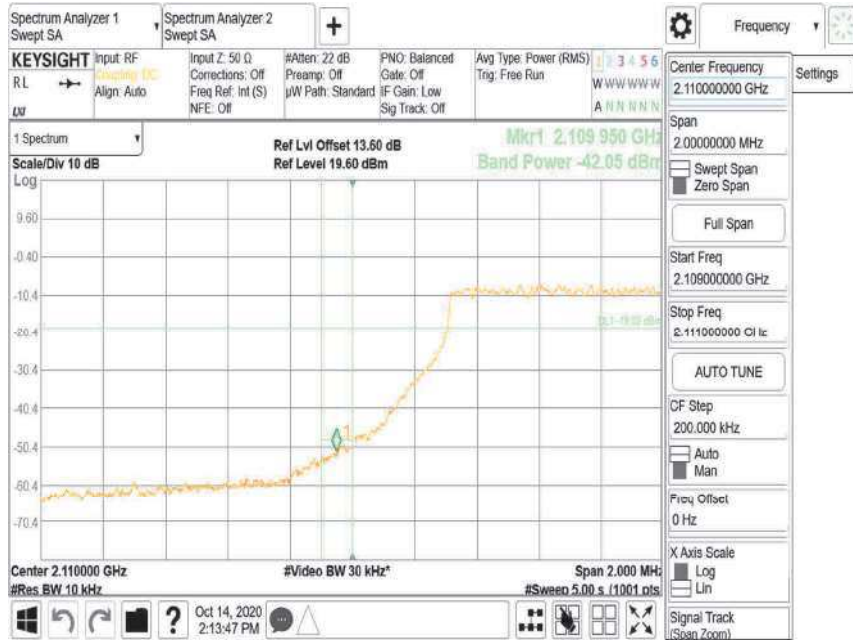
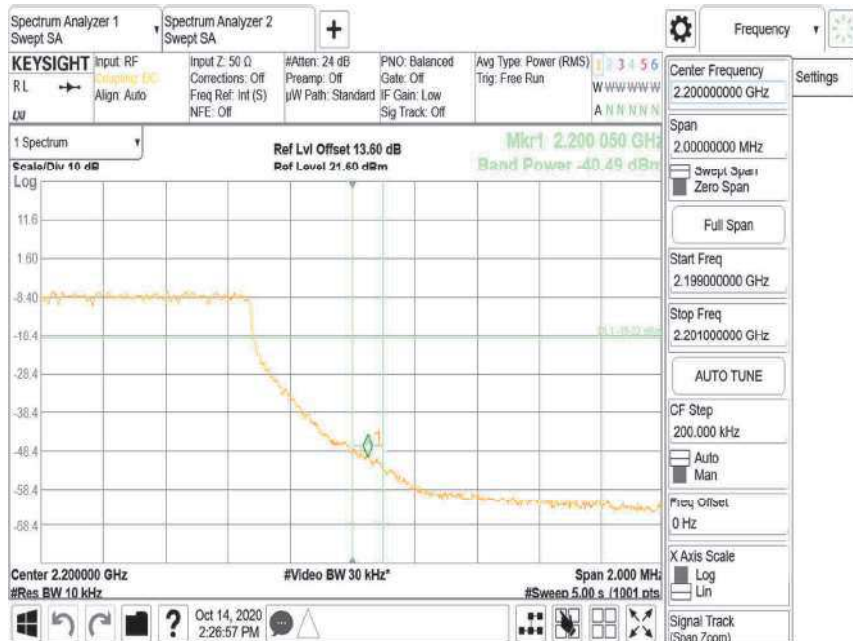




Modulation NR: QPSK - Carrier Bandwidth NR: 10.0 MHz - Channel Position B



Modulation NR: QPSK - Carrier Bandwidth NR: 10.0 MHz - Channel Position T





Modulation NR: QPSK - Carrier Bandwidth NR: 15.0 MHz - Channel Position B



Modulation NR: QPSK - Carrier Bandwidth NR: 15.0 MHz - Channel Position T





Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position B



Modulation NR: QPSK - Carrier Bandwidth NR: 20.0 MHz - Channel Position T





Configuration B

Maximum Output Power 22 dBm / Port

Antenna	Modulation	Carrier Bandwidth	Band Edge (MHz)	
			Channel Position B	Channel Position T
A	LTE: QPSK	5.0+5.0+5.0 MHz	2112.5+2117.5+2122.5	2187.5+2192.5+2197.5
A	LTE: QPSK	10.0+10.0+10.0 MHz	2115.0+2125.0+2135.0	2175.0+2185.0+2195.0
A	LTE: QPSK	15.0+15.0+15.0 MHz	2117.5+2132.5+2147.5	2162.5+2177.5+2192.5
A	LTE: QPSK	20.0+20.0+20.0 MHz	2120.0+2140.0+2160.0	2150.0+2167.0+2190.0
A	NR: QPSK	5.0+5.0+5.0 MHz	2112.5+2117.5+2122.5	2187.5+2192.5+2197.5
A	NR: QPSK	10.0+10.0+10.0 MHz	2115.0+2125.0+2135.0	2175.0+2185.0+2195.0
A	NR: QPSK	15.0+15.0+15.0 MHz	2117.5+2132.5+2147.5	2162.5+2177.5+2192.5
A	NR: QPSK	20.0+20.0+20.0 MHz	2120.0+2140.0+2160.0	2150.0+2167.0+2190.0
A	LTE + NR QPSK	5.0+5.0+5.0 MHz	2112.5+2117.5+2122.5	2187.5+2192.5+2197.5
A	LTE + NR QPSK	10.0+10.0+10.0 MHz	2115.0+2125.0+2135.0	2175.0+2185.0+2195.0
A	LTE + NR QPSK	15.0+15.0+15.0 MHz	2117.5+2132.5+2147.5	2162.5+2177.5+2192.5
A	LTE + NR QPSK	20.0+20.0+20.0 MHz	2120.0+2140.0+2160.0	2150.0+2167.0+2190.0

