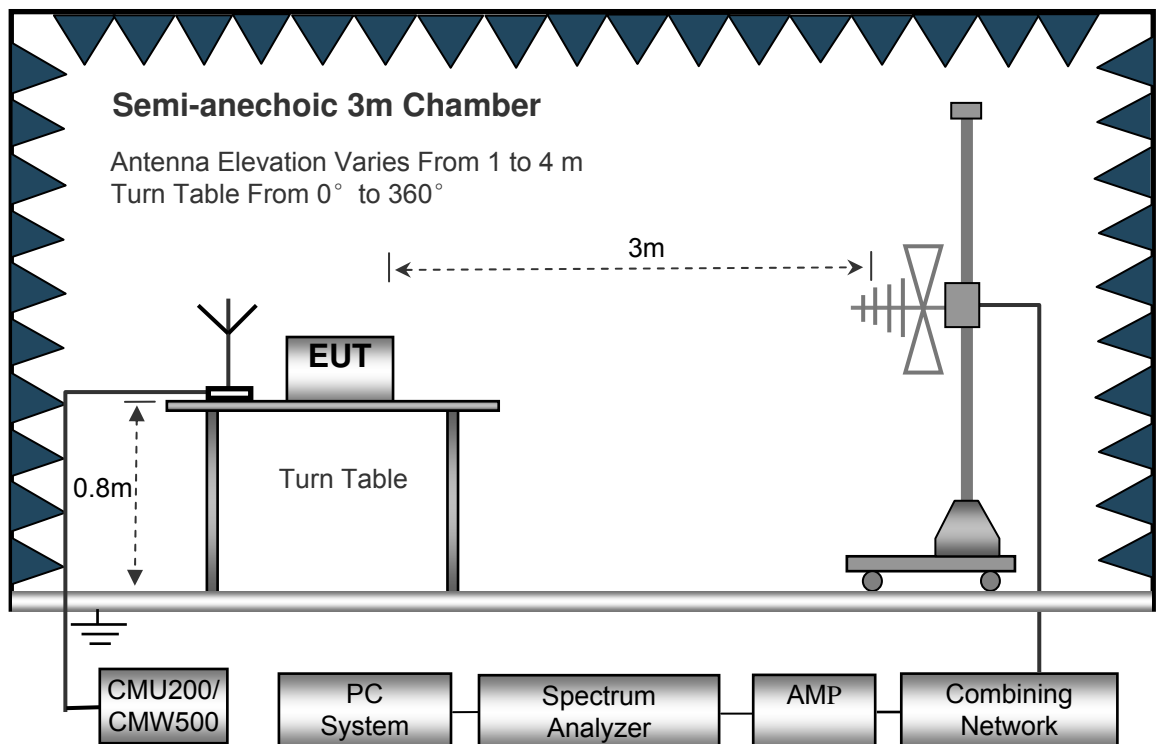
Test Requirement:	FCC Part 2.1053,24.238, 27.53(h)
Test Method:	TIA/EIA-603-D:2010
Test Mode:	Transmitting

