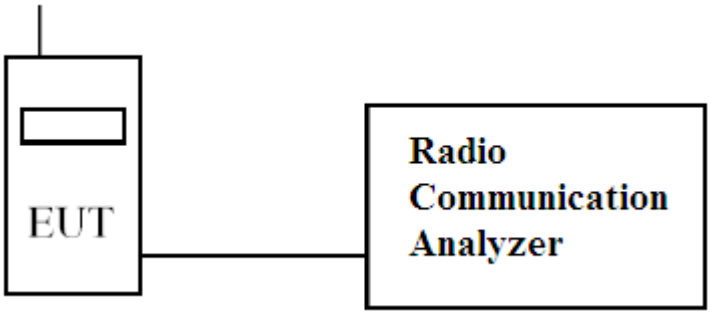
6. Spurious Emission

6.1. Test Specification

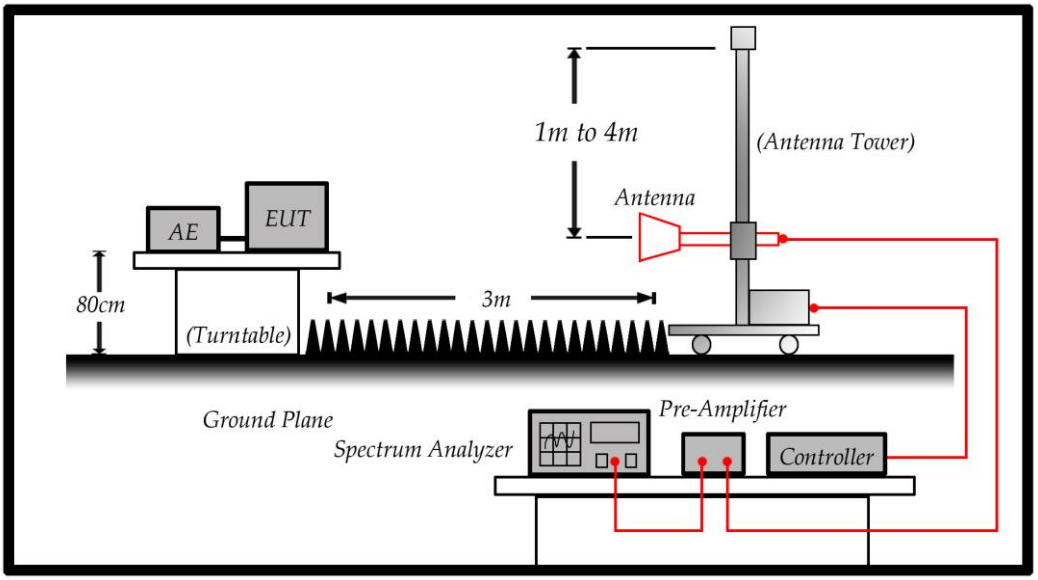
According to Part 2.1051, 2.1053, 24.238

6.2. Test Setup

6.2.1 Spurious emissions at antenna terminals.



6.2.2 Field strength of spurious radiation.



6.3. Limits

Limit	<-13dBm

43 + 10Log(P) down on the carrier where P is the power in Watts.

6.4. Test Procedure

In accordance with Part 2.1051, 2.1053, 24.238, the spurious emissions from the antenna terminal were measured. The transmitter output power was attenuated using a combination of filters and attenuators and the frequency spectrum investigated from 30MHz to 20GHz. The EUT was set to transmit on full power. The EUT was tested on Low, middle and High channels for both power levels. The resolution and video bandwidth was set to 1MHz/3MHz in accordance with Part 2.1051, 2.1053, 24.238. The spectrum analyzer detector was set to Max Hold. In addition, measurements were made up to the 10th harmonic of the fundamental. The device was then replaced with a substitution antenna, which input signal was adjusted until the received level matched that of the previously detected emission.

(1) The EUT is tested with maximum rated TX power via the Base Station simulator.

(2) The EUT is tested in three orthogonal planes, The worst case was showing in this report.

The EUT is placed on a turn table which is 1.5 meter above ground. The turn table can rotate 360 degrees to determine the position of the maximum emission level. The EUT was positioned such that the distance from antenna to the EUT was 3 meters.

The antenna can move up and down between 1 meter and 4 meters to find out the maximum emission level.

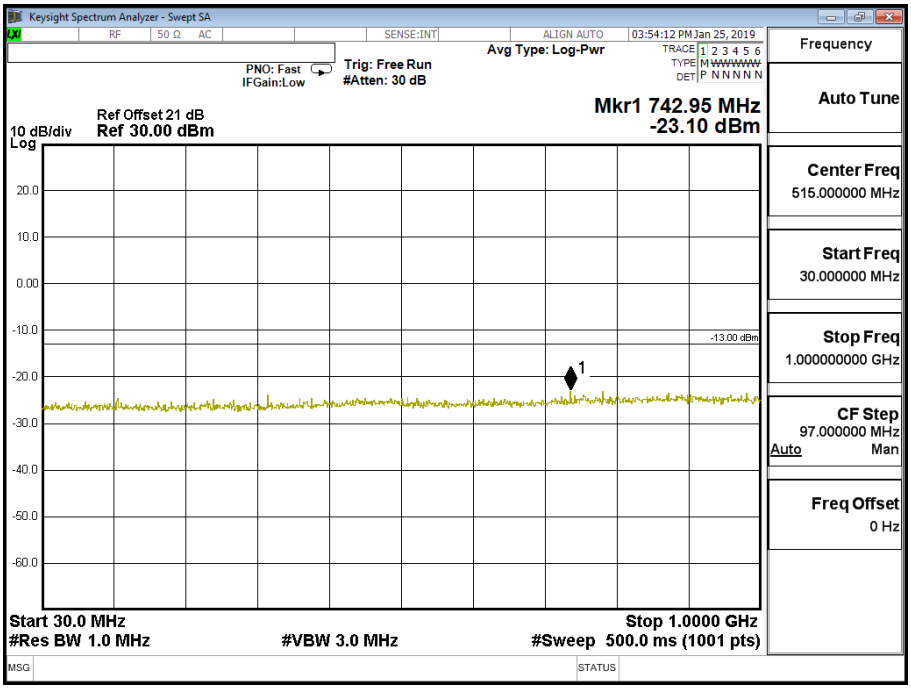
Both horizontal and vertical polarization of the antenna are set on measurement. In order to find the maximum emission, all of the interface cables must be manipulated according to TIA/EIA 603-E on radiated measurement.

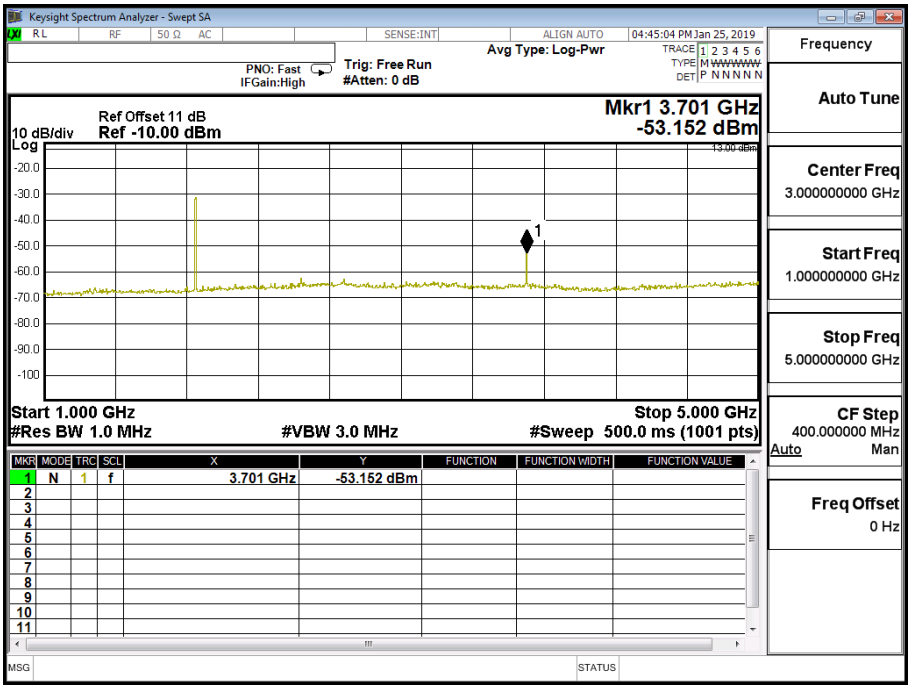
6.5. Test Result of Spurious Emission

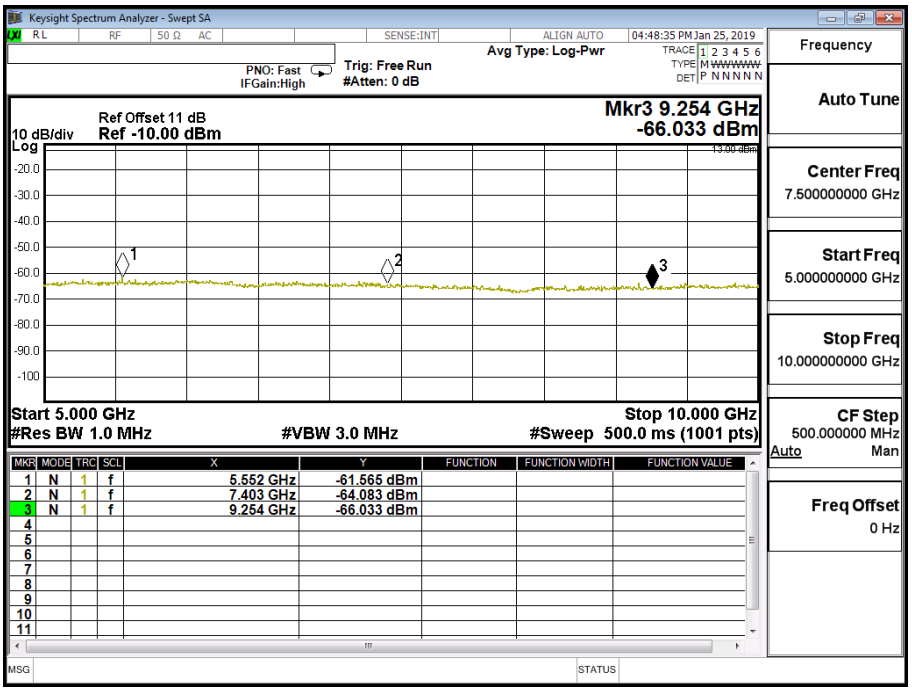
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (1.4M)	Test Range	30MHz~20GHz

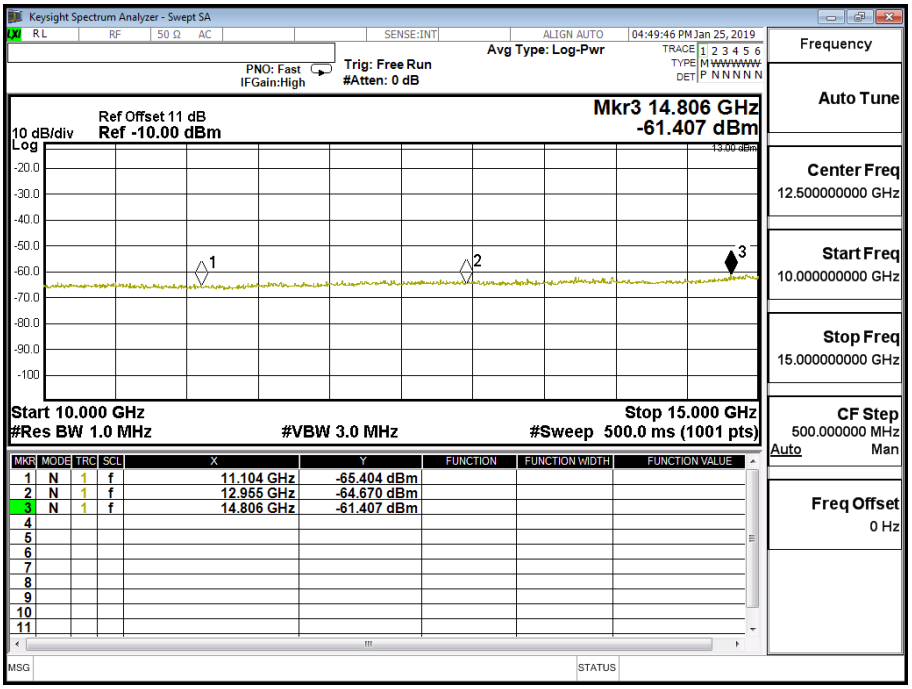
LTE-Band 2 (1.4M) QPSK(1,0) CH18607(1850.7 MHz)

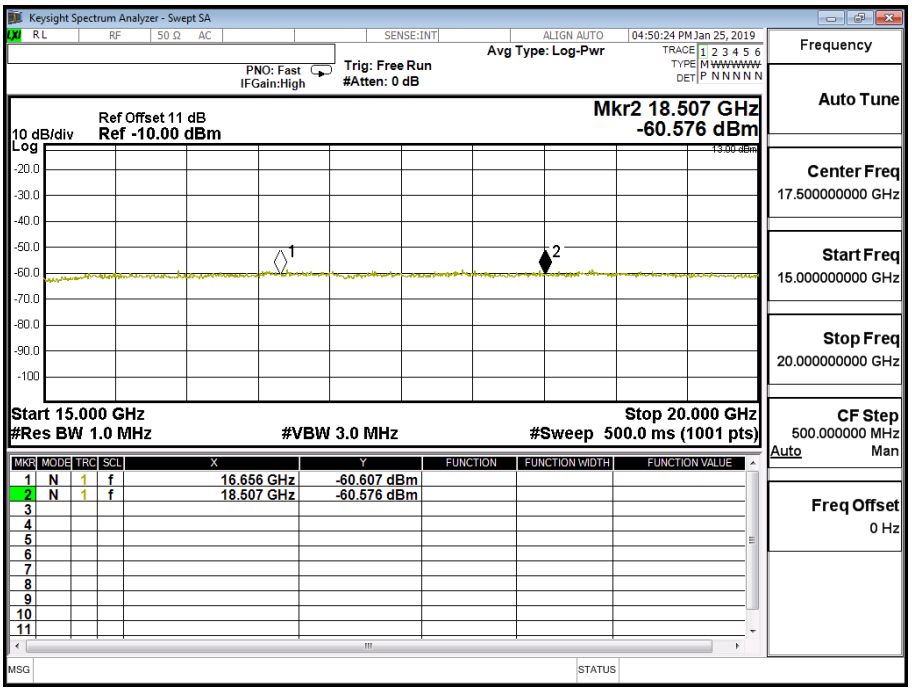
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3701	-53.152	1.10	-52.052	-13
5552	-61.565	1.23	-60.335	-13
7403	-64.083	1.59	-62.493	-13
9254	-66.033	1.89	-64.143	-13
11104	-65.404	2.07	-63.334	-13
12955	-64.670	2.26	-62.410	-13
14806	-61.407	2.64	-58.767	-13
16656	-60.607	3.50	-57.107	-13
18507	-60.576	3.70	-56.876	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:45:04 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.701 GHz
-53.152 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.701 GHz -53.152 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:48:35 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.254 GHz
-66.033 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.552 GHz -61.565 dBm
2 N 1 f 7.403 GHz -64.083 dBm
3 N 1 f 9.254 GHz -66.033 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

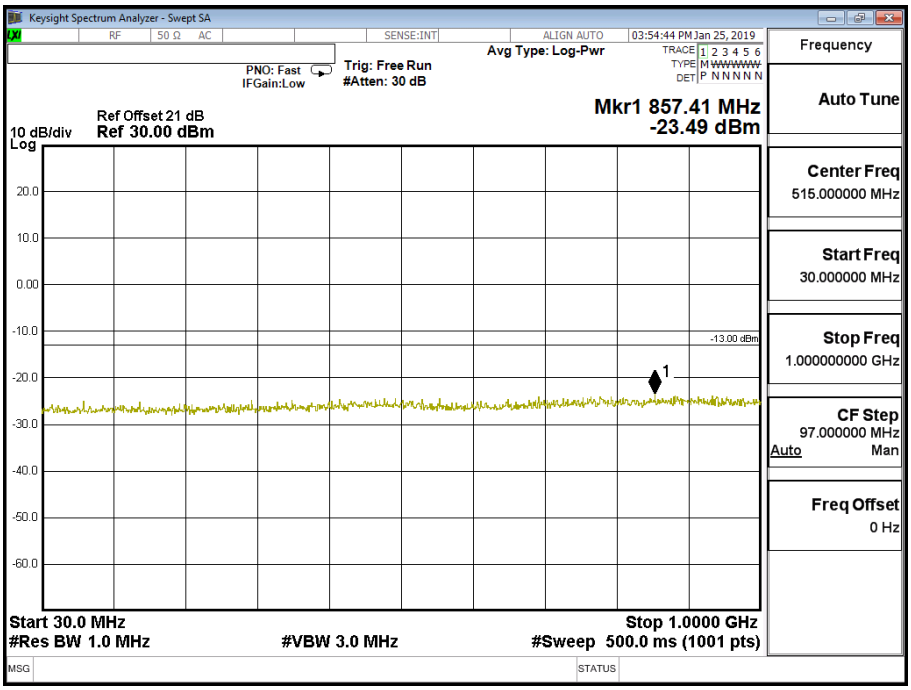

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:49:46 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 14.806 GHz
-61.407 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.104 GHz -65.404 dBm
2 N 1 f 12.955 GHz -64.670 dBm
3 N 1 f 14.806 GHz -61.407 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

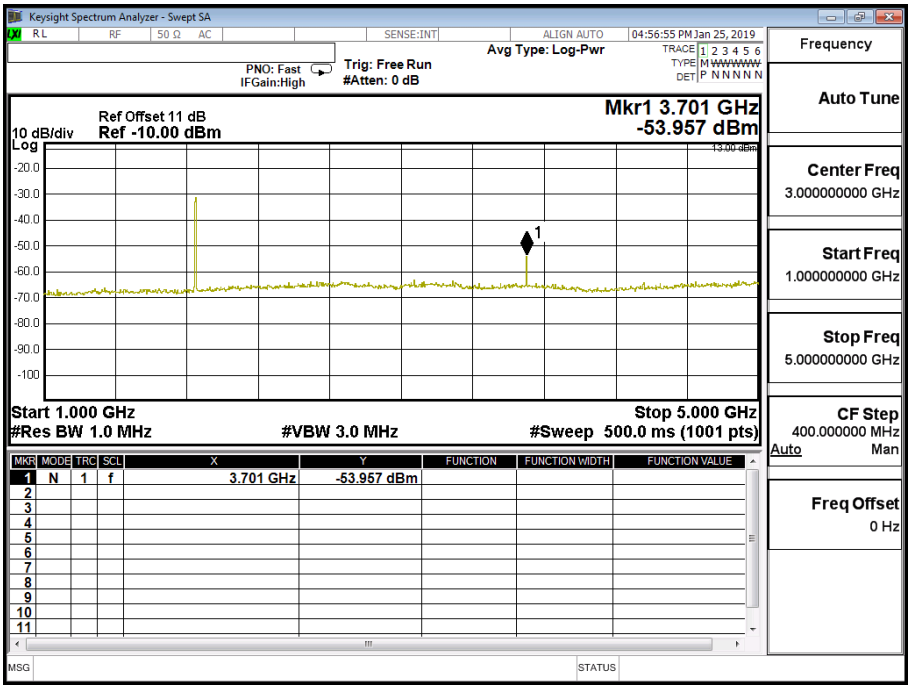

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:50:24 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 18.507 GHz
-60.576 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 16.656 GHz -60.607 dBm
2 N 1 f 18.507 GHz -60.576 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

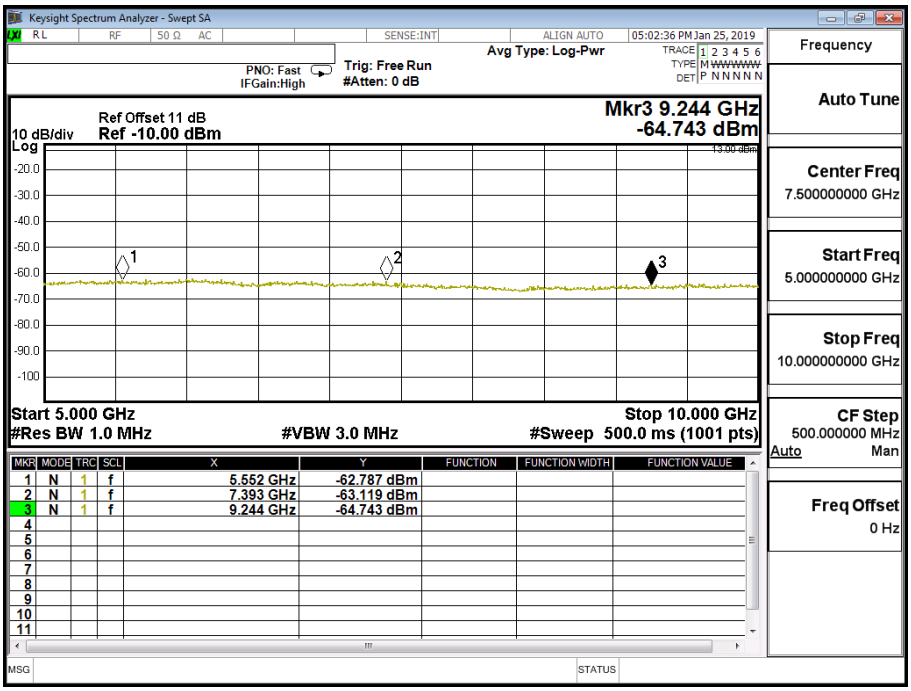
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (1.4M)	Test Range	30MHz~20GHz

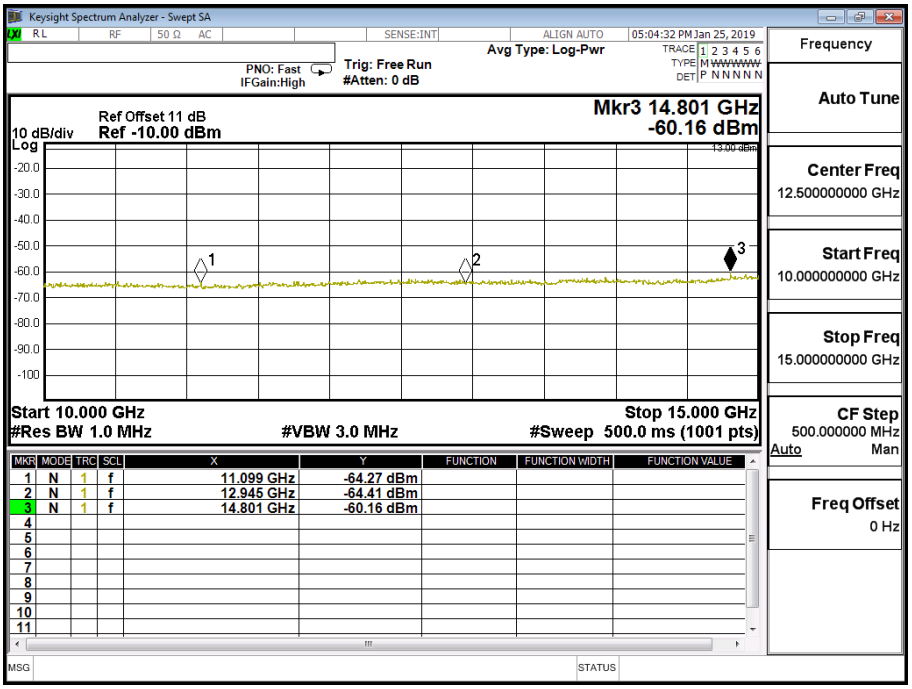
LTE-Band 2 (1.4M) 16QAM(1,0) CH18607(1850.7MHz)