Remarks

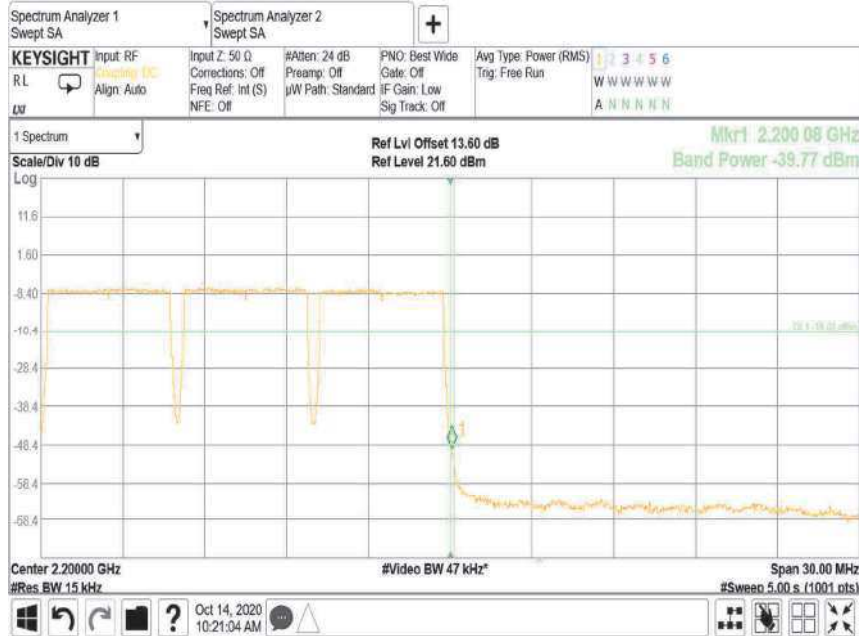
Three carrier transmitter performance is presented. The plot results represent typical radio performance. Plot data performance for all transmitter ports and channels are on file and available on request.

Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 5.0+5.0+5.0 MHz - Channel Position B

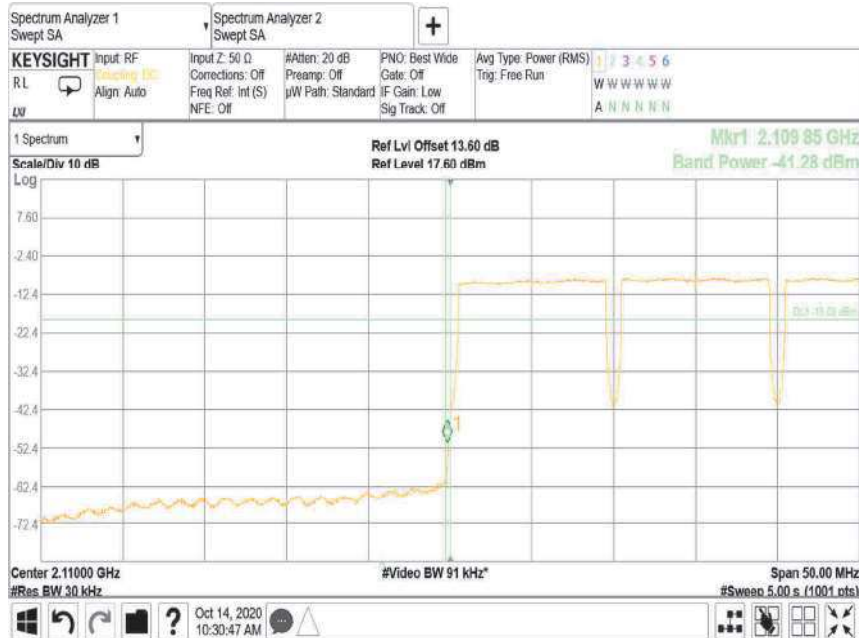




Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 5.0+5.0+5.0 MHz - Channel Position T

