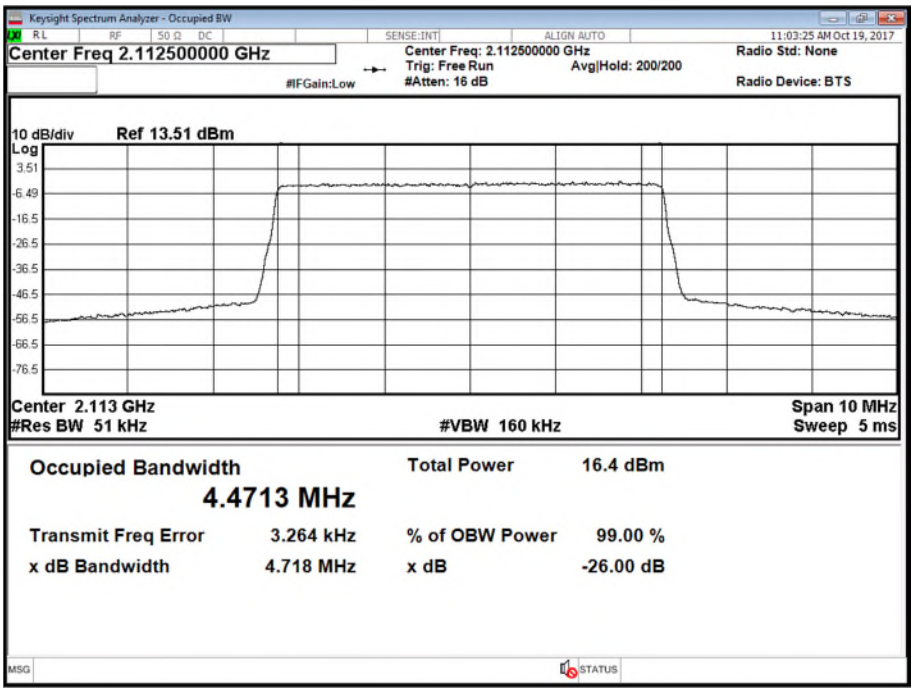
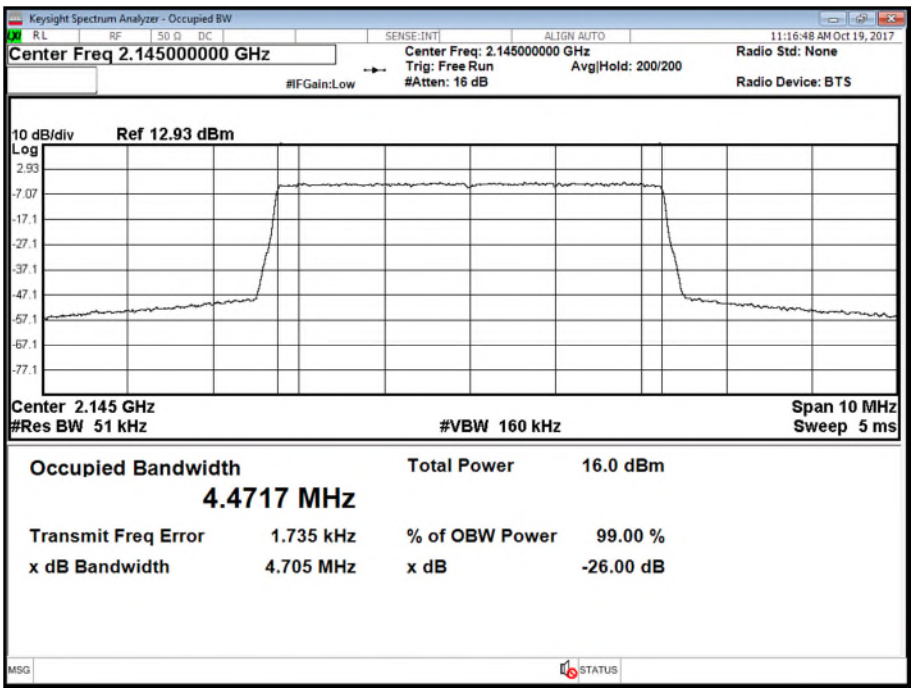
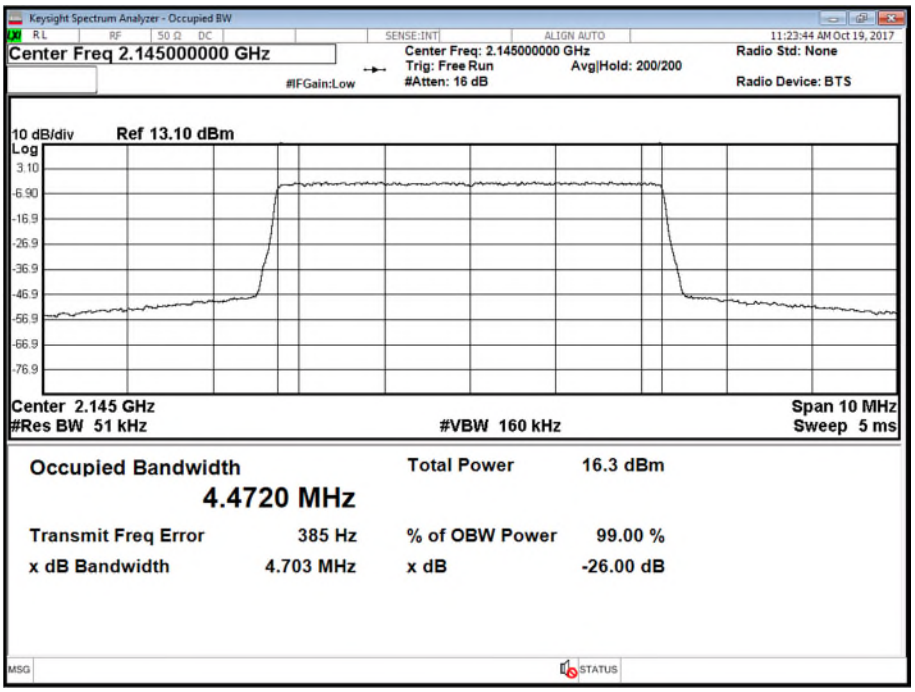
Antenna D - Bandwidth QPSK – Channel M