### 11.1 EUT Operation

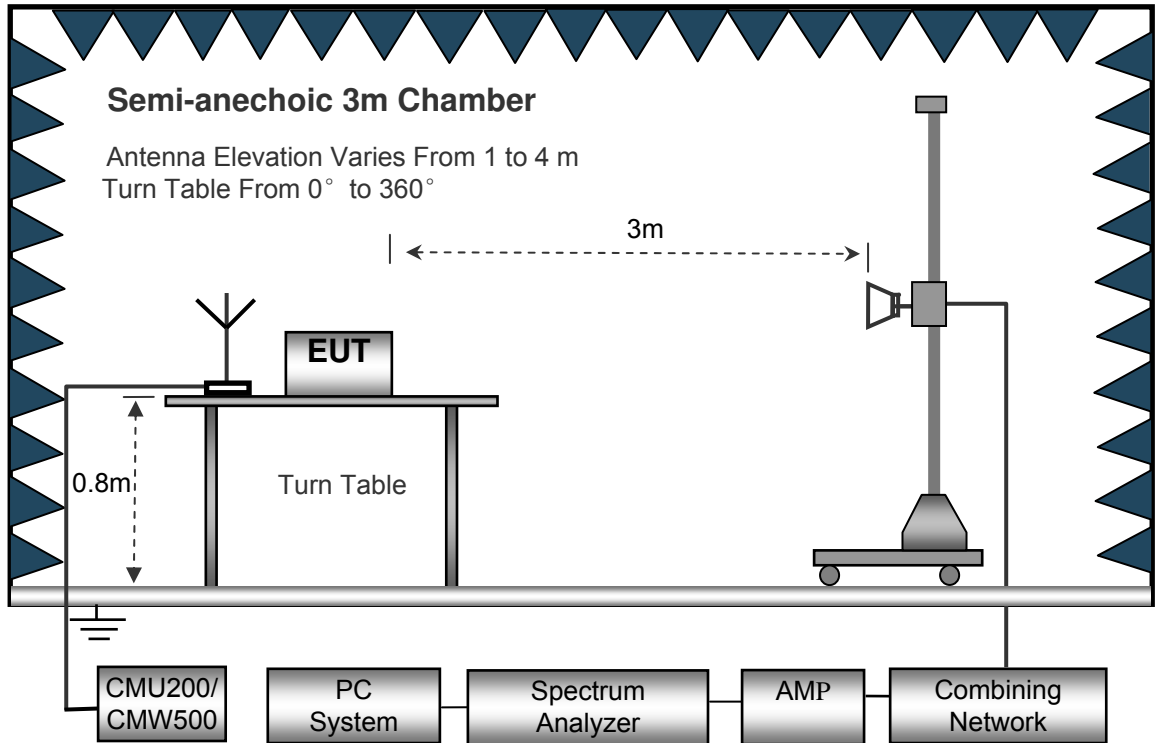
Operating Environment :	
Temperature:	23.5 °C
Humidity:	52.1 % RH
Atmospheric Pressure:	101.2kPa

### 11.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site. The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



### 11.3 Spectrum Analyzer Setup

30MHz ~ 1GHz

Sweep Speed ..... Auto  
 Detector ..... PK  
 Resolution Bandwidth..... 100kHz  
 Video Bandwidth..... 300kHz

Above 1GHz

Sweep Speed ..... Auto  
 Detector ..... PK  
 Resolution Bandwidth..... 1MHz  
 Video Bandwidth..... 3MHz  
 Detector ..... Ave.  
 Resolution Bandwidth..... 1MHz  
 Video Bandwidth..... 10Hz

## 11.4 Test Procedure

1. The EUT is placed on a turntable, which is 0.8m above ground plane.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from 30MHz up to the tenth harmonic of the highest fundamental frequency.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.
7. Remove the EUT and replace it with substitution antenna. A signal generator was connected to the substitution antenna by a non-radiating cable. The absolute levels of the spurious emissions were measured by the substitution.  
Spurious emissions in dB =  $10 \lg(\text{TXpwr in Watts}/0.001)$  – the absolute level  
Spurious attenuation limit in dB =  $43 + 10 \text{Log}_{10}(\text{power out in Watts})$
8. Repeat above procedures until the measurements for all frequencies are completed.

## 11.5 Summary of Test Results

Remark: Test performed from 30MHz to 10<sup>th</sup> harmonics with low/middle/high channels, only the worst data were recorded.