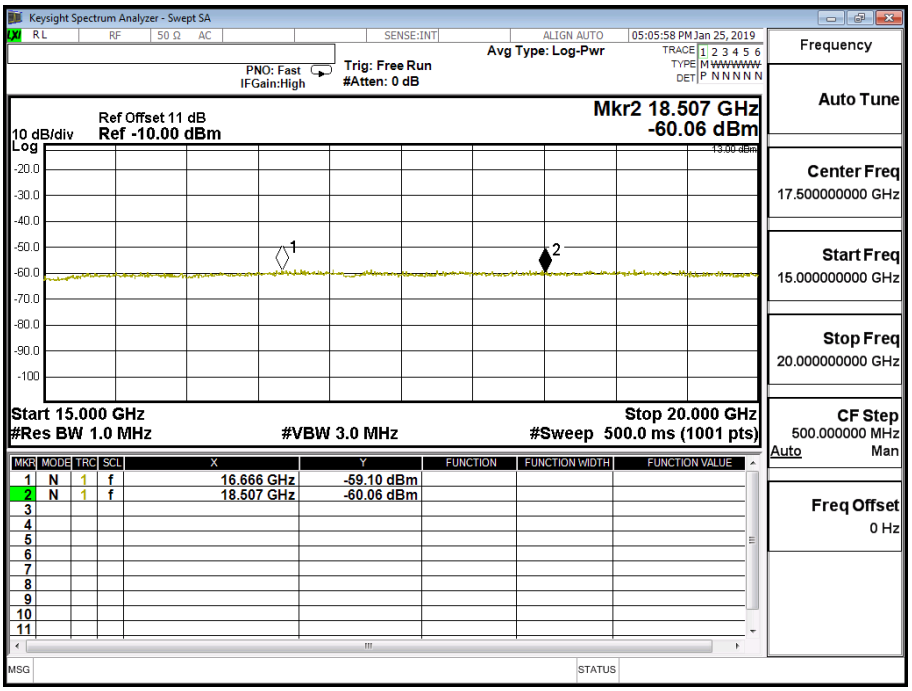
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3701	-53.957	1.10	-52.857	-13
5552	-62.787	1.23	-61.557	-13
7393	-63.119	1.59	-61.529	-13
9244	-64.743	1.89	-62.853	-13
11099	-64.270	2.07	-62.200	-13
12945	-64.410	2.26	-62.150	-13
14801	-60.160	2.64	-57.520	-13
16666	-59.100	3.50	-55.600	-13
18507	-60.060	3.70	-56.360	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
04:56:55 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.701 GHz
-53.957 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.701 GHz -53.957 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
05:02:36 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.244 GHz
-64.743 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.552 GHz -62.787 dBm
2 N 1 f 7.393 GHz -63.119 dBm
3 N 1 f 9.244 GHz -64.743 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

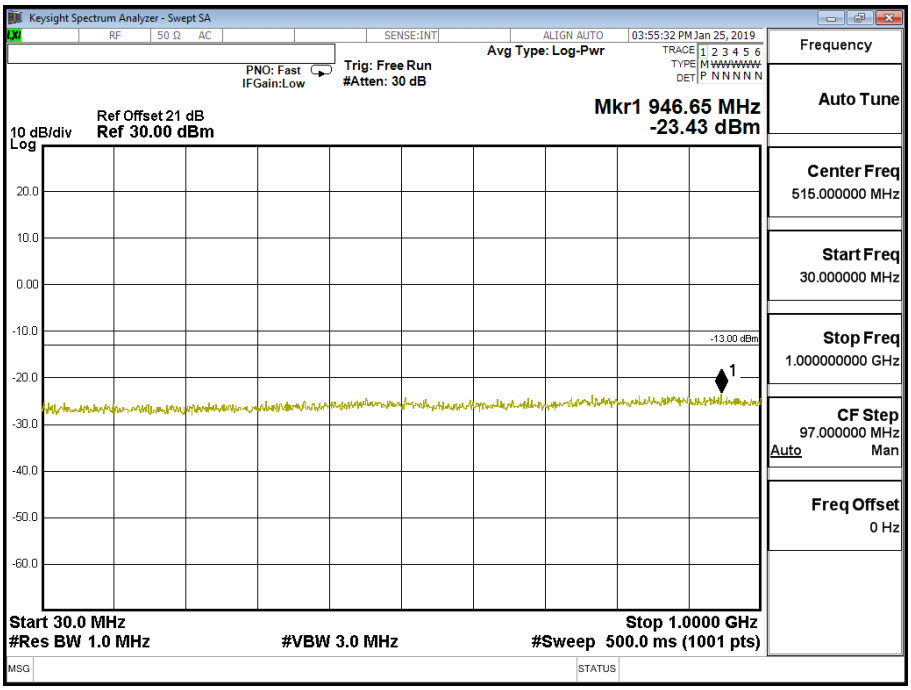

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
05:04:32 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 14.801 GHz
-60.16 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.099 GHz -64.27 dBm
2 N 1 f 12.945 GHz -64.41 dBm
3 N 1 f 14.801 GHz -60.16 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

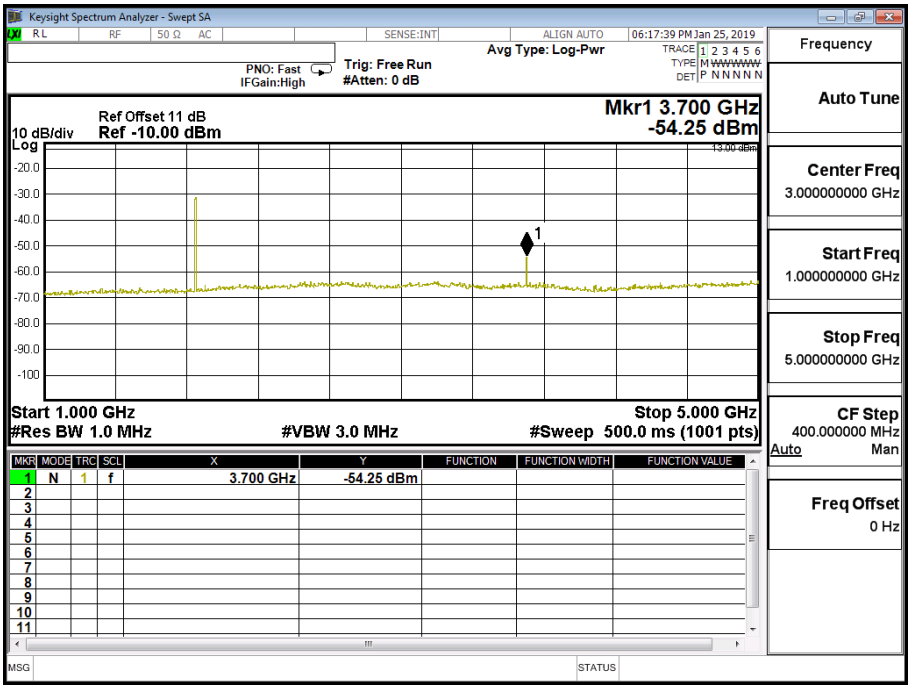

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
05:05:58 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 18.507 GHz
-60.06 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 16.666 GHz -59.10 dBm
2 N 1 f 18.507 GHz -60.06 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

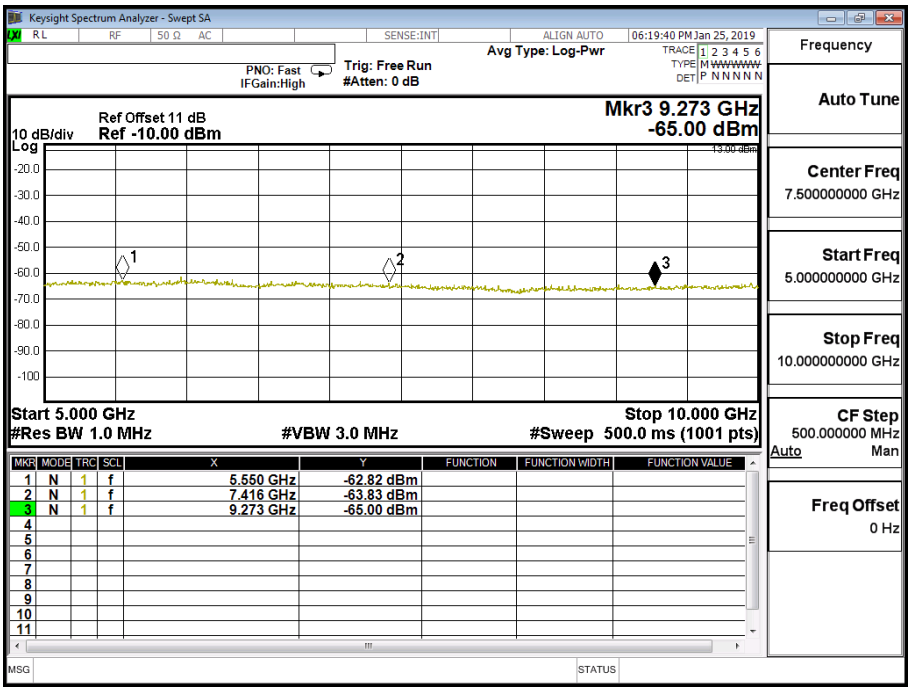
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (3M)	Test Range	30MHz~20GHz

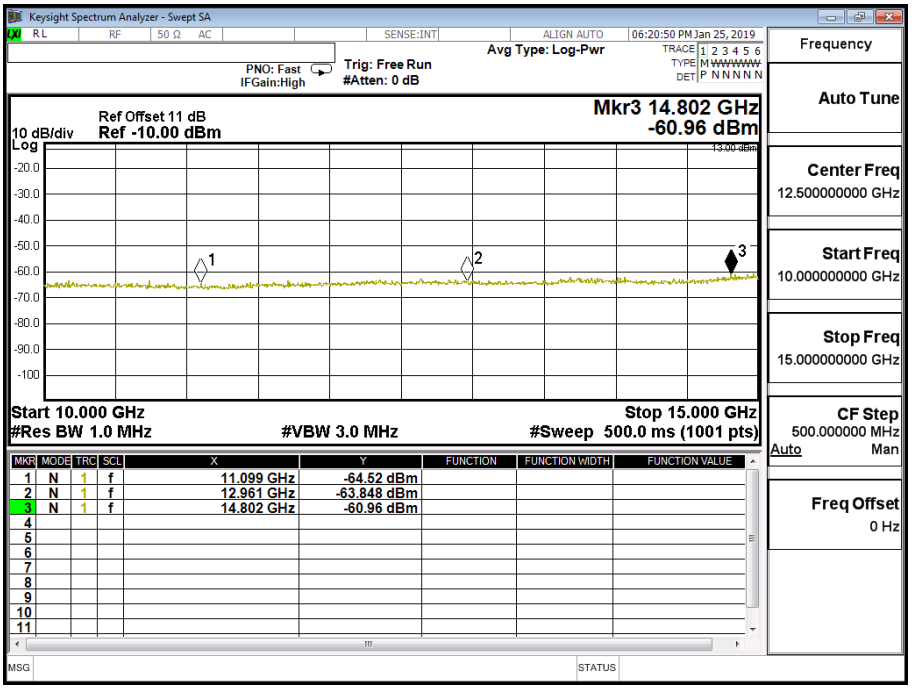
LTE-Band 2 (3M) QPSK(1,7) CH18615 (1851.5MHz)

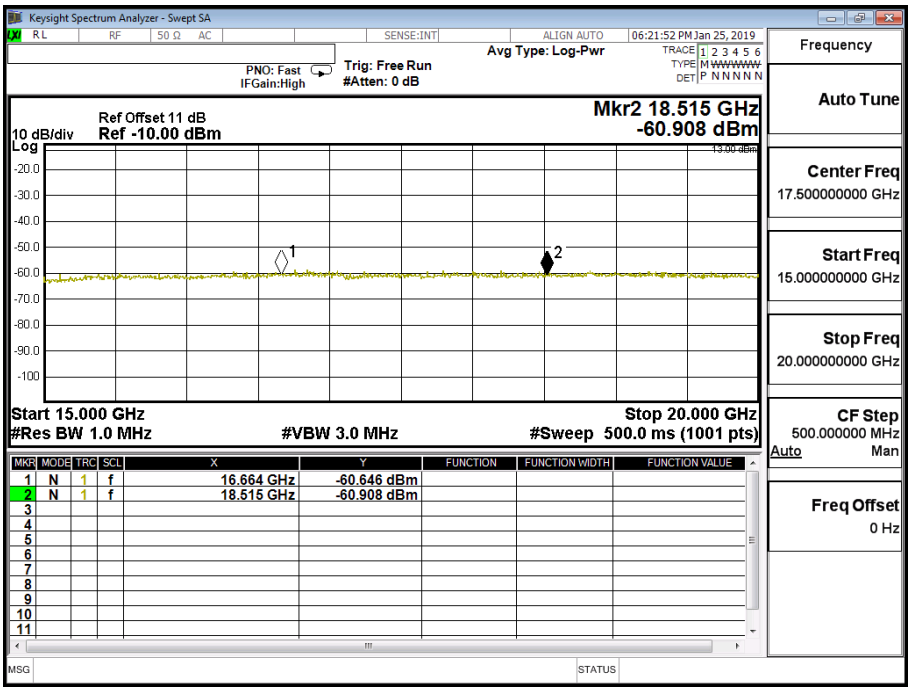
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3700	-54.250	1.10	-53.150	-13
5550	-62.820	1.23	-61.590	-13
7416	-63.830	1.59	-62.240	-13
9273	-65.000	1.89	-63.110	-13
11099	-64.520	2.07	-62.450	-13
12961	-63.848	2.26	-61.588	-13
14802	-60.960	2.64	-58.320	-13
16664	-60.646	3.50	-57.146	-13
18515	-60.908	3.70	-57.208	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:17:39 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Frequency
Auto Tune
Mkr1 3.700 GHz
-54.25 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
CF Step
400.000000 MHz
Auto
Man
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.700 GHz -54.25 dBm
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:19:40 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Frequency
Auto Tune
Mkr3 9.273 GHz
-65.00 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
CF Step
500.000000 MHz
Auto
Man
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.550 GHz -62.82 dBm
2 N 1 f 7.416 GHz -63.83 dBm
3 N 1 f 9.273 GHz -65.00 dBm
Freq Offset
0 Hz
MSG
STATUS

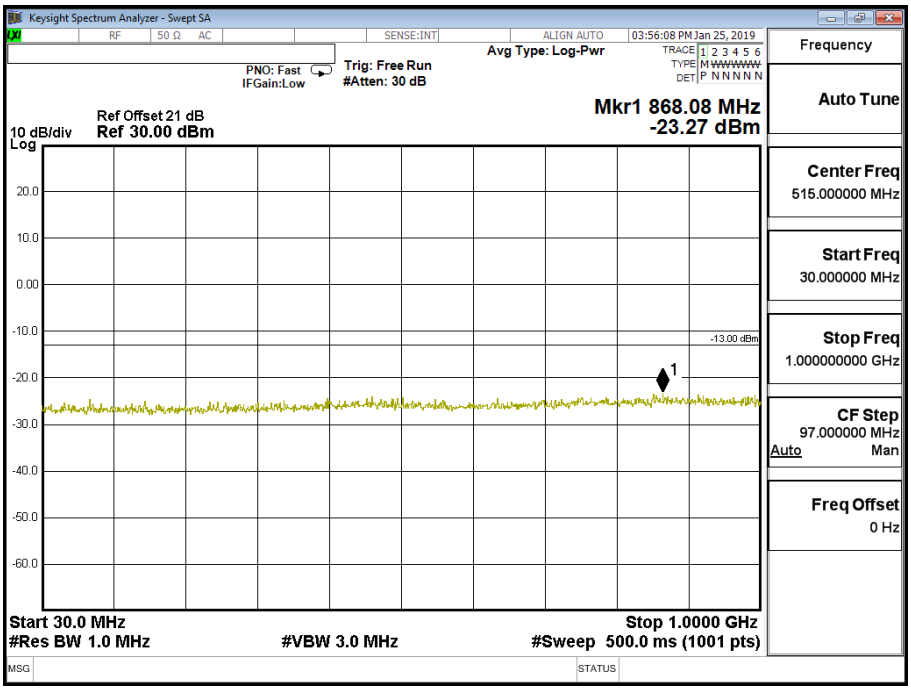

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:20:50 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 14.802 GHz
-60.96 dBm
Log
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.099 GHz -64.52 dBm
2 N 1 f 12.961 GHz -63.848 dBm
3 N 1 f 14.802 GHz -60.96 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

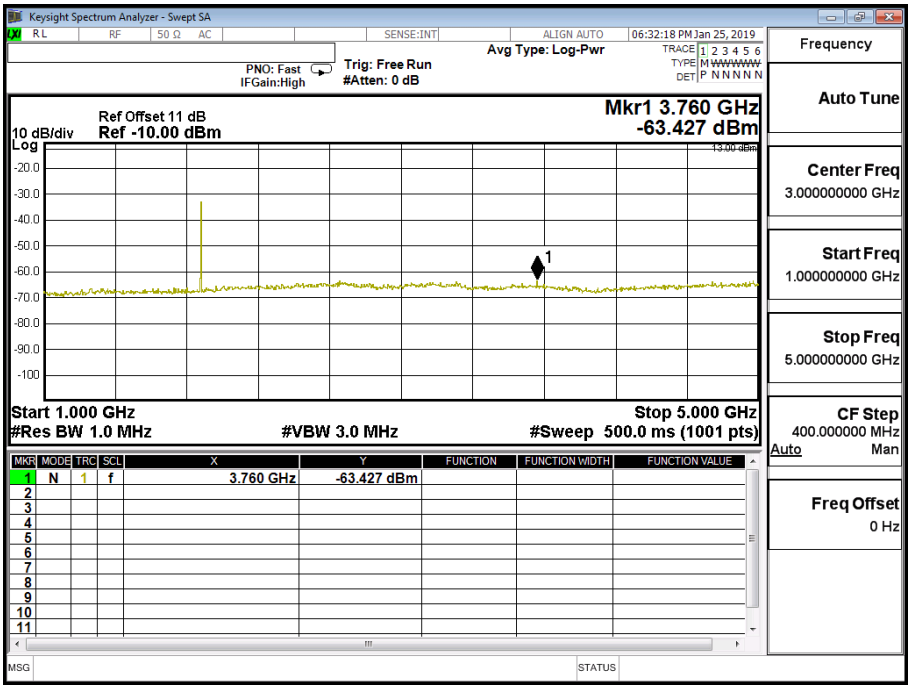

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:21:52 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 18.515 GHz
-60.908 dBm
Log
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 16.664 GHz -60.646 dBm
2 N 1 f 18.515 GHz -60.908 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

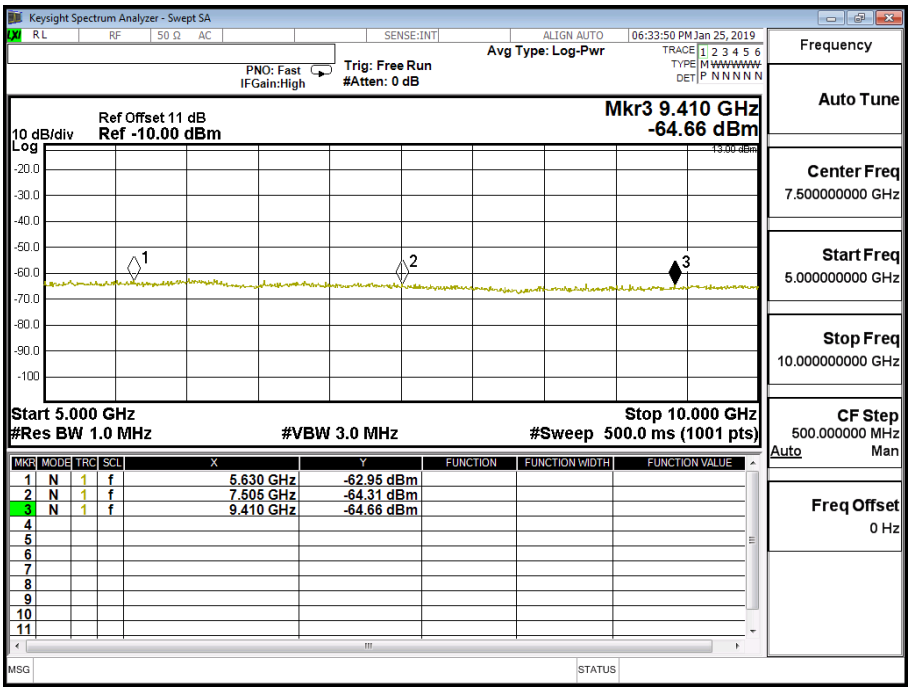
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (3M)	Test Range	30MHz~20GHz

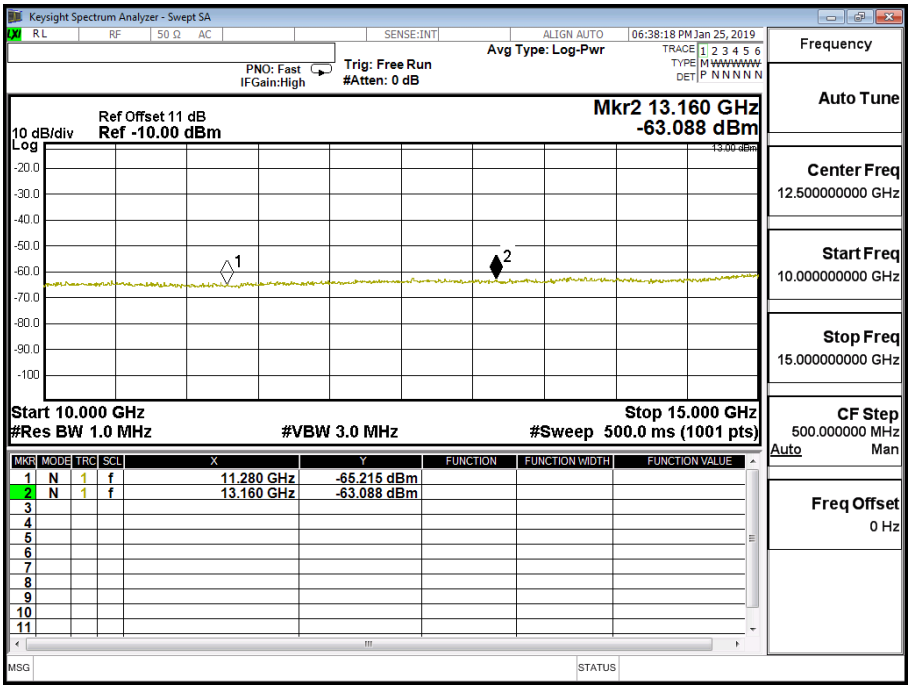
LTE-Band 2 (3M) 16QAM(1,7) CH18900 (1880MHz)