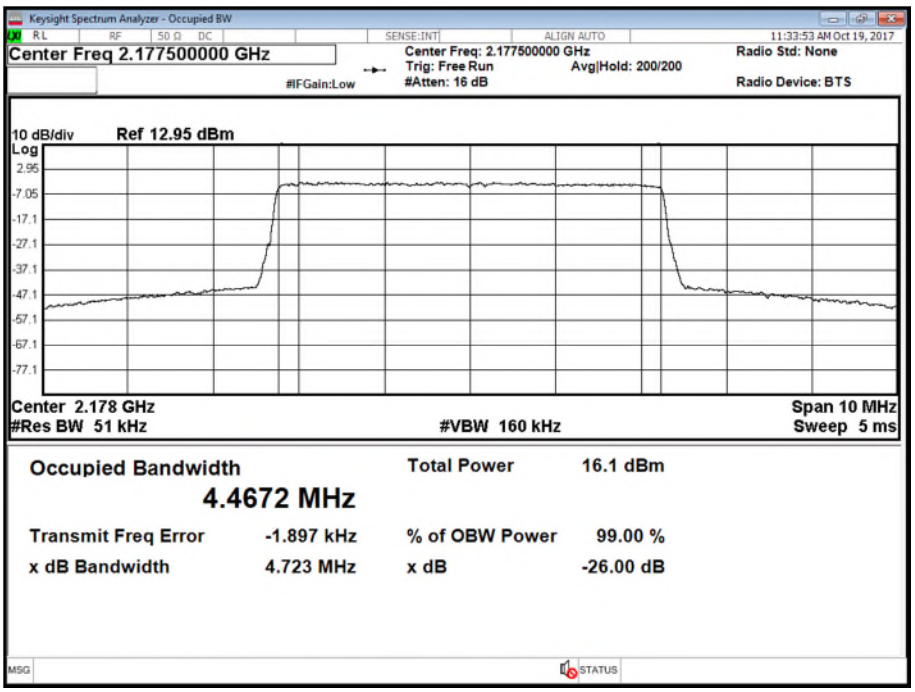
Antenna C - Bandwidth QPSK - Channel T



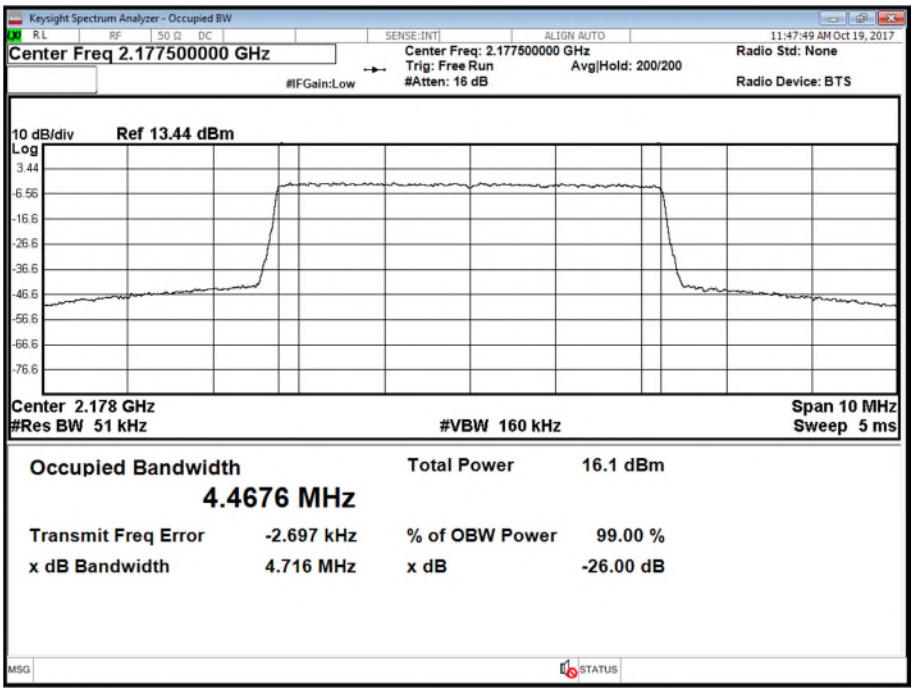
Antenna D - Bandwidth QPSK - Channel B



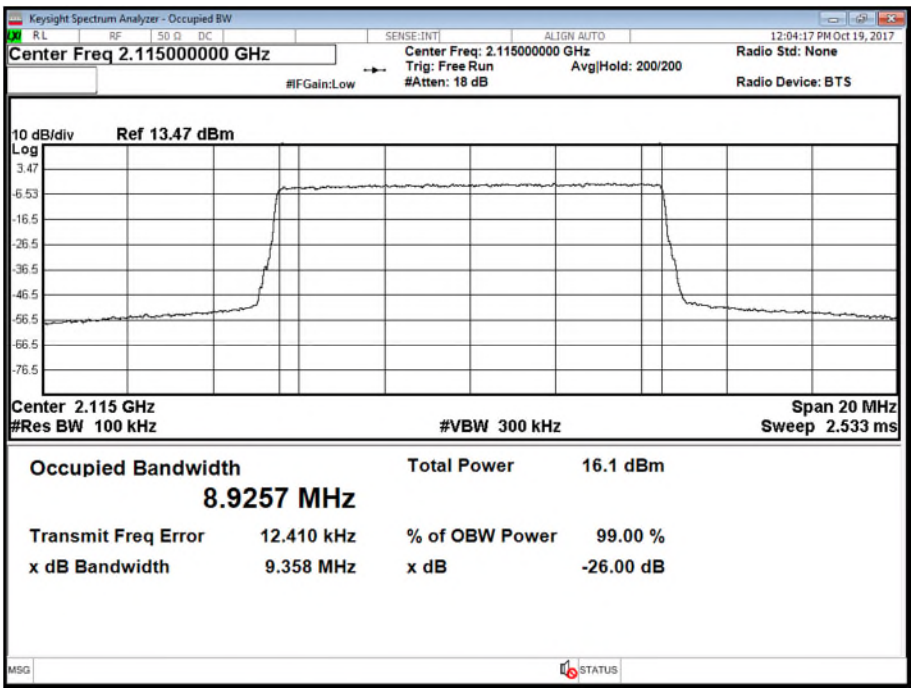
Antenna C - Bandwidth QPSK - Channel M



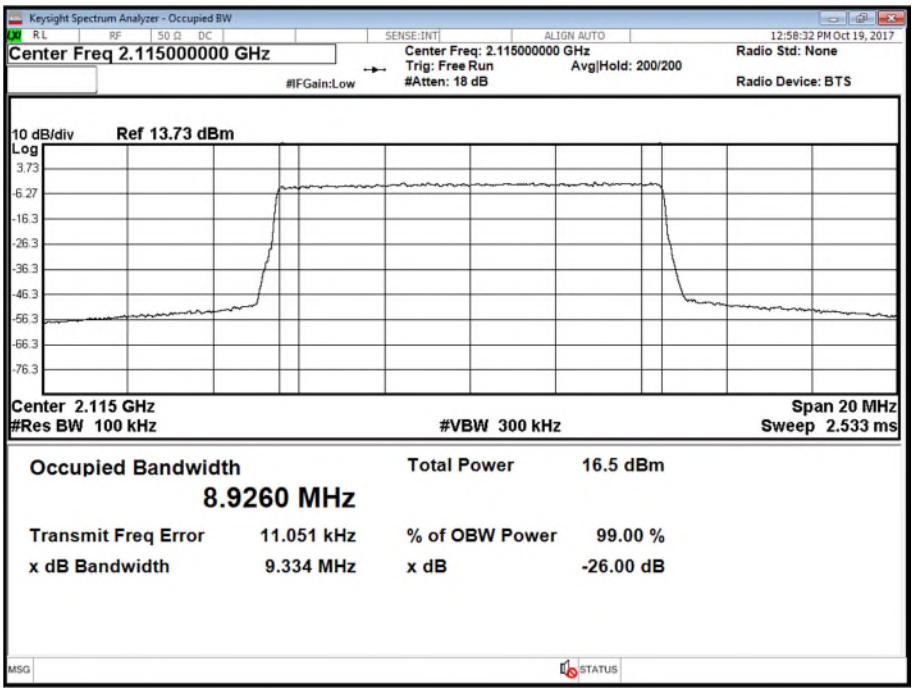
Antenna D - Bandwidth QPSK - Channel T



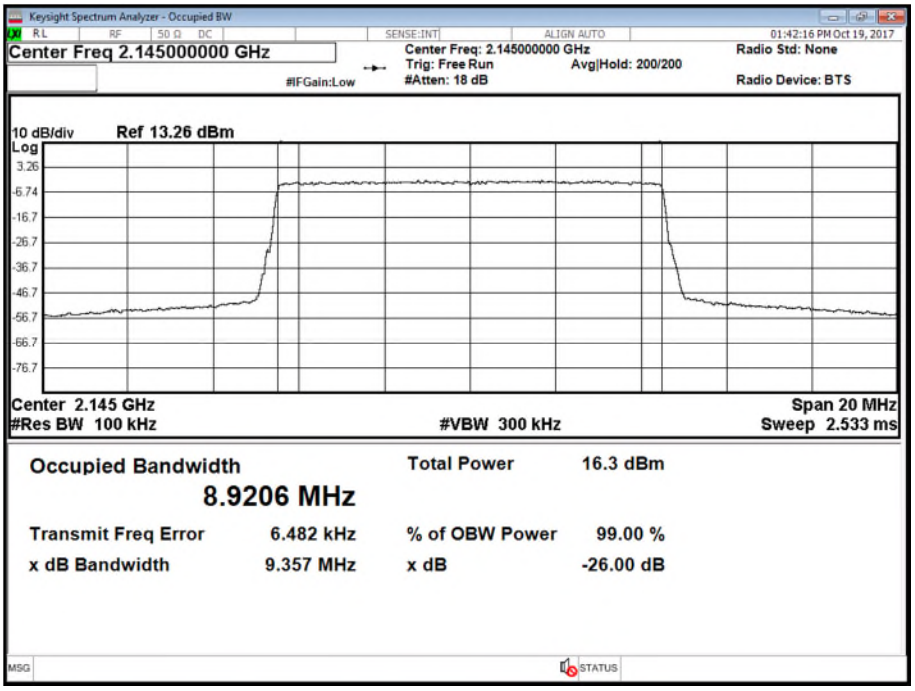
Antenna C - Bandwidth QPSK - Channel B



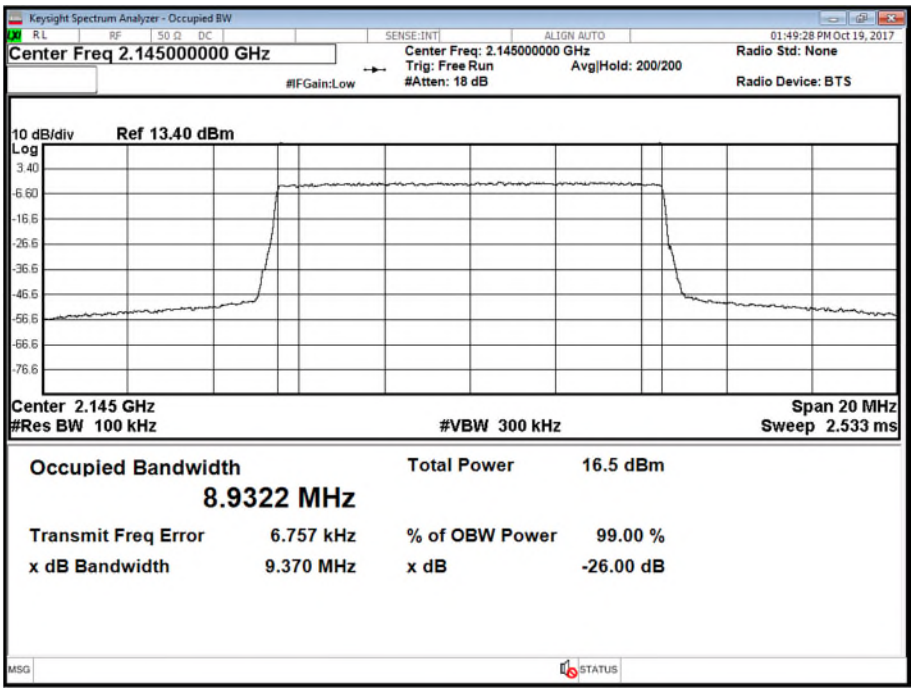
Antenna D - Bandwidth QPSK - Channel M



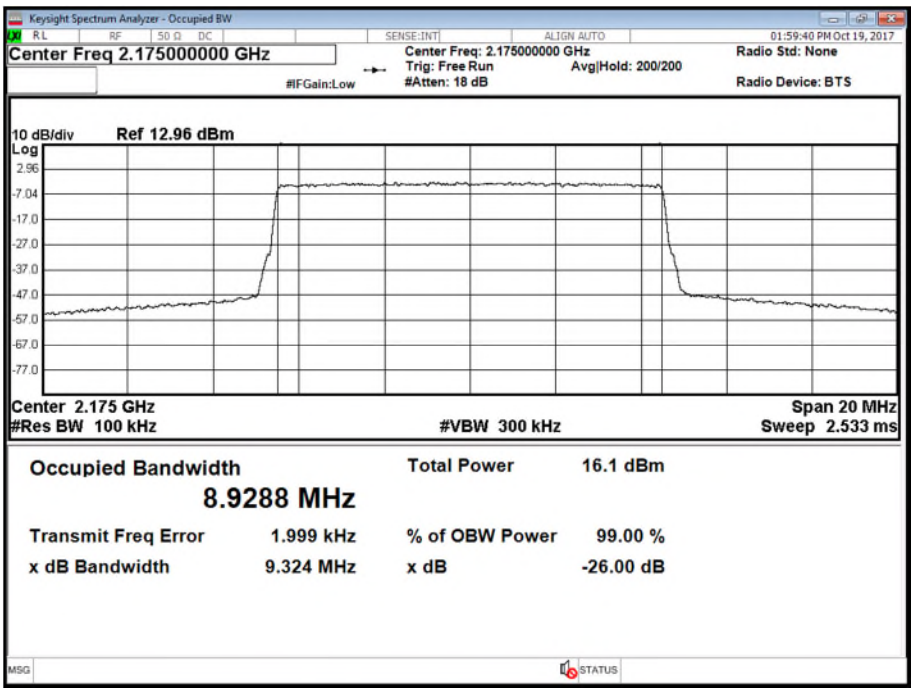
Antenna C - Bandwidth QPSK - Channel T



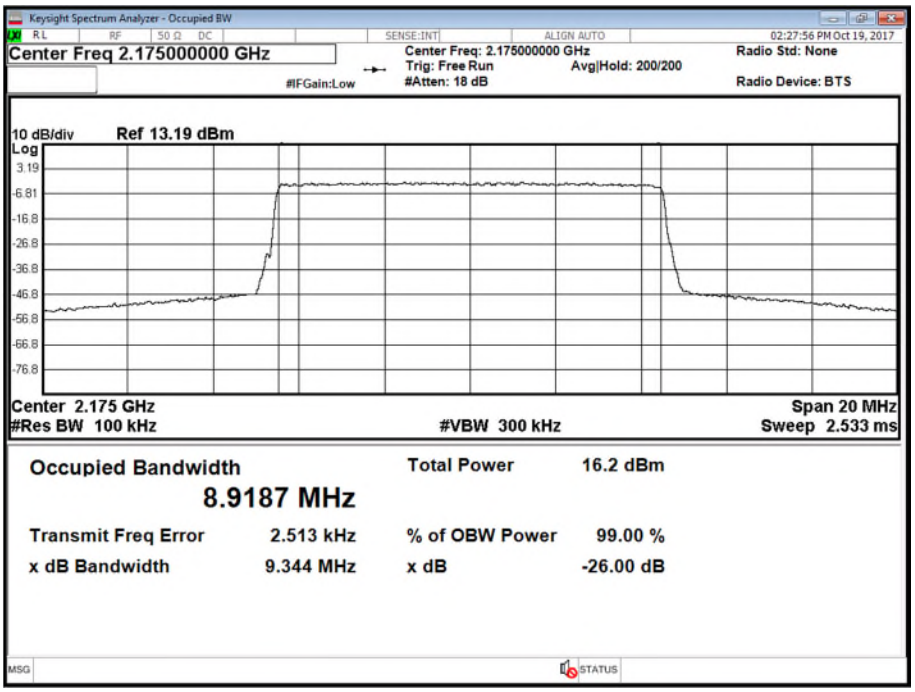
Antenna D - Bandwidth QPSK - Channel B



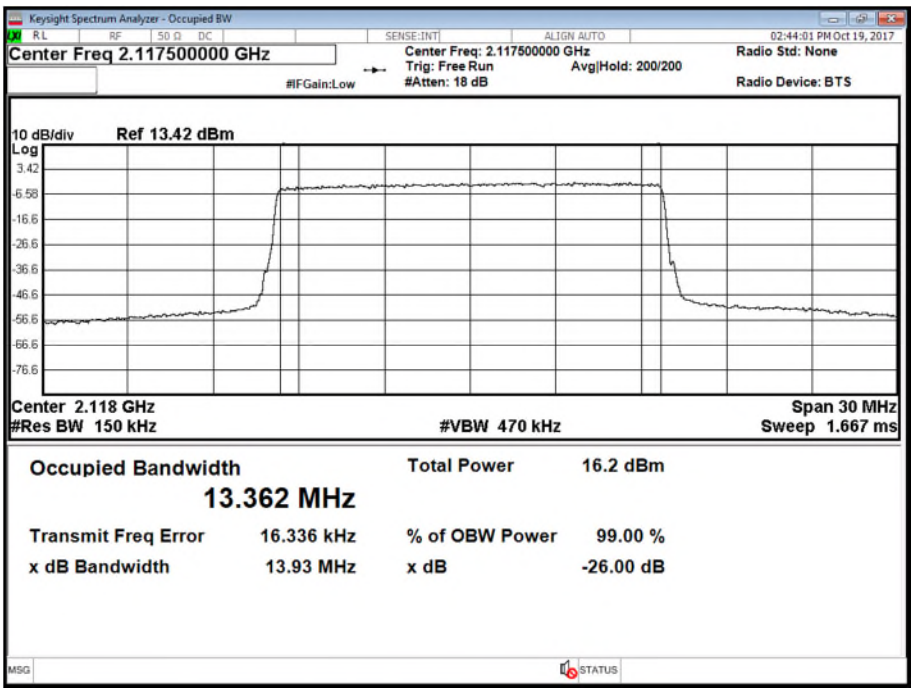
Antenna C - Bandwidth QPSK - Channel M



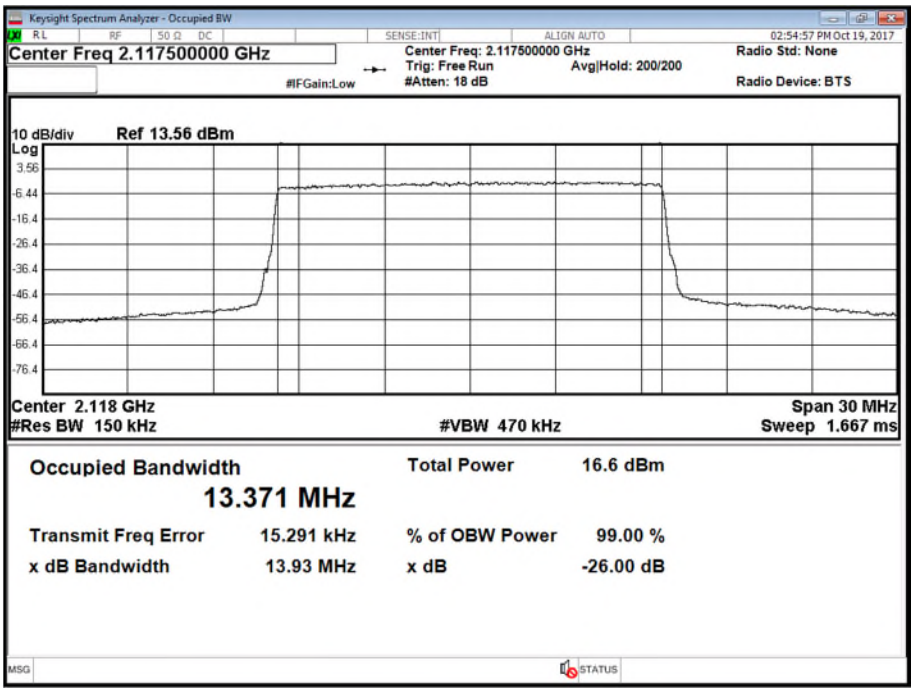
Antenna D - Bandwidth QPSK - Channel T



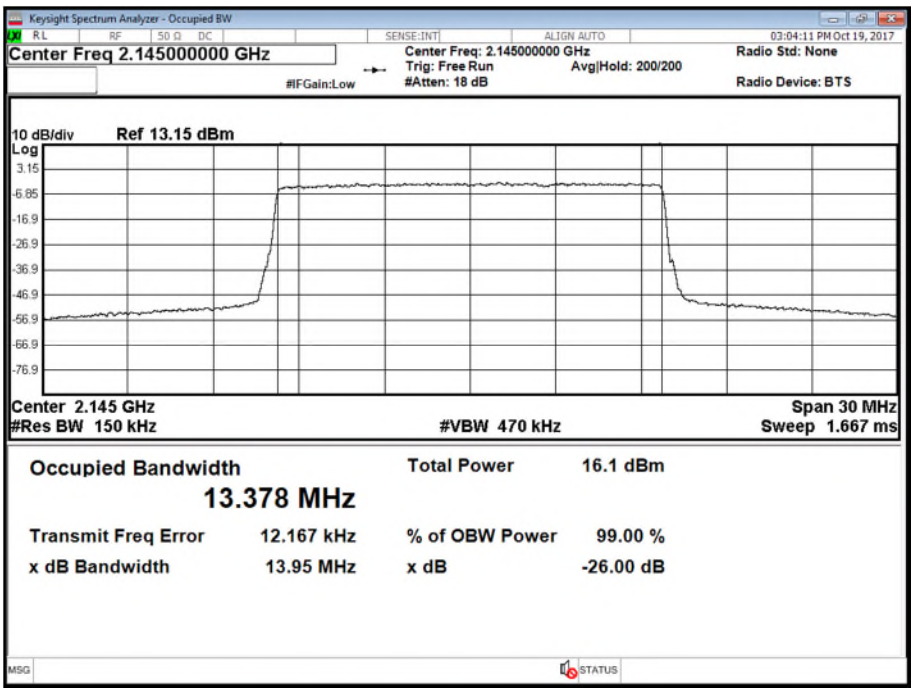
Antenna C - Bandwidth QPSK - Channel B



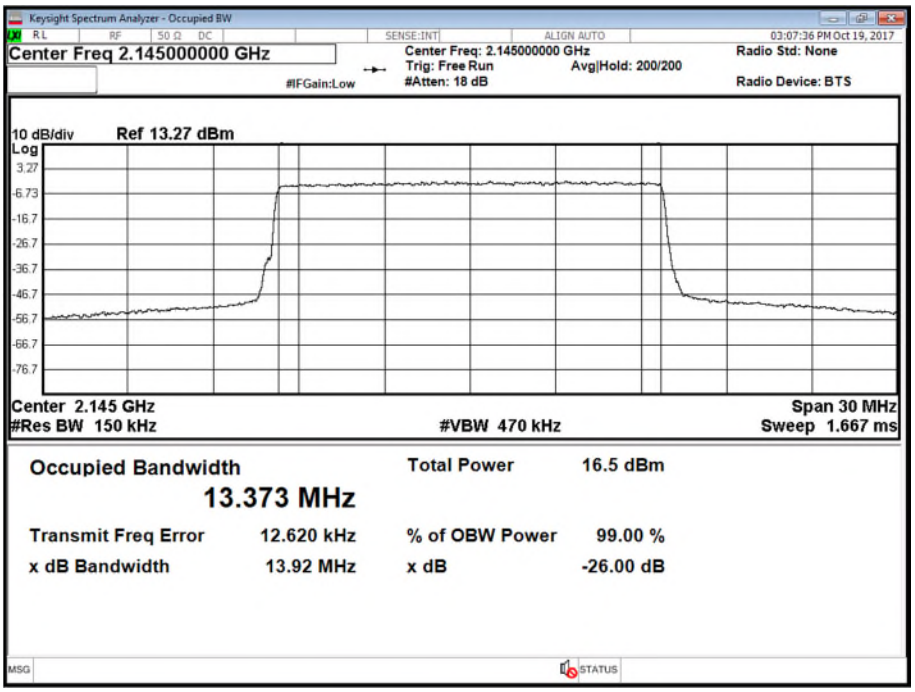
Antenna D - Bandwidth QPSK - Channel M



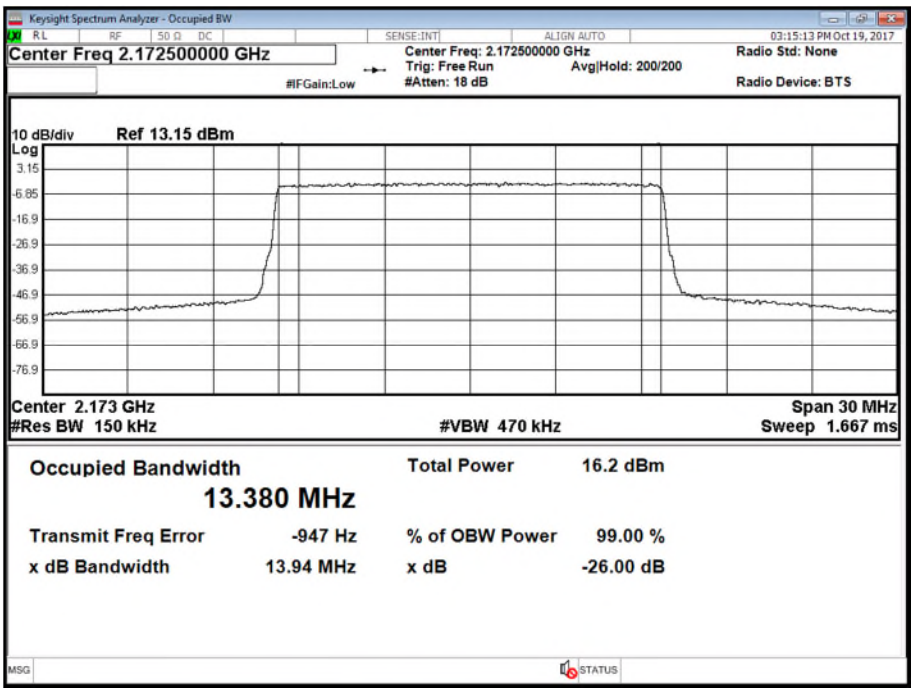
Antenna C - Bandwidth QPSK - Channel T



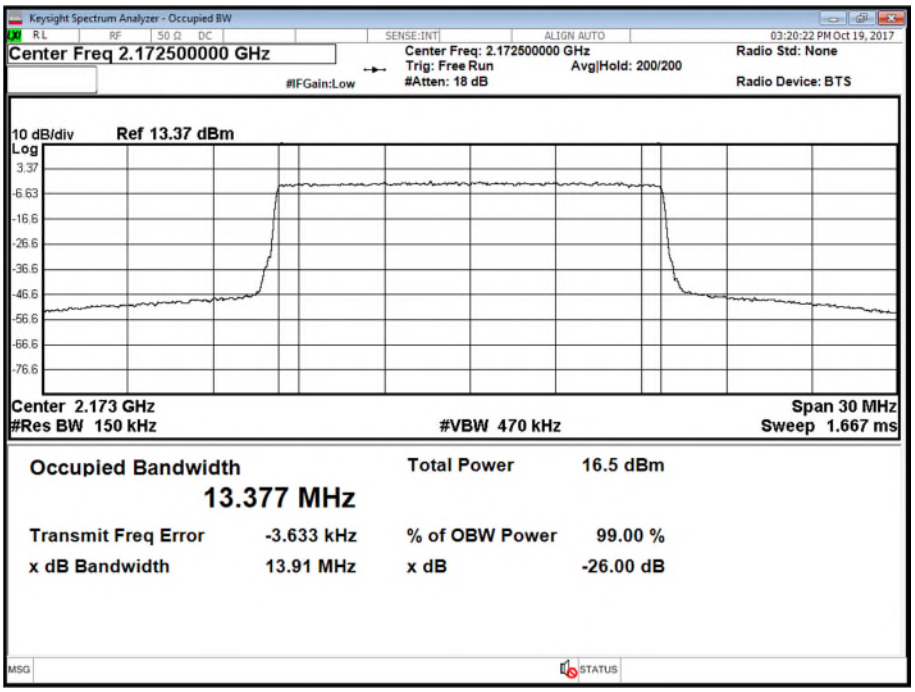
Antenna D - Bandwidth QPSK - Channel B



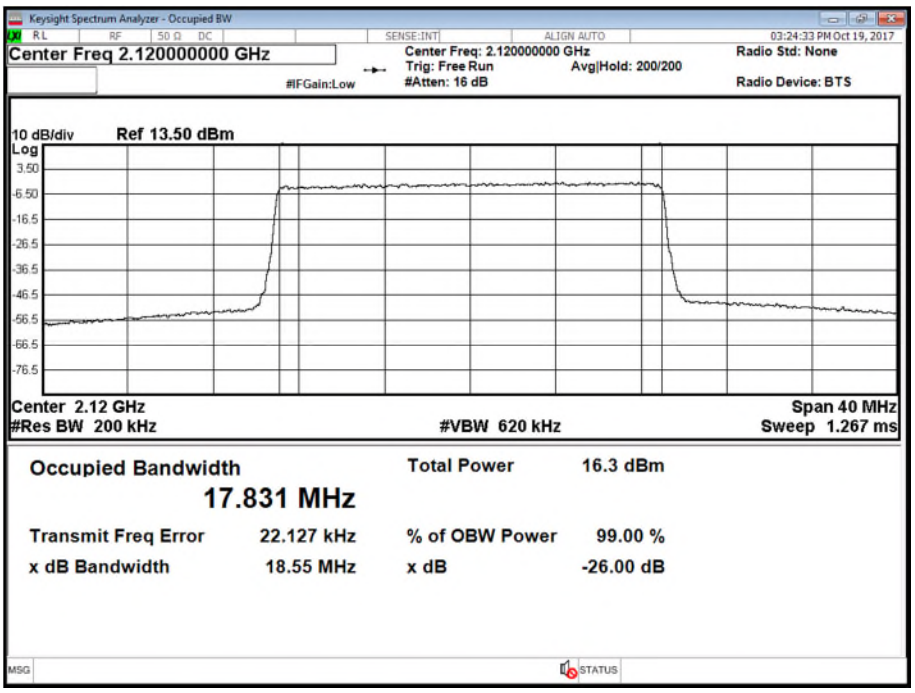
Antenna C - Bandwidth QPSK - Channel M



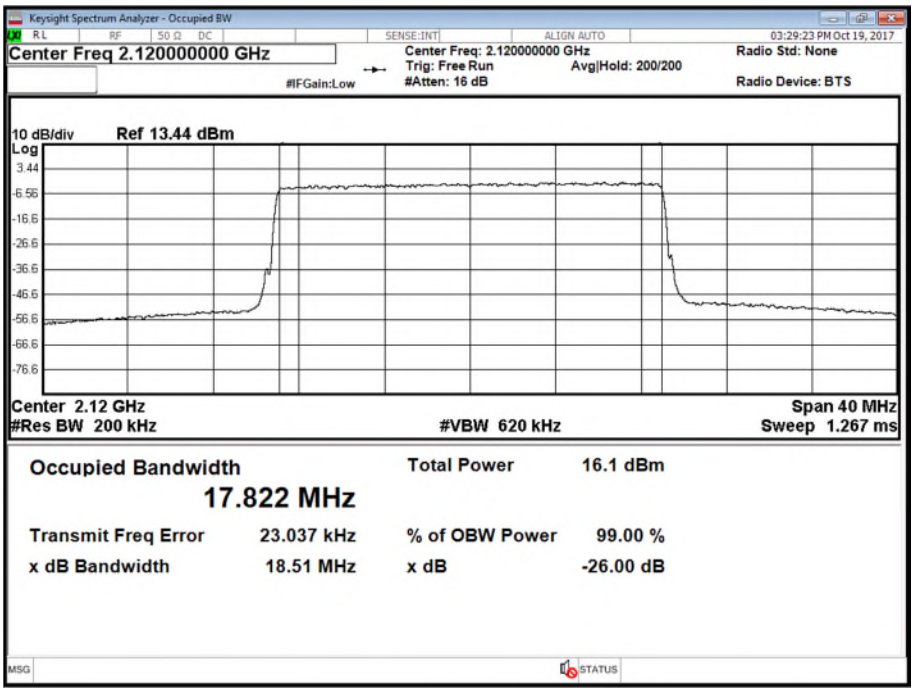
Antenna D - Bandwidth QPSK - Channel T



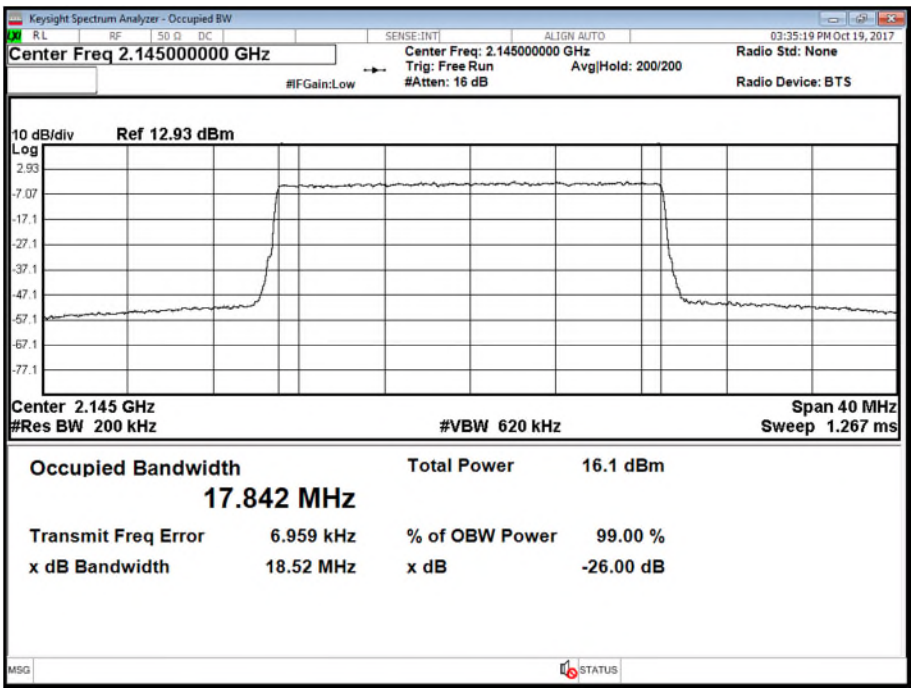
Antenna C - Bandwidth QPSK - Channel B



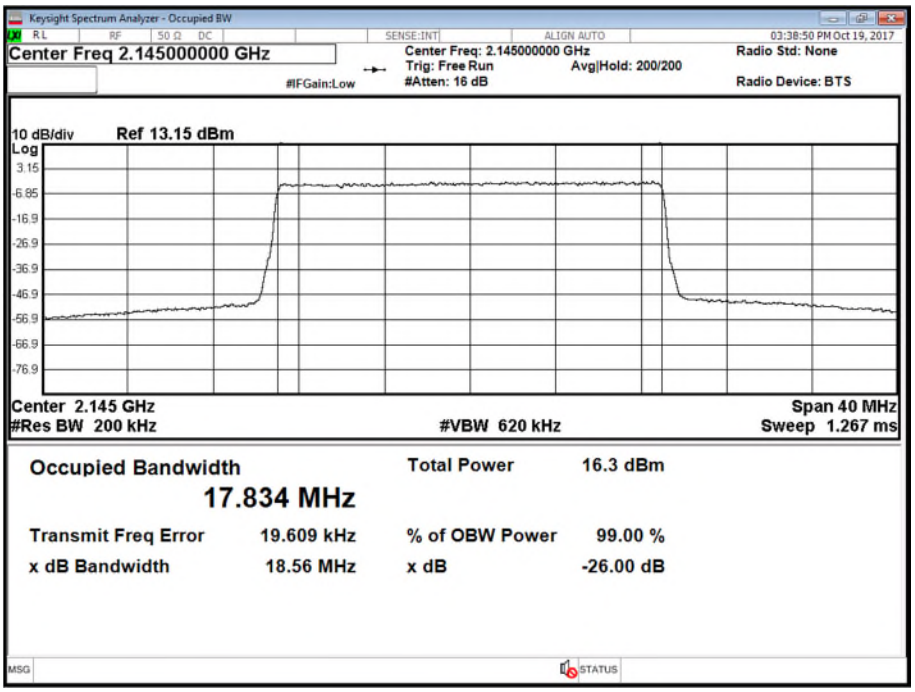
Antenna D - Bandwidth QPSK - Channel M



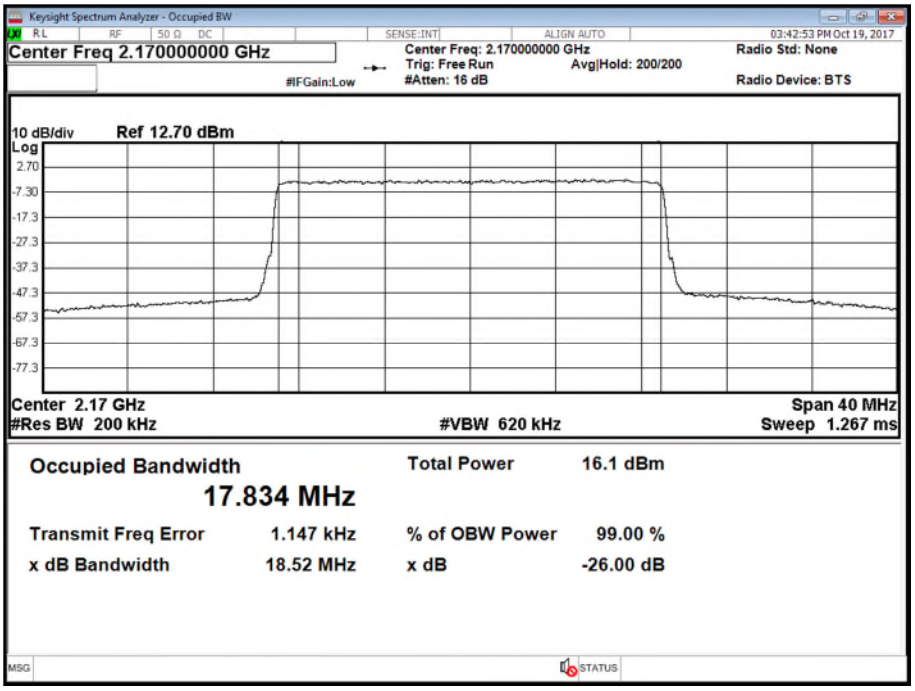
Antenna C - Bandwidth QPSK - Channel T



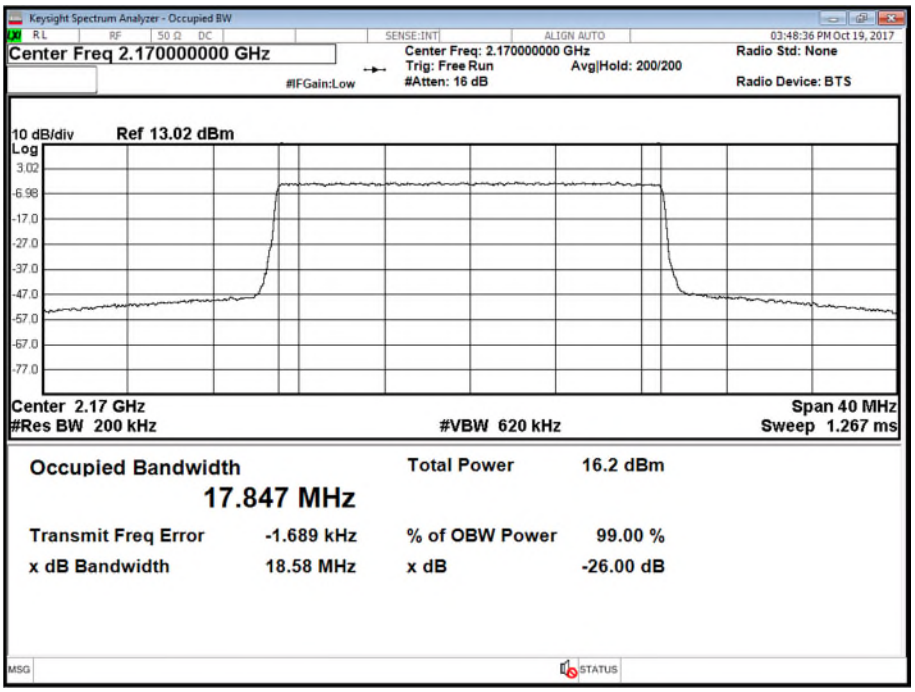
Antenna D - Bandwidth QPSK - Channel B



Antenna C - Bandwidth QPSK - Channel M



Antenna D - Bandwidth QPSK - Channel T



2.3 BAND EDGE

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 27, Clause 27.53 (h)
Industry Canada RSS-139, Clause 6.5

2.3.2 Date of Test and Modification State

19, 20 and 23 October 2017 - Modification State 0

2.3.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.4 Environmental Conditions

Ambient Temperature	23°C
Relative Humidity	50%

2.3.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01 Clause 6.
The EUT was connected to a Spectrum Analyser via an attenuator and switching box. The path loss between the EUT and the Spectrum Analyser was measured using a Network Analyser. The measured path loss was entered as a Reference Level Offset in the Spectrum Analyser. The Spectrum Analyser RBW was adjusted to be at least 1% of the measured 26dB Bandwidth. Using an RMS detector, the frequency spectrum up to 1MHz away from the Band Edge was investigated. The B66A EUT has 2 transmit ports, but can be configured to operate with 2 devices co-located.
Therefore, the test limits used were calculated on a worst-case basis accounting for an effective 4 port MIMO configuration. Testing was performed on this port with a test limit of 43+10log(P) - 10log (4) = -19 dBm.