### LTE Band 2 (Part 24E)

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 2 Channel 18607										
200.56	47.20	327	2.2	H	-63.31	0.15	0.00	-63.46	-13.00	-50.46
201.33	37.38	329	1.1	V	-70.21	0.15	0.00	-70.36	-13.00	-57.36
3701.40	65.95	261	1.4	H	-45.59	2.37	12.50	-35.46	-13.00	-22.46
3701.40	59.98	76	1.3	V	-49.83	2.37	12.50	-39.70	-13.00	-26.70
5552.10	53.58	179	2.1	H	-56.03	2.86	12.90	-45.99	-13.00	-32.99
5552.10	44.73	302	2.2	V	-64.15	2.86	12.90	-54.11	-13.00	-41.11
LTE BAND 2 Channel 18900										
200.56	46.67	250	2.2	H	-63.84	0.15	0.00	-63.99	-13.00	-50.99
201.33	37.98	272	2.0	V	-69.61	0.15	0.00	-69.76	-13.00	-56.76
3760.00	59.91	247	1.3	H	-51.63	2.37	12.50	-41.50	-13.00	-28.50
3760.00	52.99	147	2.2	V	-56.82	2.37	12.50	-46.69	-13.00	-33.69
5640.00	46.61	311	1.4	H	-63.00	2.86	12.90	-52.96	-13.00	-39.96
5640.00	37.78	219	1.3	V	-71.10	2.86	12.90	-61.06	-13.00	-48.06
LTE BAND 2 Channel 19193										
200.56	45.79	60	2.0	H	-64.72	0.15	0.00	-64.87	-13.00	-51.87
201.33	37.49	286	1.8	V	-70.10	0.15	0.00	-70.25	-13.00	-57.25
3818.60	52.03	202	2.1	H	-58.82	2.37	12.60	-48.59	-13.00	-35.59
3818.60	46.13	292	1.5	V	-63.18	2.37	12.60	-52.95	-13.00	-39.95
5727.90	39.63	335	1.8	H	-69.72	2.86	12.90	-59.68	-13.00	-46.68
5727.90	31.07	99	1.3	V	-77.43	2.86	12.90	-67.39	-13.00	-54.39

## LTE Band 4 (Part 27)

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 4 Channel 19957										
200.56	39.53	236	1.3	H	-70.98	0.15	0.00	-71.13	-13.00	-58.13
201.33	31.17	96	1.0	V	-76.42	0.15	0.00	-76.57	-13.00	-63.57
3435.00	65.95	332	1.6	H	-47.10	2.34	12.40	-37.04	-13.00	-24.04
3435.00	59.98	14	1.3	V	-51.17	2.34	12.40	-41.11	-13.00	-28.11
5152.50	53.58	173	1.7	H	-55.83	2.79	12.70	-45.92	-13.00	-32.92
5152.50	44.73	77	1.8	V	-64.04	2.79	12.70	-54.13	-13.00	-41.13
LTE BAND 4 Channel 20175										
200.56	40.52	49	1.1	H	-69.99	0.15	0.00	-70.14	-13.00	-57.14
201.33	31.90	3	1.1	V	-75.69	0.15	0.00	-75.84	-13.00	-62.84
3465.00	59.55	32	1.2	H	-53.50	2.37	12.50	-43.37	-13.00	-30.37
3465.00	53.75	79	1.6	V	-57.40	2.37	12.50	-47.27	-13.00	-34.27
5197.50	46.02	247	1.1	H	-63.39	2.79	12.70	-53.48	-13.00	-40.48
5197.50	36.86	54	2.0	V	-71.91	2.79	12.70	-62.00	-13.00	-49.00
LTE BAND 4 Channel 20393										
200.56	40.34	87	1.8	H	-70.17	0.15	0.00	-70.32	-13.00	-57.32
201.33	31.78	271	1.8	V	-75.81	0.15	0.00	-75.96	-13.00	-62.96
3508.00	52.07	274	2.0	H	-60.57	2.37	12.50	-50.44	-13.00	-37.44
3508.00	45.86	305	1.2	V	-64.87	2.37	12.50	-54.74	-13.00	-41.74
5262.00	38.77	172	1.0	H	-70.81	2.81	12.80	-60.82	-13.00	-47.82
5262.00	29.65	184	1.5	V	-79.15	2.81	12.80	-69.16	-13.00	-56.16