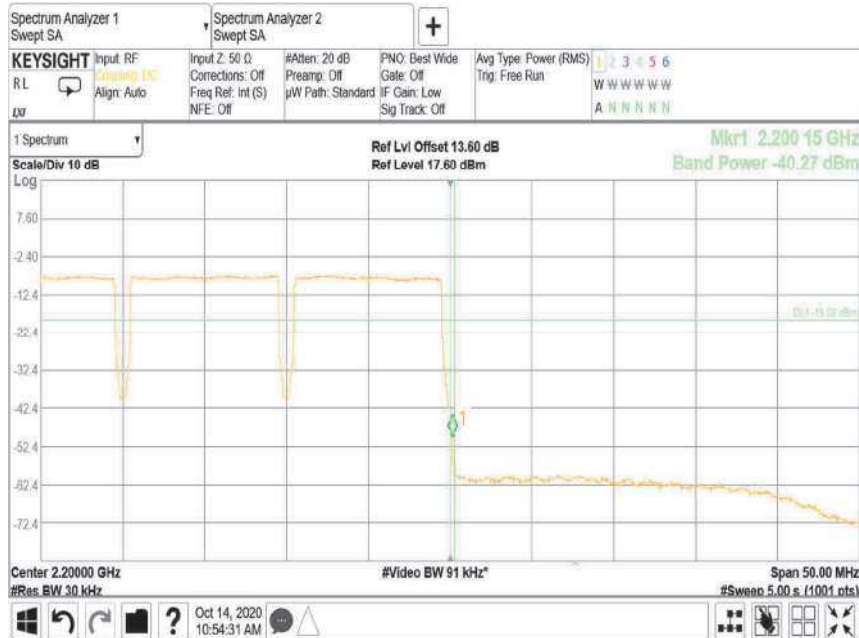


Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 10.0+10.0+10.0 MHz - Channel Position B

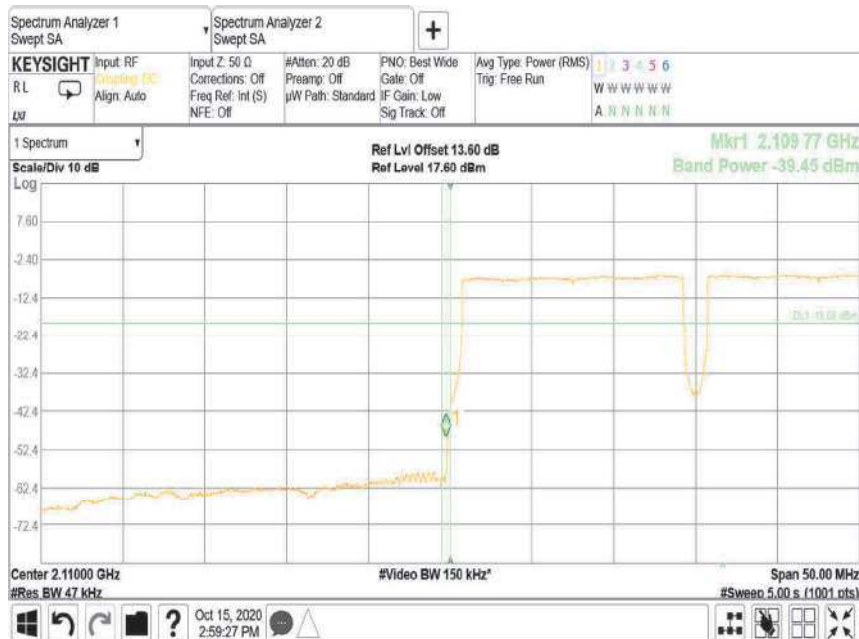




Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 10.0+10.0+10.0 MHz - Channel Position I



Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 15.0+15.0+15.0 MHz - Channel Position B

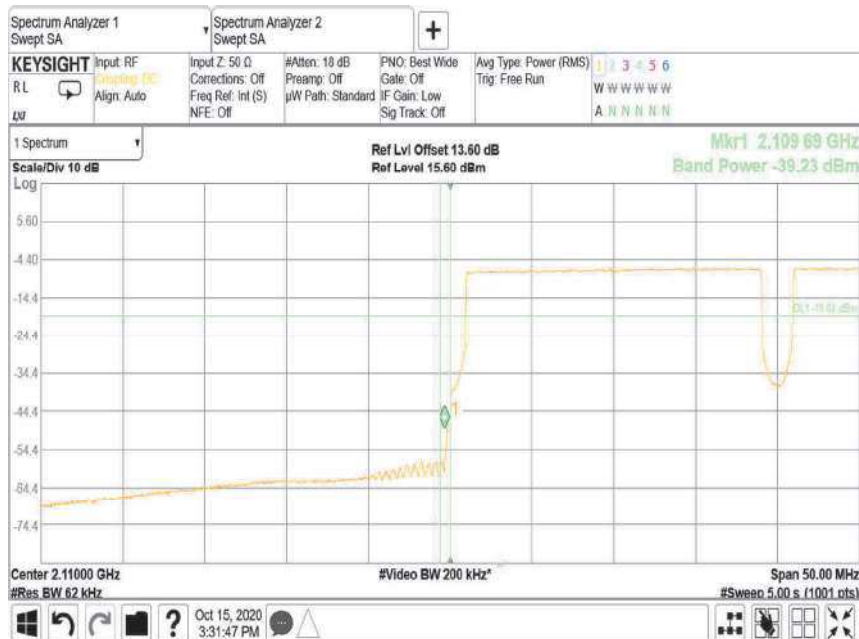




Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 15.0+15.0+15.0 MHz - Channel Position I



Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0+20.0 MHz - Channel Position B





Antenna A - Modulation LTE: QPSK - Carrier Bandwidth 20.0+20.0+20.0 MHz - Channel Position I



Antenna A - Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0 MHz - Channel Position B