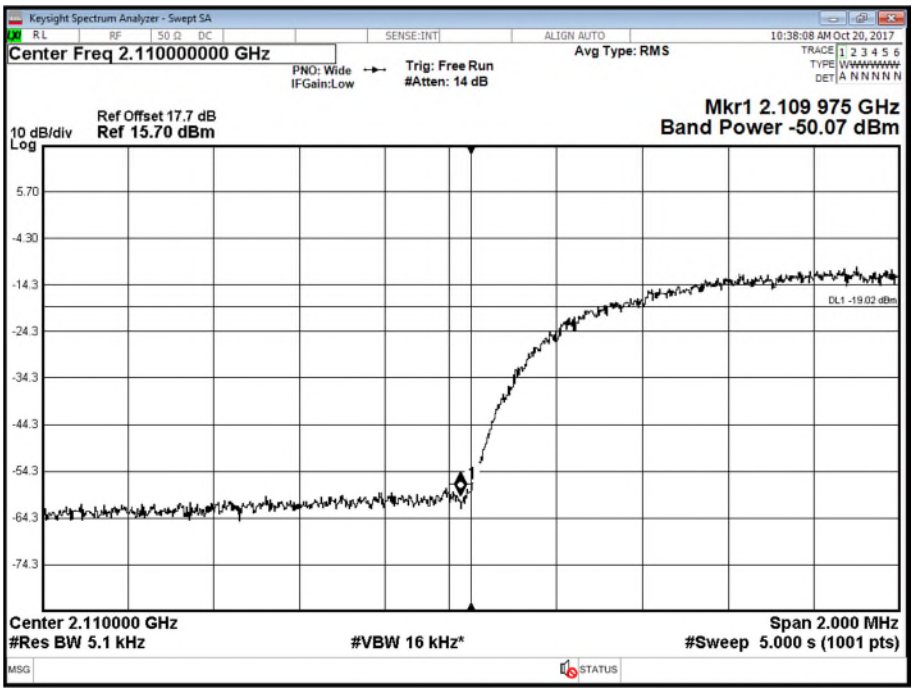
2.3.6 Test Results

Configuration 1

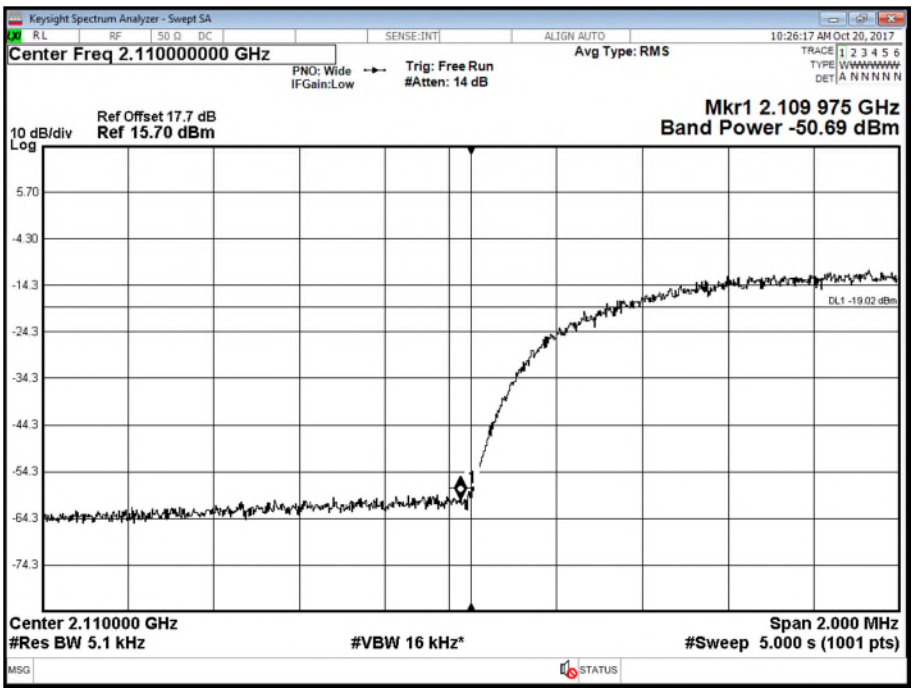
Maximum Output Power 17 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
C	16QAM	5.0 MHz	2,112.4	2,177.6
D	16QAM	5.0 MHz	2,112.4	2,177.6

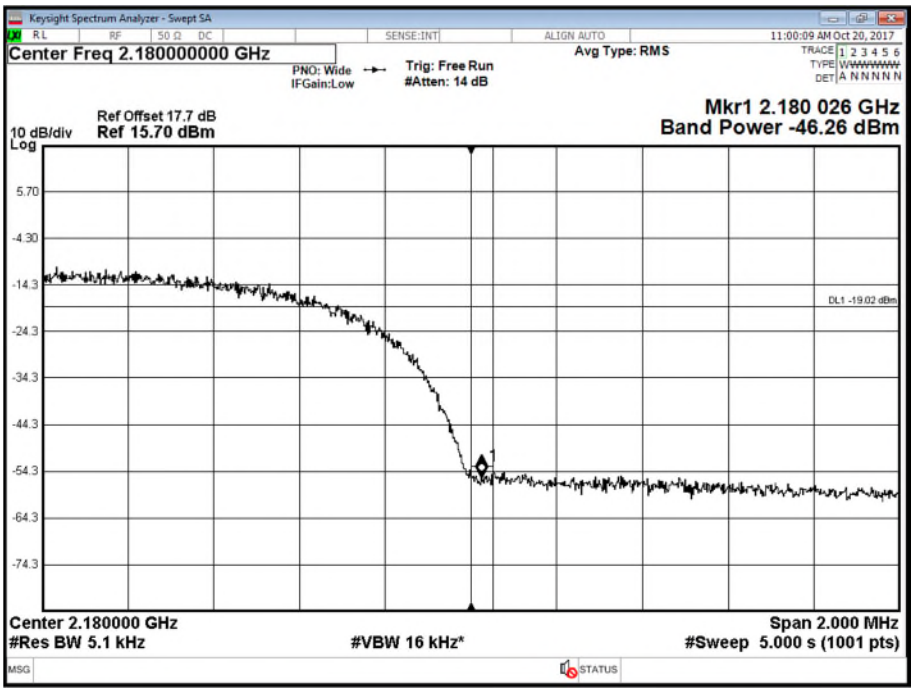
Antenna C - WCDMA Modulation 16QAM - Channel B



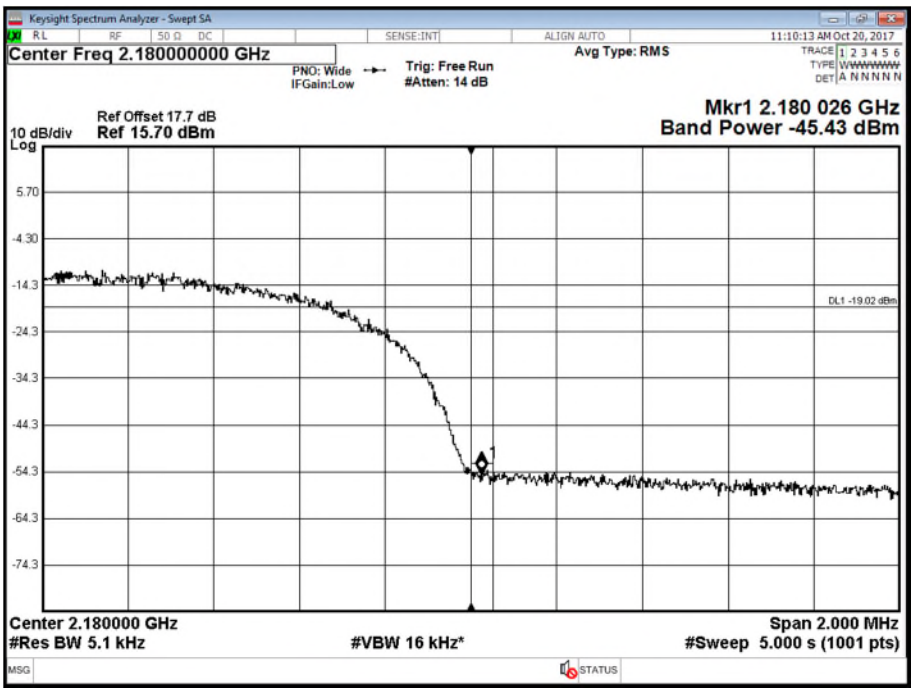
Antenna D - WCDMA Modulation 16QAM - Channel B



Antenna C - WCDMA Modulation 16QAM - Channel T



Antenna D - WCDMA Modulation 16QAM - Channel T

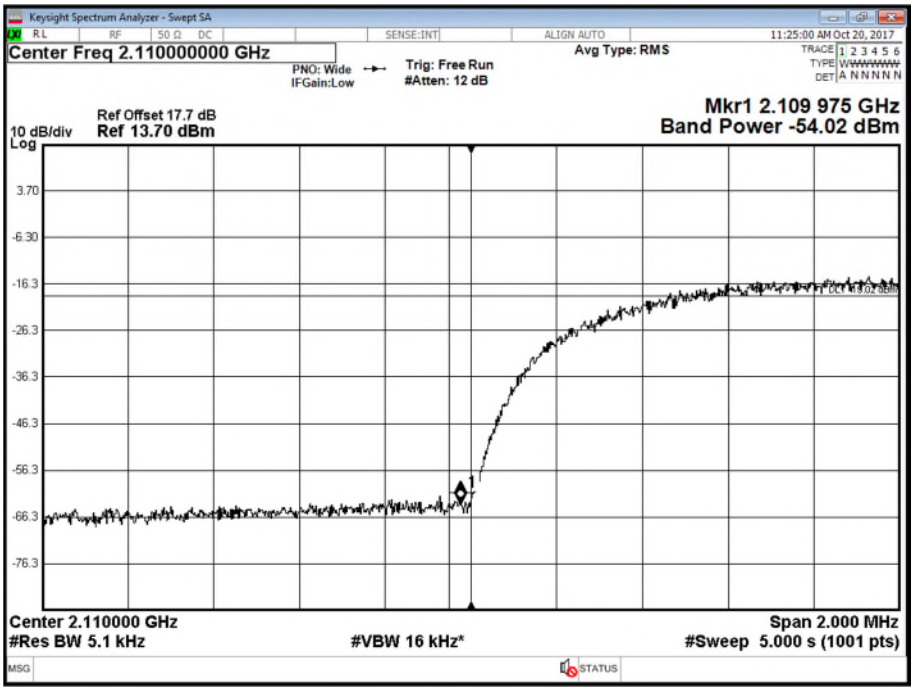


Configuration 2

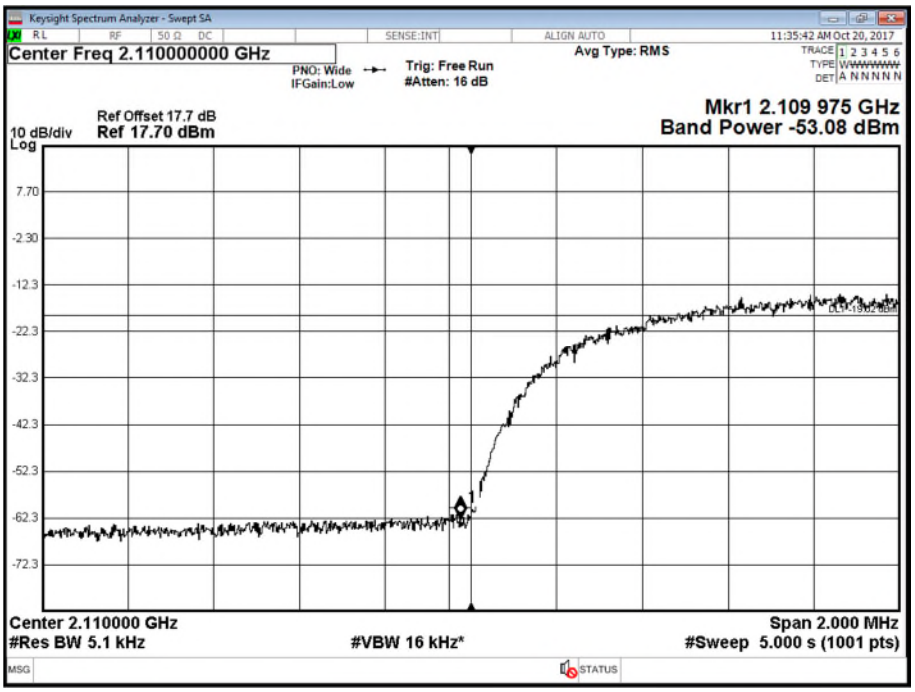
Maximum Output Power 17 dBm

Antenna	WCDMA Modulation	WCDMA Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
C	16QAM	5.0 MHz	2112.4 + 2117.4	2172.6 + 2177.6
D	16QAM	5.0 MHz	2112.4 + 2117.4	2172.6 + 2177.6

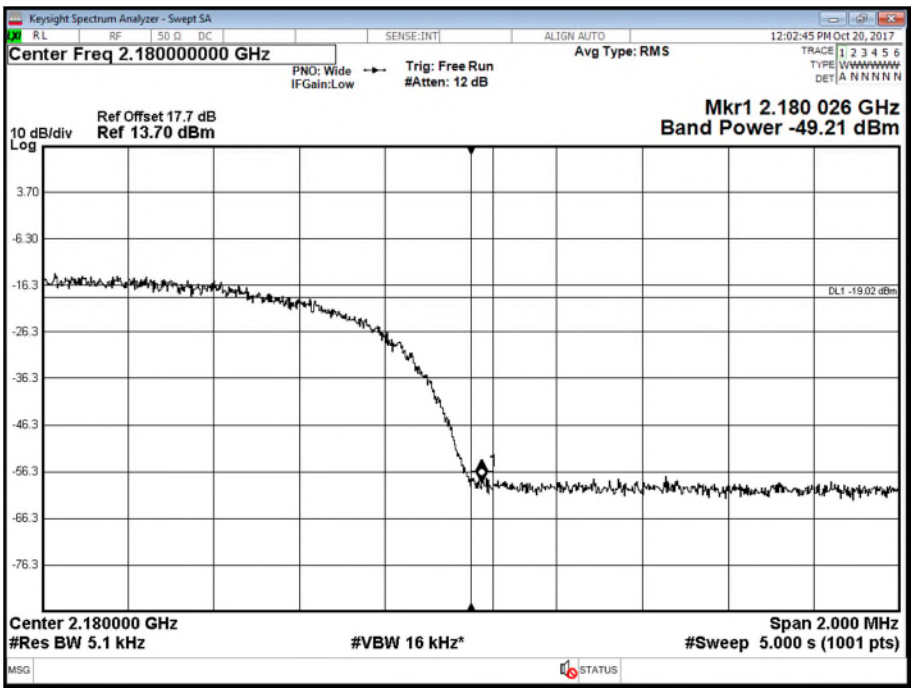
Antenna C - WCDMA Modulation 16QAM – Channel B



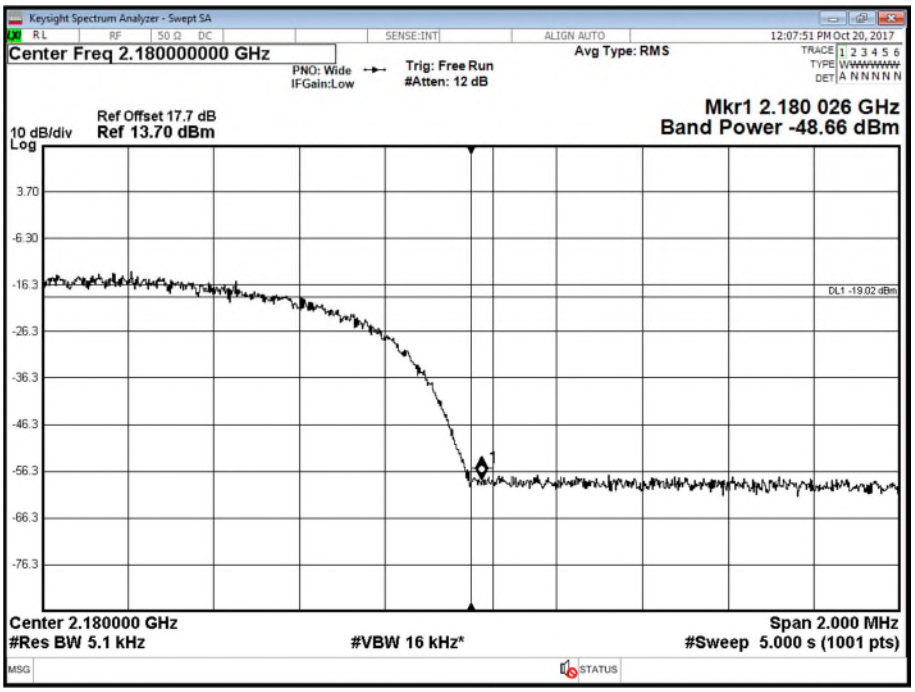
Antenna D - WCDMA Modulation 16QAM - Channel B



Antenna C - WCDMA Modulation 16QAM - Channel T



Antenna D - WCDMA Modulation 16QAM - Channel T

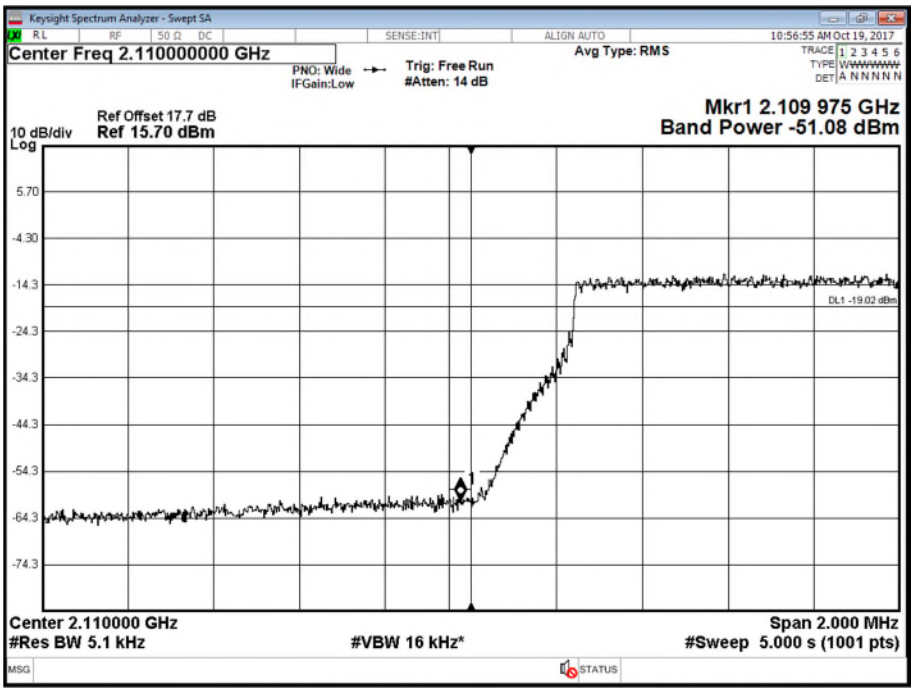


Configuration 4

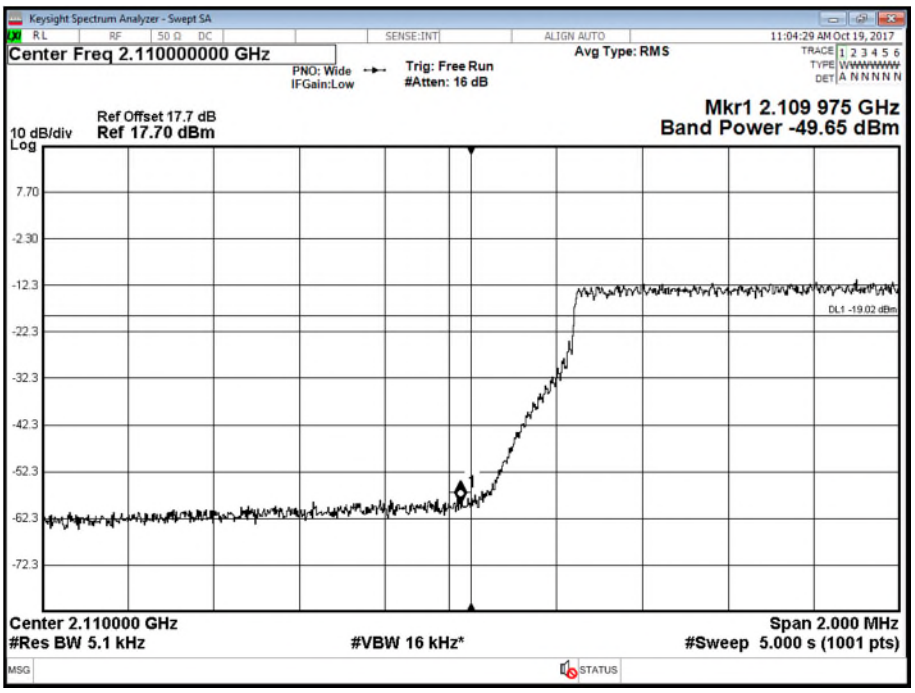
Maximum Output Power 17 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
C	QPSK	5.0 MHz	2,112.5	2,177.5
D	QPSK	5.0 MHz	2,112.5	2,177.5
C	QPSK	10.0 MHz	2,115.0	2,175.0
D	QPSK	10.0 MHz	2,115.0	2,175.0
C	QPSK	15.0 MHz	2,117.5	2,172.5
D	QPSK	15.0 MHz	2,117.5	2,172.5
C	QPSK	20.0 MHz	2,120.0	2,170.0
D	QPSK	20.0 MHz	2,120.0	2,170.0

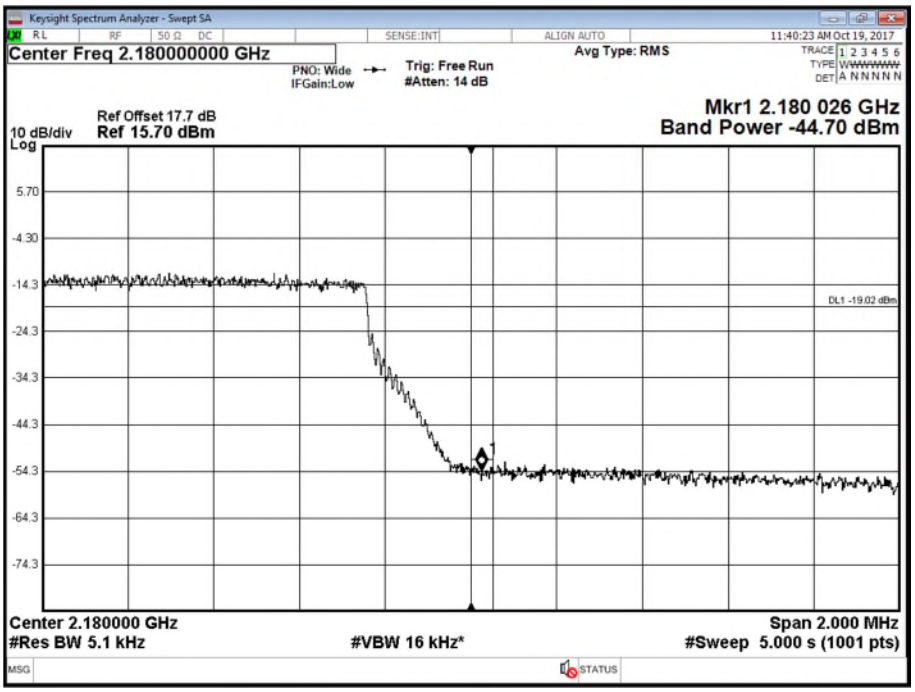
Antenna C - LTE Modulation QPSK - Channel B, 5MHz



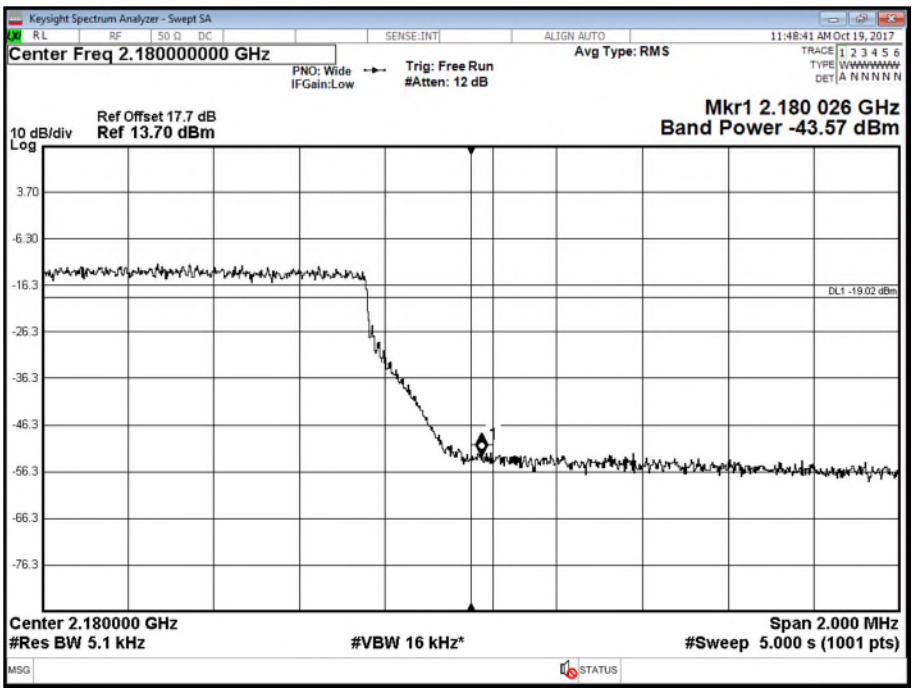
Antenna D - LTE Modulation QPSK - Channel B, 5MHz