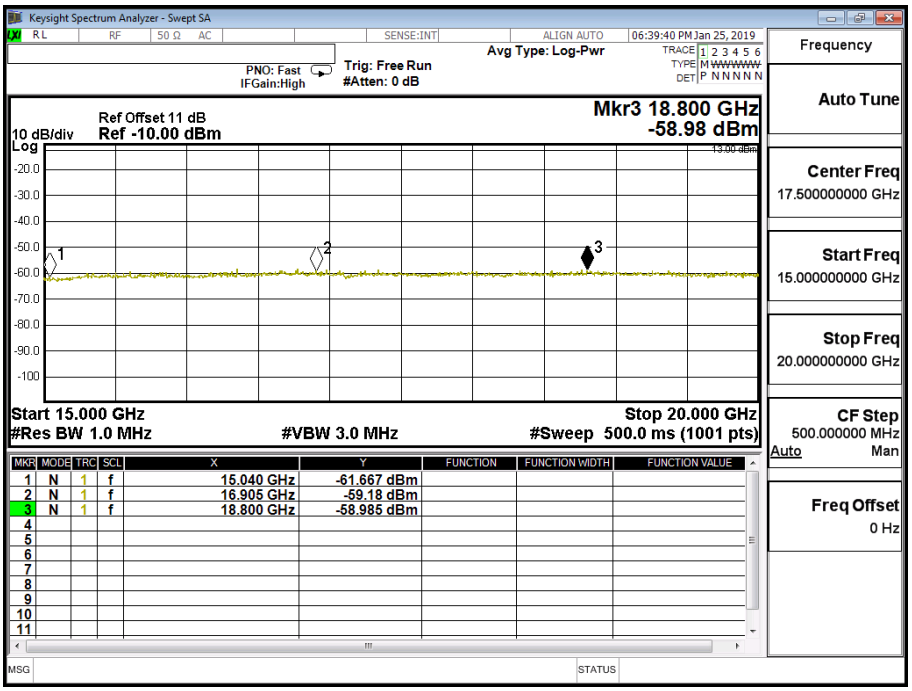
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3760	-63.427	1.10	-62.327	-13
5630	-62.950	1.23	-61.720	-13
7505	-64.310	1.59	-62.720	-13
9410	-64.660	1.89	-62.770	-13
11280	-65.215	2.07	-63.145	-13
13160	-63.088	2.26	-60.828	-13
15040	-61.667	2.64	-59.027	-13
16905	-59.180	3.50	-55.680	-13
18800	-58.985	3.70	-55.285	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:32:18 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.760 GHz
-63.427 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.760 GHz -63.427 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:33:50 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.410 GHz
-64.66 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.630 GHz -62.95 dBm
2 N 1 f 7.505 GHz -64.31 dBm
3 N 1 f 9.410 GHz -64.66 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

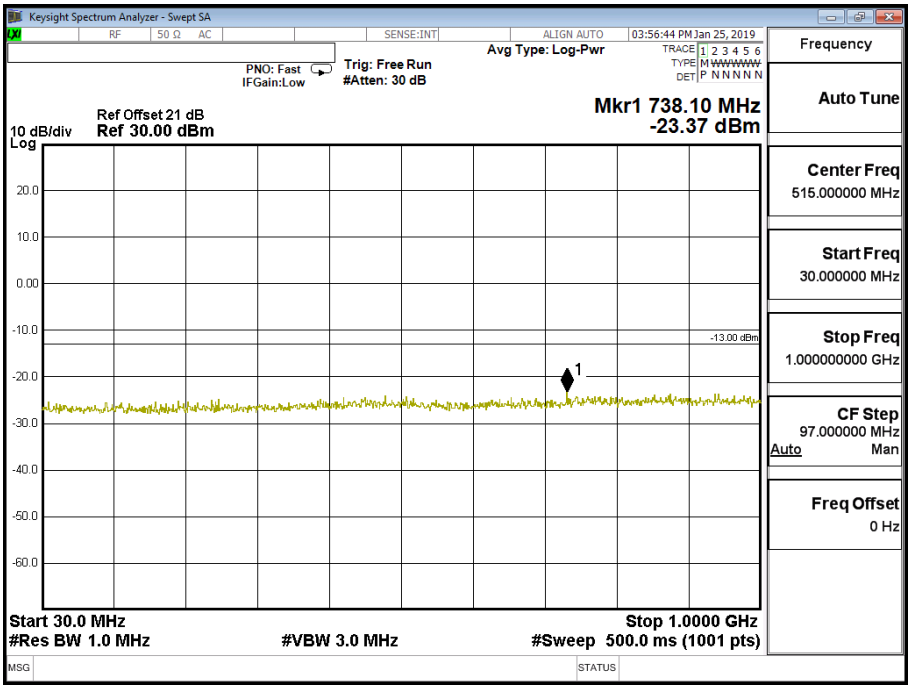

Keysight Spectrum Analyzer - Swept SA
06:38:18 PM Jan 25, 2019
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 13.160 GHz
-63.088 dBm
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
1 N 1 f 11.280 GHz -65.215 dBm
2 N 1 f 13.160 GHz -63.088 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz

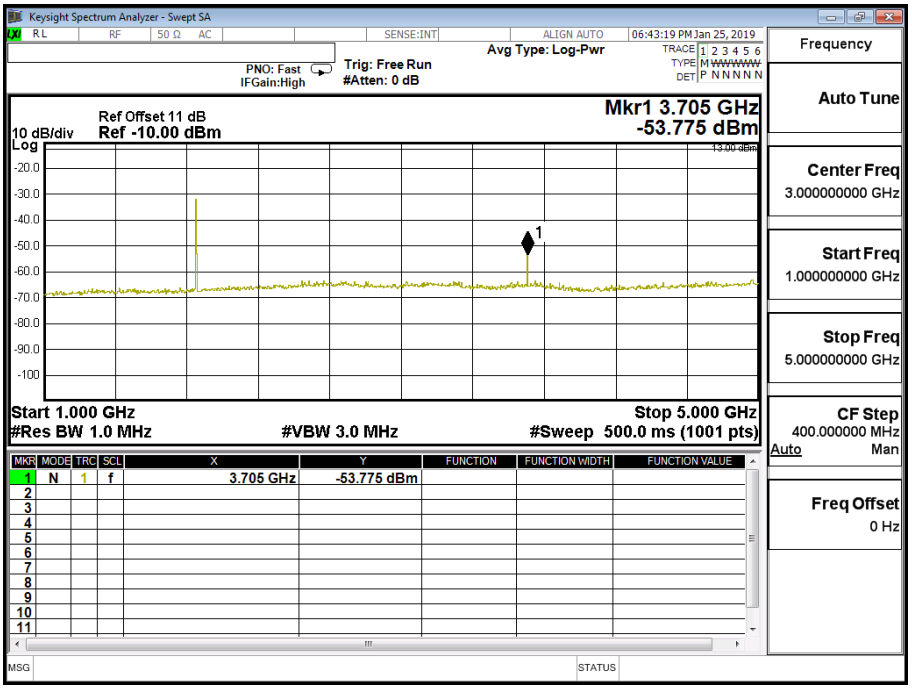

Keysight Spectrum Analyzer - Swept SA
06:39:40 PM Jan 25, 2019
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 18.800 GHz
-58.98 dBm
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
1 N 1 f 15.040 GHz -61.667 dBm
2 N 1 f 16.905 GHz -59.18 dBm
3 N 1 f 18.800 GHz -58.985 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz

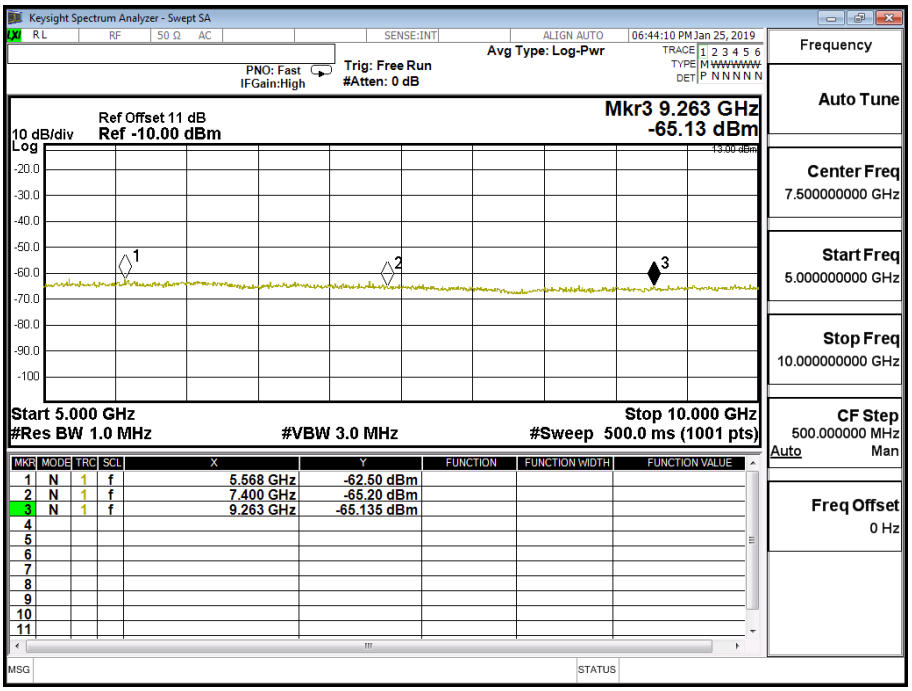
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (5M)	Test Range	30MHz~20GHz

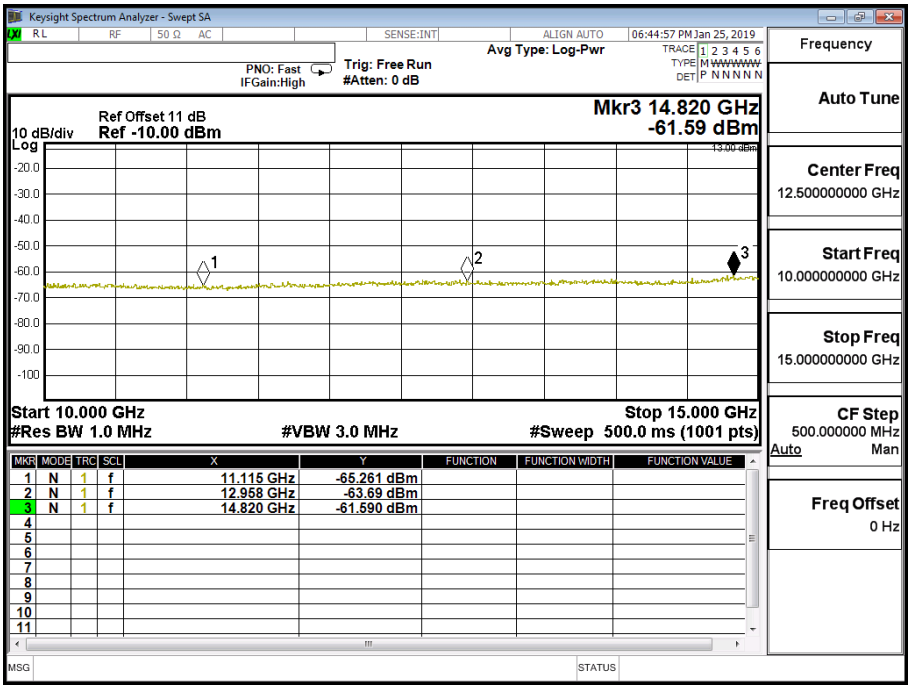
LTE-Band 2 (5M) QPSK(1,12) CH18625 (1852.5MHz)

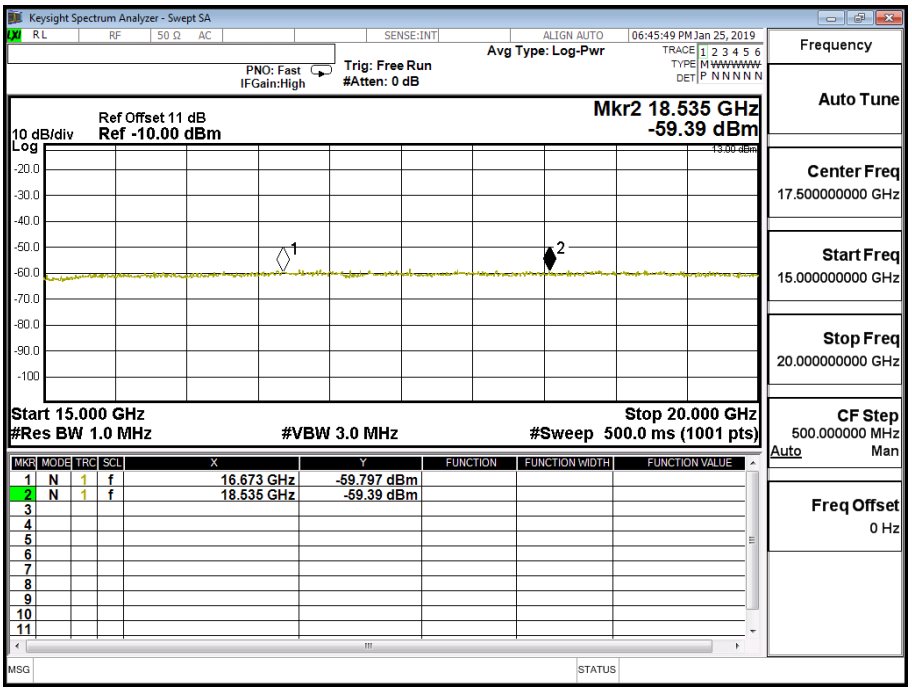
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3705	-53.775	1.10	-52.675	-13
5568	-62.500	1.23	-61.270	-13
7400	-65.200	1.59	-63.610	-13
9263	-65.135	1.89	-63.245	-13
11115	-65.261	2.07	-63.191	-13
12958	-63.690	2.26	-61.430	-13
14820	-61.590	2.64	-58.950	-13
16673	-59.797	3.50	-56.297	-13
18535	-59.390	3.70	-55.690	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:43:19 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.705 GHz
-53.775 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.705 GHz -53.775 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:44:10 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.263 GHz
-65.13 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.568 GHz -62.50 dBm
2 N 1 f 7.400 GHz -65.20 dBm
3 N 1 f 9.263 GHz -65.135 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

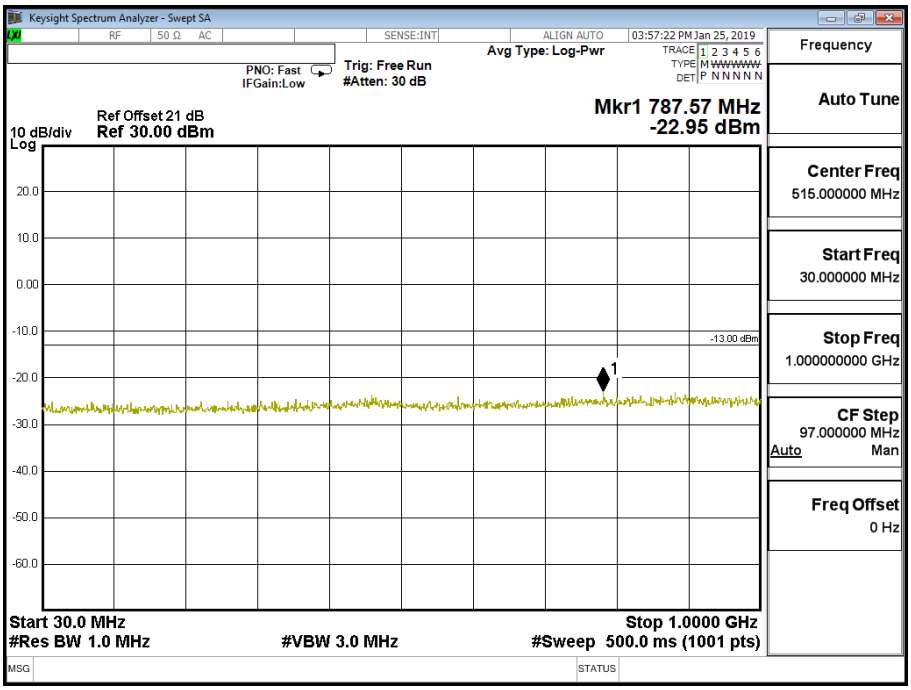

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:44:57 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Mkr3 14.820 GHz
-61.59 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.115 GHz -65.261 dBm
2 N 1 f 12.958 GHz -63.69 dBm
3 N 1 f 14.820 GHz -61.590 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

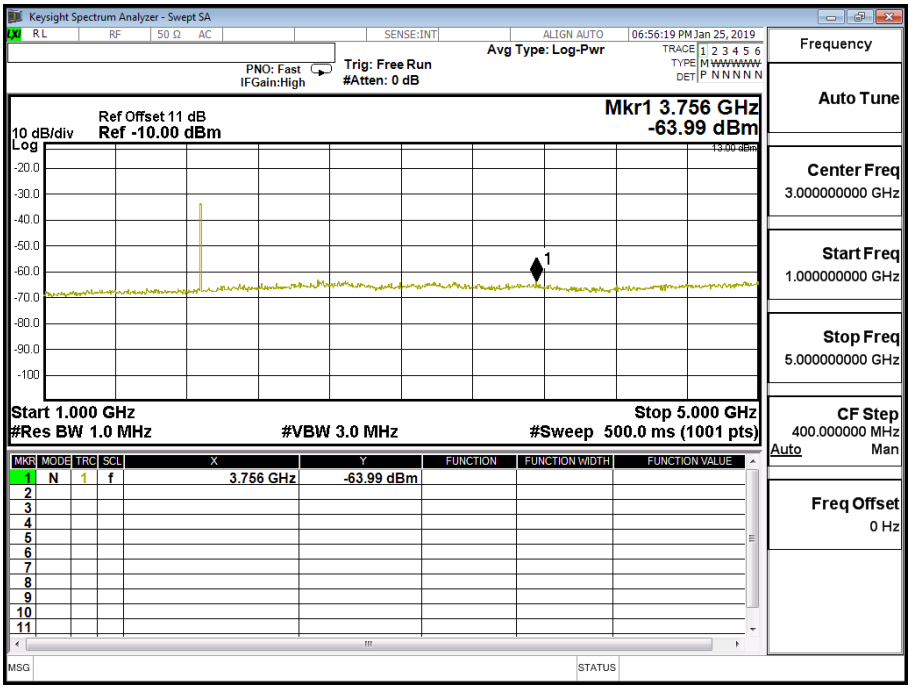

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:45:49 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Mkr2 18.535 GHz
-59.39 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 16.673 GHz -59.797 dBm
2 N 1 f 18.535 GHz -59.39 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
MSG
STATUS

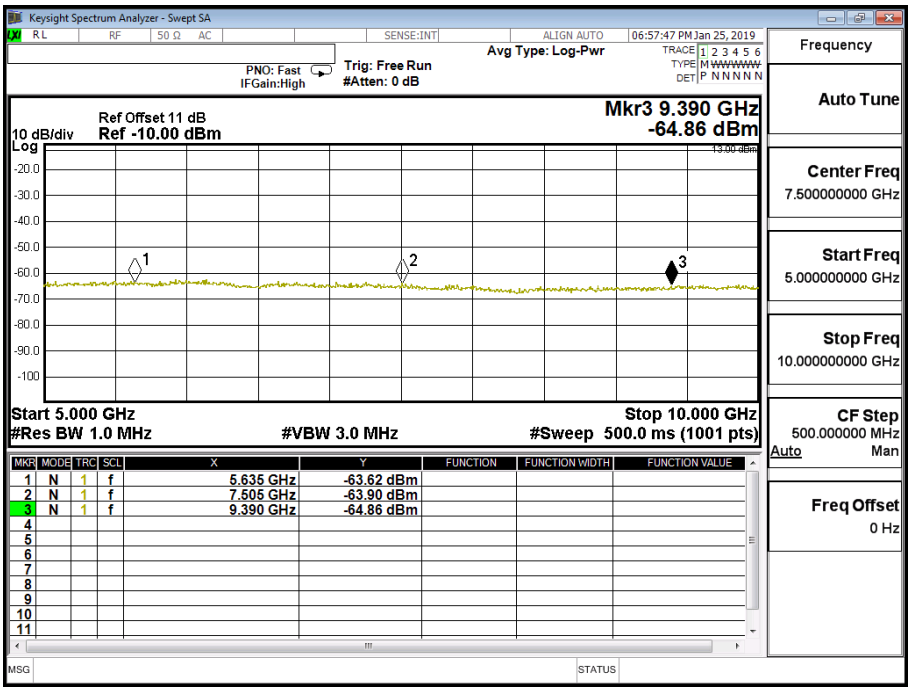
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (5M)	Test Range	30MHz~20GHz

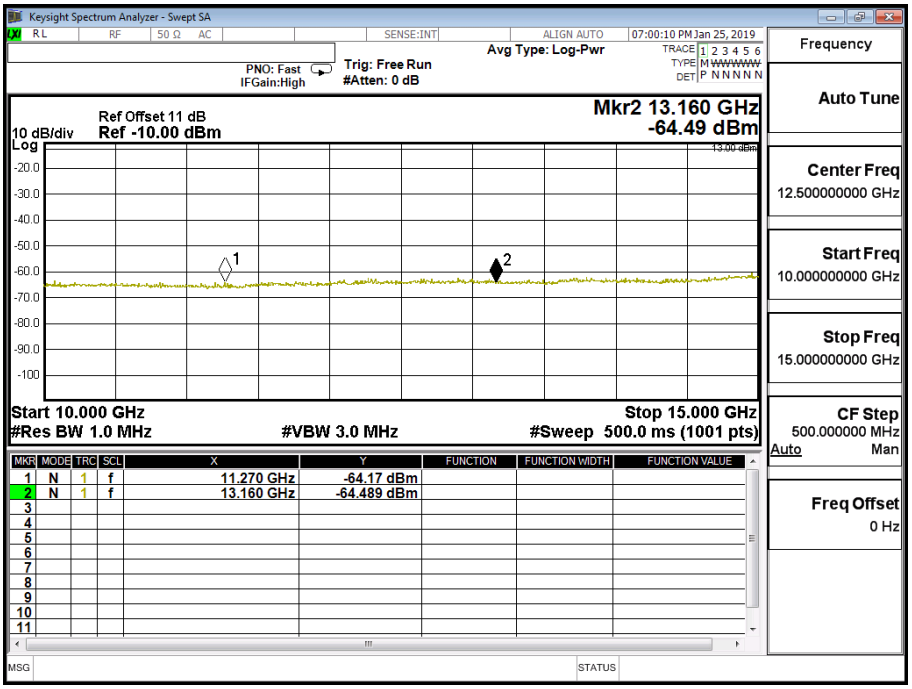
LTE- Band 2 (5M) 16QAM(1,0) CH18900 (1880MHz)