## LTE Band 7 (Part 27)

Frequency	Receiver Reading	Turn table Angle	RX Antenna		Substituted			Absolute Level	Result	
			Height	Polar	SG Level	Cable	Antenna Gain		Limit	Margin
(MHz)	(dBμV)	Degree	(m)	(H/V)	(dBm)	(dB)	(dB)	(dBm)	(dBm)	(dB)
LTE BAND 7 Channel 20775										
200.56	38.66	98	1.4	H	-71.85	0.15	0.00	-72.00	-13.00	-59.00
201.33	29.31	340	2.2	V	-78.28	0.15	0.00	-78.43	-13.00	-65.43
5010.00	65.95	56	1.1	H	-43.29	2.79	12.70	-33.38	-13.00	-20.38
5010.00	59.98	307	2.0	V	-48.79	2.79	12.70	-38.88	-13.00	-25.88
7515.00	53.58	333	1.7	H	-52.96	3.12	11.50	-44.58	-13.00	-31.58
7515.00	44.73	307	1.6	V	-60.70	3.12	11.50	-52.32	-13.00	-39.32
LTE BAND 7 Channel 21100										
200.56	38.72	336	2.1	H	-71.79	0.15	0.00	-71.94	-13.00	-58.94
201.33	30.19	156	1.5	V	-77.40	0.15	0.00	-77.55	-13.00	-64.55
5070.00	59.26	263	2.1	H	-49.98	2.37	12.50	-39.85	-13.00	-26.85
5070.00	53.34	7	1.4	V	-55.43	2.37	12.50	-45.30	-13.00	-32.30
7605.00	46.86	358	1.6	H	-59.68	3.12	11.50	-51.30	-13.00	-38.30
7605.00	38.19	45	1.7	V	-67.24	3.12	11.50	-58.86	-13.00	-45.86
LTE BAND 7 Channel 21425										
200.56	38.54	98	2.0	H	-71.97	0.15	0.00	-72.12	-13.00	-59.12
201.33	29.64	279	1.1	V	-77.95	0.15	0.00	-78.10	-13.00	-65.10
5135.00	51.60	194	1.3	H	-57.81	2.37	12.50	-47.68	-13.00	-34.68
5135.00	47.09	168	1.4	V	-61.68	2.37	12.50	-51.55	-13.00	-38.55
7702.50	40.69	18	1.5	H	-64.54	3.12	11.50	-56.16	-13.00	-43.16
7702.50	30.82	17	2.1	V	-74.07	3.12	11.50	-65.69	-13.00	-52.69

Note: 1) Absolute Level = SG Level - Cable loss + Antenna Gain  
2) Margin = Limit- Absolute Level



## 12 Band Edge Measurement

Test Requirement:	FCC Part 2.1051, 24.238(a), 27.53(h)
Test Method:	TIA/EIA-603-D:2010
Test Mode:	Transmitting

### 12.1 EUT Operation

Operating Environment :

Temperature:	23.5 °C
Humidity:	52.3 % RH
Atmospheric Pressure:	101.3kPa

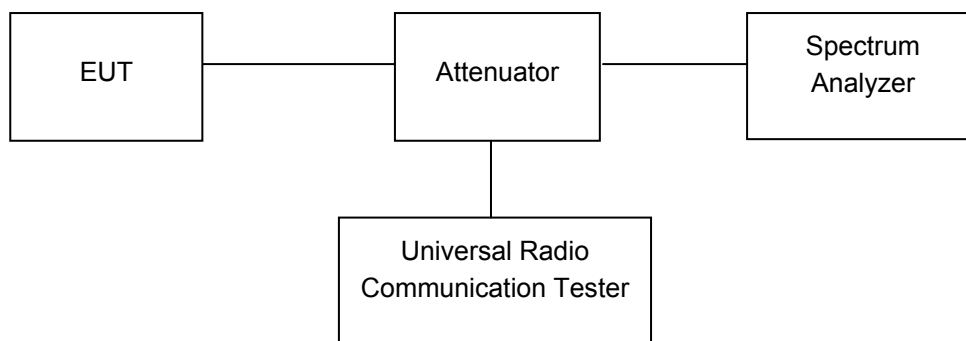
### 12.2 Test Procedure

The RF output of the transmitter was connected to the input of the spectrum analyzer through sufficient attenuation.

According to FCC Part 22.917(a), the power of any emissions 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.

According to FCC Part 24.238(a), the power of any emissions 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.

The center of the spectrum analyzer was set to block edge frequency



### 12.3 Test Result

PASS

#### LTE Band

Please refer to the Appendix Band 2/4/7 LTE Band Edge.