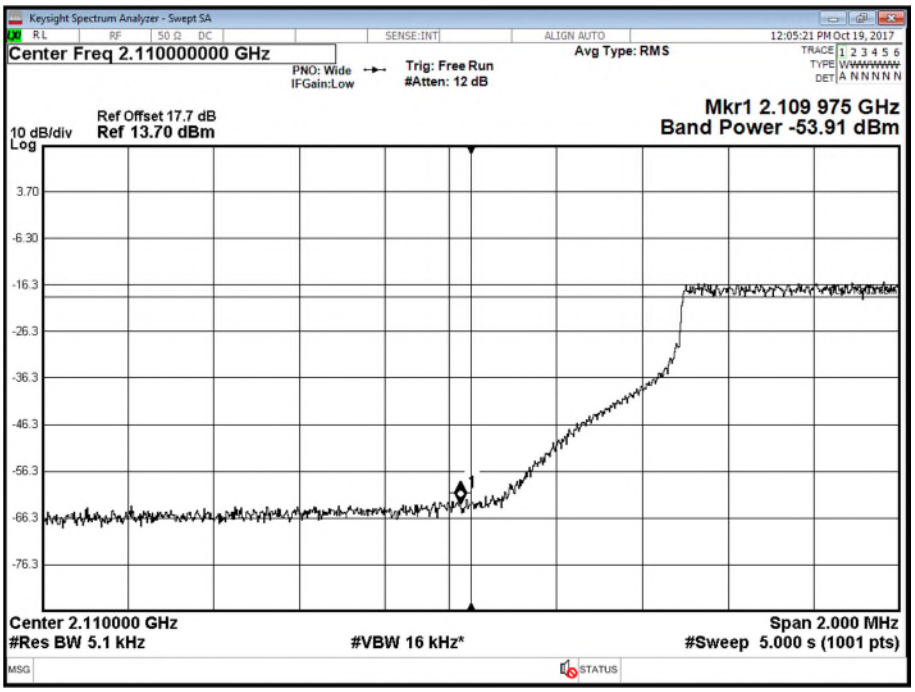
Antenna C - LTE Modulation QPSK - Channel T, 5MHz



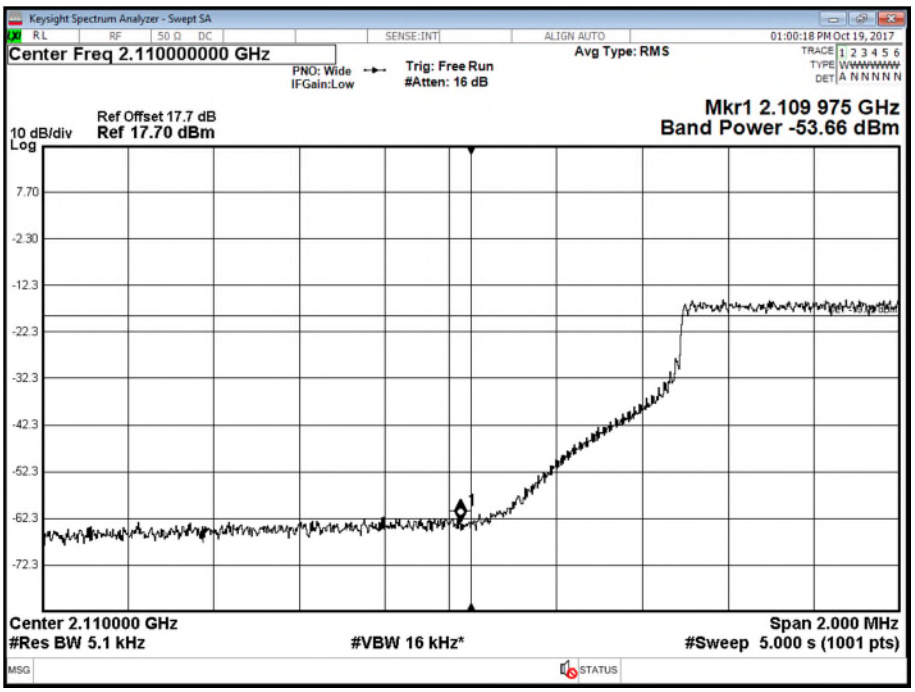
Antenna D - LTE Modulation QPSK - Channel T, 5MHz



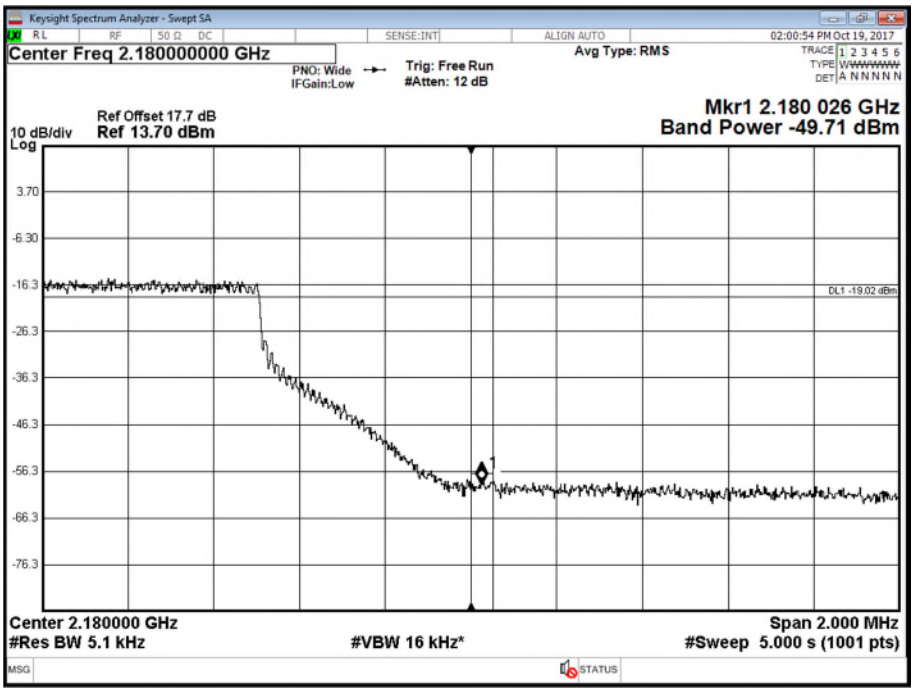
Antenna C - LTE Modulation QPSK - Channel B, 10MHz



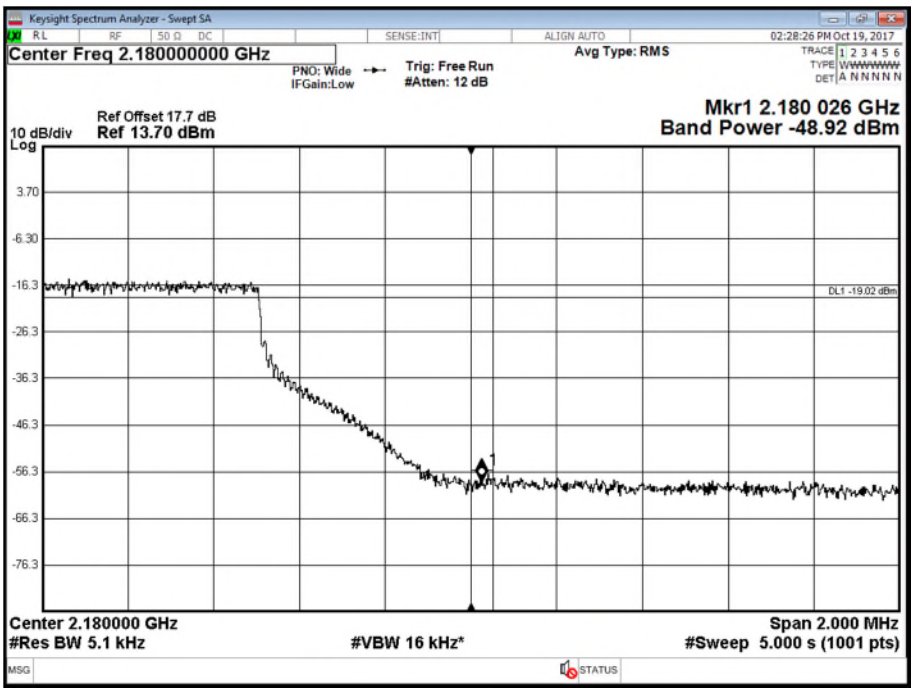
Antenna D - LTE Modulation QPSK - Channel B, 10MHz



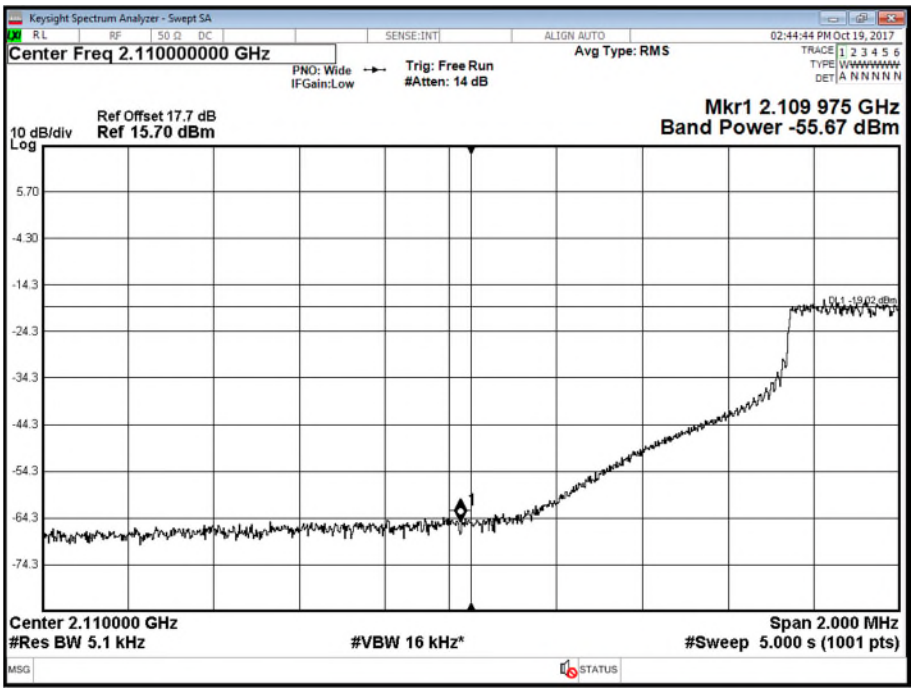
Antenna C - LTE Modulation QPSK - Channel T, 10MHz



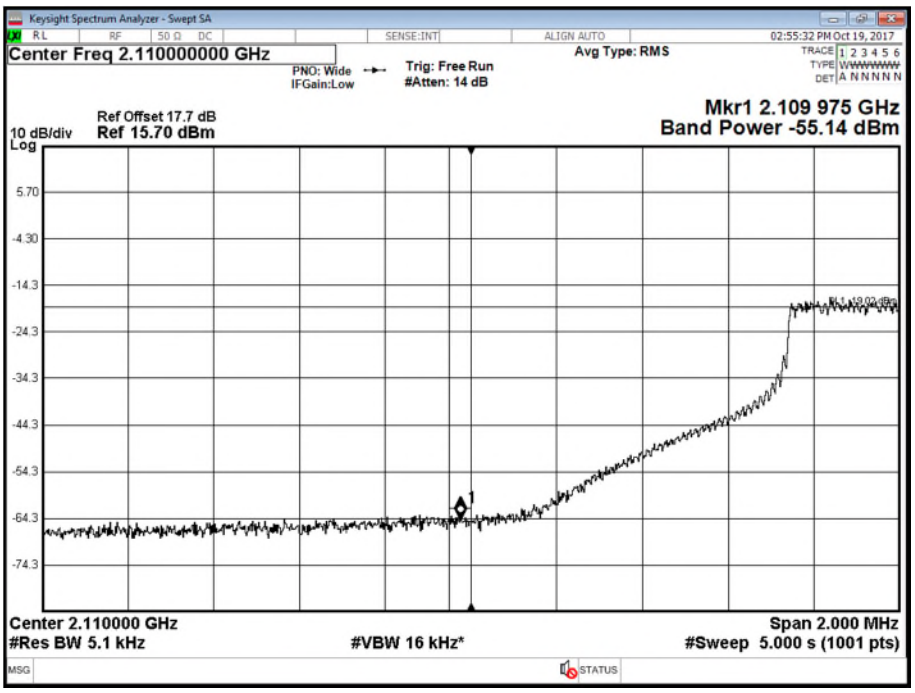
Antenna D - LTE Modulation QPSK - Channel T, 10MHz



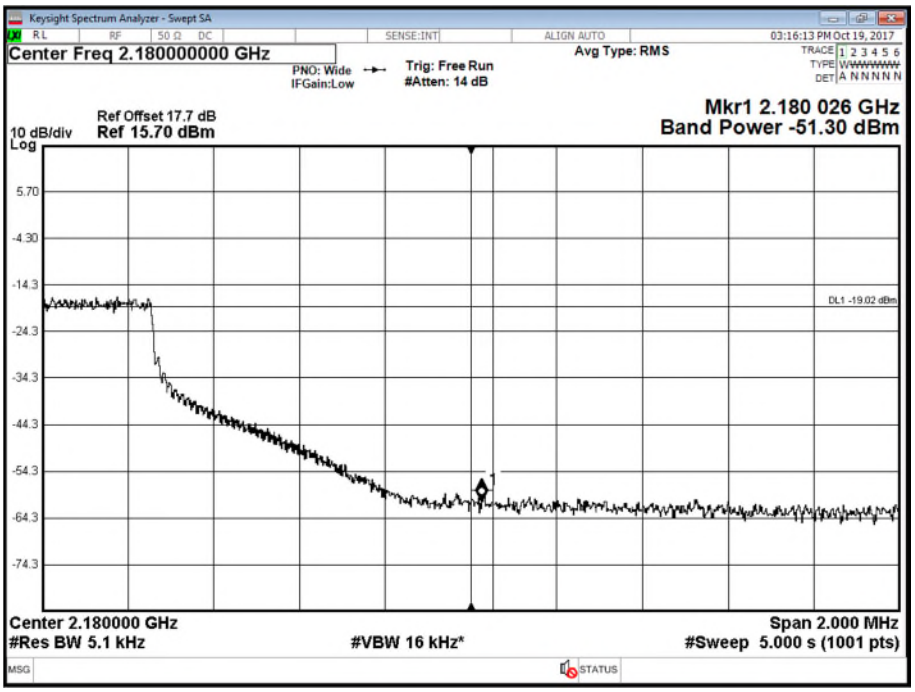
Antenna C - LTE Modulation QPSK - Channel B, 15MHz



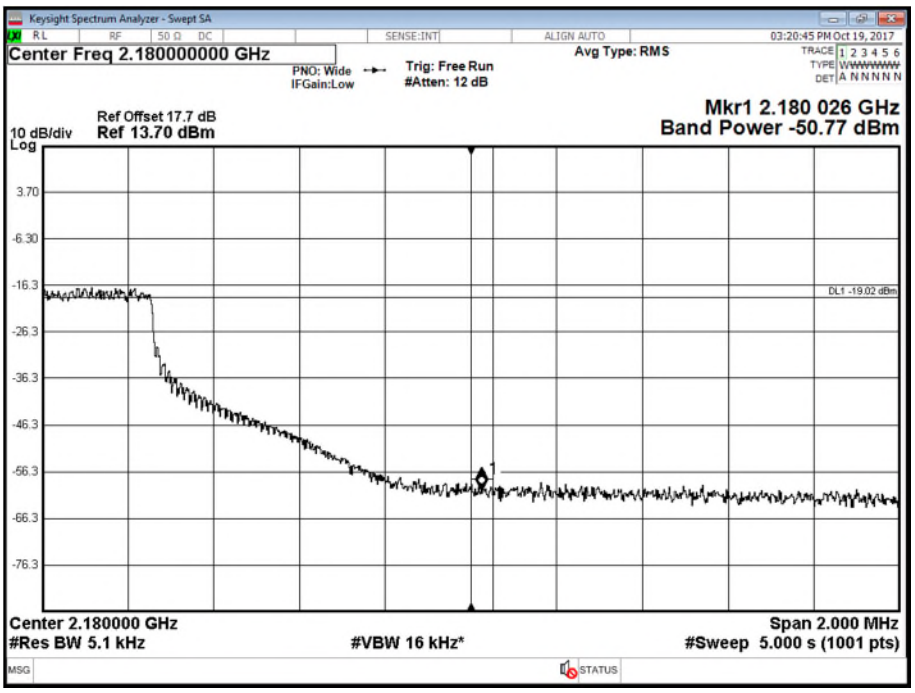
Antenna D - LTE Modulation QPSK - Channel B, 15MHz



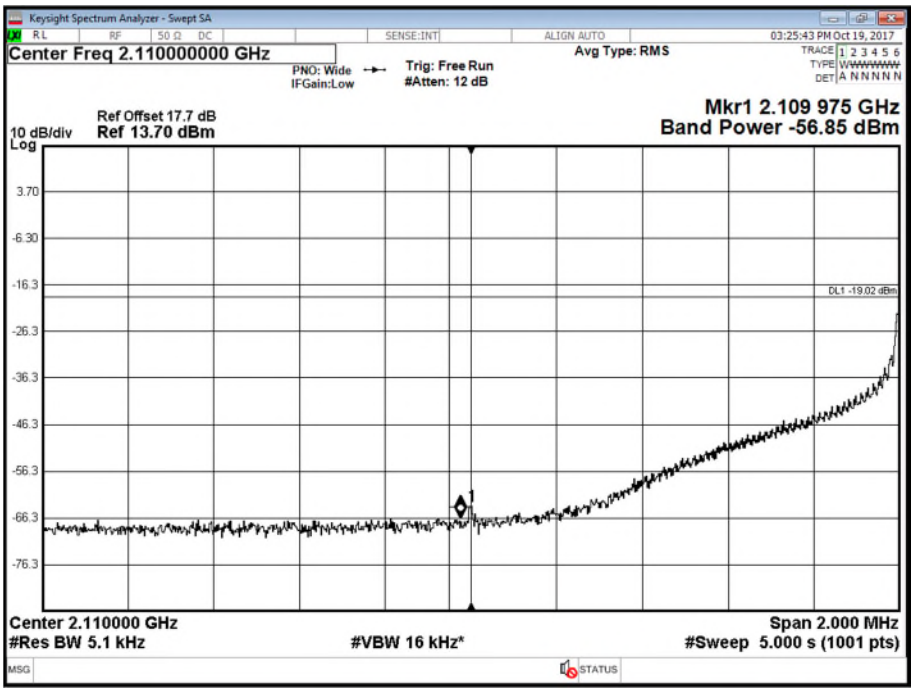
Antenna C - LTE Modulation QPSK - Channel T, 15MHz



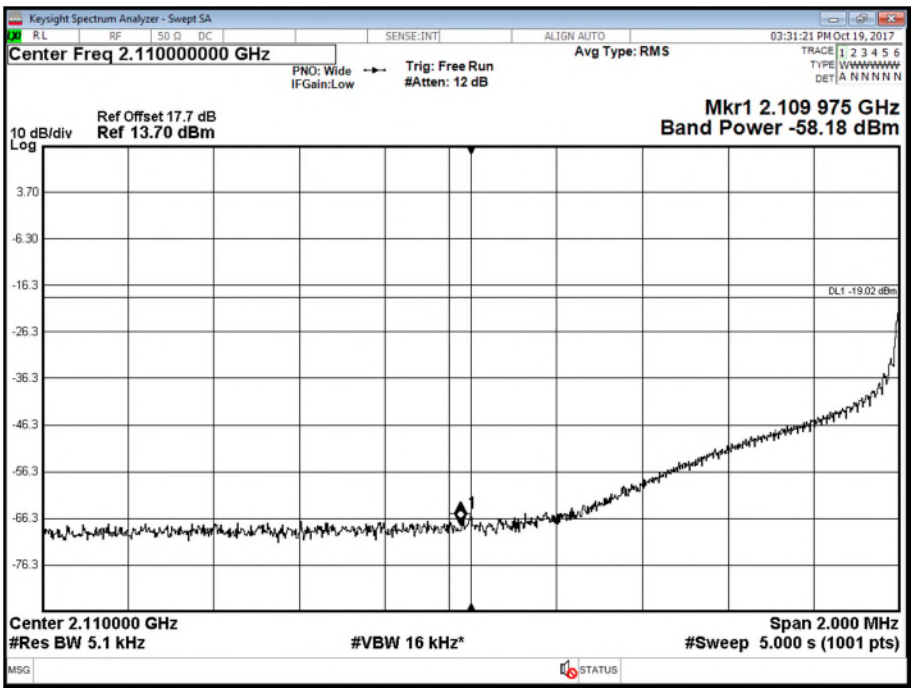
Antenna D - LTE Modulation QPSK - Channel T, 15MHz



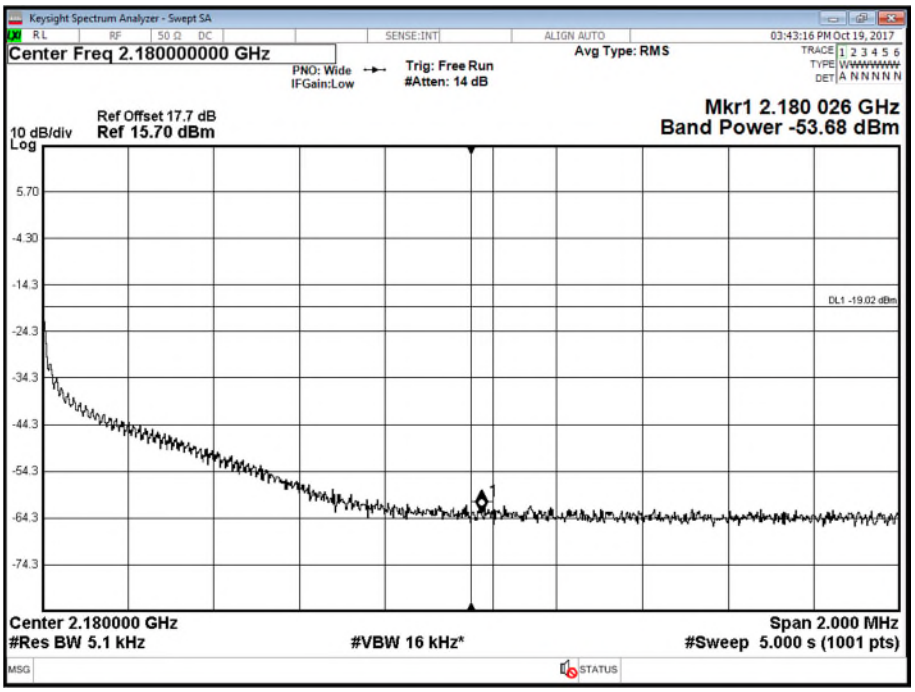
Antenna C - LTE Modulation QPSK - Channel B, 20MHz