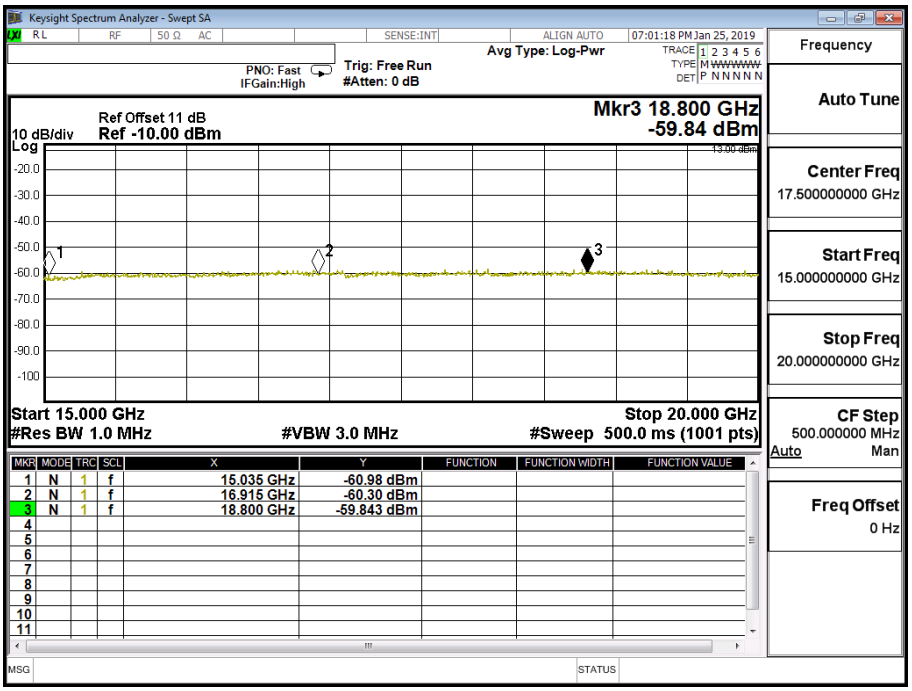
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3756	-63.990	1.10	-62.890	-13
5635	-63.620	1.23	-62.390	-13
7505	-63.900	1.59	-62.310	-13
9390	-64.860	1.89	-62.970	-13
11270	-64.170	2.07	-62.100	-13
13160	-64.489	2.26	-62.229	-13
15035	-60.980	2.64	-58.340	-13
16915	-60.300	3.50	-56.800	-13
18800	-59.843	3.70	-56.143	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:56:19 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.756 GHz
-63.99 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.756 GHz -63.99 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:57:47 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.390 GHz
-64.86 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.635 GHz -63.62 dBm
2 N 1 f 7.505 GHz -63.90 dBm
3 N 1 f 9.390 GHz -64.86 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

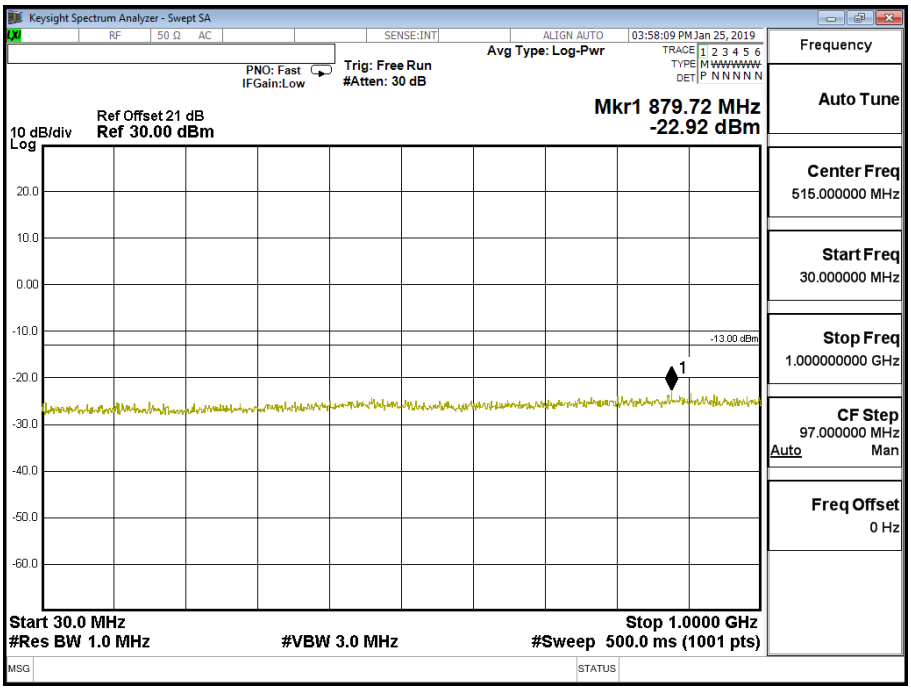

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
07:00:10 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 13.160 GHz
-64.49 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.270 GHz -64.17 dBm
2 N 1 f 13.160 GHz -64.489 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

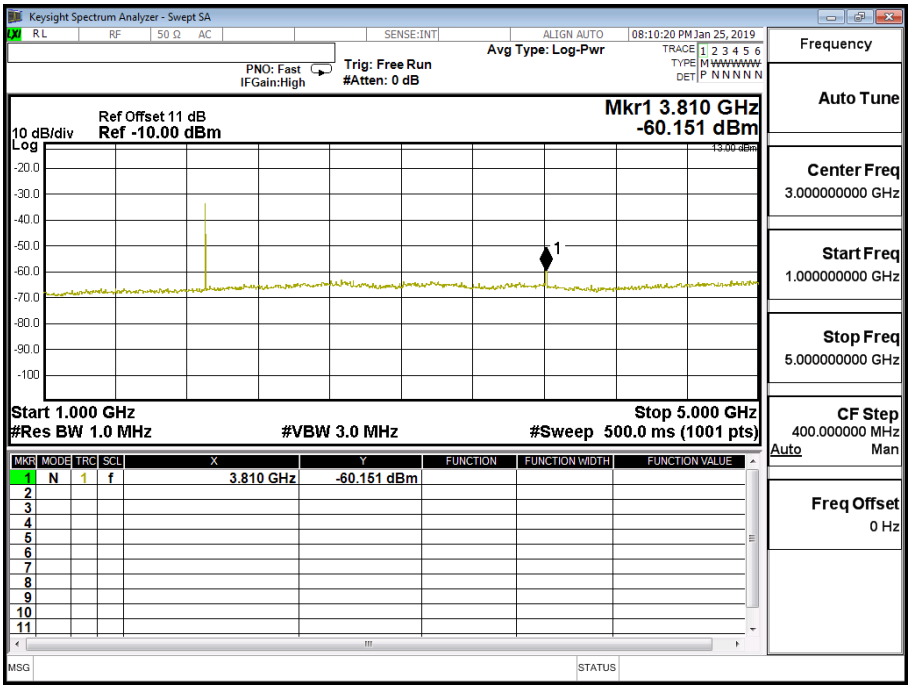

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
07:01:18 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 18.800 GHz
-59.84 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 15.035 GHz -60.98 dBm
2 N 1 f 16.915 GHz -60.30 dBm
3 N 1 f 18.800 GHz -59.843 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

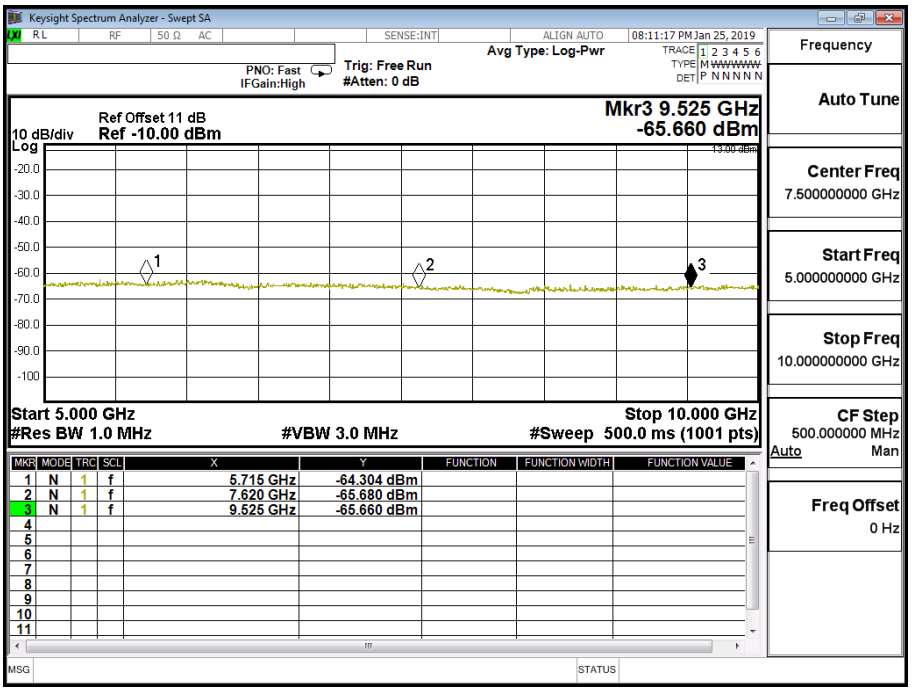
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (10M)	Test Range	30MHz~20GHz

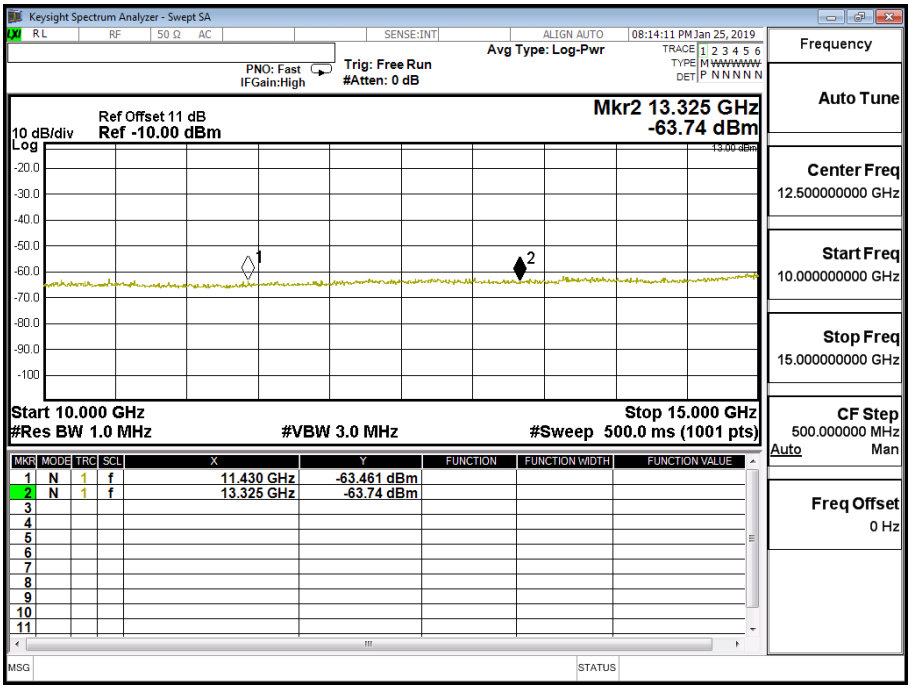
LTE- Band 2 (10M) QPSK(1,24) CH19150 (1905MHz)

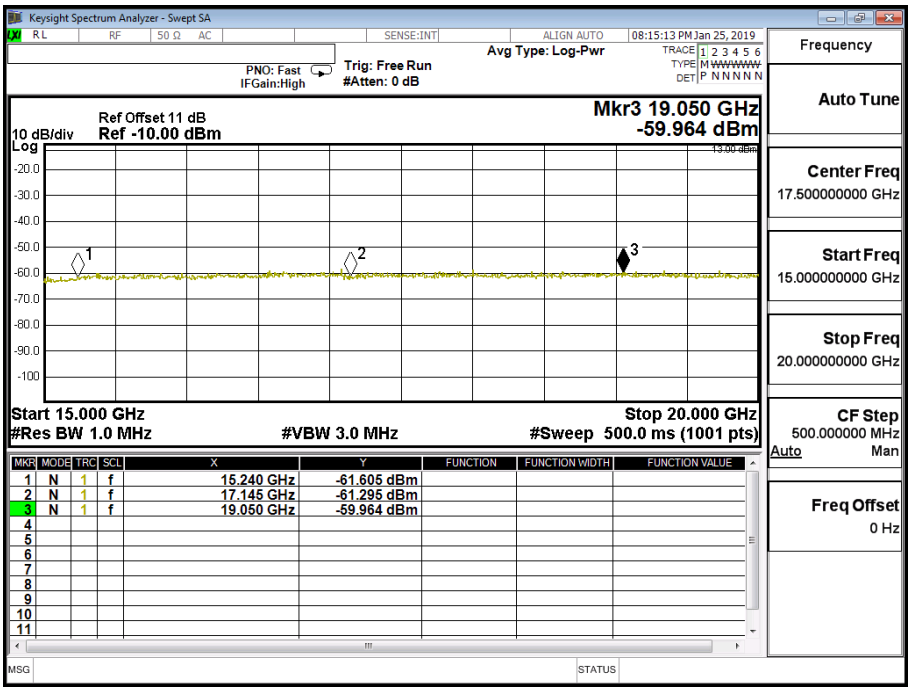
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3810	-60.151	1.10	-59.051	-13
5715	-64.304	1.23	-63.074	-13
7620	-65.680	1.59	-64.090	-13
9525	-65.660	1.89	-63.770	-13
11430	-63.461	2.07	-61.391	-13
13325	-63.740	2.26	-61.480	-13
15240	-61.605	2.64	-58.965	-13
17145	-61.295	3.50	-57.795	-13
19050	-59.964	3.70	-56.264	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:10:20 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Frequency
Auto Tune
Mkr1 3.810 GHz
-60.151 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
CF Step
400.000000 MHz
Auto
Man
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.810 GHz -60.151 dBm
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:11:17 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Frequency
Auto Tune
Mkr3 9.525 GHz
-65.660 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
CF Step
500.000000 MHz
Auto
Man
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.715 GHz -64.304 dBm
2 N 1 f 7.620 GHz -65.680 dBm
3 N 1 f 9.525 GHz -65.660 dBm
Freq Offset
0 Hz
MSG
STATUS

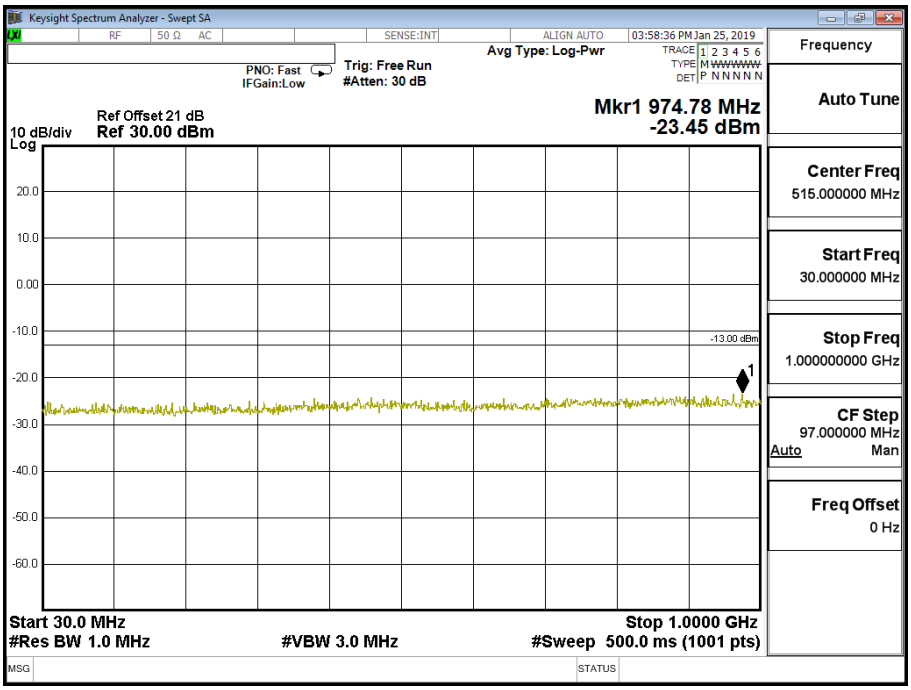

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:14:11 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Mkr2 13.325 GHz
-63.74 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.430 GHz -63.461 dBm
2 N 1 f 13.325 GHz -63.74 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

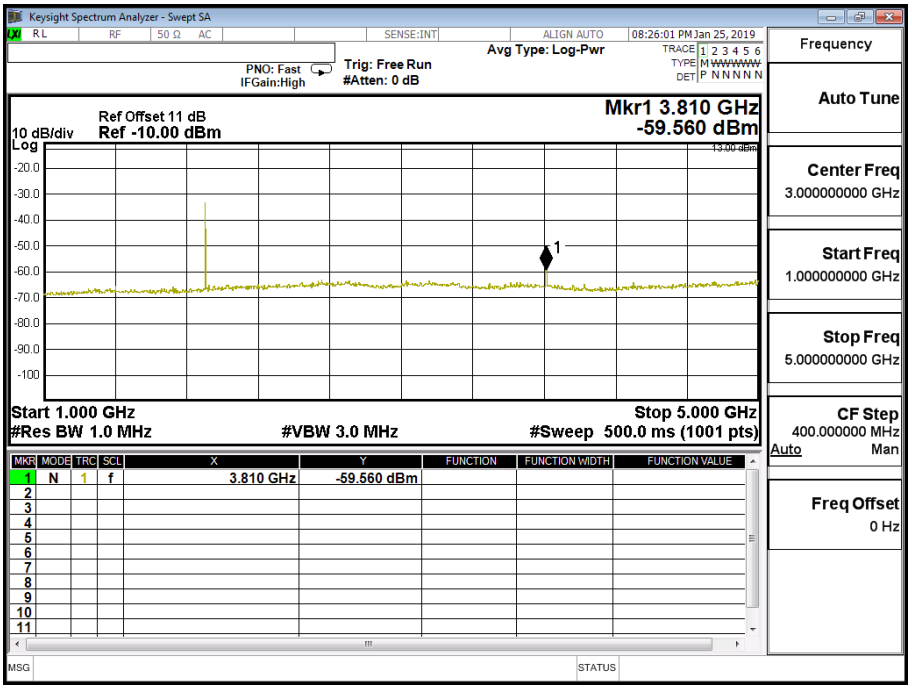

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:15:13 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Mkr3 19.050 GHz
-59.964 dBm
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 15.240 GHz -61.605 dBm
2 N 1 f 17.145 GHz -61.295 dBm
3 N 1 f 19.050 GHz -59.964 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

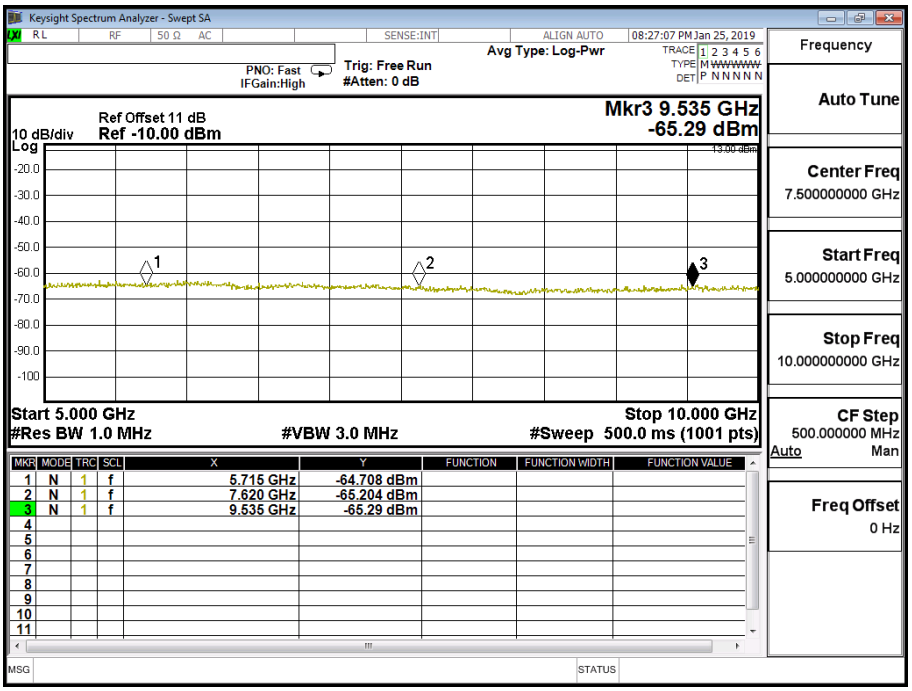
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (10M)	Test Range	30MHz~20GHz

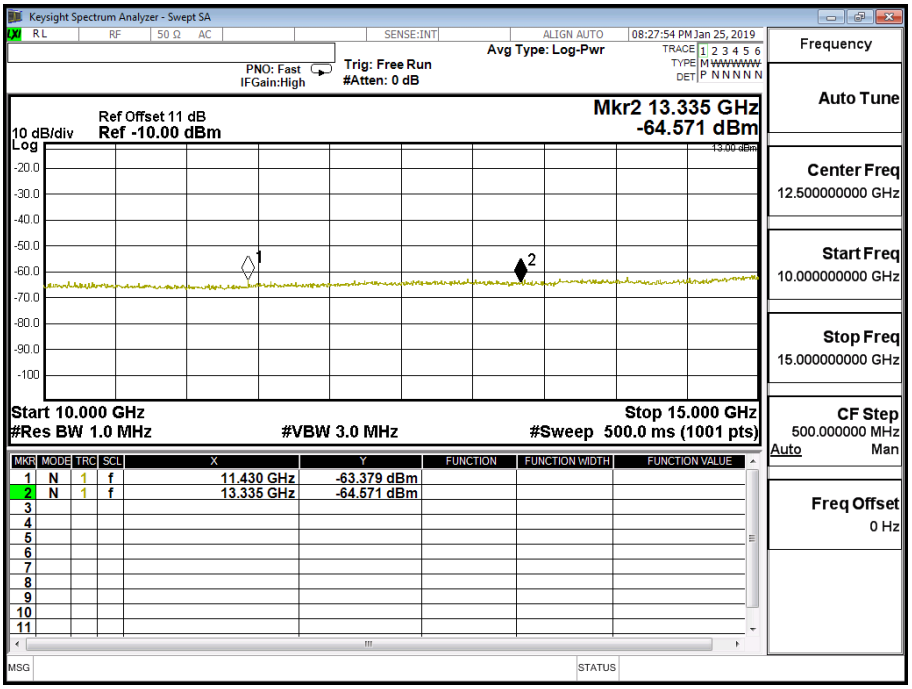
LTE- Band 2 10M 16QAM(1,24) CH19150 (1905MHz)