## 13 FREQUENCY STABILITY

Test Requirement:	FCC Part 2.1055, 24.235, 27.5(h),27.54
Test Method:	TIA/EIA-603-D:2010
Test Mode:	Transmitting

### 13.1 EUT Operation

Operating Environment :

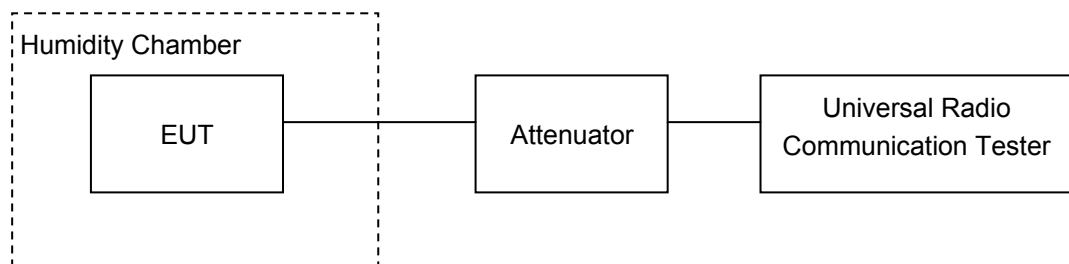
Temperature:	22.9 °C
Humidity:	52.0 % RH
Atmospheric Pressure:	101.3kPa

### 13.2 Test Procedure

Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to communication test set via feed-through attenuators. The EUT was placed inside the temperature chamber. The DC leads and RF output cable exited the chamber through an opening made for the purpose.

After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from the communication test set.

Frequency Stability vs. Voltage: For hand carried, battery powered equipment; reduce primary supply voltage to the battery operating end point which shall be specified by the manufacturer.



### 13.3 Test Result

#### LTE Band 2 (Part 24E)

Test Frequency:1880.0MHz QPSK 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	5	0.0027	2.5
40		6	0.0032	2.5
30		15	0.0080	2.5
20		6	0.0032	2.5
10		11	0.0059	2.5
0		-1	-0.0005	2.5
-10		15	0.0080	2.5
-20		7	0.0037	2.5
-30		13	0.0069	2.5
20		3.3	15	0.0080
20	4.2	11	0.0059	2.5

Test Frequency:1880.0MHz 16QAM 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0016	2.5
40		11	0.0059	2.5
30		3	0.0016	2.5
20		7	0.0037	2.5
10		5	0.0027	2.5
0		8	0.0043	2.5
-10		3	0.0016	2.5
-20		11	0.0059	2.5
-30		14	0.0074	2.5
20		3.3	0	0.0000
20	4.2	0	0.0000	2.5

## LTE Band 2 (Part 24E)

Test Frequency:1880.0MHz QPSK 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	1	0.0005	2.5
40		-1	-0.0005	2.5
30		0	0.0000	2.5
20		-4	-0.0021	2.5
10		-1	-0.0005	2.5
0		-10	-0.0053	2.5
-10		-11	-0.0059	2.5
-20		-13	-0.0069	2.5
-30		3	0.0016	2.5
20		3.3	1	0.0005
20	4.2	-7	-0.0037	2.5

Test Frequency:1880.0MHz 16QAM 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	10	0.0053	2.5
40		-4	-0.0021	2.5
30		5	0.0027	2.5
20		2	0.0011	2.5
10		4	0.0021	2.5
0		11	0.0059	2.5
-10		10	0.0053	2.5
-20		1	0.0005	2.5
-30		2	0.0011	2.5
20		3.3	9	0.0048
20	4.2	2	0.0011	2.5

## LTE Band 2 (Part 24E)

Test Frequency:1880.0MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	5	0.0027	2.5
40		9	0.0048	2.5
30		9	0.0048	2.5
20		8	0.0037	2.5
10		10	0.0053	2.5
0		1	0.0005	2.5
-10		-2	-0.0011	2.5
-20		2	0.0011	2.5
-30		14	0.0074	2.5
20		3.3	-1	-0.0005
20	4.2	1	0.0005	2.5