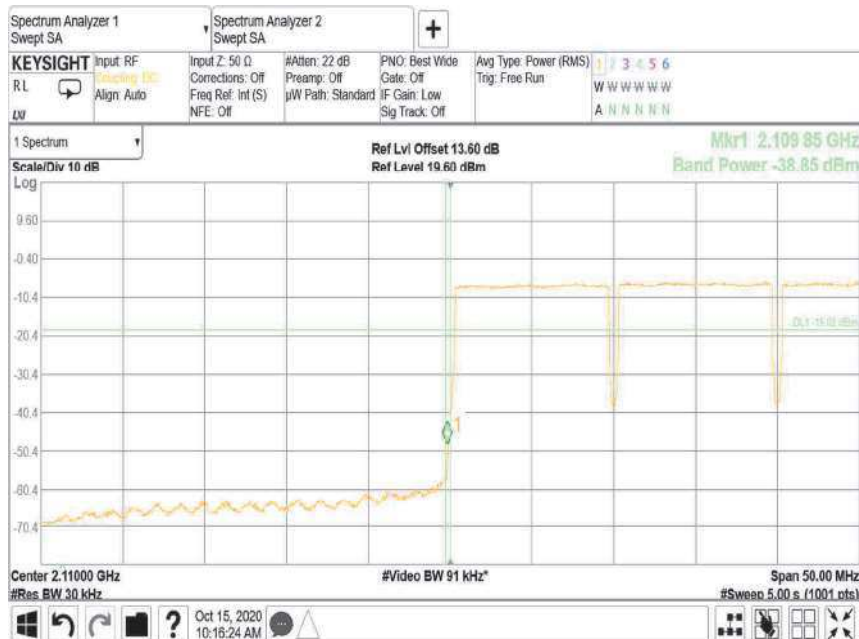




Antenna A - Modulation NR: QPSK - Carrier Bandwidth 5.0+5.0+5.0 MHz - Channel Position T



Antenna A - Modulation NR: QPSK - Carrier Bandwidth 10.0+10.0+10.0 MHz - Channel Position B





Antenna A - Modulation NR: QPSK - Carrier Bandwidth 10.0+10.0+10.0 MHz - Channel Position I



Antenna A - Modulation NR: QPSK - Carrier Bandwidth 15.0+15.0+15.0 MHz - Channel Position B

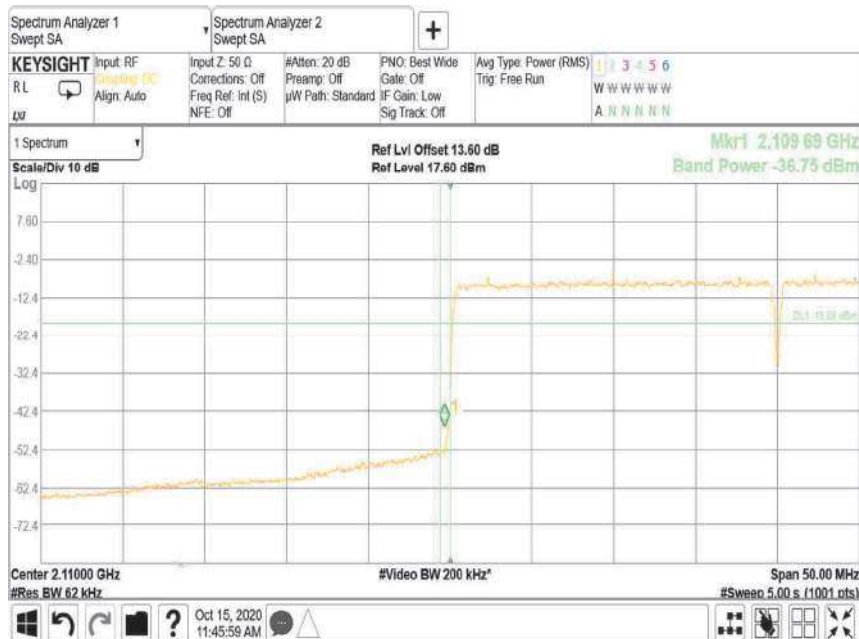




Antenna A - Modulation NR: QPSK - Carrier Bandwidth 15.0+15.0+15.0 MHz - Channel Position I



Antenna A - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0+20.0 MHz - Channel Position B





Antenna A - Modulation NR: QPSK - Carrier Bandwidth 20.0+20.0+20.0 MHz - Channel Position I