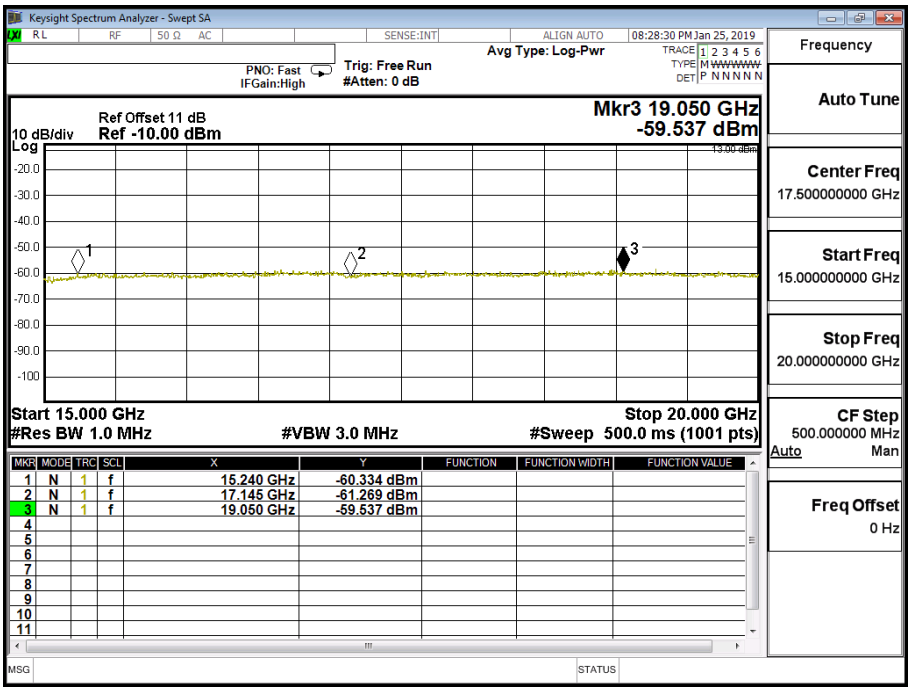
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3810	-59.560	1.10	-58.460	-13
5715	-64.708	1.23	-63.478	-13
7620	-65.204	1.59	-63.614	-13
9535	-65.290	1.89	-63.400	-13
11430	-63.379	2.07	-61.309	-13
13335	-64.571	2.26	-62.311	-13
15240	-60.334	2.64	-57.694	-13
17145	-61.269	3.50	-57.769	-13
19050	-59.537	3.70	-55.837	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:26:01 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.810 GHz
-59.560 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.810 GHz -59.560 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:27:07 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.535 GHz
-65.29 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.715 GHz -64.708 dBm
2 N 1 f 7.620 GHz -65.204 dBm
3 N 1 f 9.535 GHz -65.29 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

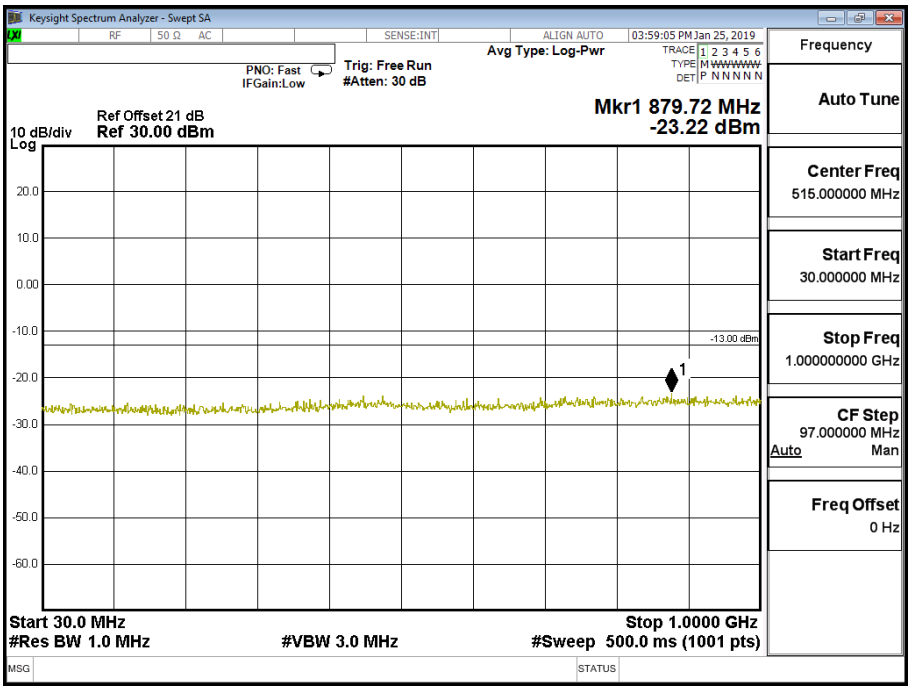

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:27:54 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 13.335 GHz
-64.571 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.430 GHz -63.379 dBm
2 N 1 f 13.335 GHz -64.571 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

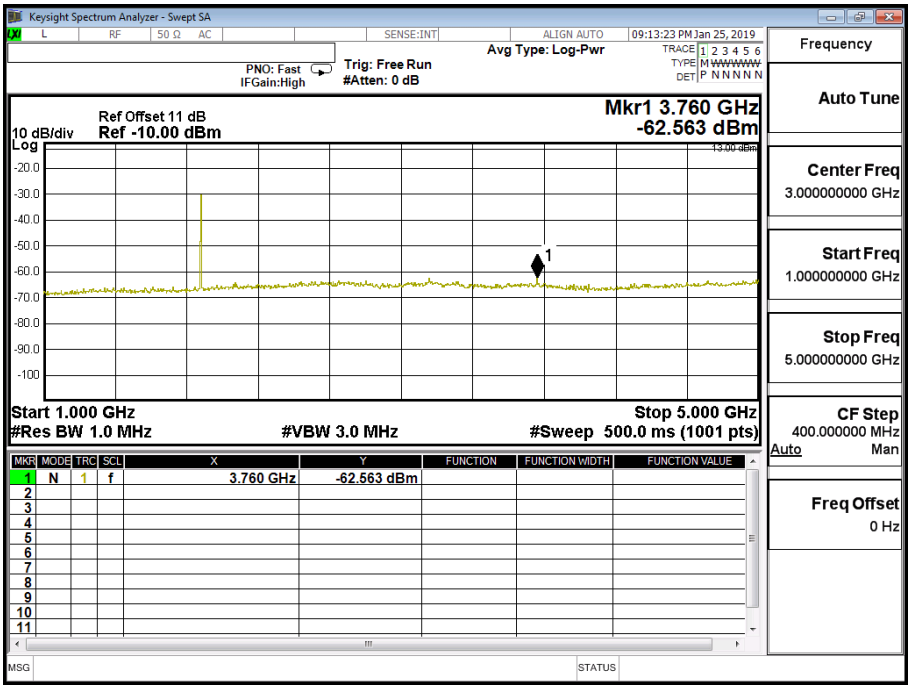

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:28:30 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 19.050 GHz
-59.537 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 15.240 GHz -60.334 dBm
2 N 1 f 17.145 GHz -61.269 dBm
3 N 1 f 19.050 GHz -59.537 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

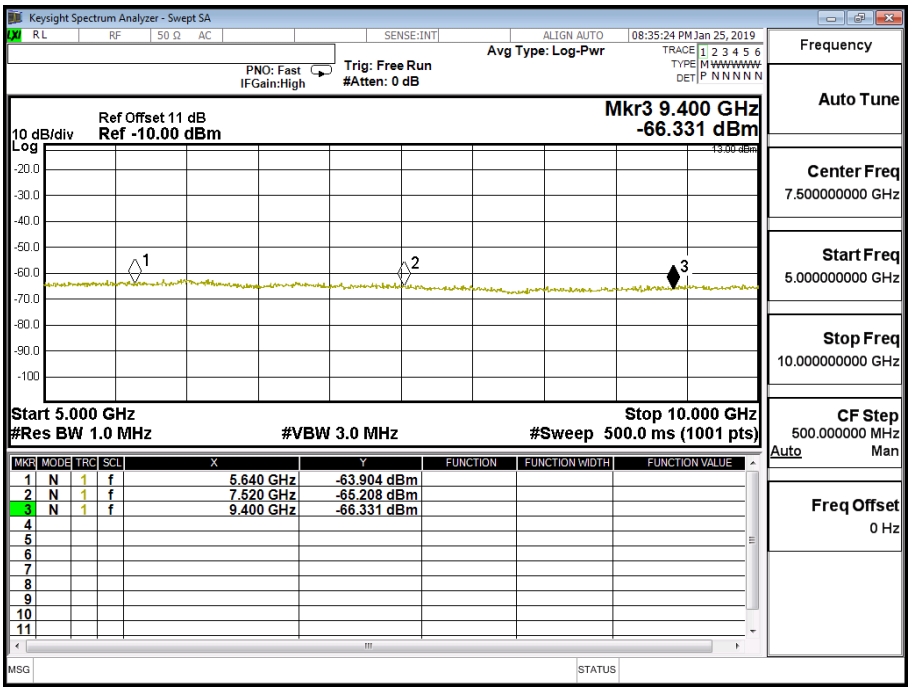
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 15M	Test Range	30MHz~20GHz

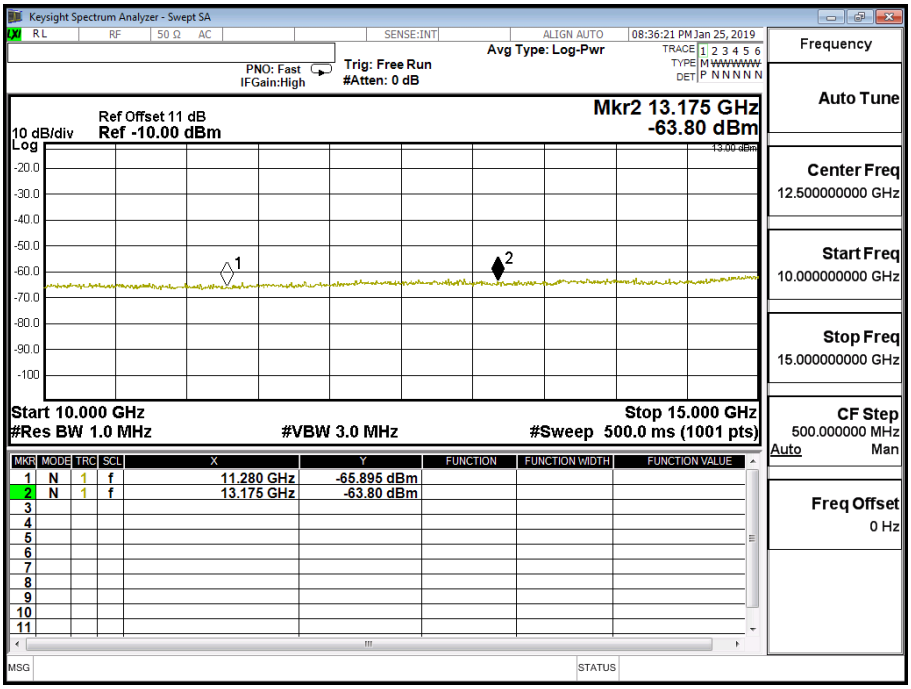
LTE-Band 2 15M QPSK(1,37) CH18900 (1880MHz)

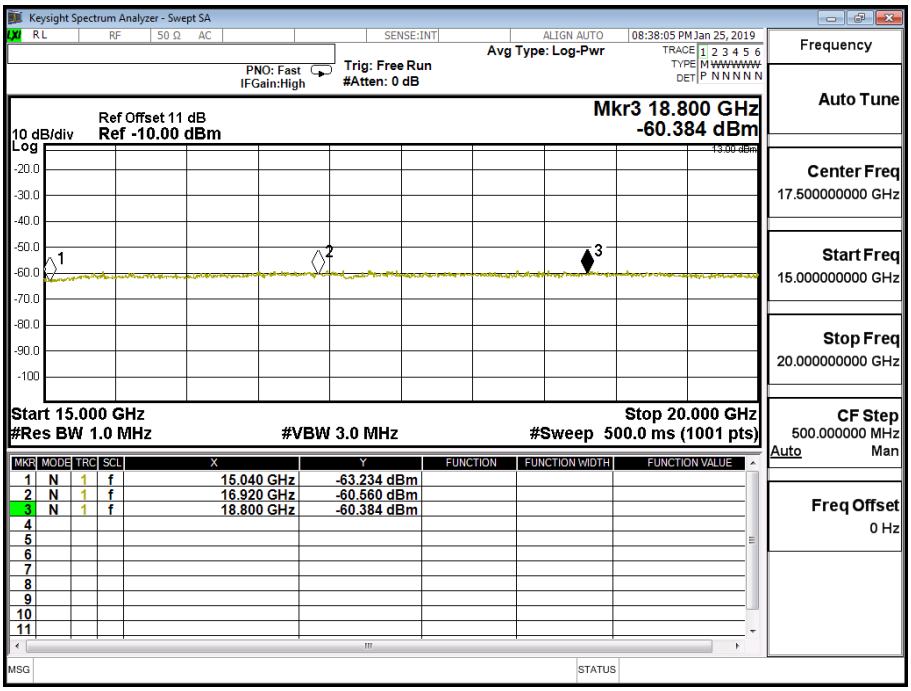
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3760	-62.563	1.10	-61.463	-13
5640	-63.904	1.23	-62.674	-13
7520	-65.208	1.59	-63.618	-13
9400	-66.331	1.89	-64.441	-13
11280	-65.895	2.07	-63.825	-13
13175	-63.800	2.26	-61.540	-13
15040	-63.234	2.64	-60.594	-13
16920	-60.560	3.50	-57.060	-13
18800	-60.384	3.70	-56.684	-13




Keysight Spectrum Analyzer - Swept SA
L
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
09:13:23 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.760 GHz
-62.563 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.760 GHz -62.563 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:35:24 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.400 GHz
-66.331 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.640 GHz -63.904 dBm
2 N 1 f 7.520 GHz -65.208 dBm
3 N 1 f 9.400 GHz -66.331 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

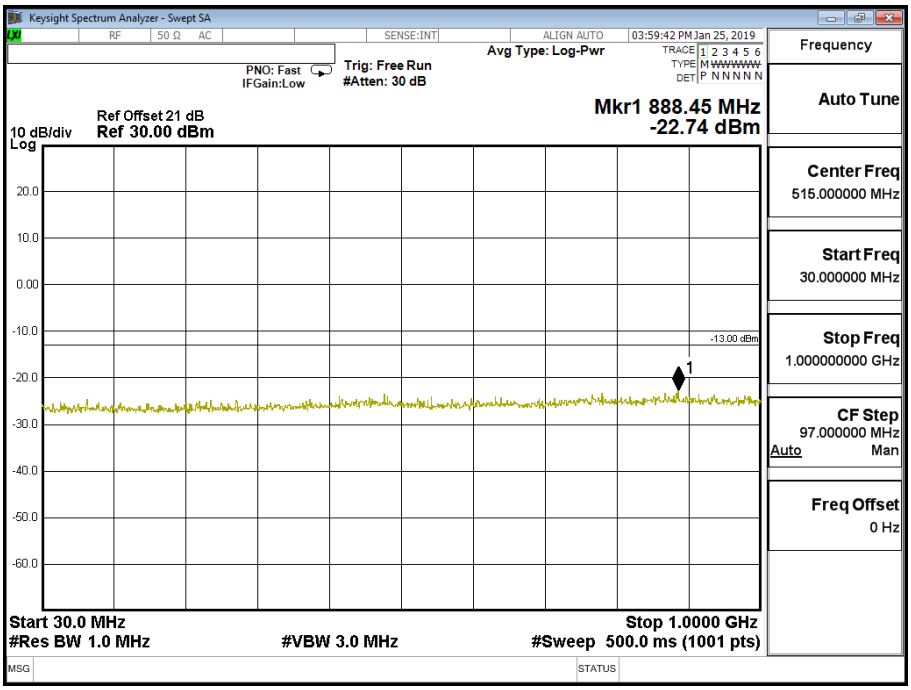

Keysight Spectrum Analyzer - Swept SA
08:36:21 PM Jan 25, 2019
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 13.175 GHz
-63.80 dBm
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
1 N 1 f 11.280 GHz -65.895 dBm
2 N 1 f 13.175 GHz -63.80 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz

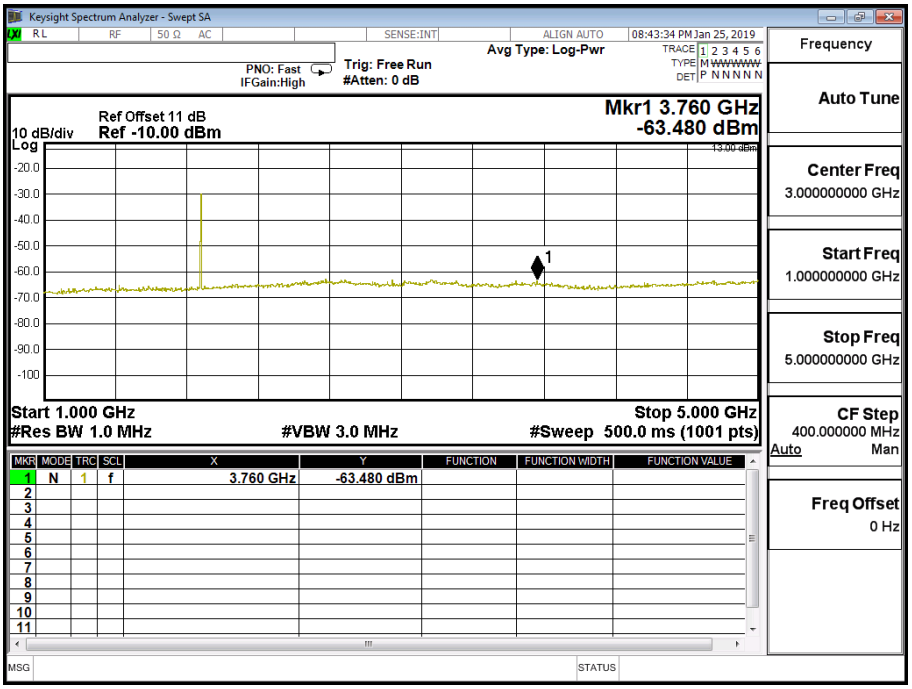

Keysight Spectrum Analyzer - Swept SA
08:38:05 PM Jan 25, 2019
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 18.800 GHz
-60.384 dBm
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
1 N 1 f 15.040 GHz -63.234 dBm
2 N 1 f 16.920 GHz -60.560 dBm
3 N 1 f 18.800 GHz -60.384 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz

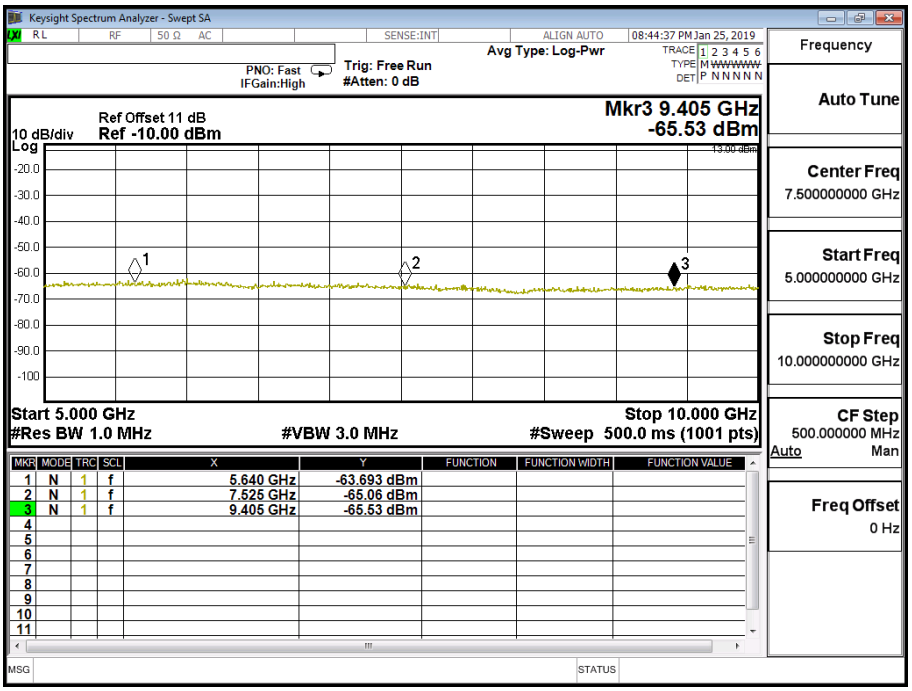
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (15M)	Test Range	30MHz~20GHz

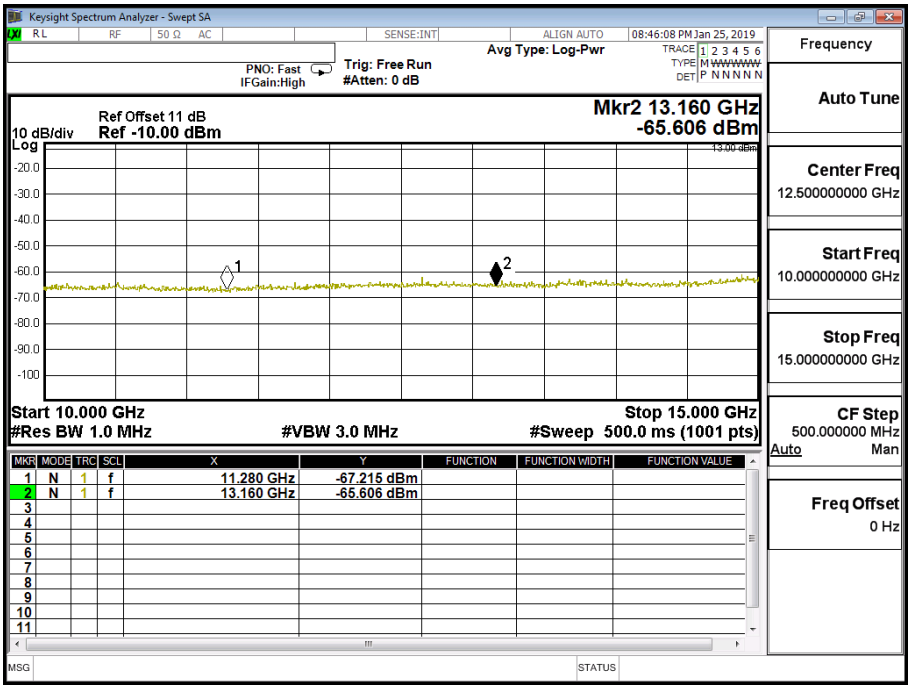
LTE-Band 2 (15M) 16QAM(1,37) CH18900 (1880MHz)