Test Frequency:1880.0MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0016	2.5
40		-4	-0.0021	2.5
30		-1	-0.0005	2.5
20		-3	-0.0021	2.5
10		1	0.0005	2.5
0		-4	-0.0021	2.5
-10		-6	-0.0032	2.5
-20		4	0.0021	2.5
-30		1	0.0005	2.5
20		3.3	-12	-0.0064
20	4.2	5	0.0027	2.5

## LTE Band 2 (Part 24E)

Test Frequency:1880.0MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	4	0.0021	2.5
40		-6	-0.0032	2.5
30		0	0.0000	2.5
20		4	0.0011	2.5
10		10	0.0053	2.5
0		-4	-0.0021	2.5
-10		5	0.0027	2.5
-20		2	0.0011	2.5
-30		8	0.0043	2.5
20		3.3	-4	-0.0021
20	4.2	4	0.0021	2.5

Test Frequency:1880.0MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	15	0.0080	2.5
40		9	0.0048	2.5
30		3	0.0016	2.5
20		7	0.0037	2.5
10		-1	-0.0005	2.5
0		-2	-0.0011	2.5
-10		4	0.0021	2.5
-20		10	0.0053	2.5
-30		0	0.0000	2.5
20		3.3	0	0.0000
20	4.2	6	0.0032	2.5

## LTE Band 2 (Part 24E)

Test Frequency:1880.0MHz QPSK 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	9	0.0048	2.5
40		-2	-0.0011	2.5
30		3	0.0016	2.5
20		2	0.0011	2.5
10		-3	-0.0016	2.5
0		10	0.0053	2.5
-10		2	0.0011	2.5
-20		4	0.0021	2.5
-30		5	0.0027	2.5
20		3.3	4	0.0021
20	4.2	-4	-0.0021	2.5

Test Frequency:1880.0MHz 16QAM 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	-7	-0.0037	2.5
40		-1	-0.0005	2.5
30		-4	-0.0021	2.5
20		1	0.0005	2.5
10		-3	-0.0016	2.5
0		3	0.0016	2.5
-10		0	0.0000	2.5
-20		-6	-0.0032	2.5
-30		-3	-0.0016	2.5
20		3.3	6	0.0032
20	4.2	-8	-0.0043	2.5

## LTE Band 2 (Part 24E)

Test Frequency:1880.0MHz QPSK 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	0	0.0000	2.5
40		-2	-0.0011	2.5
30		-6	-0.0032	2.5
20		1	0.0005	2.5
10		3	0.0016	2.5
0		-4	-0.0021	2.5
-10		7	0.0037	2.5
-20		-1	-0.0005	2.5
-30		1	0.0005	2.5
20		3.3	2	0.0011
20	4.2	9	0.0048	2.5

Test Frequency:1880.0MHz 16QAM 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	7	0.0037	2.5
40		-3	-0.0016	2.5
30		7	0.0037	2.5
20		0	0.0000	2.5
10		5	0.0027	2.5
0		-4	-0.0021	2.5
-10		-3	-0.0016	2.5
-20		8	0.0043	2.5
-30		1	0.0005	2.5
20		3.3	8	0.0043
20	4.2	5	0.0027	2.5



**LTE Band 4 (Part 27)**

Test Frequency:1732.5MHz QPSK 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	7	0.0040	2.5
40		-6	-0.0035	2.5
30		1	0.0006	2.5
20		1	0.0006	2.5
10		-2	-0.0012	2.5
0		9	0.0052	2.5
-10		0	0.0000	2.5
-20		-6	-0.0035	2.5
-30		9	0.0052	2.5
20		3.3	4	0.0023
20	4.2	-3	-0.0017	2.5

Test Frequency:1732.5MHz 16QAM 1.4MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	1	0.0006	2.5
40		14	0.0081	2.5
30		12	0.0069	2.5
20		7	0.0040	2.5
10		13	0.0075	2.5
0		11	0.0063	2.5
-10		14	0.0081	2.5
-20		2	0.0012	2.5
-30		10	0.0058	2.5
20		3.3	4	0.0023
20	4.2	6	0.0035	2.5