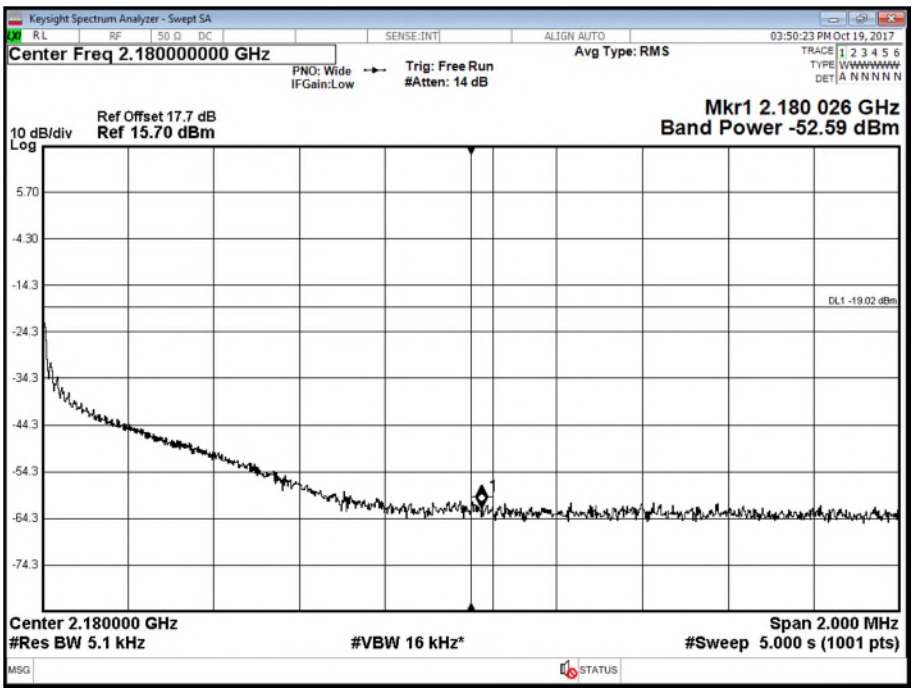
Antenna D - LTE Modulation QPSK - Channel B, 20MHz



Antenna C - LTE Modulation QPSK - Channel T, 20MHz



Antenna D - LTE Modulation QPSK - Channel T, 20MHz

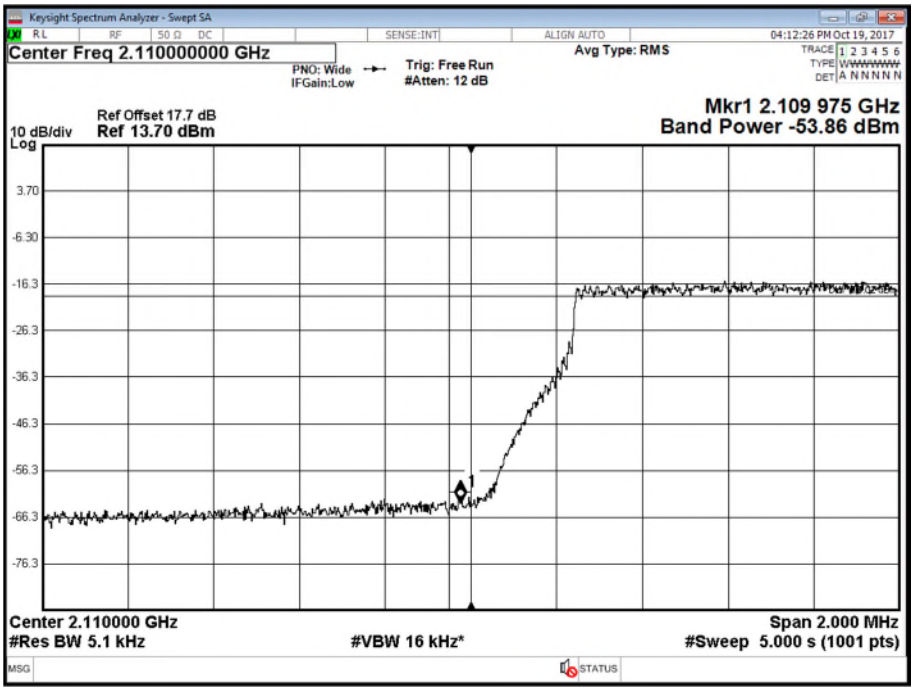


Configuration 5

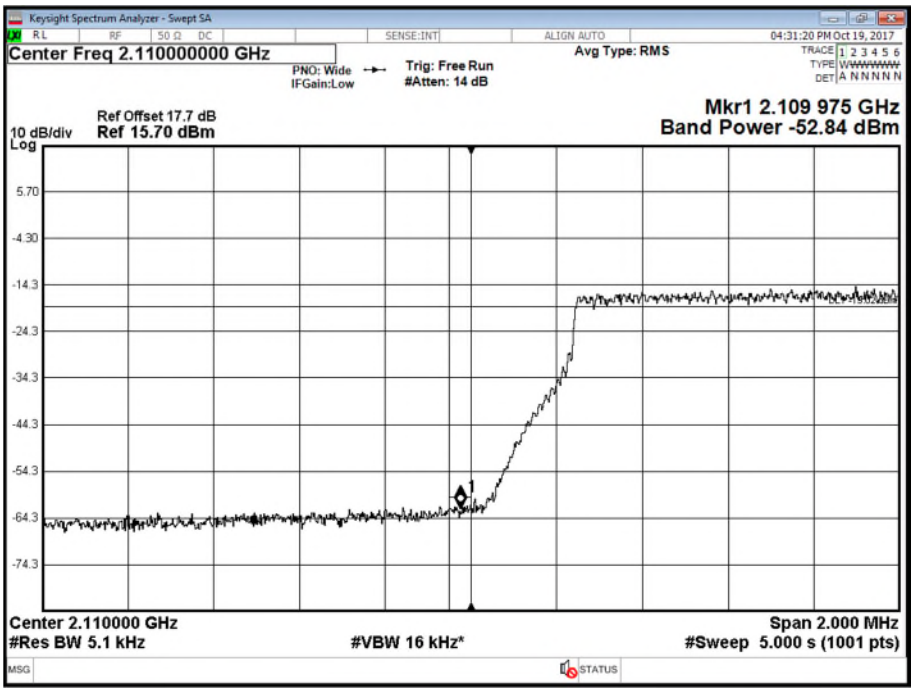
Maximum Output Power 17 dBm

Antenna	LTE Modulation	LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
C	QPSK	5.0 MHz	2112.5 + 2117.5	2172.5 + 2177.5
D	QPSK	5.0 MHz	2112.5 + 2117.5	2172.5 + 2177.5
C	QPSK	10.0 MHz	2115 + 2125	2165 + 2175
D	QPSK	10.0 MHz	2115 + 2125	2165 + 2175
C	QPSK	15.0 MHz	2117.5 + 2132.5	2157.5 + 2172.5
D	QPSK	15.0 MHz	2117.5 + 2132.5	2157.5 + 2172.5
C	QPSK	20.0 MHz	2120 + 2140	2150 + 2170
D	QPSK	20.0 MHz	2120 + 2140	2150 + 2170

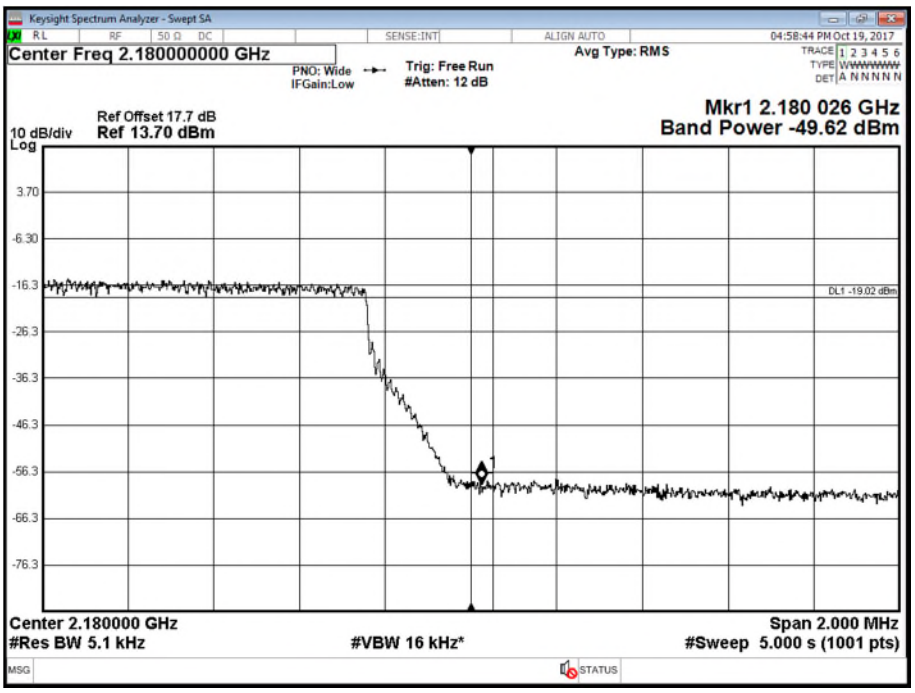
Antenna C - LTE Modulation QPSK - Channel B, 5MHz



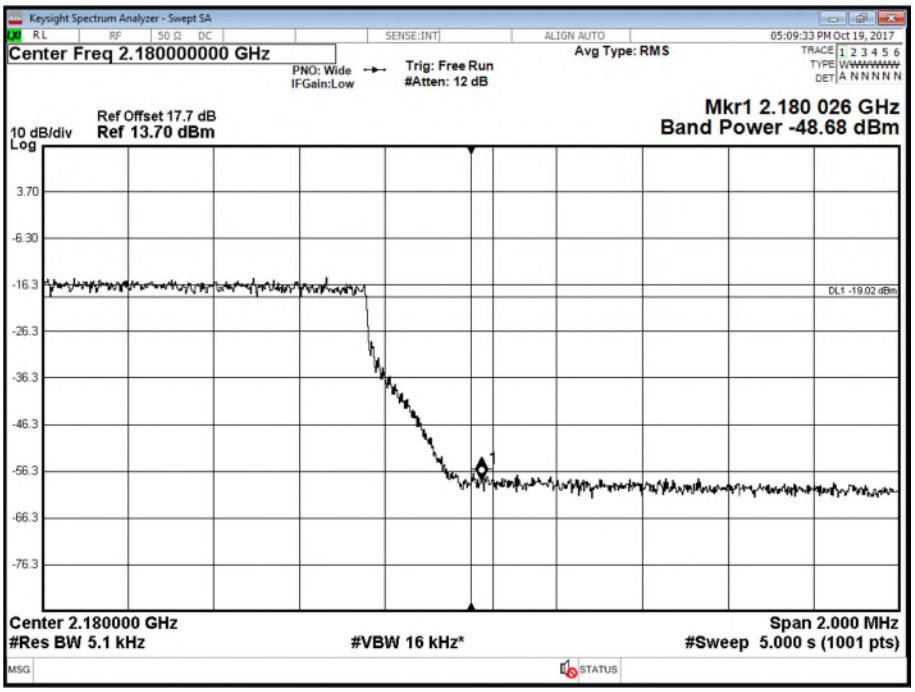
Antenna D - LTE Modulation QPSK - Channel B, 5MHz



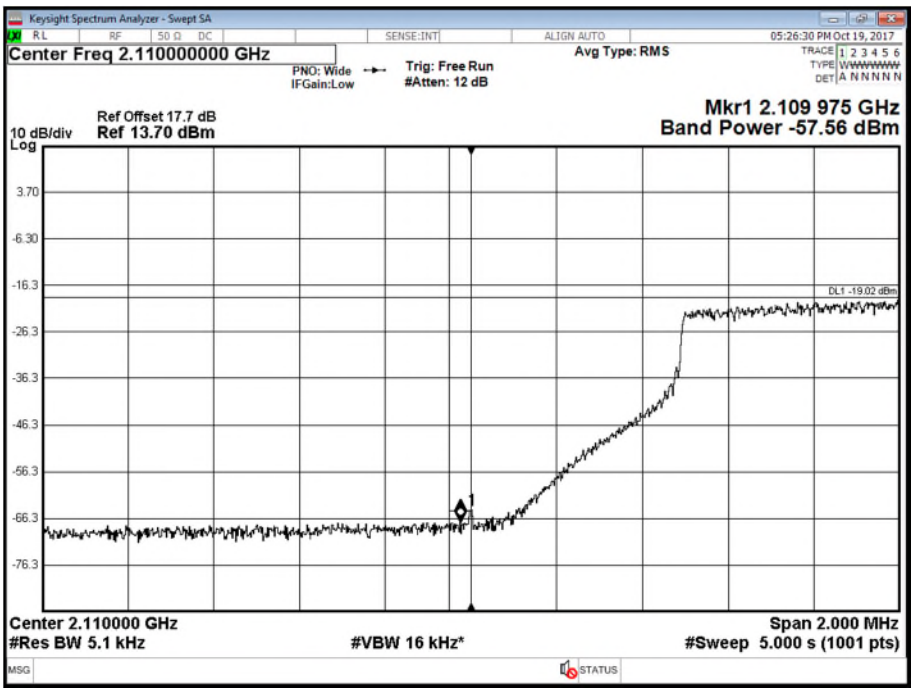
Antenna C - LTE Modulation QPSK - Channel T, 5MHz



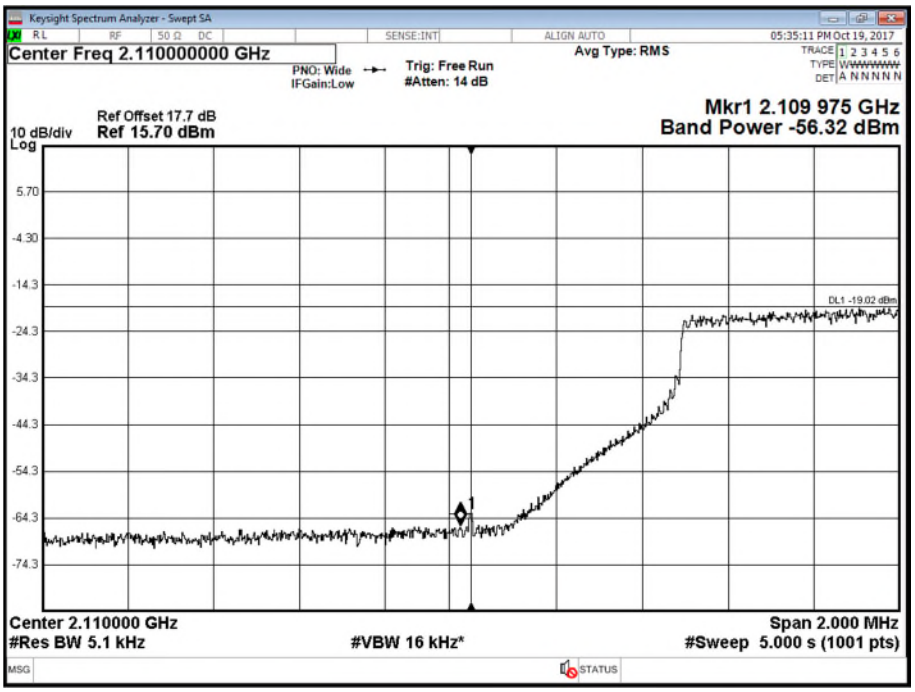
Antenna D - LTE Modulation QPSK - Channel T, 5MHz



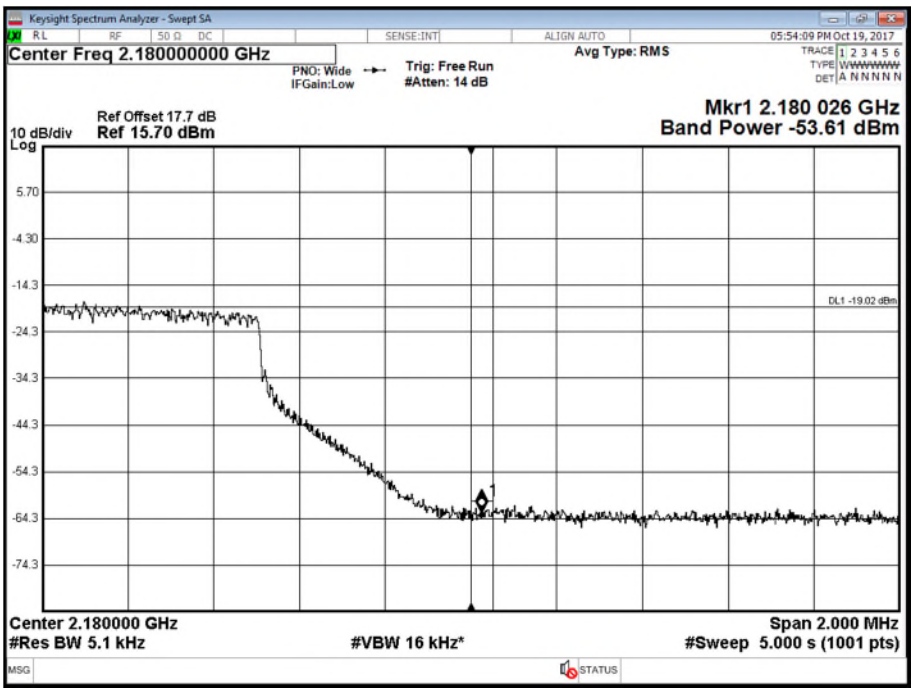
Antenna C - LTE Modulation QPSK - Channel B, 10MHz



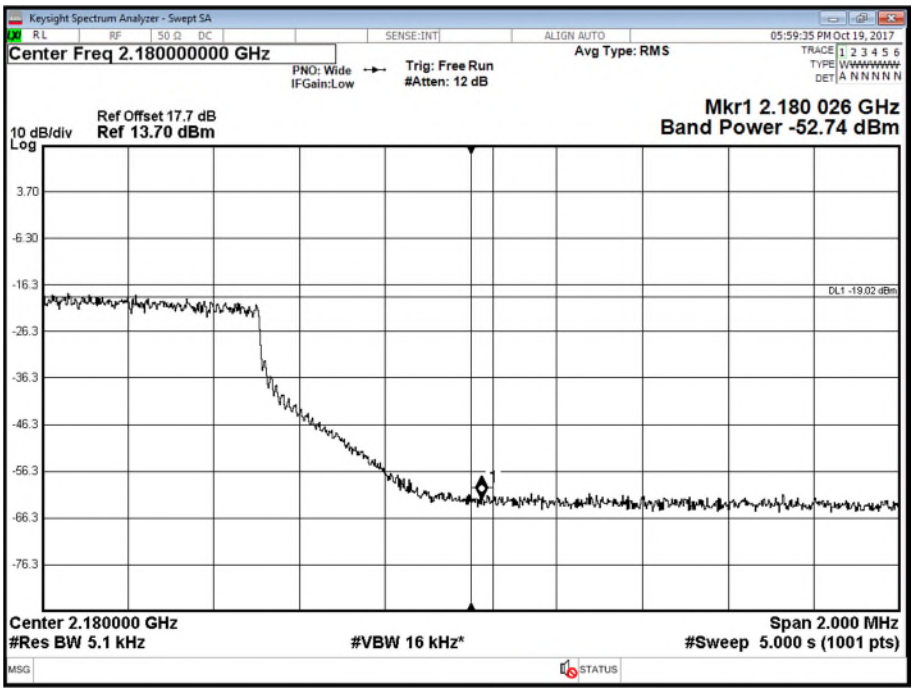
Antenna D - LTE Modulation QPSK - Channel B, 10MHz



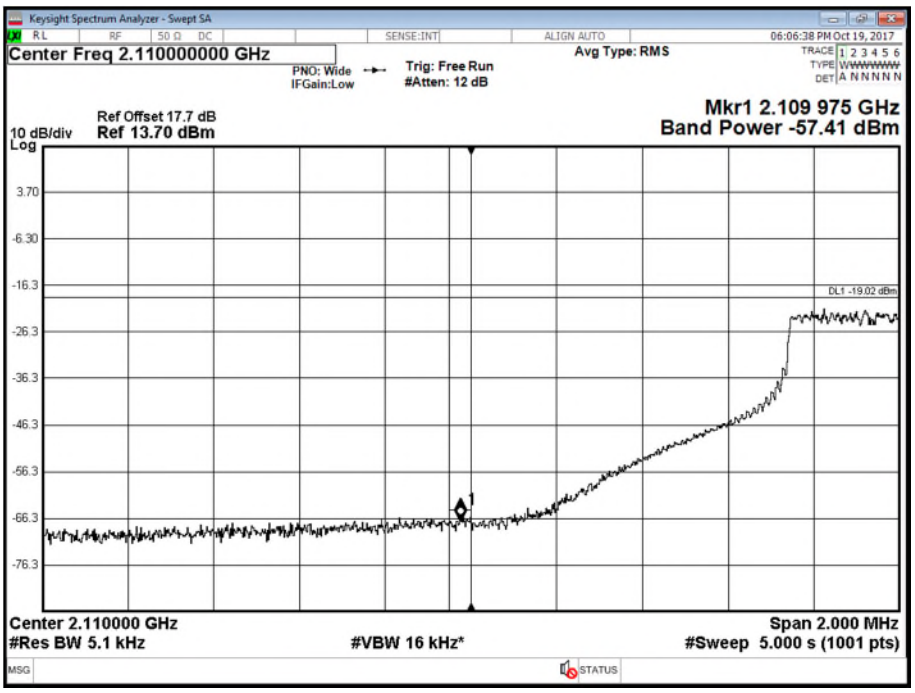
Antenna C - LTE Modulation QPSK - Channel T, 10MHz



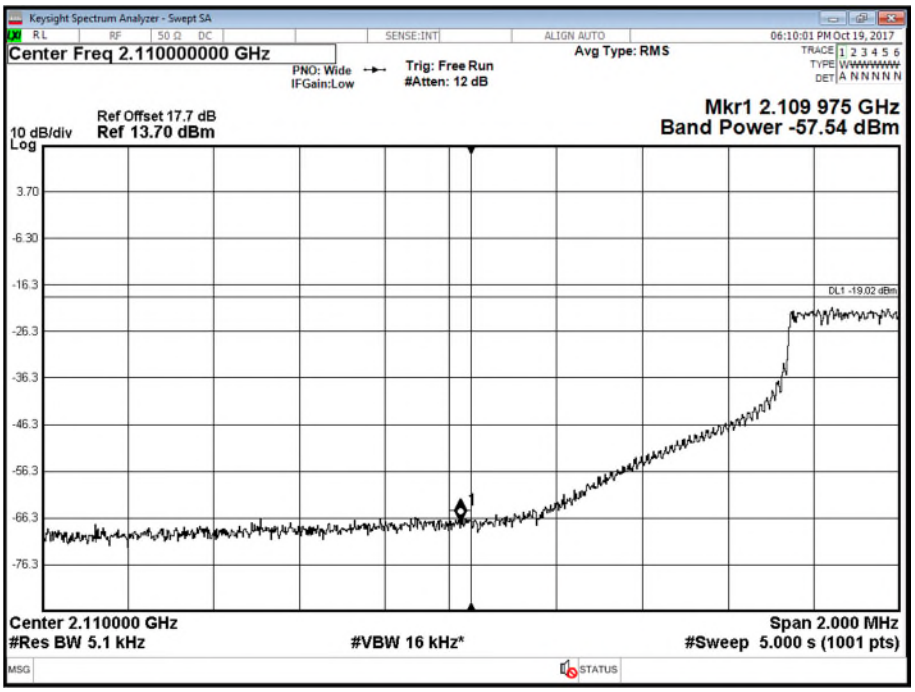
Antenna D - LTE Modulation QPSK - Channel T, 10MHz



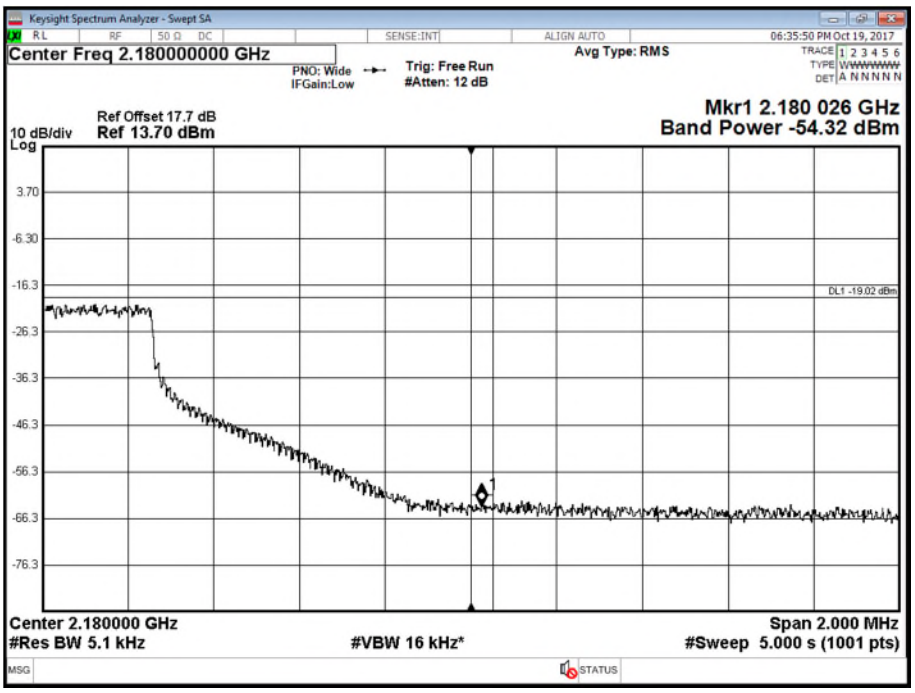
Antenna C - LTE Modulation QPSK - Channel B, 15MHz