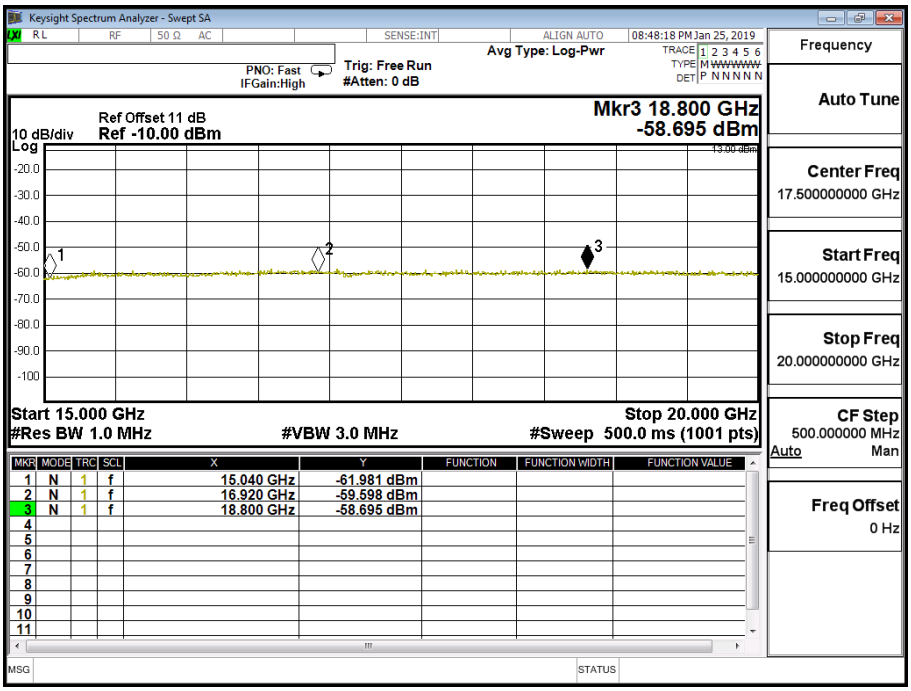
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3760	-63.480	1.10	-62.380	-13
5640	-63.693	1.23	-62.463	-13
7525	-65.060	1.59	-63.470	-13
9405	-65.530	1.89	-63.640	-13
11280	-67.215	2.07	-65.145	-13
13160	-65.606	2.26	-63.346	-13
15040	-61.981	2.64	-59.341	-13
16920	-59.598	3.50	-56.098	-13
18800	-58.695	3.70	-54.995	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:43:34 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.760 GHz
-63.480 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.760 GHz -63.480 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:44:37 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.405 GHz
-65.53 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.640 GHz -63.693 dBm
2 N 1 f 7.525 GHz -65.06 dBm
3 N 1 f 9.405 GHz -65.53 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

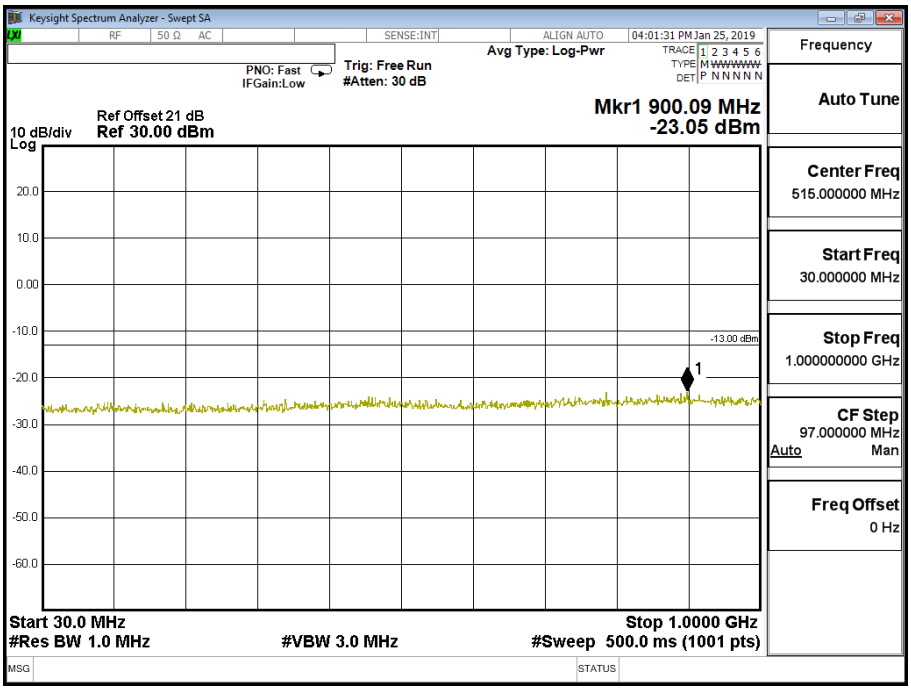

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:46:08 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 13.160 GHz
-65.606 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.280 GHz -67.215 dBm
2 N 1 f 13.160 GHz -65.606 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

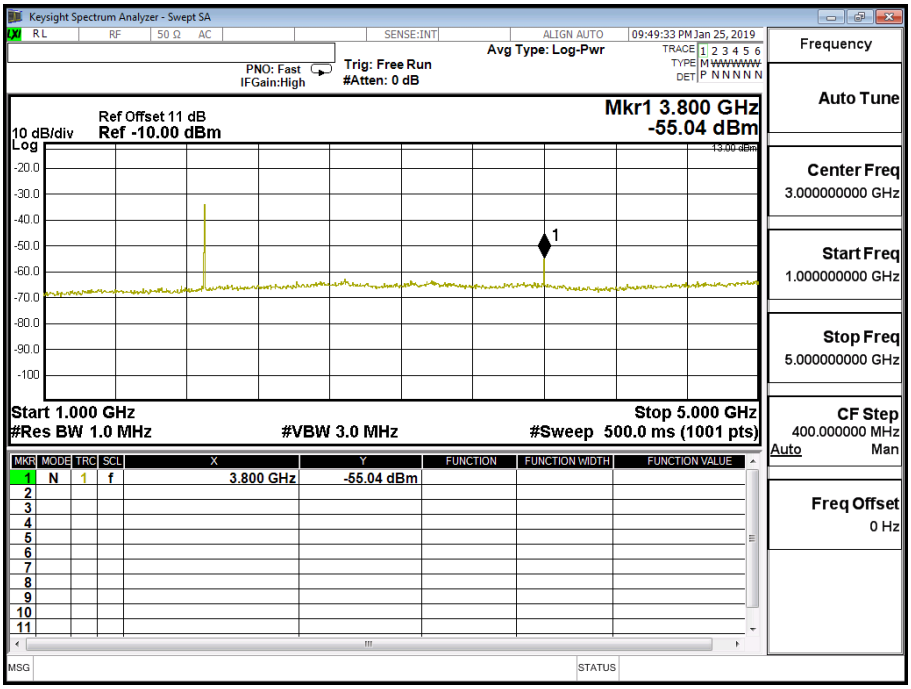

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
08:48:18 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 18.800 GHz
-58.695 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 15.040 GHz -61.981 dBm
2 N 1 f 16.920 GHz -59.598 dBm
3 N 1 f 18.800 GHz -58.695 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

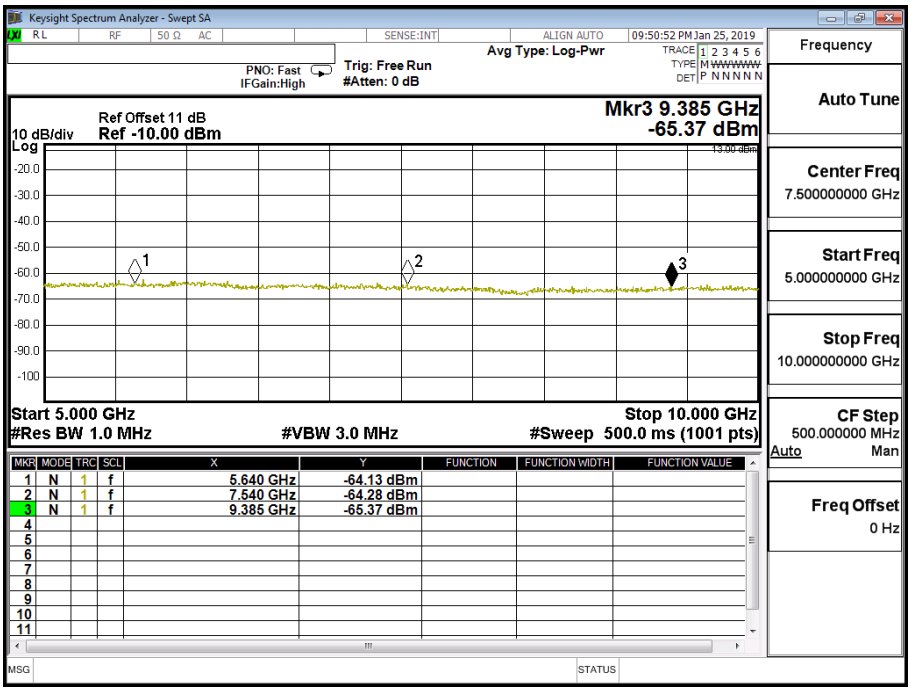
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (20M)	Test Range	30MHz~20GHz

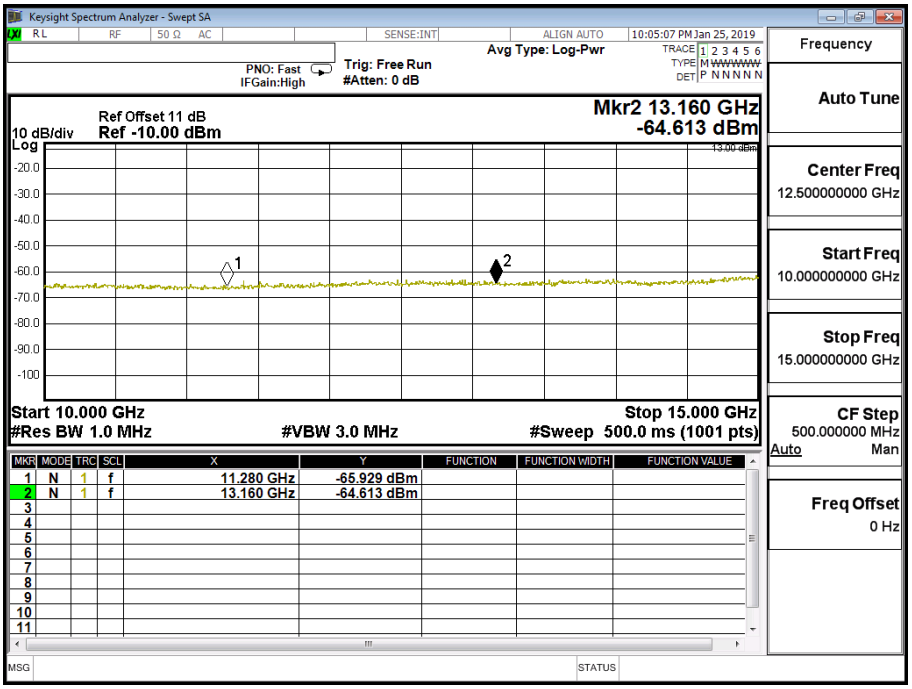
LTE-Band 2 (20M) QPSK(1,49) CH18900 (1880MHz)

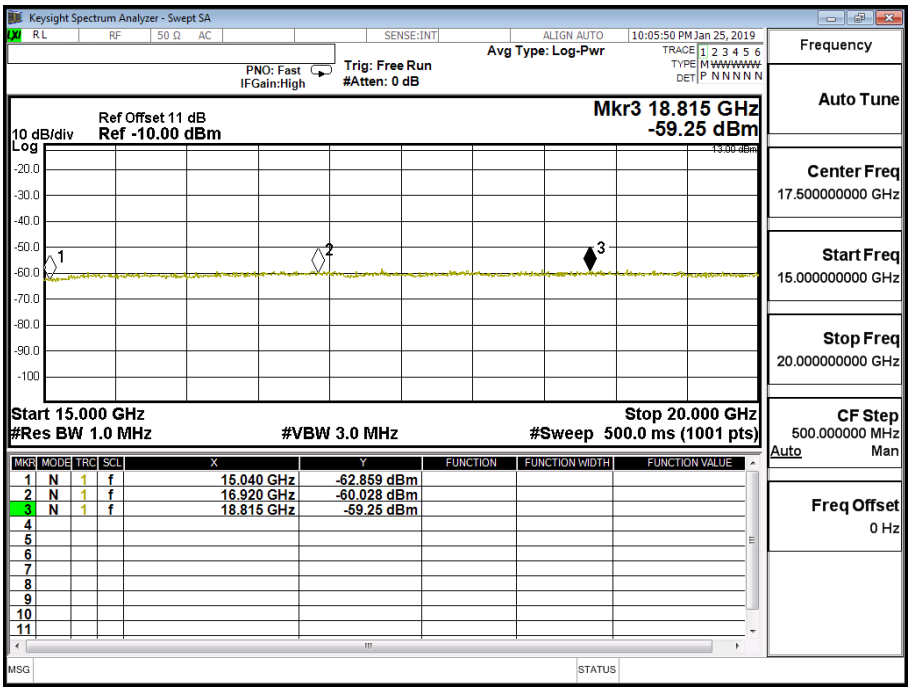
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3800	-55.040	1.10	-53.940	-13
5640	-64.130	1.23	-62.900	-13
7540	-64.280	1.59	-62.690	-13
9385	-65.370	1.89	-63.480	-13
11280	-65.929	2.07	-63.859	-13
13160	-64.613	2.26	-62.353	-13
15040	-62.859	2.64	-60.219	-13
16920	-60.028	3.50	-56.528	-13
18815	-59.250	3.70	-55.550	-13




Keysight Spectrum Analyzer - Swept SA
09:49:33 PM Jan 25, 2019
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.800 GHz
-55.04 dBm
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto
Man
Freq Offset
0 Hz
1 N 1 f 3.800 GHz -55.04 dBm


Keysight Spectrum Analyzer - Swept SA
09:50:52 PM Jan 25, 2019
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.385 GHz
-65.37 dBm
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto
Man
Freq Offset
0 Hz
1 N 1 f 5.640 GHz -64.13 dBm
2 N 1 f 7.540 GHz -64.28 dBm
3 N 1 f 9.385 GHz -65.37 dBm

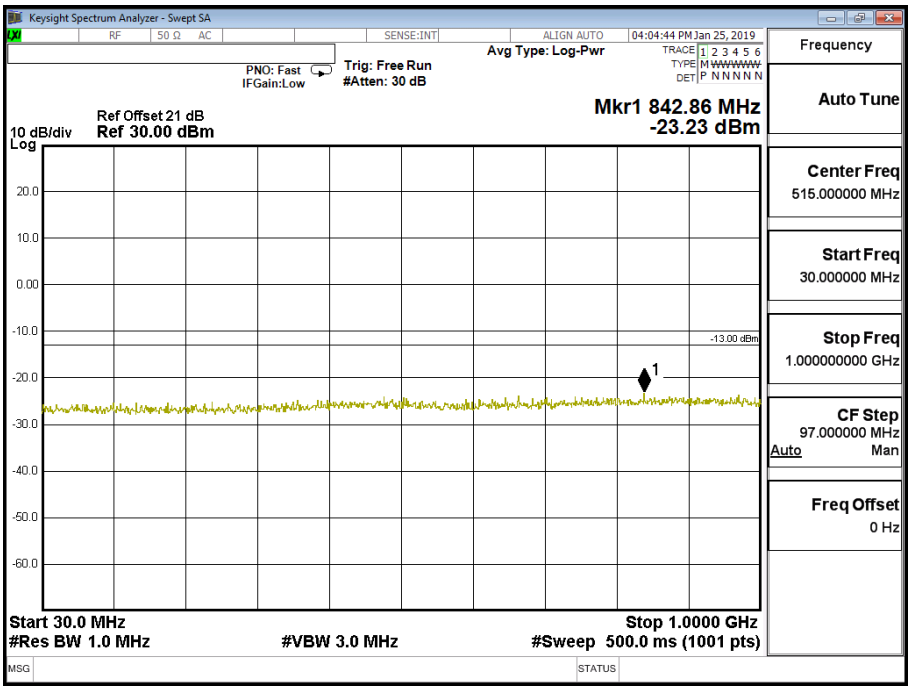

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
10:05:07 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 13.160 GHz
-64.613 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 11.280 GHz -65.929 dBm
2 N 1 f 13.160 GHz -64.613 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

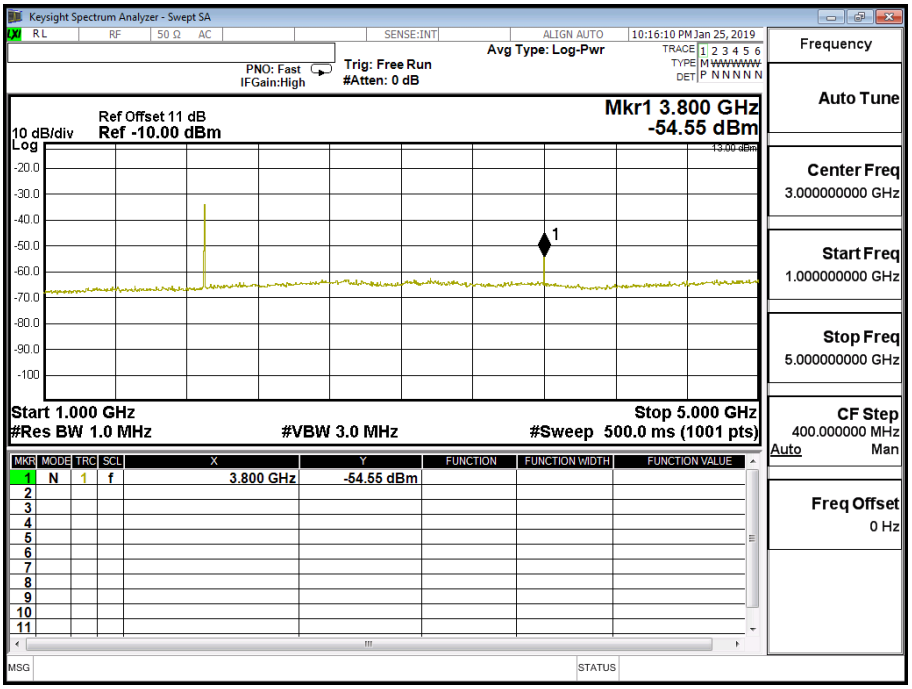

Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
10:05:50 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 18.815 GHz
-59.25 dBm
Log
13.00 dBm
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 15.040 GHz -62.859 dBm
2 N 1 f 16.920 GHz -60.028 dBm
3 N 1 f 18.815 GHz -59.25 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS

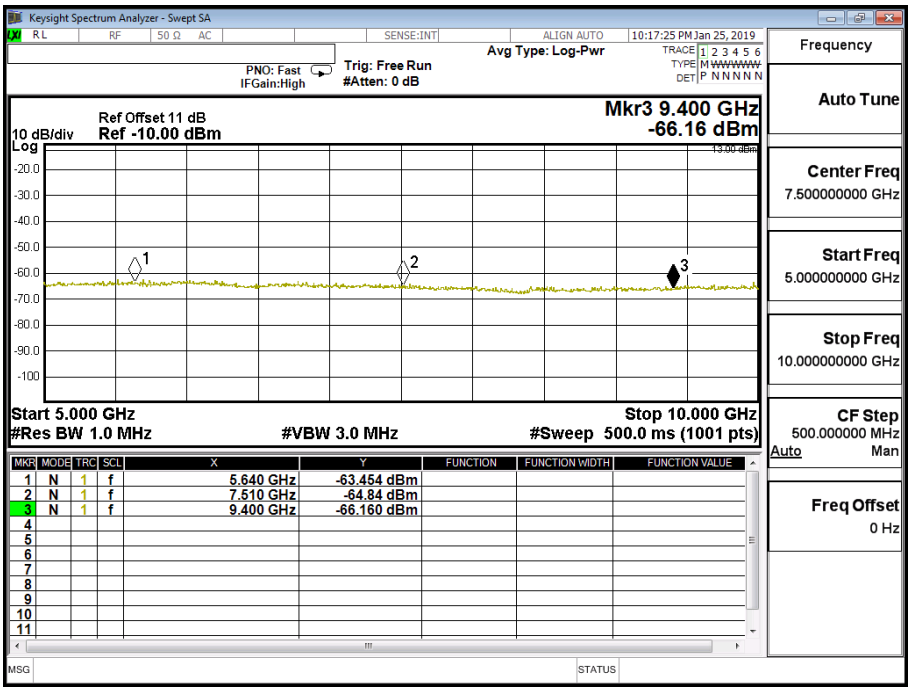
Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Conducted)		
Date of Test	2019/01/25	Test Site	CTR
Test Condition	LTE-Band 2 (20M)	Test Range	30MHz~20GHz

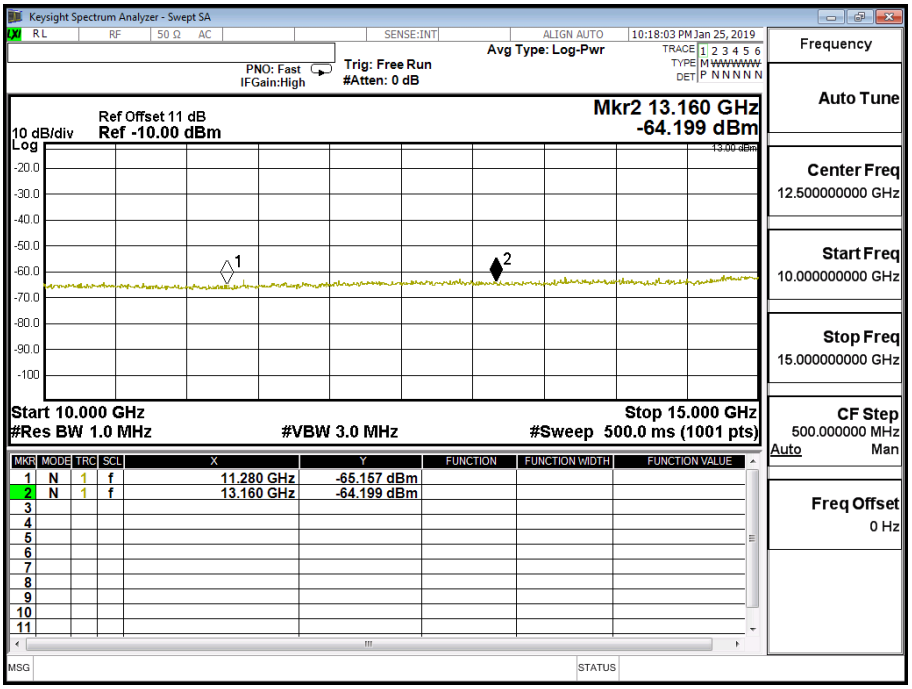
LTE-Band 2 (20M) 16QAM(1,49) CH18900(1880MHz)

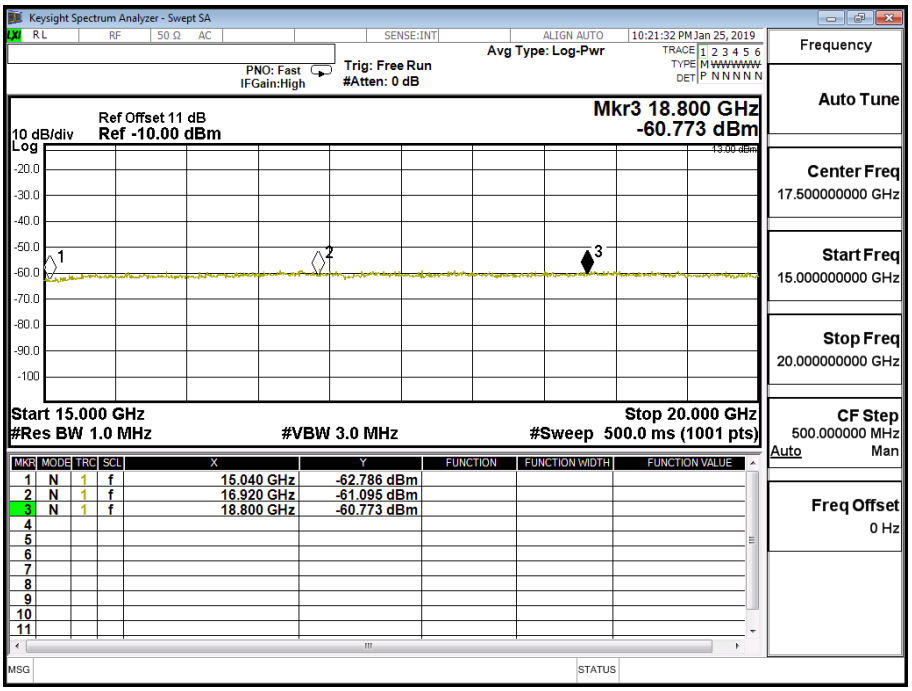
Frequency (MHz)	Reading Level (dBm)	Path Loss (dB)	Emission Level (dBm)	Limit (dBm)
3800	-54.550	1.10	-53.450	-13
5640	-63.454	1.23	-62.224	-13
7510	-64.840	1.59	-63.250	-13
9400	-66.160	1.89	-64.270	-13
11280	-65.157	2.07	-63.087	-13
13160	-64.199	2.26	-61.939	-13
15040	-62.786	2.64	-60.146	-13
16920	-61.095	3.50	-57.595	-13
18800	-60.773	3.70	-57.073	-13




Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
10:16:10 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr1 3.800 GHz
-54.55 dBm
Log
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 1.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 3.800 GHz -54.55 dBm
Frequency
Auto Tune
Center Freq
3.000000000 GHz
Start Freq
1.000000000 GHz
Stop Freq
5.000000000 GHz
CF Step
400.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
RL
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
10:17:25 PM Jan 25, 2019
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 9.400 GHz
-66.16 dBm
Log
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
-80.0
-90.0
-100
Start 5.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 10.000 GHz
#Sweep 500.0 ms (1001 pts)
MKR MODE TRC SCL X Y FUNCTION FUNCTION WIDTH FUNCTION VALUE
1 N 1 f 5.640 GHz -63.454 dBm
2 N 1 f 7.510 GHz -64.84 dBm
3 N 1 f 9.400 GHz -66.160 dBm
Frequency
Auto Tune
Center Freq
7.500000000 GHz
Start Freq
5.000000000 GHz
Stop Freq
10.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz
MSG
STATUS


Keysight Spectrum Analyzer - Swept SA
10:18:03 PM Jan 25, 2019
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr2 13.160 GHz
-64.199 dBm
Start 10.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 15.000 GHz
#Sweep 500.0 ms (1001 pts)
1 N 1 f 11.280 GHz -65.157 dBm
2 N 1 f 13.160 GHz -64.199 dBm
Frequency
Auto Tune
Center Freq
12.500000000 GHz
Start Freq
10.000000000 GHz
Stop Freq
15.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz


Keysight Spectrum Analyzer - Swept SA
10:21:32 PM Jan 25, 2019
Avg Type: Log-Pwr
PNO: Fast
IFGain:High
Trig: Free Run
#Atten: 0 dB
Ref Offset 11 dB
10 dB/div
Ref -10.00 dBm
Mkr3 18.800 GHz
-60.773 dBm
Start 15.000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 20.000 GHz
#Sweep 500.0 ms (1001 pts)
1 N 1 f 15.040 GHz -62.786 dBm
2 N 1 f 16.920 GHz -61.095 dBm
3 N 1 f 18.800 GHz -60.773 dBm
Frequency
Auto Tune
Center Freq
17.500000000 GHz
Start Freq
15.000000000 GHz
Stop Freq
20.000000000 GHz
CF Step
500.000000 MHz
Auto Man
Freq Offset
0 Hz

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Radiated) - Multi Band Dipole Antenna (STAF)		
Date of Test	2019/01/29	Test Site	Site3
Test Condition	Band 2 (1.4M) CH18607 (1850.7MHz)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 2 (1.4M) QPSK(1,0)

3701	-57.186	-57.798	2.530	12.600	-47.728	-13
5552	-63.327	-59.943	3.050	13.100	-49.893	-13
7403	-62.903	-48.205	3.650	11.500	-40.355	-13
9254	-61.884	-46.969	3.850	12.000	-38.819	-13
11104	-64.433	-46.884	4.580	12.000	-39.464	-13

Vertical Emissions Band 2 (1.4M) QPSK(1,0)

3701	-56.173	-54.537	2.530	12.600	-44.467	-13
5552	-63.041	-58.997	3.050	13.100	-48.947	-13
7403	-62.708	-47.678	3.650	11.500	-39.828	-13
9254	-62.634	-47.160	3.850	12.000	-39.010	-13
11104	-63.615	-45.864	4.580	12.000	-38.444	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Radiated) - Multi Band Dipole Antenna (STAF)		
Date of Test	2019/01/29	Test Site	Site3
Test Condition	Band 2 (3M) CH18615 (1851.5MHz)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 2 (3M) QPSK(1,7)

3703	-57.834	-58.446	2.530	12.600	-48.376	-13
5555	-63.209	-59.825	3.050	13.100	-49.775	-13
7406	-63.611	-48.957	3.650	11.500	-41.107	-13
9258	-62.706	-47.832	3.850	12.000	-39.682	-13
11109	-64.801	-47.311	4.580	12.000	-39.891	-13

Vertical Emissions Band 2 (3M) QPSK(1,7)

3703	-56.837	-55.202	2.530	12.600	-45.132	-13
5555	-62.087	-58.101	3.050	13.100	-48.051	-13
7406	-62.995	-47.908	3.650	11.500	-40.058	-13
9258	-62.572	-47.097	3.850	12.000	-38.947	-13
11109	-64.220	-46.558	4.580	12.000	-39.138	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Radiated) - Multi Band Dipole Antenna (STAF)		
Date of Test	2019/01/29	Test Site	Site3
Test Condition	Band 2 (5M) CH18625 (1852.5MHz)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 2 (5M) QPSK(1,12)

3705	-53.719	-54.330	2.530	12.600	-44.260	-13
5558	-62.711	-59.167	3.050	13.100	-49.117	-13
7410	-62.987	-48.445	3.650	11.500	-40.595	-13
9263	-62.078	-46.967	3.850	12.000	-38.817	-13
11115	-64.513	-47.199	4.580	12.000	-39.779	-13

Vertical Emissions Band 2 (5M) QPSK(1,12)

3705	-55.963	-54.328	2.530	12.600	-44.258	-13
5558	-62.055	-58.011	3.050	13.100	-47.961	-13
7410	-63.674	-48.605	3.650	11.500	-40.755	-13
9263	-61.759	-46.393	3.850	12.000	-38.243	-13
11115	-64.045	-46.383	4.580	12.000	-38.963	-13

Note:

1. Receiver setting (Peak Detector) : RBW:3MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Radiated) - Multi Band Dipole Antenna (STAF)		
Date of Test	2019/01/29	Test Site	Site3
Test Condition	Band 2 (10M) CH19150 (1905MHz)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 2 (10M) QPSK(1,24)

3810	-54.419	-54.771	2.530	12.600	-44.701	-13
5715	-63.229	-61.112	3.050	13.100	-51.062	-13
7620	-63.749	-49.811	3.650	11.500	-41.961	-13
9525	-61.004	-46.273	3.850	12.000	-38.123	-13
11430	-63.732	-45.556	4.580	12.000	-38.136	-13

Vertical Emissions Band 2 (10M) QPSK(1,24)

3810	-54.709	-52.523	2.530	12.600	-42.453	-13
5715	-63.907	-61.626	3.050	13.100	-51.576	-13
7620	-63.011	-48.560	3.650	11.500	-40.710	-13
9525	-61.614	-46.328	3.850	12.000	-38.178	-13
11430	-63.299	-45.239	4.580	12.000	-37.819	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. ERP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Radiated) - Multi Band Dipole Antenna (STAF)		
Date of Test	2019/01/29	Test Site	Site3
Test Condition	Band 2 (15M) CH18900 (1880MHz)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 2 (15M) QPSK(1,37)

3760	-54.667	-55.015	2.530	12.600	-44.945	-13
5640	-62.792	-60.111	3.050	13.100	-50.061	-13
7520	-63.766	-49.397	3.650	11.500	-41.547	-13
9400	-63.306	-47.988	3.850	12.000	-39.838	-13
11280	-63.847	-47.179	4.580	12.000	-39.759	-13

Vertical Emissions Band 2 (15M) QPSK(1,37)

3760	-53.733	-51.751	2.530	12.600	-41.681	-13
5640	-62.328	-59.178	3.050	13.100	-49.128	-13
7520	-62.388	-47.325	3.650	11.500	-39.475	-13
9400	-62.715	-46.920	3.850	12.000	-38.770	-13
11280	-64.822	-48.168	4.580	12.000	-40.748	-13

Note:

1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Spurious Emission (Radiated) - Multi Band Dipole Antenna (STAF)		
Date of Test	2019/01/29	Test Site	Site3
Test Condition	Band 2 (20M) CH18900 (1880MHz)	Test Range	9kHz ~20GHz

Frequency	Reading Level	Signal Generator Level	Cable Loss	Antenna Gain	EIRP Value	Limit
(GHz)	(dBm)	(dBm)	(dB)	(dBi)	(dBm)	(dBm)

Horizontal Emissions Band 2 (20M) QPSK(1,49)

3760	-50.760	-51.108	2.530	12.600	-41.038	-13
5640	-61.864	-59.337	3.050	13.100	-49.287	-13
7520	-64.027	-49.658	3.650	11.500	-41.808	-13
9400	-62.768	-47.430	3.850	12.000	-39.280	-13
11280	-64.506	-48.045	4.580	12.000	-40.625	-13

Vertical Emissions Band 2 (20M) QPSK(1,49)

3760	-50.792	-48.810	2.530	12.600	-38.740	-13
5640	-62.668	-59.009	3.050	13.100	-48.959	-13
7520	-63.371	-48.351	3.650	11.500	-40.501	-13
9400	-61.981	-46.150	3.850	12.000	-38.000	-13
11280	-63.749	-47.101	4.580	12.000	-39.681	-13

Note:

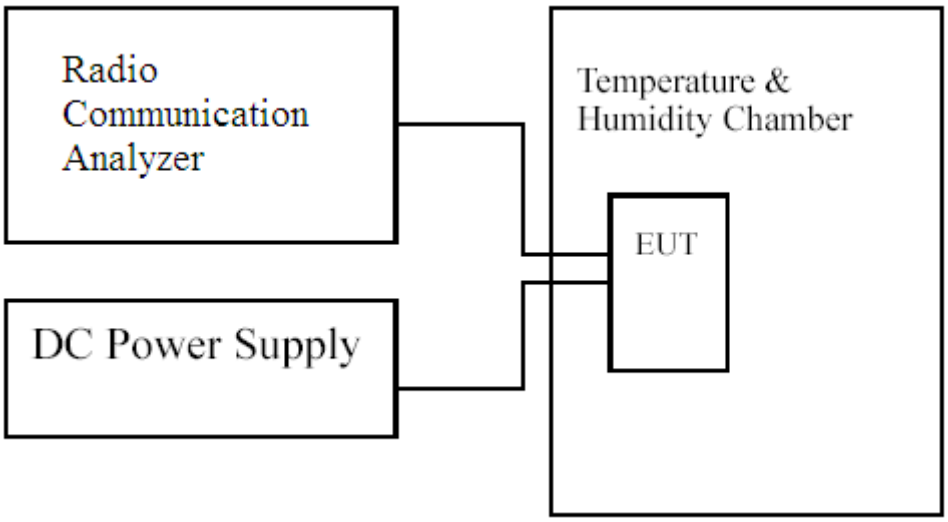
1. Receiver setting (Peak Detector) : RBW:1MHz; VBW:3MHz
2. EIRP Value = Signal Generator Level + Antenna Gain - Cable Loss
3. Spurious emissions past 12 GHz are not shown, due to the magnitude of spurious emissions attenuated more than 20 dB below the limit.

7. Frequency Stability Under Temperature & Voltage Variations

7.1. Test Specification

According to Part 2.1055, 24.235

7.2. Test Setup



7.3. Limits

Limit	**<±2.5ppm**

7.4. Test Procedure

The frequency stability of transmitter is measured by:

(a) Temperature: The temperature is varied from -30˚C to 50˚C in 10˚C increment using a standard temperature & Humidity chamber.

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

The EUT was connected via the base station simulator. Universal Radio Communication Tester, (MT8820C), was used to measure The Frequency Error. The maximum result of measurements was recorded.

7.5. Test Result of Frequency Stability Under Temperature Variations

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (1.4M) CH18900(1880MHz) –QPSK	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0099	±4.70
-20	1.88	0.0122	±4.70
-10	1.88	-0.0077	±4.70
0	1.88	-0.0069	±4.70
10	1.88	-0.0084	±4.70
20	1.88	-0.0131	±4.70
30	1.88	-0.0107	±4.70
40	1.88	-0.0096	±4.70
50	1.88	-0.0095	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0105	±4.70
120	1.88	-0.0131	±4.70
102	1.88	-0.0098	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (1.4M) CH18900(1880MHz) –16QAM	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0092	±4.70
-20	1.88	-0.0108	±4.70
-10	1.88	0.0078	±4.70
0	1.88	-0.0075	±4.70
10	1.88	0.0067	±4.70
20	1.88	-0.0100	±4.70
30	1.88	-0.0105	±4.70
40	1.88	-0.0085	±4.70
50	1.88	-0.0081	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0105	±4.70
120	1.88	-0.0100	±4.70
102	1.88	-0.0094	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (3M) CH18900(1880MHz) –QPSK	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0076	±4.70
-20	1.88	-0.0096	±4.70
-10	1.88	-0.0109	±4.70
0	1.88	-0.0073	±4.70
10	1.88	-0.0084	±4.70
20	1.88	-0.0100	±4.70
30	1.88	-0.0113	±4.70
40	1.88	-0.0062	±4.70
50	1.88	-0.0104	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0088	±4.70
120	1.88	-0.0100	±4.70
102	1.88	0.0107	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (3M) CH18900(1880MHz) –16QAM	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	0.0070	±4.70
-20	1.88	-0.0107	±4.70
-10	1.88	-0.0098	±4.70
0	1.88	-0.0076	±4.70
10	1.88	-0.0070	±4.70
20	1.88	-0.0083	±4.70
30	1.88	0.0062	±4.70
40	1.88	0.0069	±4.70
50	1.88	0.0089	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0080	±4.70
120	1.88	-0.0083	±4.70
102	1.88	-0.0121	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (5M) CH18900(1880MHz) –QPSK	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0087	±4.70
-20	1.88	-0.0090	±4.70
-10	1.88	-0.0055	±4.70
0	1.88	-0.0078	±4.70
10	1.88	-0.0084	±4.70
20	1.88	-0.0106	±4.70
30	1.88	-0.0093	±4.70
40	1.88	-0.0072	±4.70
50	1.88	-0.0074	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0085	±4.70
120	1.88	-0.0106	±4.70
102	1.88	-0.0115	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (5M) CH18900(1880MHz) –16QAM	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0065	±4.70
-20	1.88	-0.0086	±4.70
-10	1.88	-0.0087	±4.70
0	1.88	-0.0061	±4.70
10	1.88	-0.0083	±4.70
20	1.88	-0.0099	±4.70
30	1.88	-0.0074	±4.70
40	1.88	-0.0087	±4.70
50	1.88	-0.0089	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0120	±4.70
120	1.88	-0.0099	±4.70
102	1.88	-0.0095	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (10M) CH18900(1880MHz) –QPSK	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0077	±4.70
-20	1.88	-0.0074	±4.70
-10	1.88	-0.0064	±4.70
0	1.88	-0.0076	±4.70
10	1.88	-0.0064	±4.70
20	1.88	-0.0085	±4.70
30	1.88	-0.0074	±4.70
40	1.88	-0.0084	±4.70
50	1.88	-0.0090	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0093	±4.70
120	1.88	-0.0085	±4.70
102	1.88	-0.0069	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (10M) CH18900(1880MHz) –16QAM	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0080	±4.70
-20	1.88	-0.0082	±4.70
-10	1.88	-0.0073	±4.70
0	1.88	-0.0066	±4.70
10	1.88	-0.0077	±4.70
20	1.88	-0.0081	±4.70
30	1.88	-0.0087	±4.70
40	1.88	-0.0059	±4.70
50	1.88	-0.0084	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0085	±4.70
120	1.88	-0.0081	±4.70
102	1.88	-0.0104	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (15M) CH18900(1880MHz) –QPSK	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0078	±4.70
-20	1.88	-0.0090	±4.70
-10	1.88	0.0077	±4.70
0	1.88	-0.0074	±4.70
10	1.88	0.0078	±4.70
20	1.88	-0.0082	±4.70
30	1.88	-0.0104	±4.70
40	1.88	-0.0091	±4.70
50	1.88	-0.0078	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0104	±4.70
120	1.88	-0.0082	±4.70
102	1.88	-0.0086	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (15M) CH18900(1880MHz) –16QAM	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	-0.0084	±4.70
-20	1.88	-0.0102	±4.70
-10	1.88	-0.0079	±4.70
0	1.88	-0.0097	±4.70
10	1.88	-0.0104	±4.70
20	1.88	-0.0103	±4.70
30	1.88	-0.0095	±4.70
40	1.88	-0.0095	±4.70
50	1.88	-0.0092	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0087	±4.70
120	1.88	-0.0103	±4.70
102	1.88	-0.0085	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (20M) CH18900(1880MHz) –QPSK	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	0.0072	±4.70
-20	1.88	0.0059	±4.70
-10	1.88	0.0066	±4.70
0	1.88	-0.0069	±4.70
10	1.88	-0.0060	±4.70
20	1.88	-0.0077	±4.70
30	1.88	-0.0073	±4.70
40	1.88	-0.0082	±4.70
50	1.88	-0.0077	±4.70

Voltage Variations

AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0077	±4.70
120	1.88	-0.0077	±4.70
102	1.88	-0.0101	±4.70

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Frequency Stability Under Temperature Variations & Voltage Variations		
Date of Test	2019/01/30	Test Site	CTR
Test Condition	Band 2 (20M) CH18900(1880MHz) –16QAM	Test Range	-30℃~+50℃

Frequency Stability Under Temperature Variations

Temperature Interval(℃)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
-30	1.88	0.0100	±4.70
-20	1.88	-0.0076	±4.70
-10	1.88	-0.0086	±4.70
0	1.88	-0.0064	±4.70
10	1.88	-0.0094	±4.70
20	1.88	0.0078	±4.70
30	1.88	-0.0064	±4.70
40	1.88	-0.0088	±4.70
50	1.88	-0.0103	±4.70

Voltage Variations

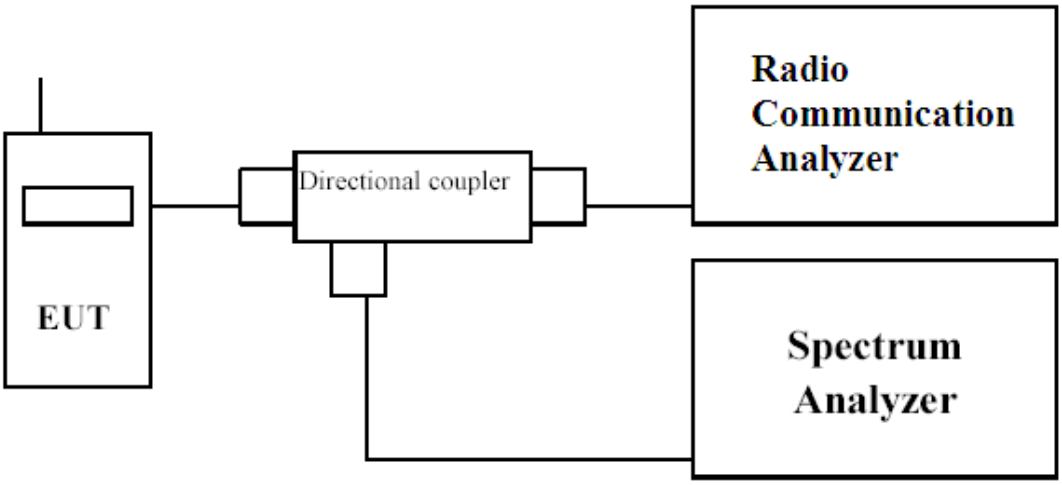
AC Voltage (V)	Test Frequency (GHz)	Deviation (kHz)	Limit (kHz)
138	1.88	-0.0063	±4.70
120	1.88	0.0078	±4.70
102	1.88	-0.0071	±4.70

8. Peak to Average Ratio

8.1 Test Specification

According to Part 24.232 (a)

8.2 Test Setup



8.3 Limits

The peak-to-average power ratio (PAPR) of the transmitter output power must not exceed 13 dB. The PAPR measurements should be made using either an instrument with complementary cumulative distribution function (CCDF) capabilities to determine that PAPR will not exceed 13 dB for more than 0.1 percent of the time or other Commission approved procedure.

8.4 Test Procedure

a) Refer to instrument's analyzer instruction manual for details on how to use the power statistics/CCDF function;

b) Set resolution/measurement bandwidth ≥ signal's occupied bandwidth;

c) Set the number of counts to a value that stabilizes the measured CCDF curve;

d) Set the measurement interval as follows:

1) for continuous transmissions, set to 1 ms,

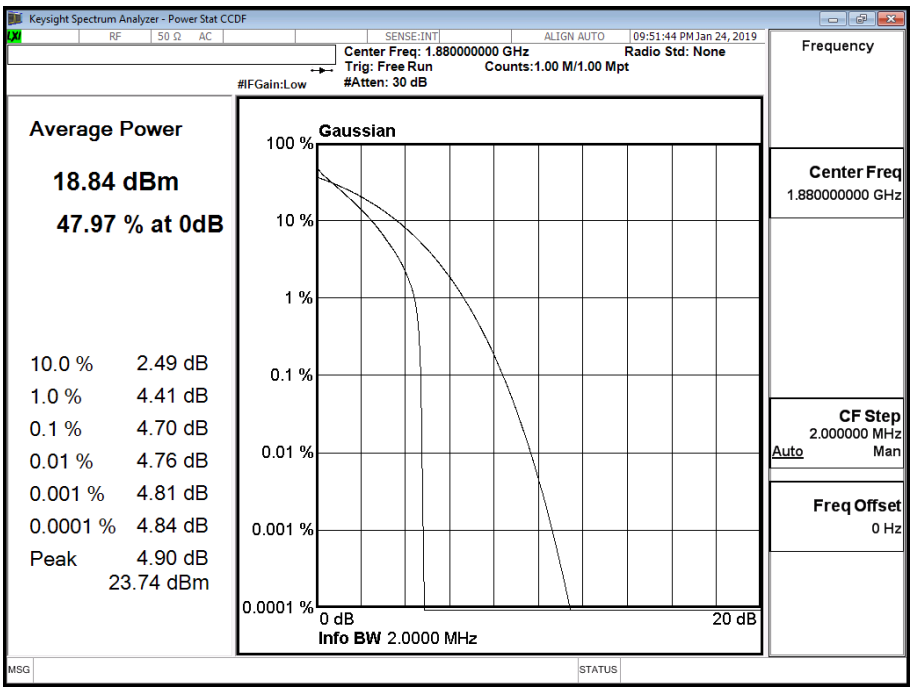
2) for burst transmissions, employ an external trigger that is synchronized with the EUT burst timing sequence, or use the internal burst trigger with a trigger level that allows the burst to stabilize and set the measurement interval to a time that is less than or equal to the burst duration.

e) Record the maximum PAPR level associated with a probability of 0.1%.