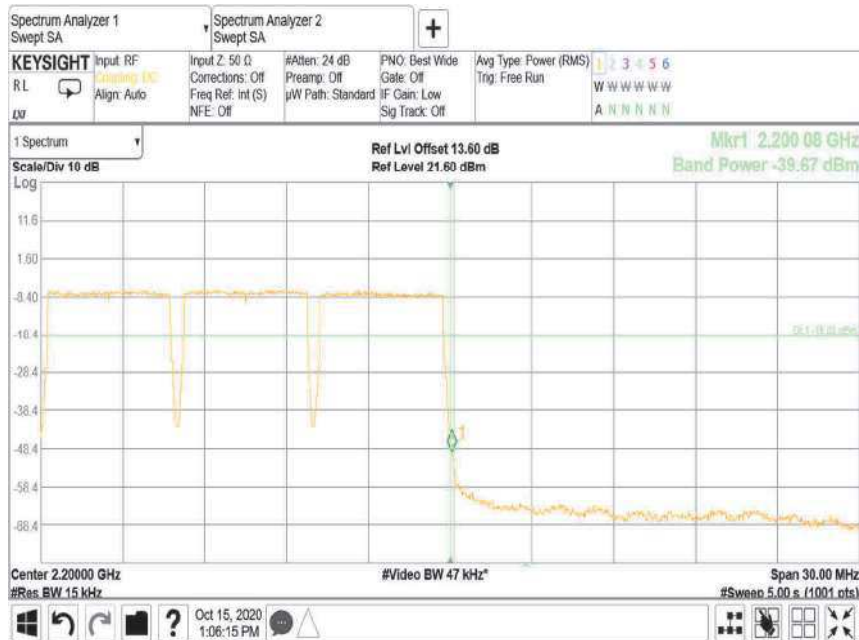


Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 5.0+5.0+5.0 MHz - Channel Position B

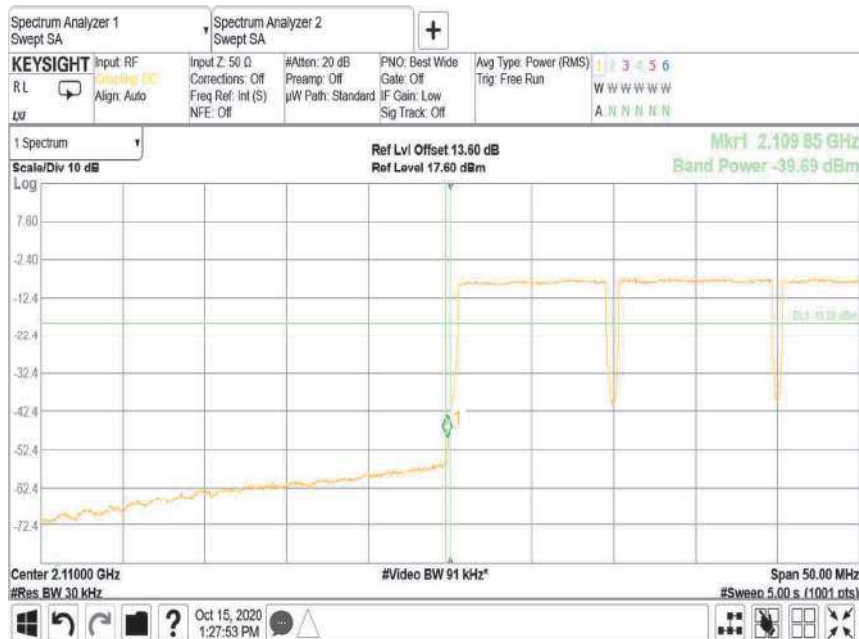




Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 5.0+5.0+5.0 MHz - Channel Position I

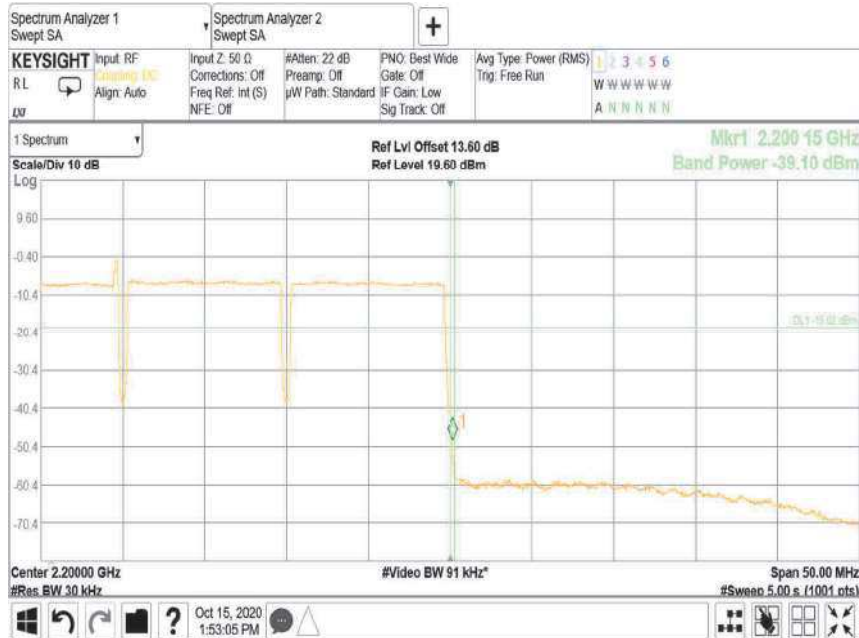


Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 10.0+10.0+10.0 MHz - Channel Position B





Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 10.0+10.0+10.0 MHz - Channel Position I



Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 15.0+15.0+15.0 MHz - Channel Position B





Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 15.0+15.0+15.0 MHz - Channel Position I



Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 20.0+20.0+20.0 MHz - Channel Position B





Antenna A - Modulation LTE + NR QPSK - Carrier Bandwidth 20.0+20.0+20.0 MHz - Channel Position 1



Limit	-19 dBm
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2.4 TRANSCEIVER 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
RSS-170, Clause 5.4