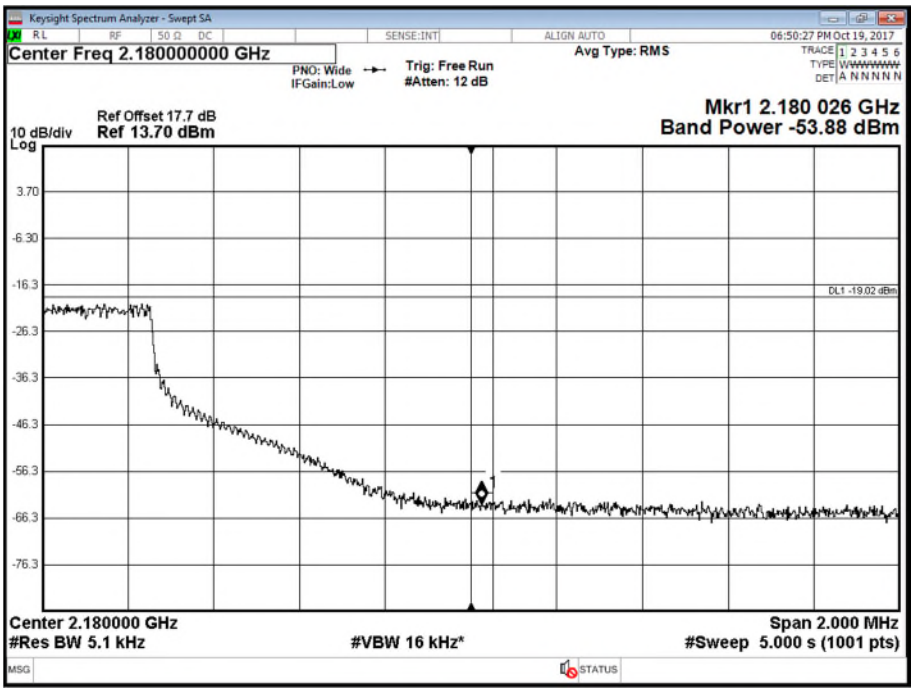
Antenna D - LTE Modulation QPSK - Channel B, 15MHz



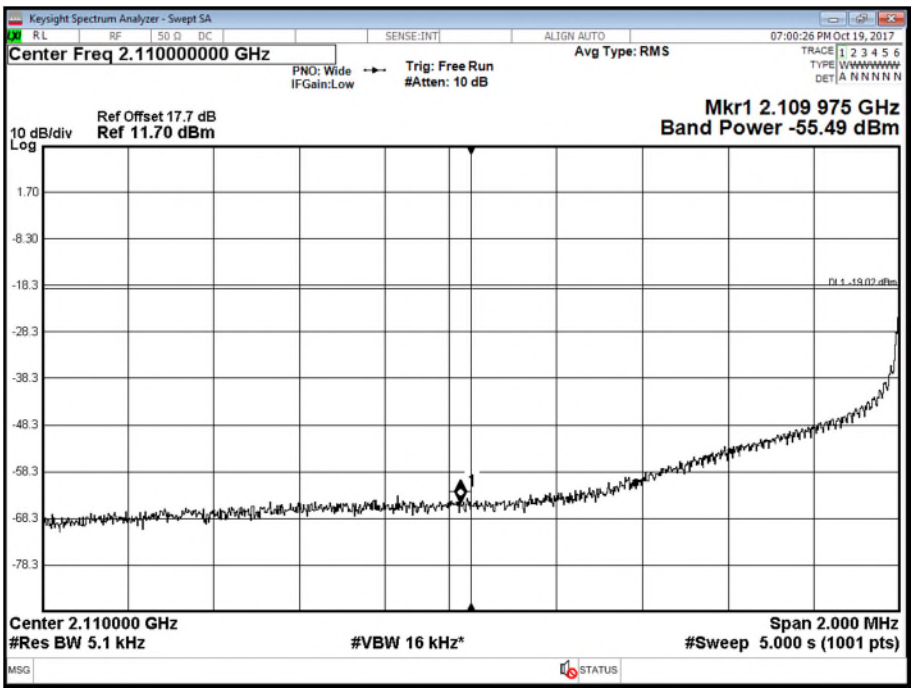
Antenna C - LTE Modulation QPSK - Channel T, 15MHz



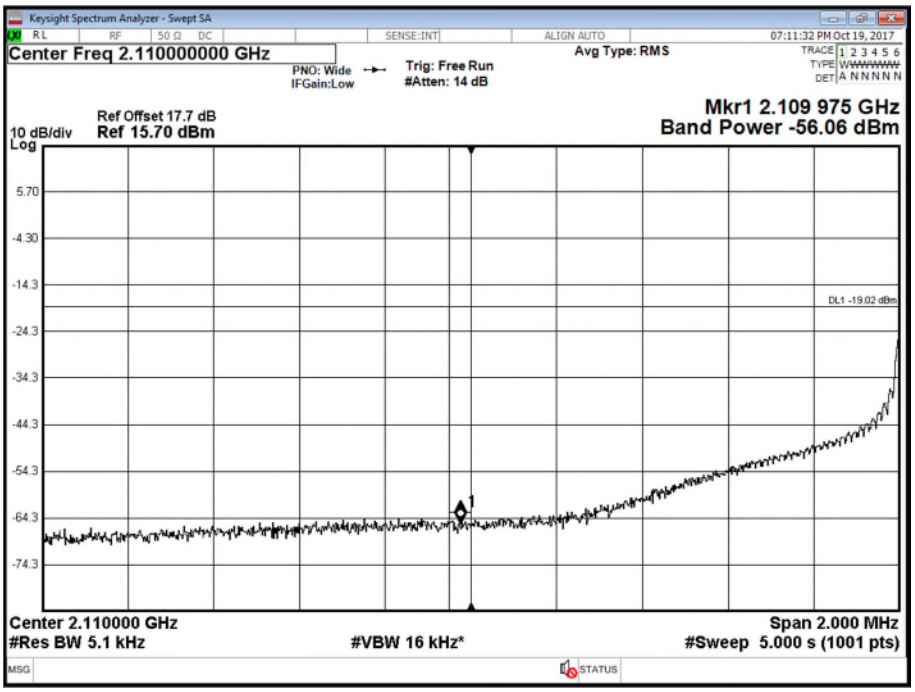
Antenna D - LTE Modulation QPSK - Channel T, 15MHz



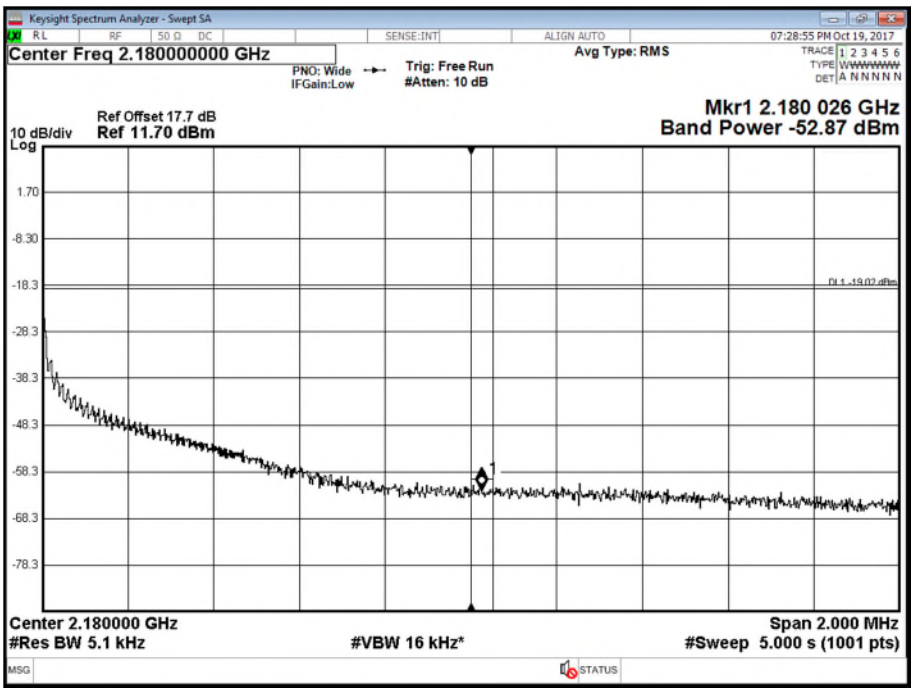
Antenna C - LTE Modulation QPSK - Channel B, 20MHz



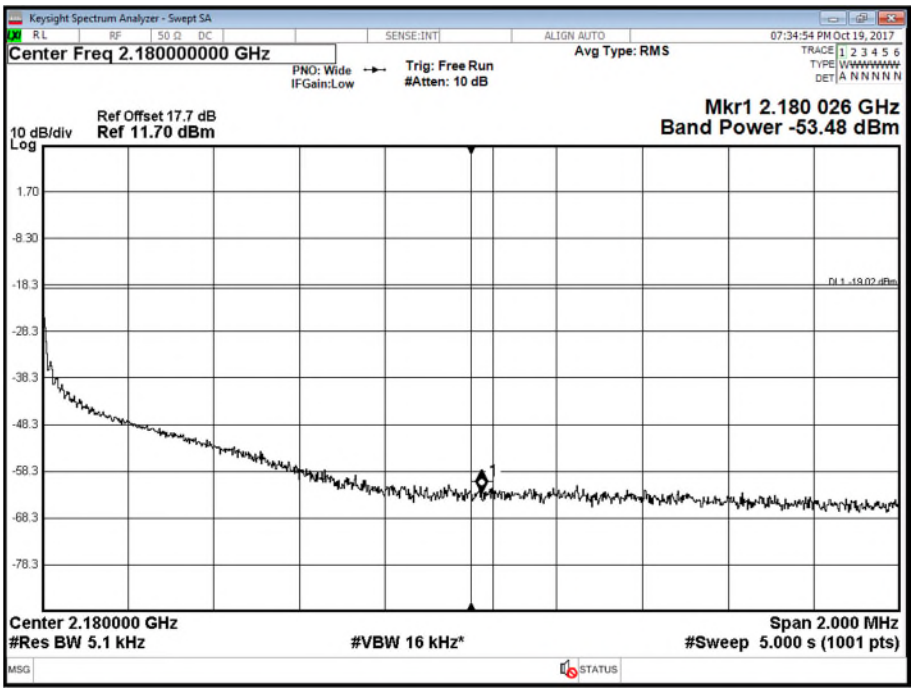
Antenna D - LTE Modulation QPSK - Channel B, 20MHz



Antenna C - LTE Modulation QPSK - Channel T, 20MHz



Antenna D - LTE Modulation QPSK - Channel T, 20MHz

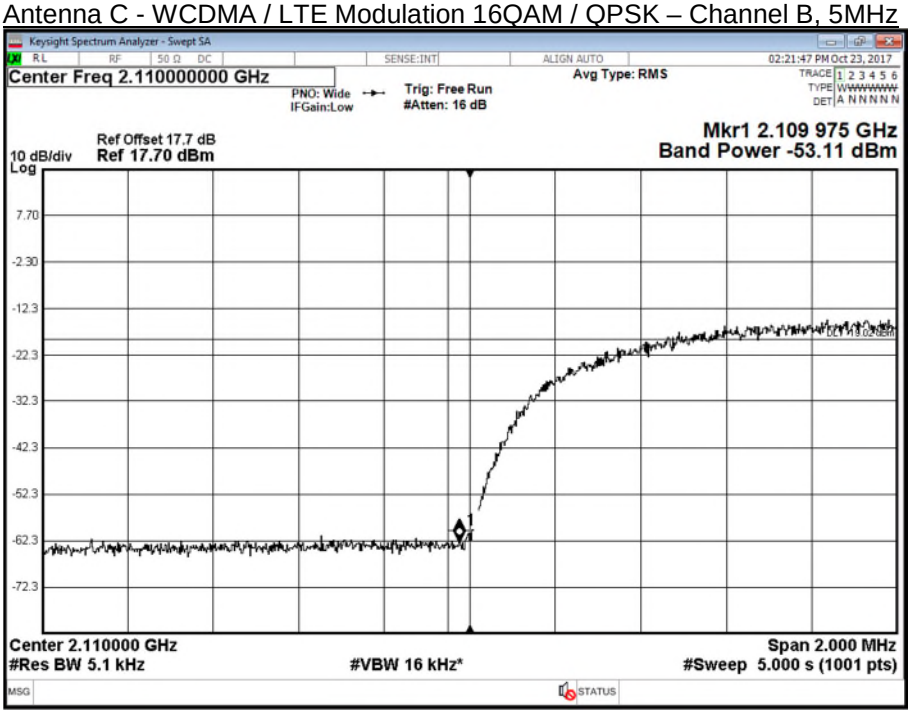


Configuration 6

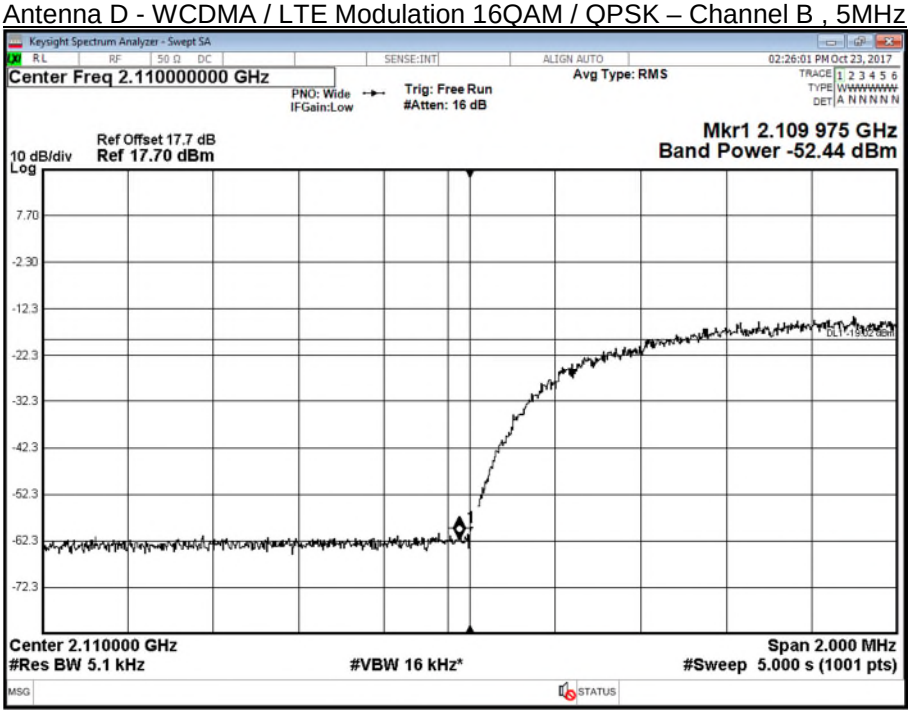
Maximum Output Power 17 dBm

Antenna	WCDMA / LTE Modulation	WCDMA / LTE Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B_{RFBW}	Channel Position T_{RFBW}
C	16QAM / QPSK	5.0 MHz / 5.0 MHz	2112.4 + 2117.5	2172.6 + 2177.5
D	16QAM / QPSK	5.0 MHz / 5.0 MHz	2112.4 + 2117.5	2172.6 + 2177.5
C	16QAM / QPSK	5.0 MHz / 10.0 MHz	2112.4 + 2120	2167.6 + 2175
D	16QAM / QPSK	5.0 MHz / 10.0 MHz	2112.4 + 2120	2167.6 + 2175
C	16QAM / QPSK	5.0 MHz / 15.0 MHz	2112.4 + 2122.5	2162.6+ 2172.5
D	16QAM / QPSK	5.0 MHz / 15.0 MHz	2112.4 + 2122.5	2162.6+ 2172.5
C	16QAM / QPSK	5.0 MHz / 20.0 MHz	2112.4 + 2125	2157.6 + 2170
D	16QAM / QPSK	5.0 MHz / 20.0 MHz	2112.4 + 2125	2157.6 + 2170

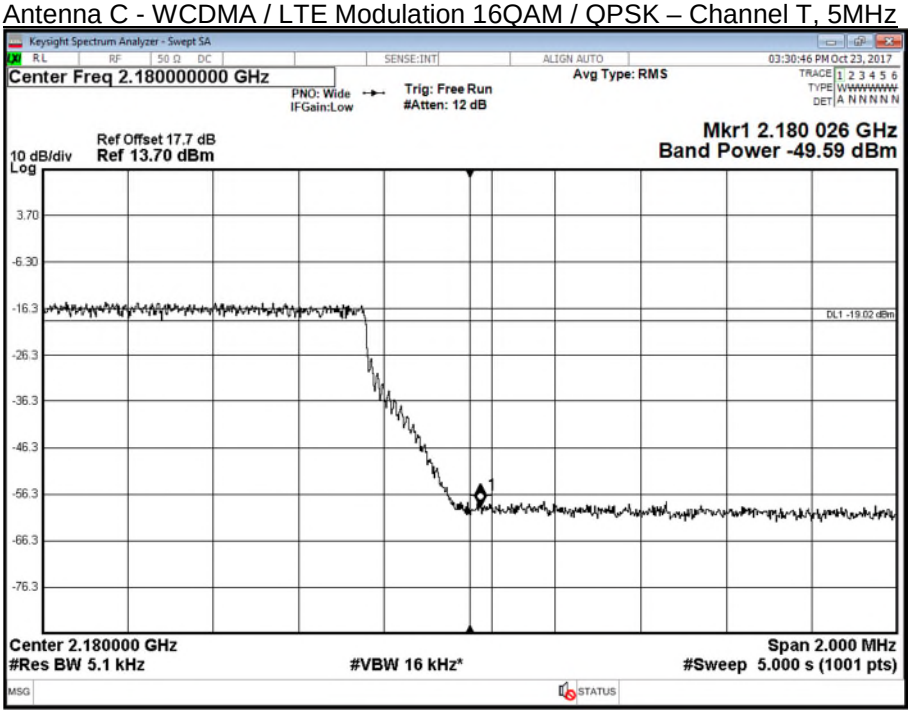
Antenna C - WCDMA / LTE Modulation 16QAM / QPSK – Channel B, 5MHz



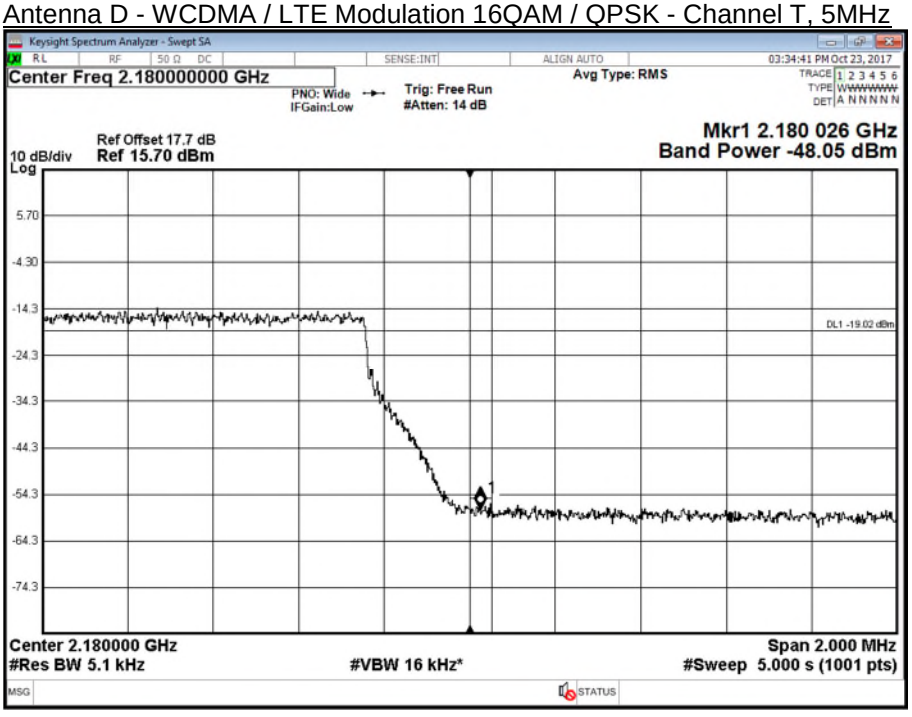
Antenna D - WCDMA / LTE Modulation 16QAM / QPSK – Channel B , 5MHz



Antenna C - WCDMA / LTE Modulation 16QAM / QPSK – Channel T, 5MHz



Antenna D - WCDMA / LTE Modulation 16QAM / QPSK - Channel T, 5MHz



Limit	-19 dBm

2.4 TRANSMITTER SPURIOUS EMISSIONS

2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 27, Clause 27.53 (h)
Industry Canada RSS-139, Clause 6.5

2.4.2 Date of Test and Modification State

19 and 20 October 2017 - Modification State 0

2.4.3 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.4 Environmental Conditions

Ambient Temperature	23°C
Relative Humidity	50%

2.4.5 Test Method

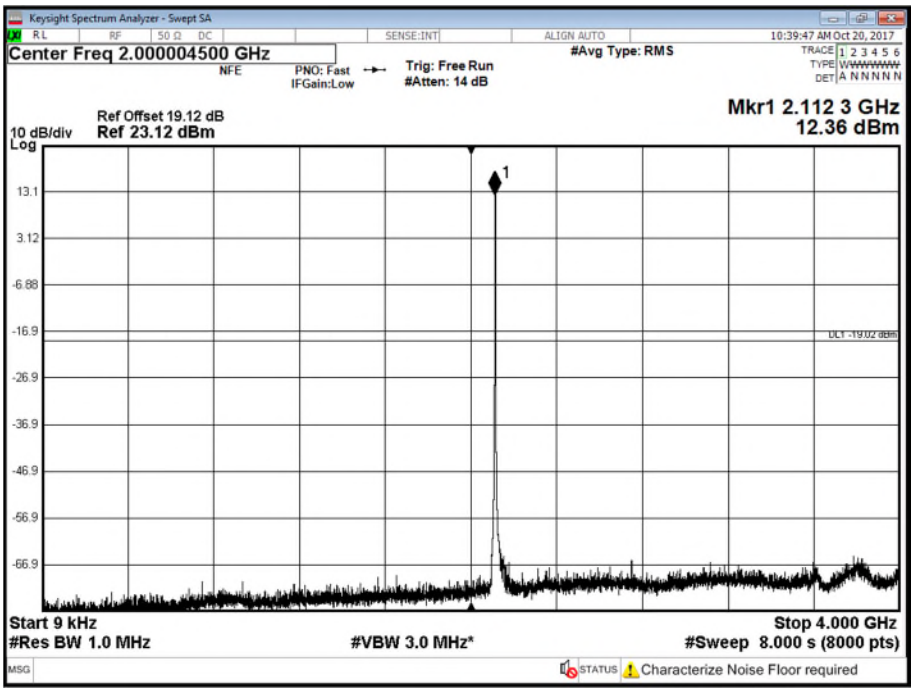
All measurements were made in accordance with FCC KDB 971168 D01 Clause 6.
The EUT was connected to a Spectrum Analyser via an attenuator and switching box. Prior to testing, a Network Analyser was used to calibrate the path loss between the EUT and the Spectrum Analyser. The worst-case path loss in the measured ranges was entered as a reference level offset. Over the measured ranges, the RBW was set to 1MHz with a VBW of 3MHz. All measurement results are specified as average with an RMS detector being used in conjunction with a trace setting of Max Hold. Measurements were performed in configurations of the EUT as reported below.
The B66A EUT has 2 transmit ports, but can be configured to operate with 2 devices co-located. Therefore, the test limits used were calculated on a worst-case basis accounting for an effective 4 port MIMO configuration. Testing was performed on this port with a test limit of 43+10log(P) - 10log(4) = -19 dBm.