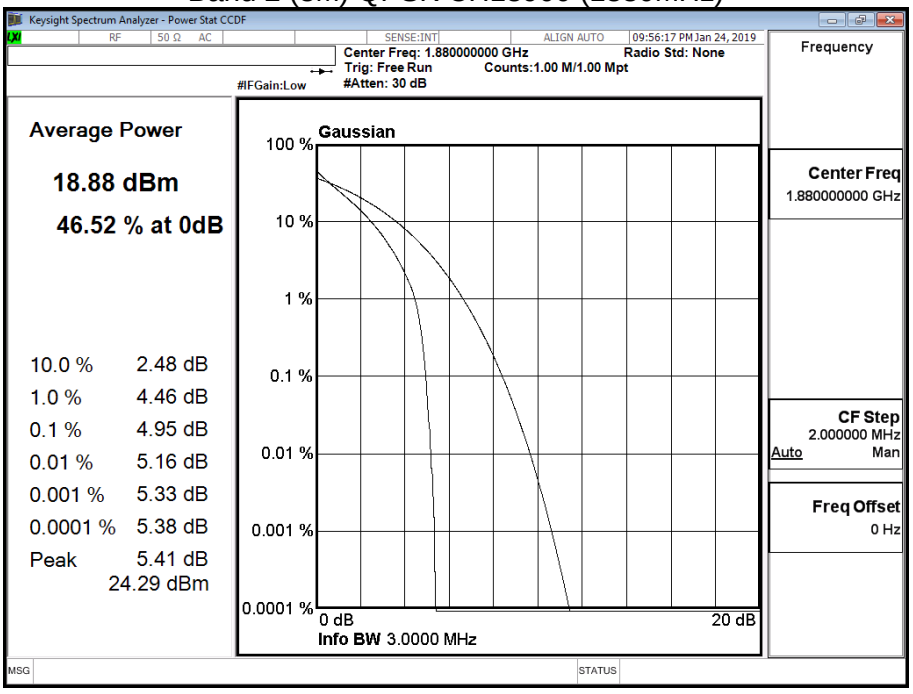
8.5 Test Result of Spurious Emission

Product	4G/LTE Multi-Service 11ac Broadband Router, 4G/LTE Wireless-AC VoIP Broadband Router, 4G/LTE Wireless-AC Broadband Router		
Test Mode	Peak to Average Ratio		
Date of Test	2019/01/24	Test Site	CTR
Test Condition	LTE-Band 2		

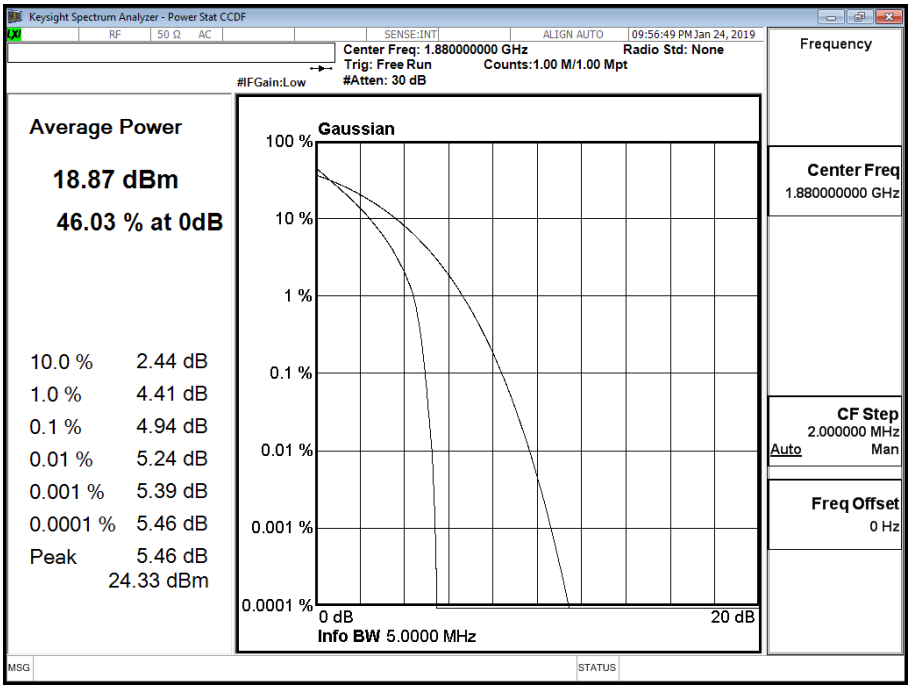
Band 2 (1.4M) QPSK CH18900 (1880MHz)



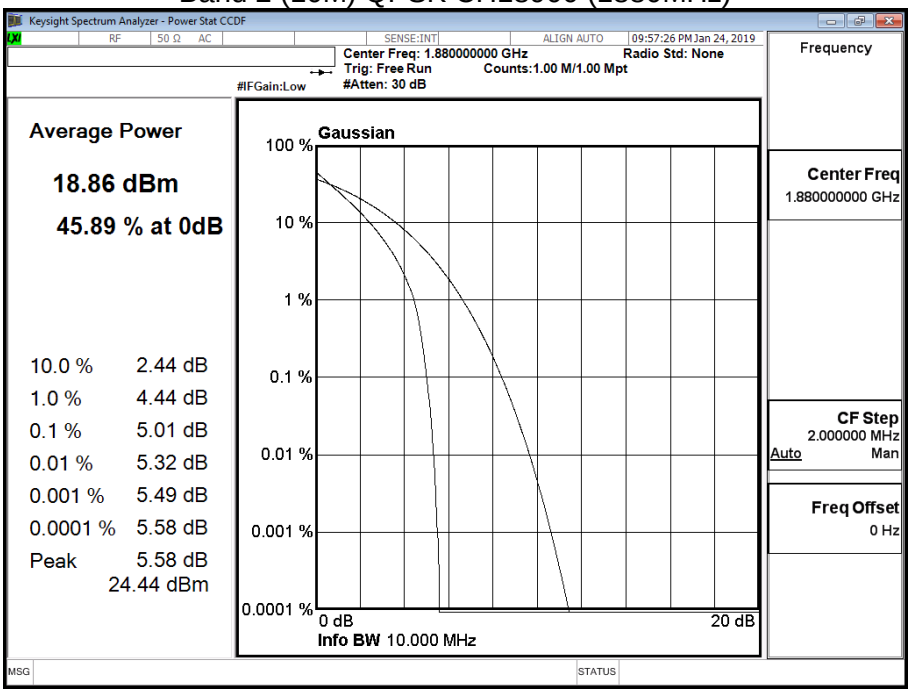
Band 2 (3M) QPSK CH18900 (1880MHz)



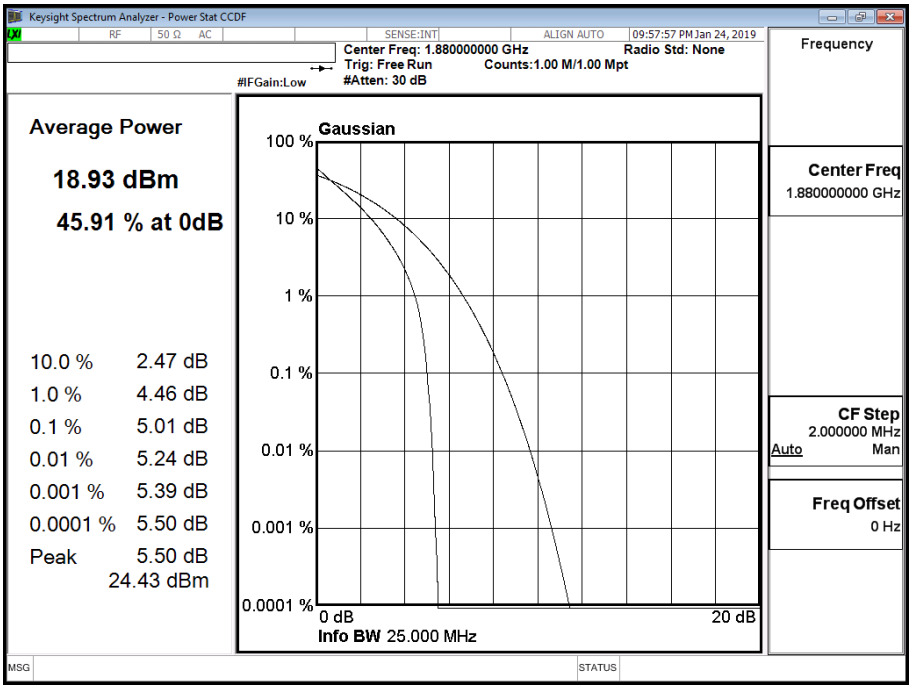
Band 2 (5M) QPSK CH18900 (1880MHz)



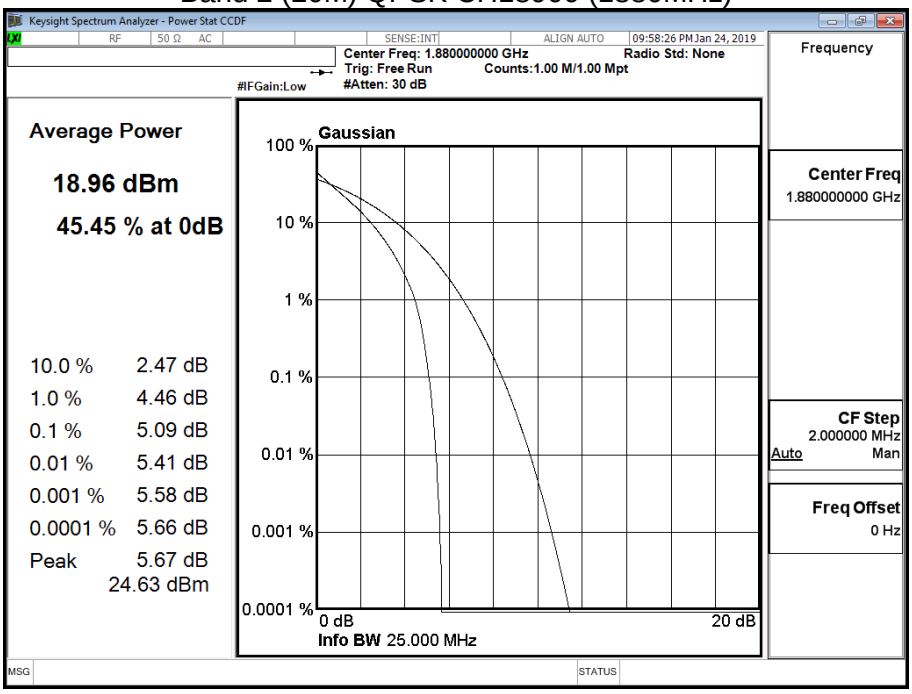
Band 2 (10M) QPSK CH18900 (1880MHz)



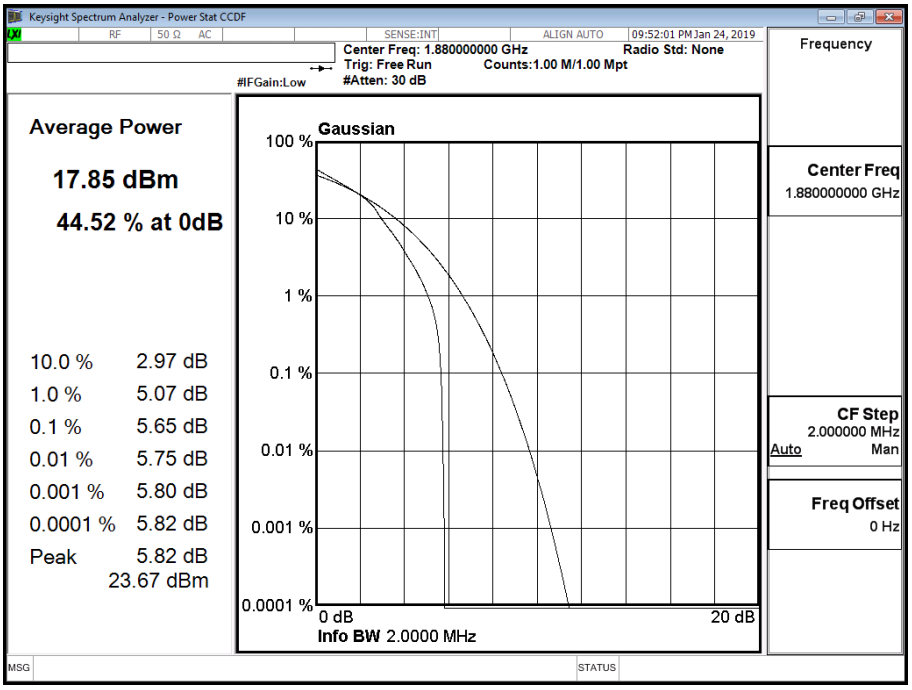
Band 2 (15M) QPSK CH18900 (1880MHz)



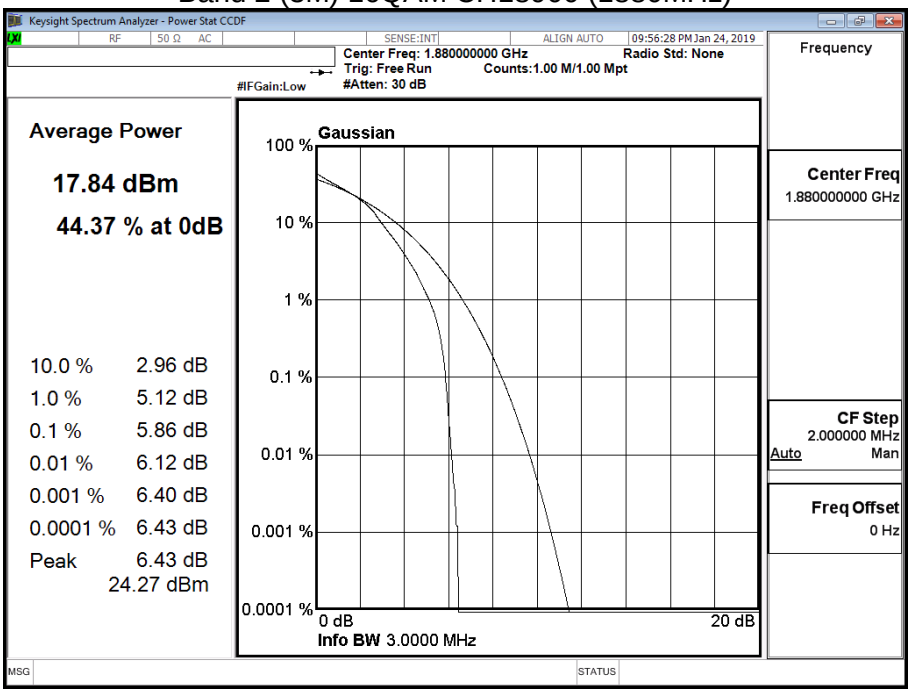
Band 2 (20M) QPSK CH18900 (1880MHz)



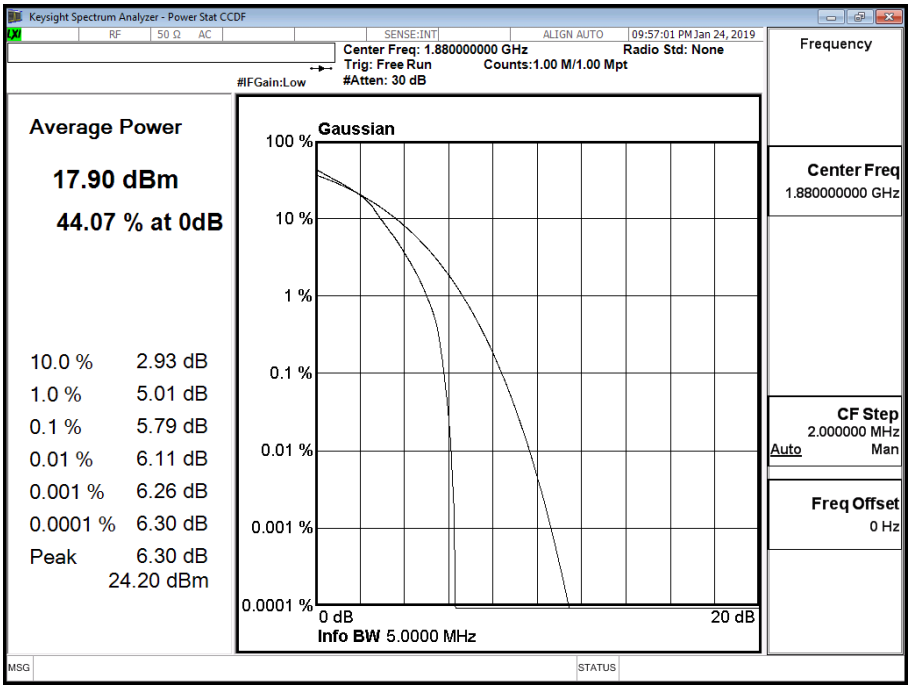
Band 2 (1.4M) 16QAM CH18900 (1880MHz)



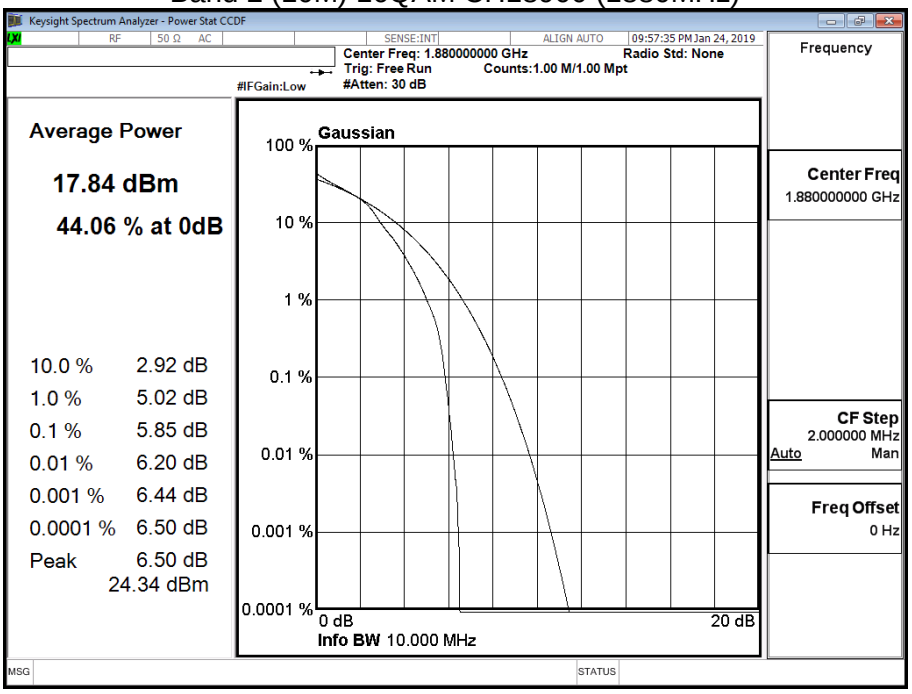
Band 2 (3M) 16QAM CH18900 (1880MHz)



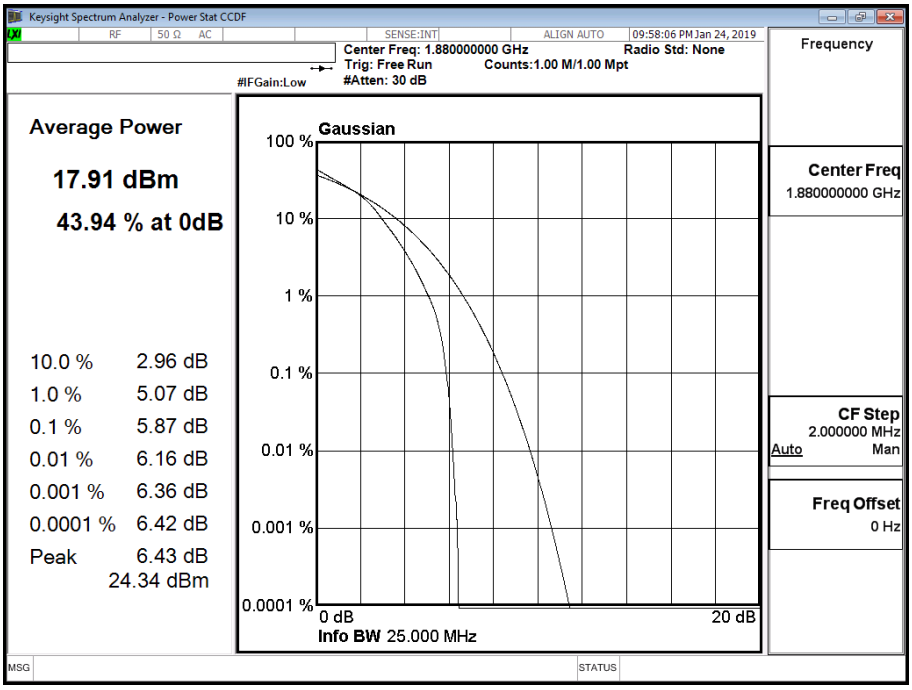
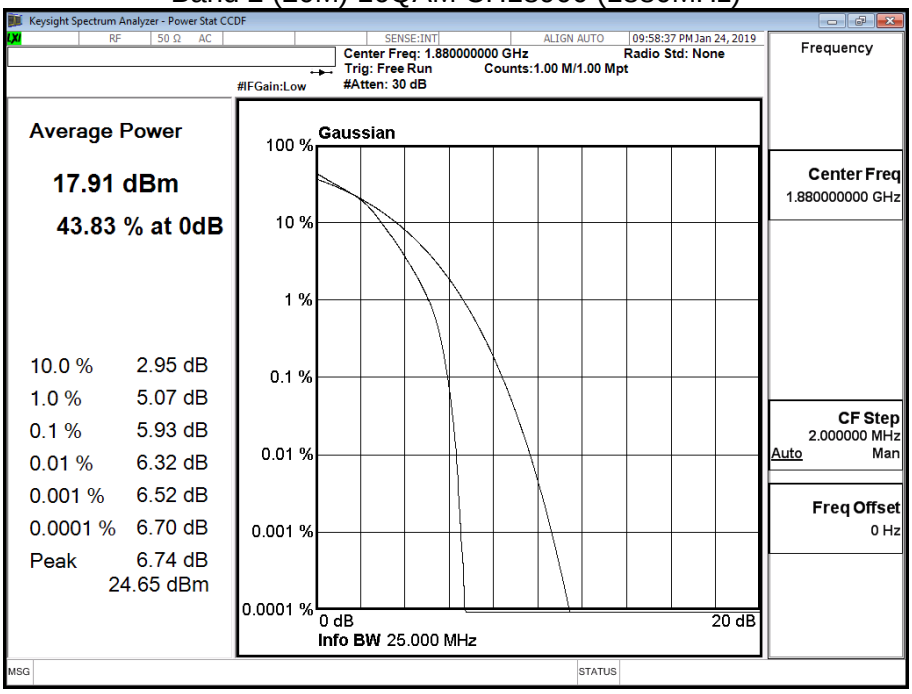
Band 2 (5M) 16QAM CH18900 (1880MHz)



Band 2 (10M) 16QAM CH18900 (1880MHz)



Band 2 (15M) 16QAM CH18900 (1880MHz)



Band 2 (20M) 16QAM CH18900 (1880MHz)