2.4.2 Date of Test and Modification State

13 and 14 October 2020 - 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	22.8 - 23.5°C
Relative Humidity	31.3 - 33.1%

2.4.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

Each of the 2 bands of the EUT has 4 transmit ports, 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

$$43+10\log(P) - 10\log(4) = -19 \text{ dBm}$$

2.4.6 Test Results

Configuration A

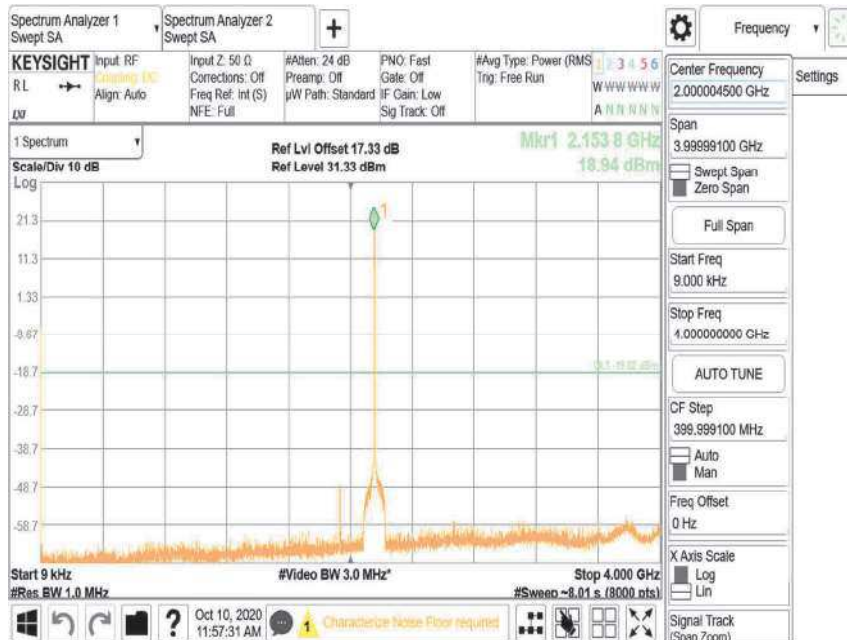
Maximum Output Power 22 dBm / Port

Remarks

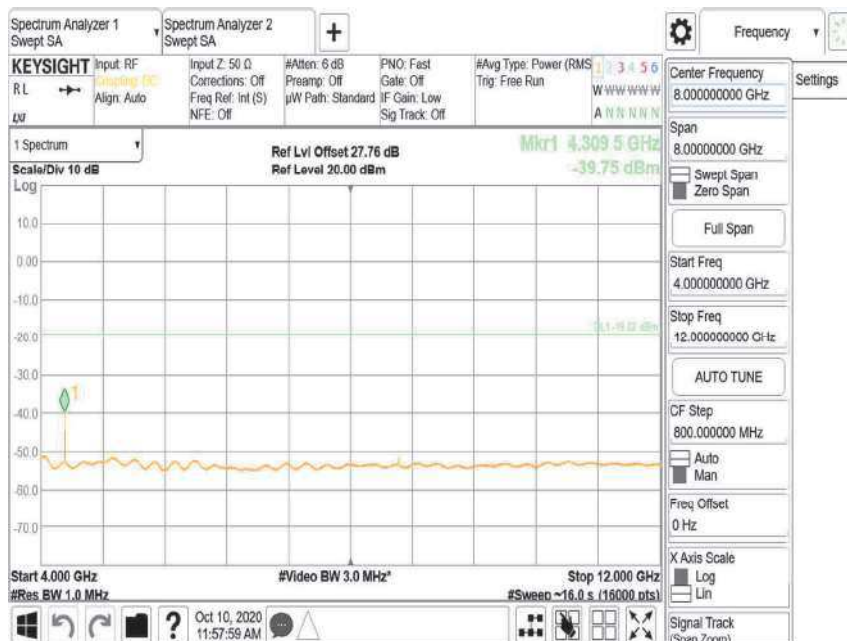
1. Spurious emissions have been searched for all channel, bandwidths, and antenna ports.
2. Representative spurious emissions performance has been presented for all modulations.
3. Plot data performance for all transmitter ports, channel bandwidths, and channel positions are on file and available on request.



Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1000 MHz

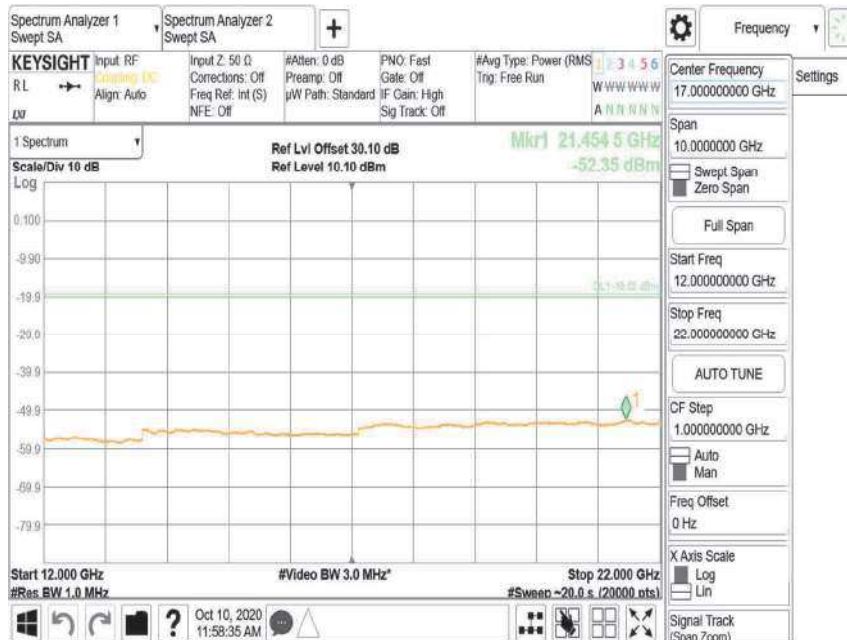


Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1000 to 8000 MHz





Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3 - Range 0.009 to 1000 MHz

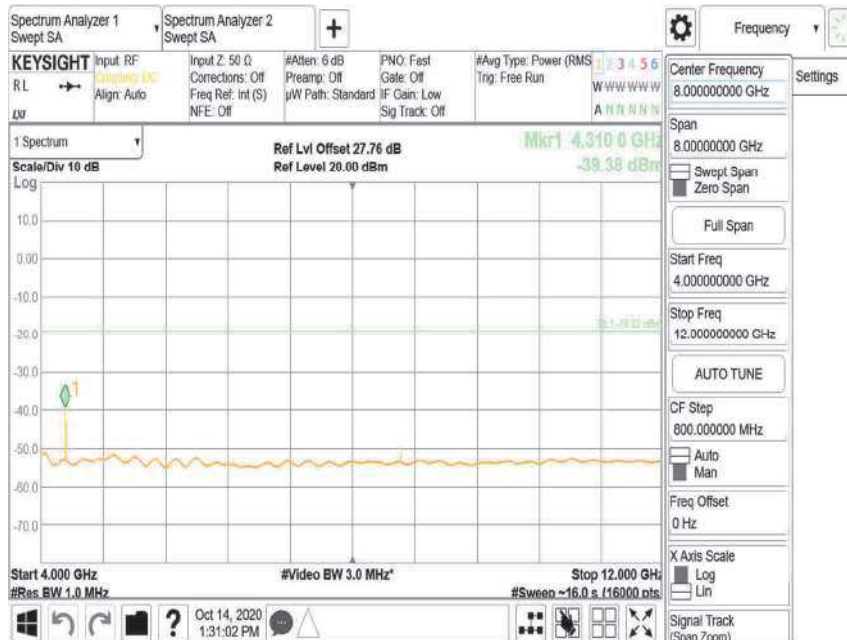


Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1000 MHz

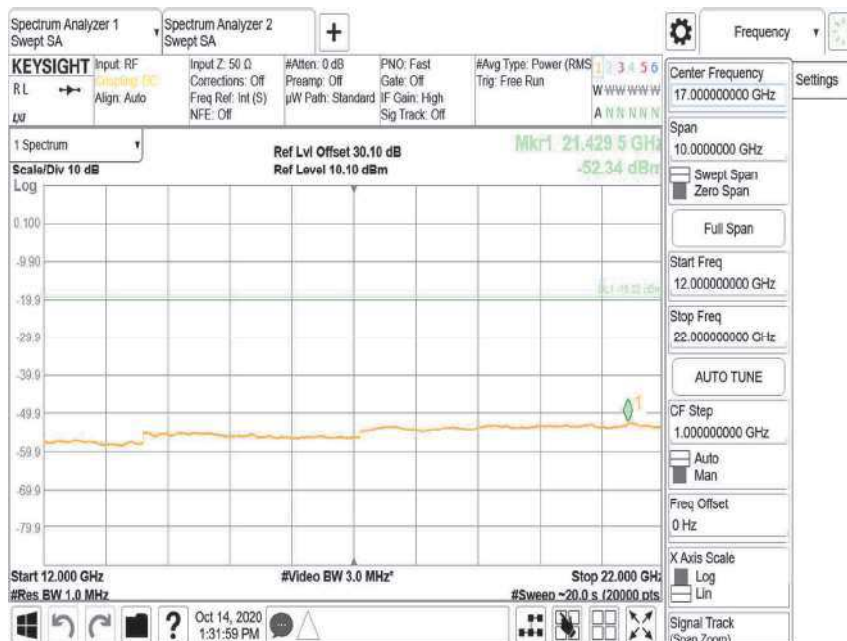




Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1000 to 8000 MHz

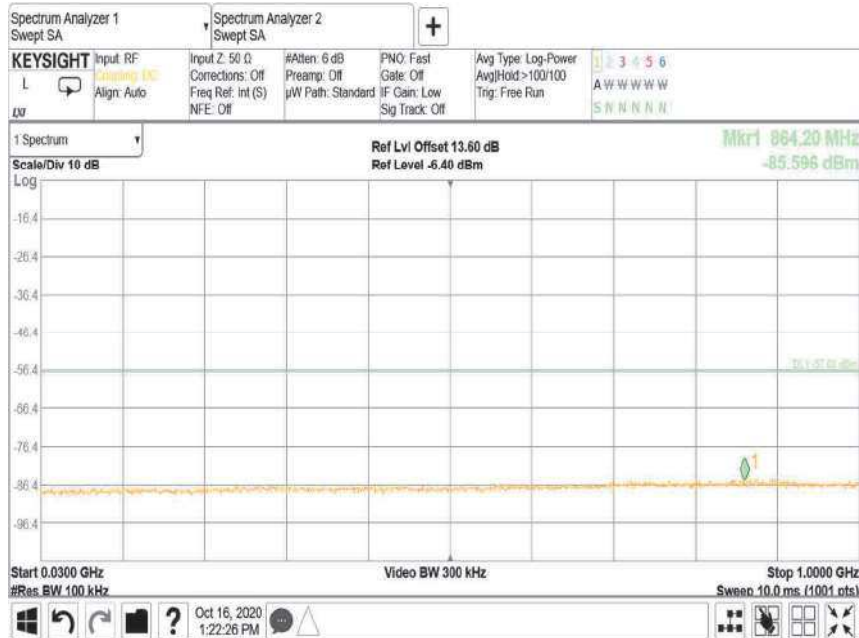


Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3 - Range 0.009 to 1000 MHz

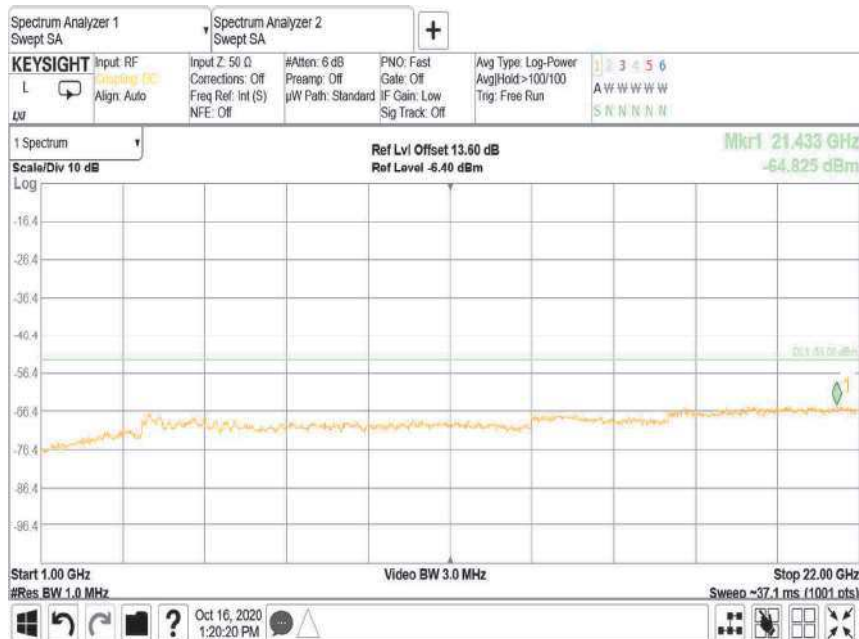




Modulation Receiver Spurious - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 30 MHz to 1000 MHz