2.4.6 Test Results

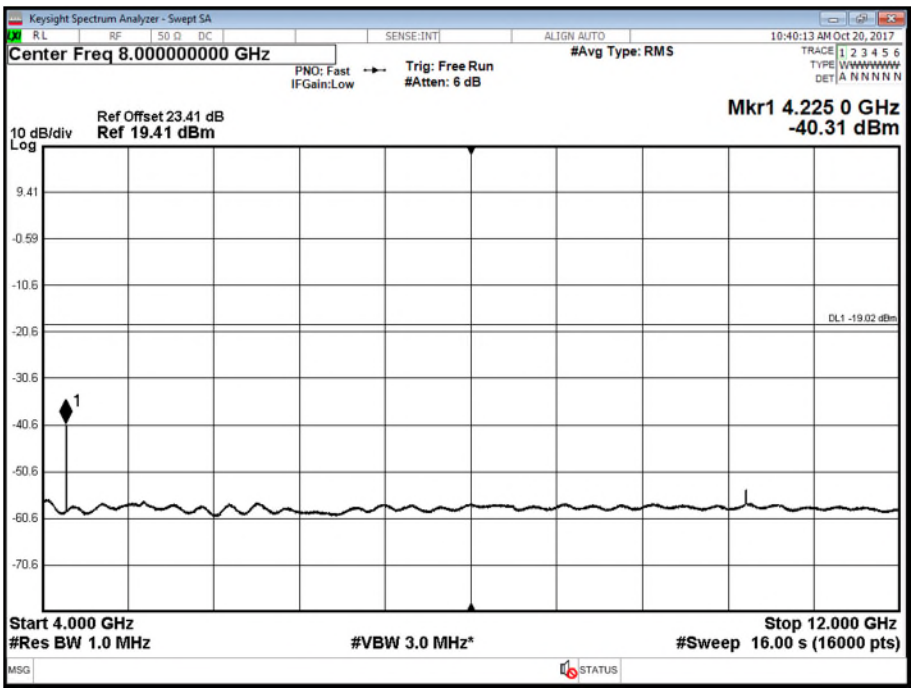
Configuration 1

Maximum Output Power 17 dBm

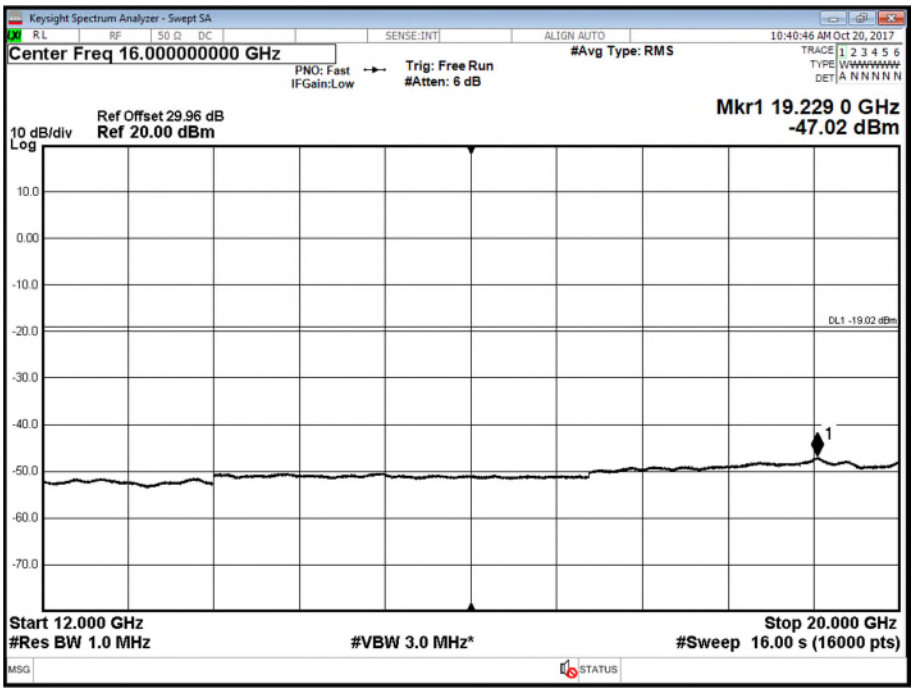
Antenna C - WCDMA Modulation 16QAM – Channel B, 5MHz



Antenna C - WCDMA Modulation 16QAM - Channel B, 5MHz

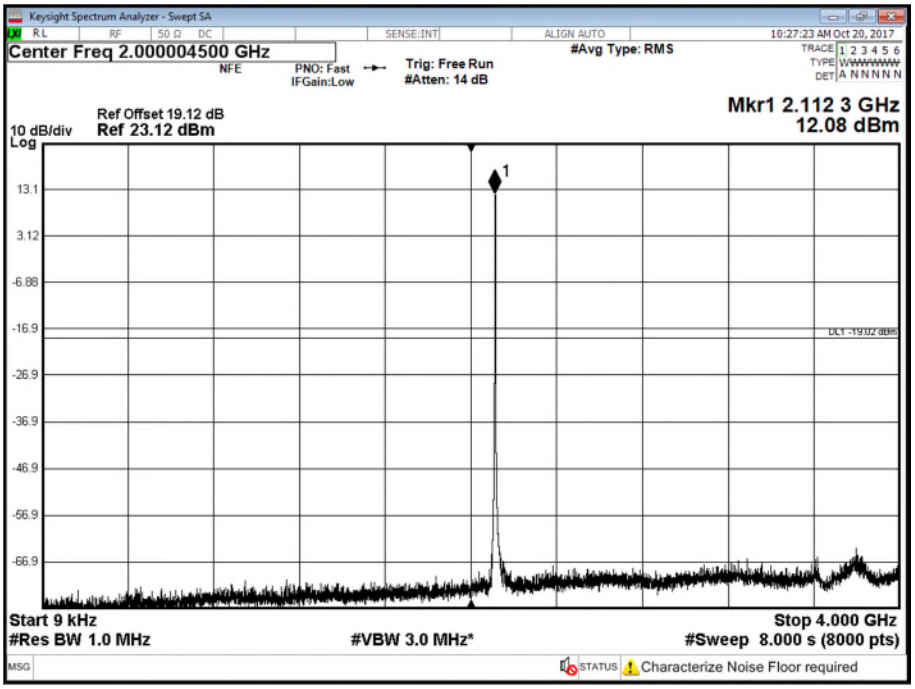


Antenna C - WCDMA Modulation 16QAM - Channel B, 5MHz

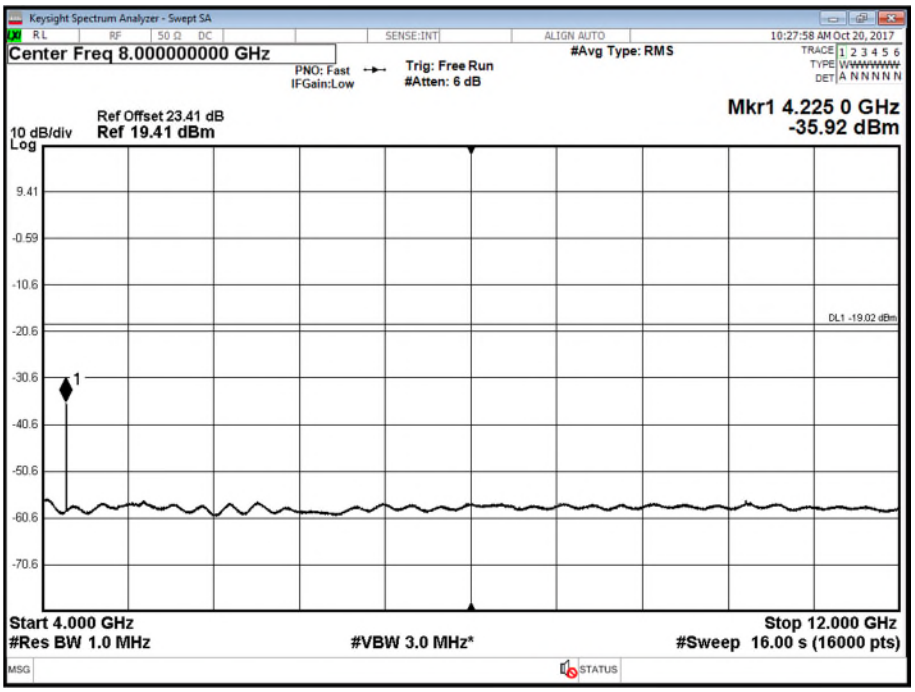


Note: No emissions were observed in the 20-22 GHz band and the margin observed was more than 20 dB.

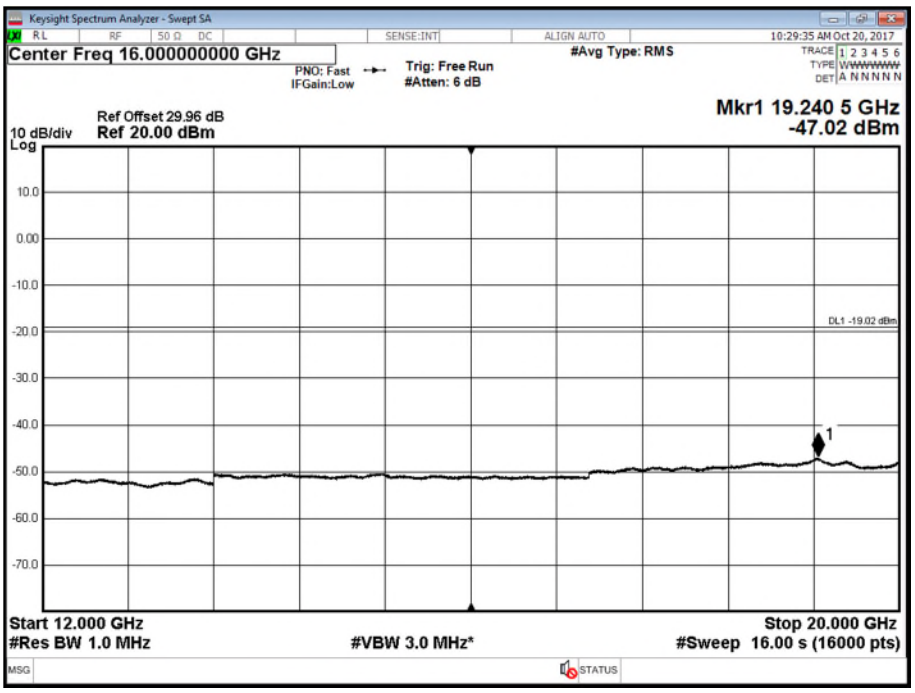
Antenna D - WCDMA Modulation 16QAM - Channel B, 5MHz



Antenna D - WCDMA Modulation 16QAM - Channel B, 5MHz

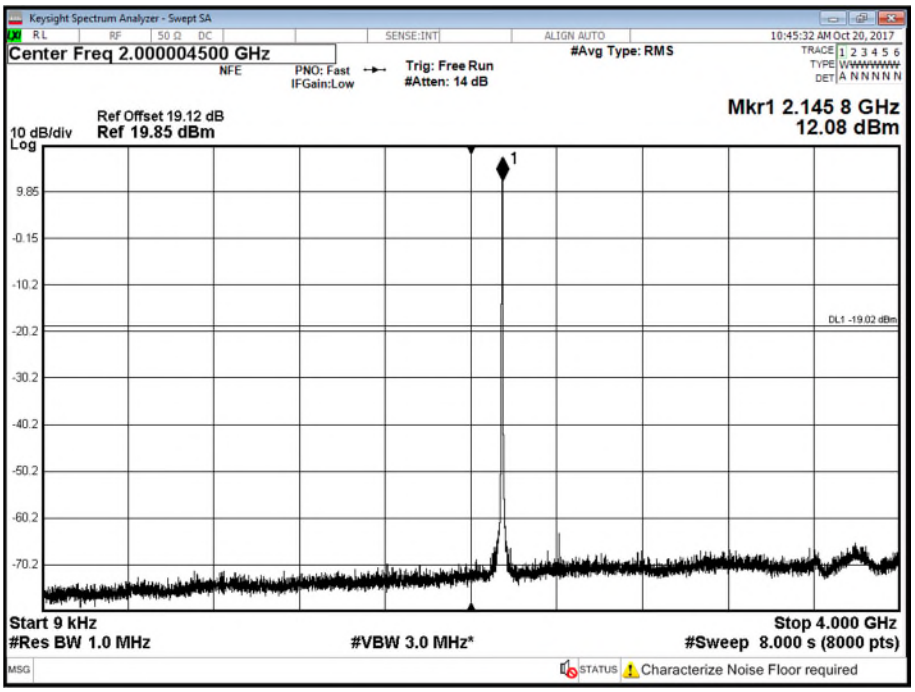


Antenna D - WCDMA Modulation 16QAM - Channel B, 5MHz

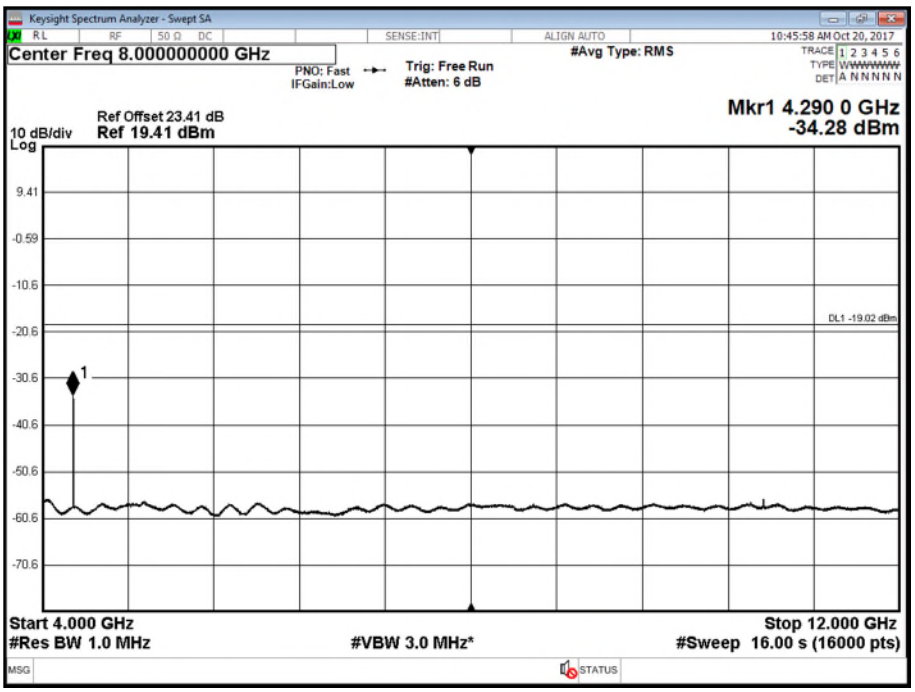


Note: No emissions were observed in the 20-22 GHz band and the margin observed was more than 20 dB.

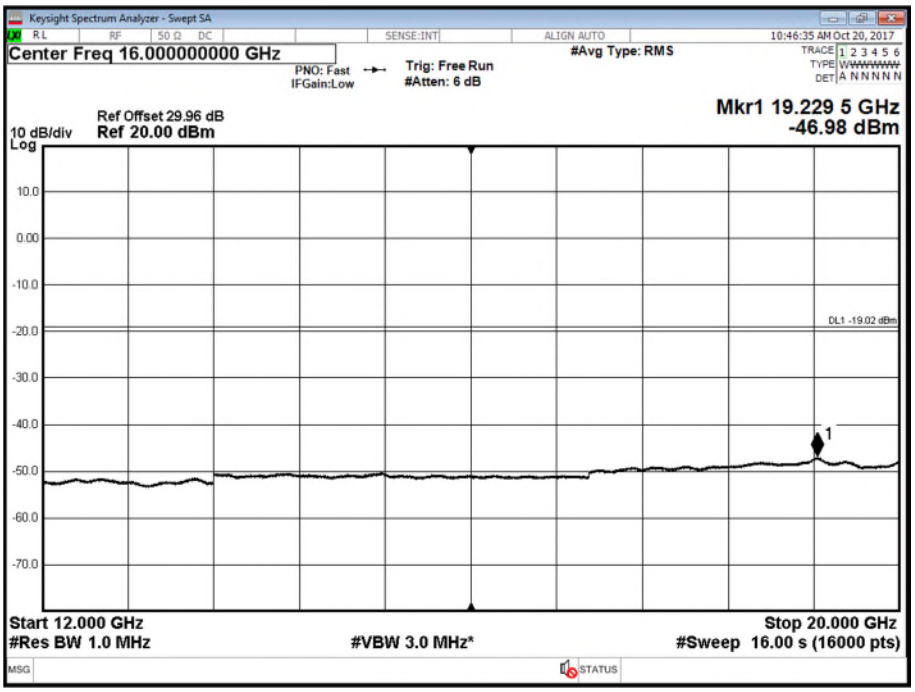
Antenna C - WCDMA Modulation 16QAM - Channel M, 5MHz



Antenna C - WCDMA Modulation 16QAM - Channel M, 5MHz

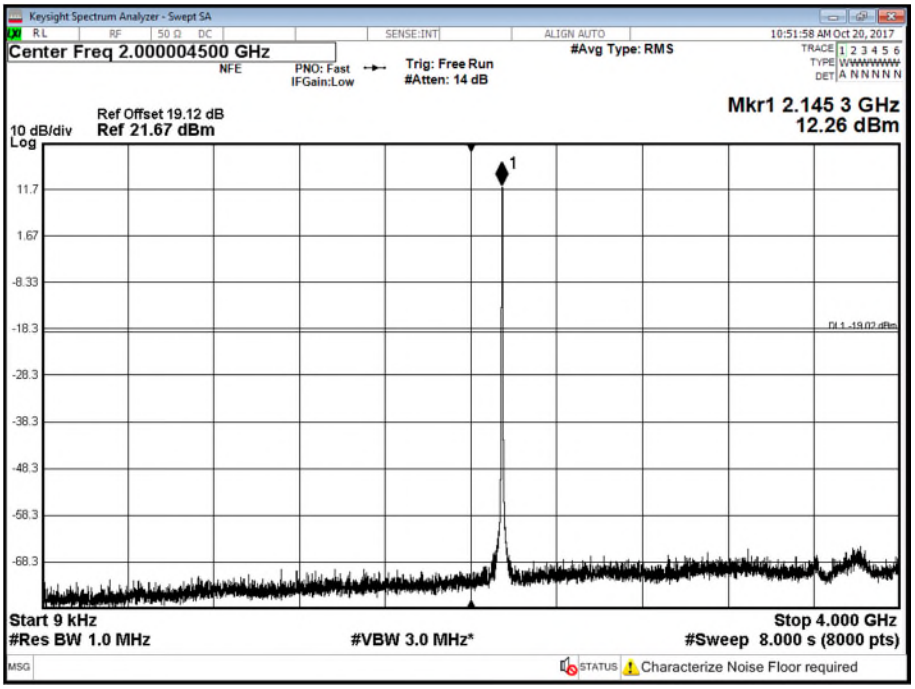


Antenna C - WCDMA Modulation 16QAM - Channel M, 5MHz

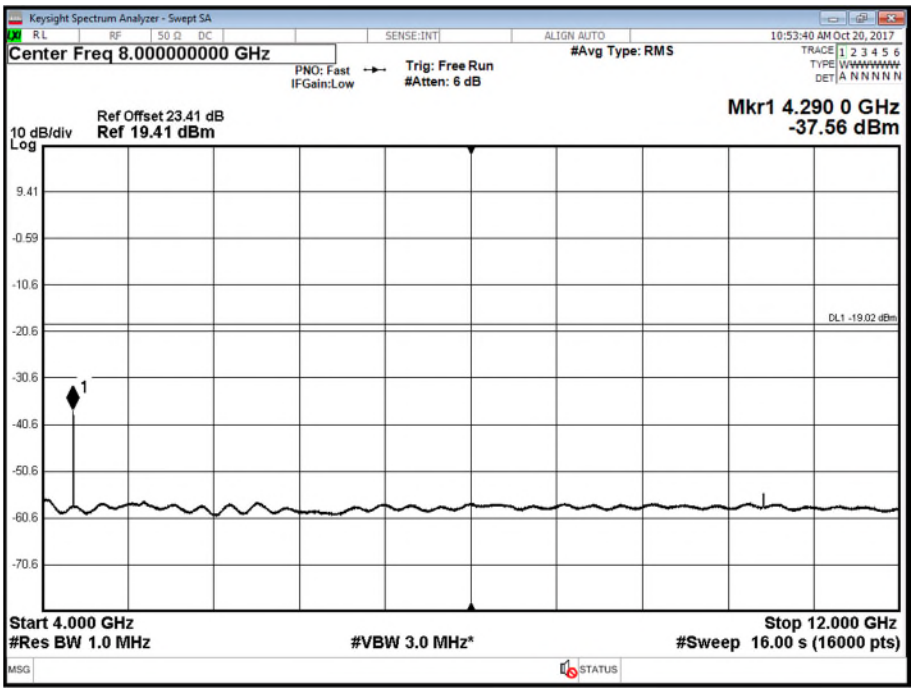


Note: No emissions were observed in the 20-22 GHz band and the margin observed was more than 20 dB.

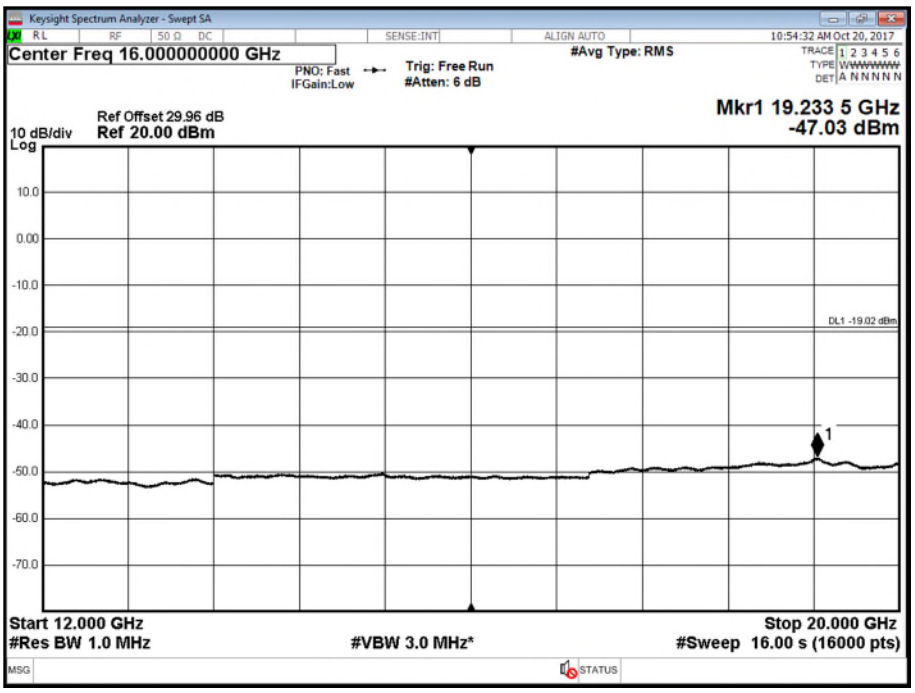
Antenna D - WCDMA Modulation 16QAM - Channel M, 5MHz



Antenna D - WCDMA Modulation 16QAM - Channel M, 5MHz

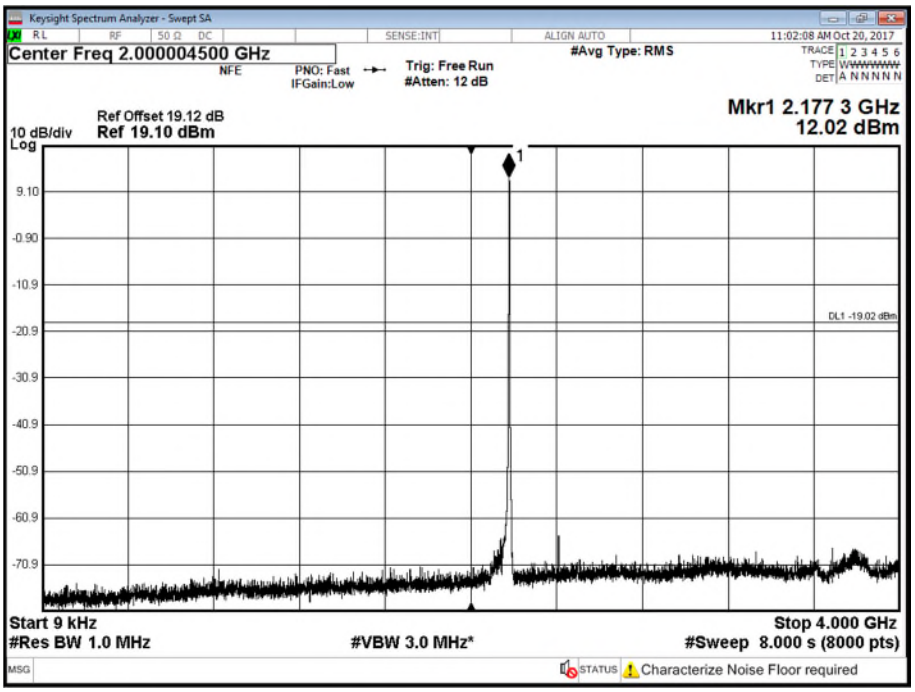


Antenna D - WCDMA Modulation 16QAM - Channel M, 5MHz

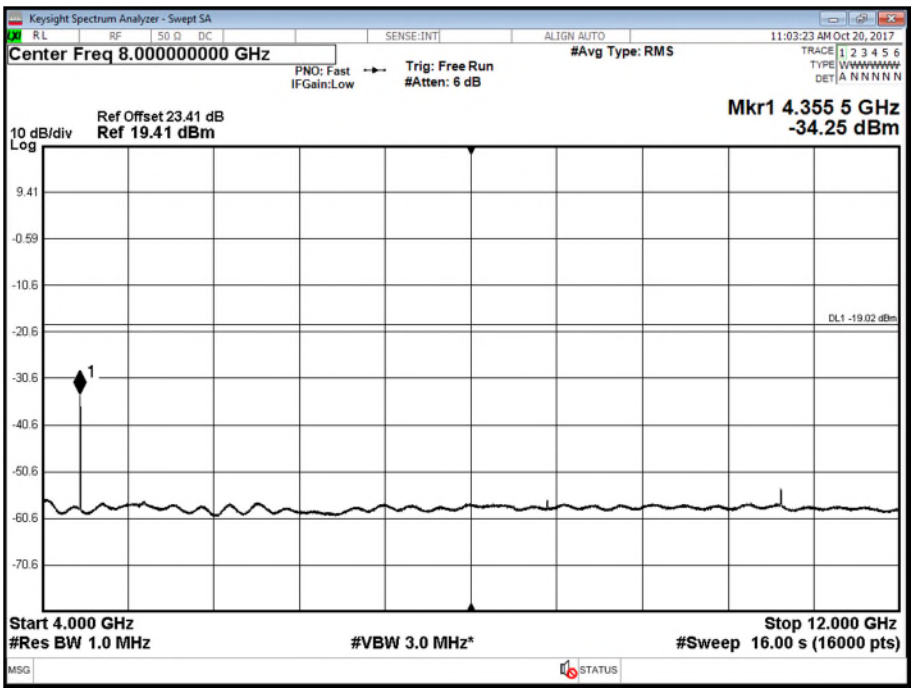


Note: No emissions were observed in the 20-22 GHz band and the margin observed was more than 20 dB.