## LTE Band 4 (Part 27)

Test Frequency:1732.5MHz QPSK 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	2	0.0012	2.5
40		-1	-0.0006	2.5
30		1	0.0006	2.5
20		4	0.0023	2.5
10		-1	-0.0006	2.5
0		-3	-0.0017	2.5
-10		-2	-0.0012	2.5
-20		7	0.0040	2.5
-30		4	0.0023	2.5
20		3.3	-4	-0.0023
20	4.2	-3	-0.0017	2.5

Test Frequency:1732.5MHz 16QAM 3MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	9	0.0052	2.5
40		9	0.0052	2.5
30		-6	-0.0035	2.5
20		2	0.0012	2.5
10		4	0.0023	2.5
0		11	0.0063	2.5
-10		0	0.0000	2.5
-20		9	0.0052	2.5
-30		-2	-0.0012	2.5
20		3.3	3	0.0017
20	4.2	2	0.0012	2.5

## LTE Band 4 (Part 27)

Test Frequency:1732.5MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	-3	-0.0017	2.5
40		-7	-0.0040	2.5
30		2	0.0012	2.5
20		2	0.0012	2.5
10		-6	-0.0035	2.5
0		-6	-0.0035	2.5
-10		-7	-0.0040	2.5
-20		-2	-0.0012	2.5
-30		-2	-0.0012	2.5
20		3.3	5	0.0029
20	4.2	10	0.0058	2.5

Test Frequency:1732.5MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	0	0.0000	2.5
40		9	0.0052	2.5
30		9	0.0052	2.5
20		5	0.0029	2.5
10		4	0.0023	2.5
0		6	0.0035	2.5
-10		6	0.0035	2.5
-20		5	0.0029	2.5
-30		9	0.0052	2.5
20		3.3	-2	-0.0012
20	4.2	12	0.0069	2.5

## LTE Band 4 (Part 27)

Test Frequency:1732.5MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	-6	-0.0035	2.5
40		-3	-0.0017	2.5
30		-4	-0.0023	2.5
20		3	0.0017	2.5
10		7	0.0040	2.5
0		-2	-0.0012	2.5
-10		3	0.0017	2.5
-20		-2	-0.0012	2.5
-30		5	0.0029	2.5
20		3.3	-1	-0.0006
20	4.2	0	0.0000	2.5

Test Frequency:1732.5MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	11	0.0063	2.5
40		2	0.0012	2.5
30		11	0.0063	2.5
20		3	0.0017	2.5
10		2	0.0012	2.5
0		-1	-0.0006	2.5
-10		12	0.0069	2.5
-20		-5	-0.0029	2.5
-30		11	0.0063	2.5
20		3.3	-4	-0.0023
20	4.2	8	0.0046	2.5

## LTE Band 4 (Part 27)

Test Frequency:1732.5MHz QPSK 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	1	0.0006	2.5
40		7	0.0040	2.5
30		1	0.0006	2.5
20		1	0.0006	2.5
10		-5	-0.0029	2.5
0		0	0.0000	2.5
-10		6	0.0035	2.5
-20		-2	-0.0012	2.5
-30		0	0.0000	2.5
20		3.3	4	0.0023
20	4.2	-4	-0.0023	2.5

Test Frequency:1732.5MHz 16QAM 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	9	0.0052	2.5
40		6	0.0035	2.5
30		2	0.0012	2.5
20		4	0.0023	2.5
10		-3	-0.0017	2.5
0		13	0.0075	2.5
-10		10	0.0058	2.5
-20		7	0.0040	2.5
-30		1	0.0006	2.5
20		3.3	11	0.0063
20	4.2	-5	-0.0029	2.5

## LTE Band 4 (Part 27)

Test Frequency:1732.5MHz QPSK 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	-1	-0.0006	2.5
40		-4	-0.0023	2.5
30		-8	-0.0046	2.5
20		-5	-0.0029	2.5
10		-6	-0.0035	2.5
0		-11	-0.0063	2.5
-10		-13	-0.0075	2.5
-20		-8	-0.0046	2.5
-30		1	0.0006	2.5
20		3.3	-5	-0.0029
20	4.2	-13	-0.0075	2.5

Test Frequency:1732.5MHz 16QAM 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0017	2.5
40		3	0.0017	2.5
30		-10	-0.0058	2.5
20		-4	-0.0023	2.5
10		-9	-0.0052	2.5
0		4	0.0023	2.5
-10		-4	-0.0023	2.5
-20		-3	-0.0017	2.5
-30		-13	-0.0075	2.5
20		3.3	-12	-0.0069
20	4.2	-3	-0.0017	2.5

**LTE Band 7 (Part 27)**

Test Frequency:2535MHz QPSK 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	4	0.0016	2.5
40		4	0.0016	2.5
30		12	0.0047	2.5
20		5	0.0020	2.5
10		7	0.0028	2.5
0		10	0.0039	2.5
-10		11	0.0043	2.5
-20		3	0.0012	2.5
-30		13	0.0051	2.5
20		3.3	1	0.0004
20	4.2	-2	-0.0008	2.5

Test Frequency:2535MHz 16QAM 5MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	6	0.0024	2.5
40		4	0.0016	2.5
30		-6	-0.0024	2.5
20		3	0.0012	2.5
10		11	0.0043	2.5
0		-3	-0.0012	2.5
-10		-5	-0.0020	2.5
-20		4	0.0016	2.5
-30		8	0.0032	2.5
20		3.3	-1	-0.0004
20	4.2	-5	-0.0020	2.5

## LTE Band 7 (Part 27)

Test Frequency:2535MHz QPSK 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	1	0.0004	2.5
40		7	0.0028	2.5
30		10	0.0039	2.5
20		1	0.0004	2.5
10		7	0.0028	2.5
0		7	0.0028	2.5
-10		5	0.0020	2.5
-20		-8	-0.0032	2.5
-30		-4	-0.0016	2.5
20		3.3	7	0.0028
20	4.2	-4	-0.0016	2.5

Test Frequency:2535MHz 16QAM 10MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	4	0.0016	2.5
40		0	0.0000	2.5
30		-5	-0.0020	2.5
20		3	0.0012	2.5
10		11	0.0043	2.5
0		-5	-0.0020	2.5
-10		4	0.0016	2.5
-20		-4	-0.0016	2.5
-30		11	0.0043	2.5
20		3.3	-5	-0.0020
20	4.2	9	0.0036	2.5



## LTE Band 7 (Part 27)

Test Frequency:2535MHz QPSK 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	4	0.0016	2.5
40		4	0.0016	2.5
30		0	0.0000	2.5
20		3	0.0012	2.5
10		4	0.0016	2.5
0		6	0.0024	2.5
-10		7	0.0028	2.5
-20		1	0.0004	2.5
-30		6	0.0024	2.5
20		3.3	-5	-0.0020
20	4.2	9	0.0036	2.5

Test Frequency:2535MHz 16QAM 15MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	3	0.0012	2.5
40		8	0.0032	2.5
30		5	0.0020	2.5
20		6	0.0024	2.5
10		-1	-0.0004	2.5
0		13	0.0051	2.5
-10		6	0.0024	2.5
-20		-1	-0.0004	2.5
-30		12	0.0047	2.5
20		3.3	5	0.0020
20	4.2	14	0.0055	2.5

## LTE Band 7 (Part 27)

Test Frequency:2535MHz QPSK 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	10	0.0039	2.5
40		-6	-0.0024	2.5
30		11	0.0043	2.5
20		3	0.0012	2.5
10		6	0.0024	2.5
0		-2	-0.0008	2.5
-10		12	0.0047	2.5
-20		9	0.0036	2.5
-30		4	0.0016	2.5
20		3.3	-5	-0.0020
20	4.2	10	0.0039	2.5

Test Frequency:2535MHz 16QAM 20MHz				
Temperature (°C)	Power Supply (VDC)	Frequency Error (Hz)	Frequency Error (ppm)	Limit (ppm)
50	3.7	6	0.0024	2.5
40		-5	-0.0020	2.5
30		-7	-0.0028	2.5
20		-2	-0.0008	2.5
10		0	0.0000	2.5
0		-1	-0.0004	2.5
-10		-3	-0.0012	2.5
-20		0	0.0000	2.5
-30		0	0.0000	2.5
20		3.3	-10	-0.0039
20	4.2	-1	-0.0004	2.5