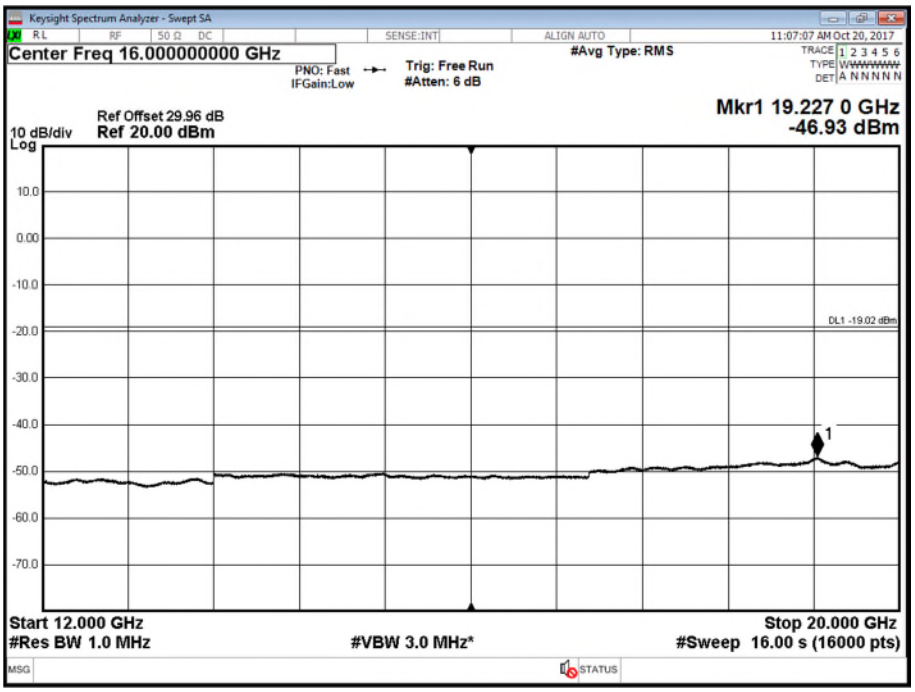
Antenna C - WCDMA Modulation 16QAM - Channel T, 5MHz



Antenna C - WCDMA Modulation 16QAM - Channel T, 5MHz

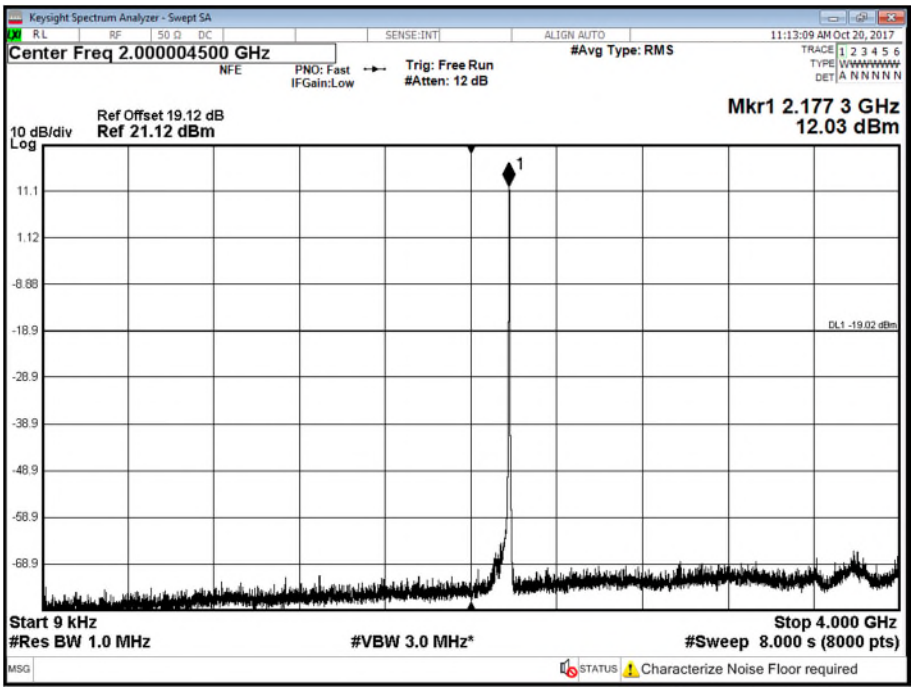


Antenna C - WCDMA Modulation 16QAM - Channel T, 5MHz

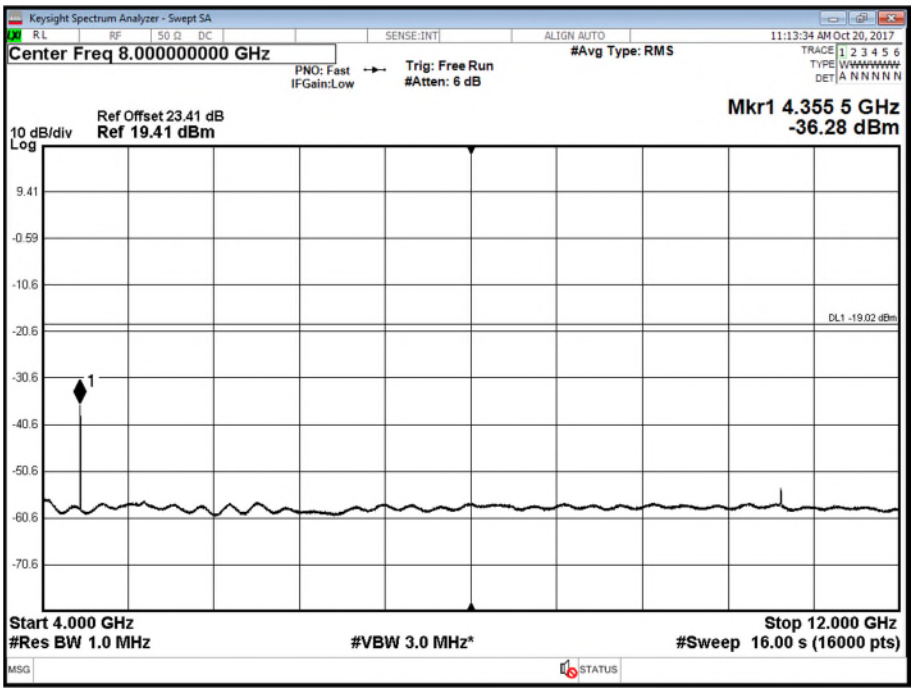


Note: No emissions were observed in the 20-22 GHz band and the margin observed was more than 20 dB.

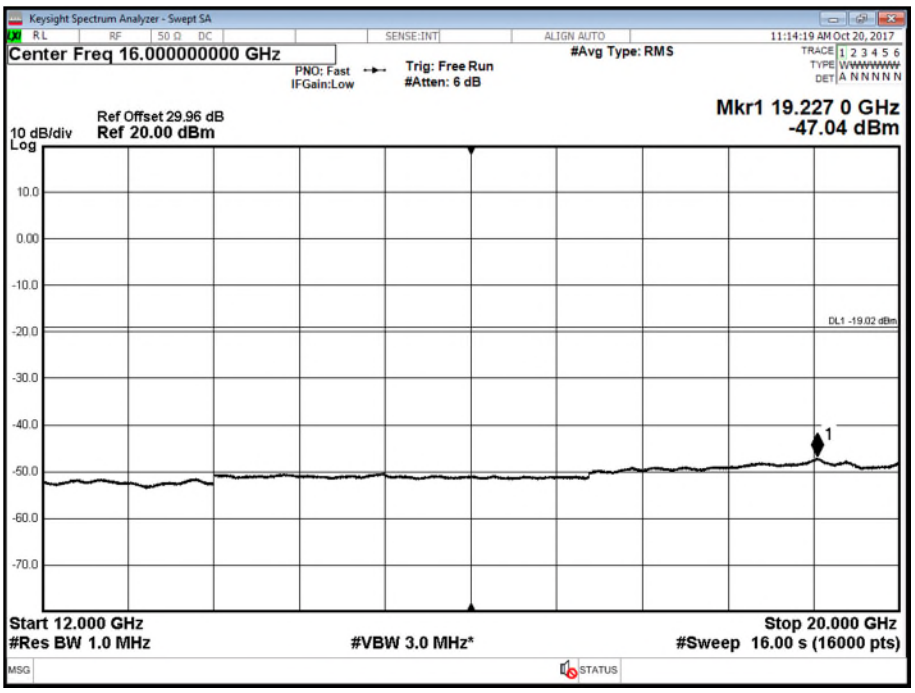
Antenna D - WCDMA Modulation 16QAM - Channel T, 5MHz



Antenna D - WCDMA Modulation 16QAM - Channel T, 5MHz



Antenna D - WCDMA Modulation 16QAM - Channel T, 5MHz

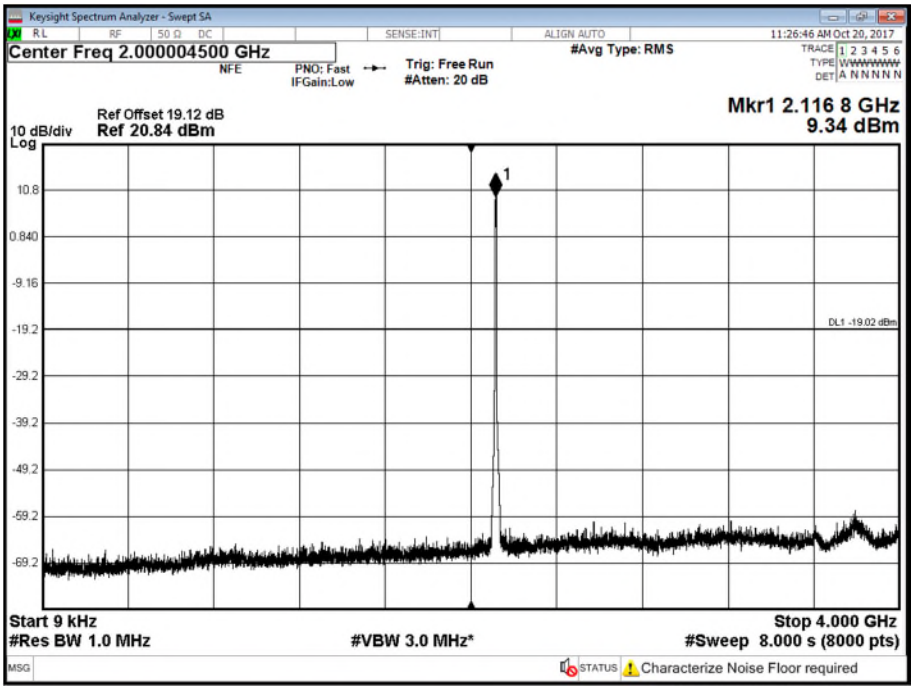


Note: No emissions were observed in the 20-22 GHz band and the margin observed was more than 20 dB.

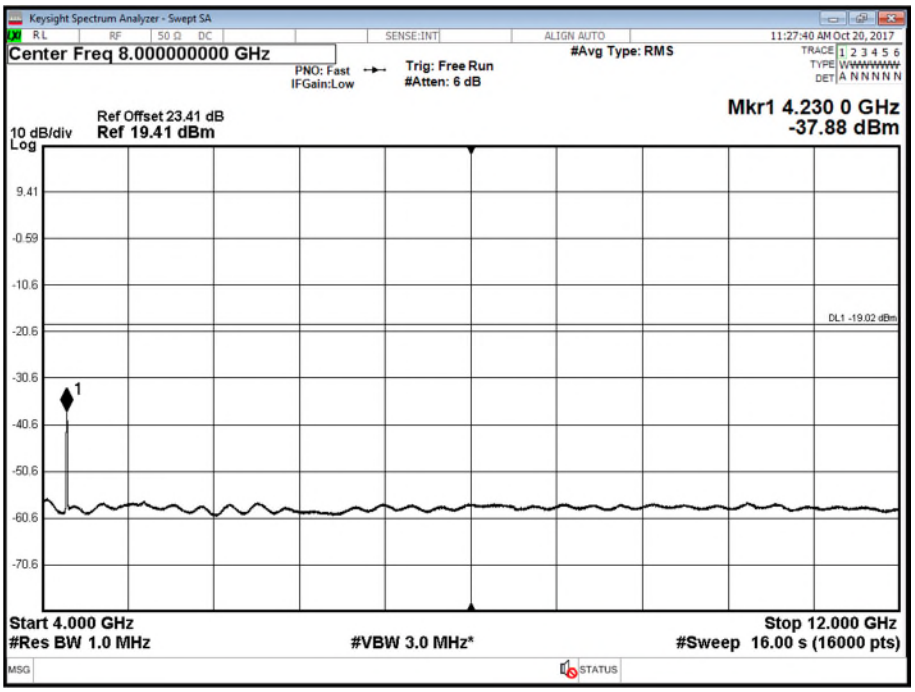
Configuration 2

Maximum Output Power 17 dBm

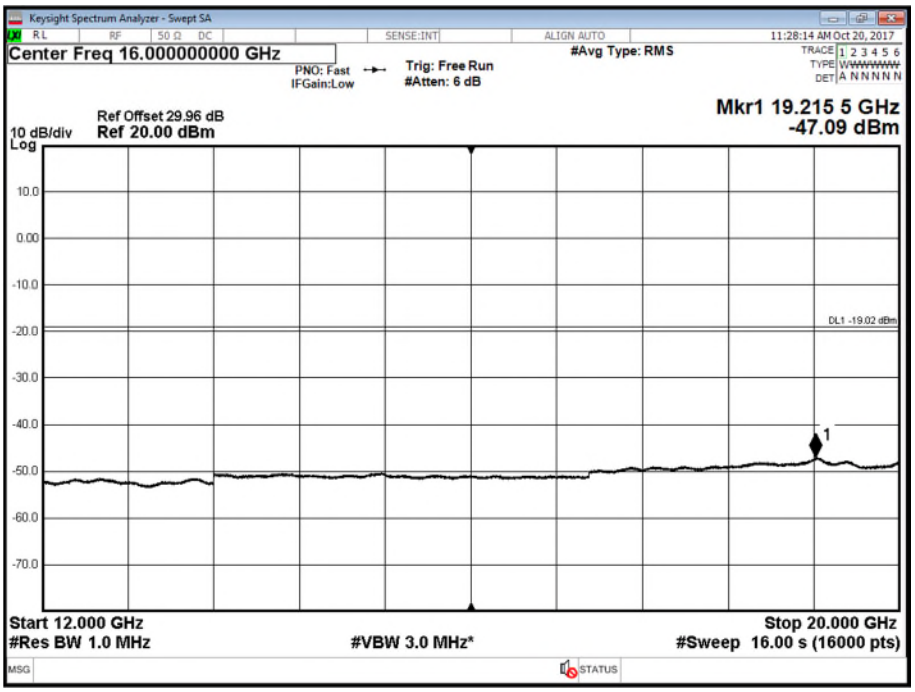
Antenna C - WCDMA Modulation 16QAM - Channel B, 5MHz



Antenna C - WCDMA Modulation 16QAM - Channel B, 5MHz

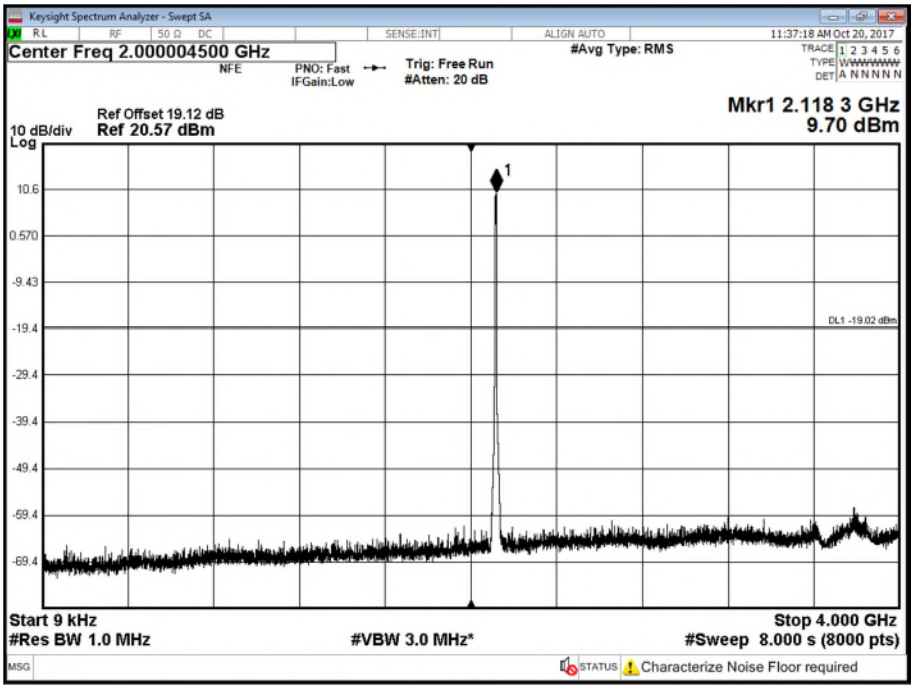


Antenna C - WCDMA Modulation 16QAM - Channel B, 5MHz

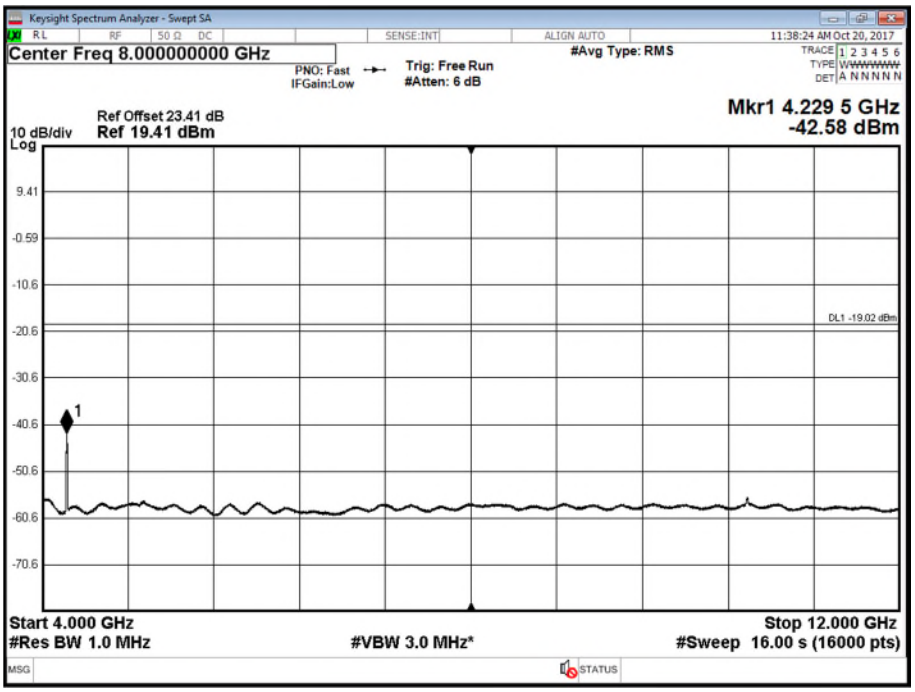


Note: No emissions were observed in the 20-22 GHz band and the margin observed was more than 20 dB.

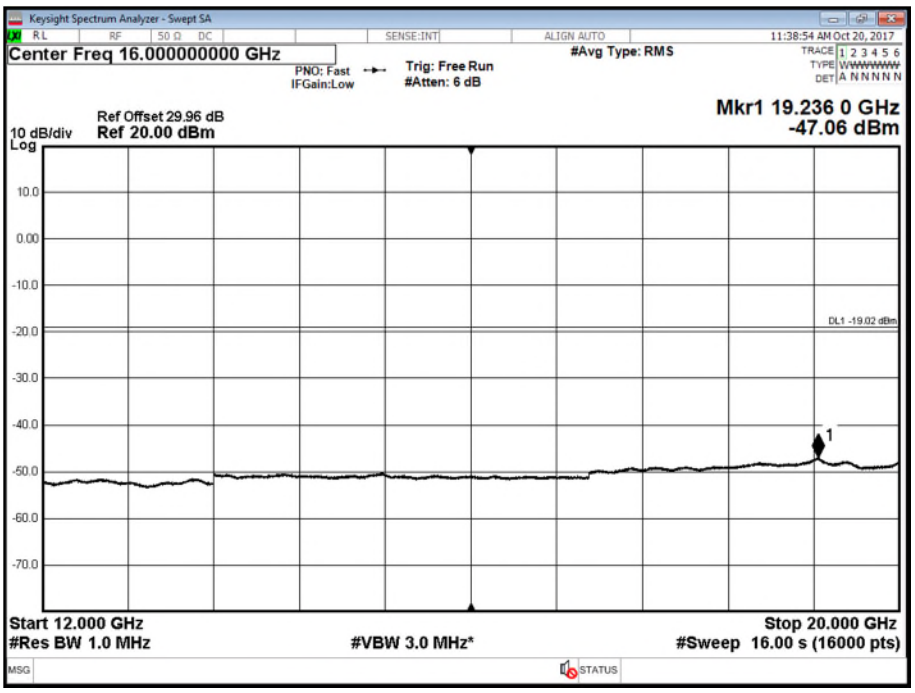
Antenna D - WCDMA Modulation 16QAM - Channel B, 5MHz



Antenna D - WCDMA Modulation 16QAM - Channel B, 5MHz



Antenna D - WCDMA Modulation 16QAM - Channel B, 5MHz



Note: No emissions were observed in the 20-22 GHz band and the margin observed was more than 20 dB.