Modulation Receiver Spurious - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1000 to 22000 MHz





Configuration B

Maximum Output Power 22 dBm / Port

Remarks

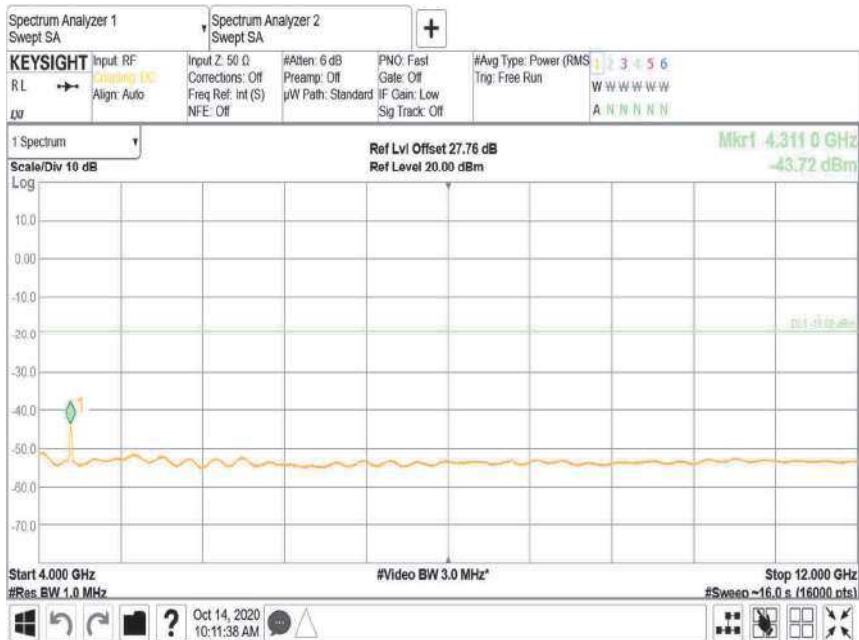
1. Spurious emissions have been searched for all channel, bandwidths, and antenna ports.
2. Representative spurious emissions performance has been presented for all modulations.
3. Plot data performance for all transmitter ports, channel bandwidths, and channel positions are on file and available on request.

Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1000 MHz





Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1000 to 8000 MHz

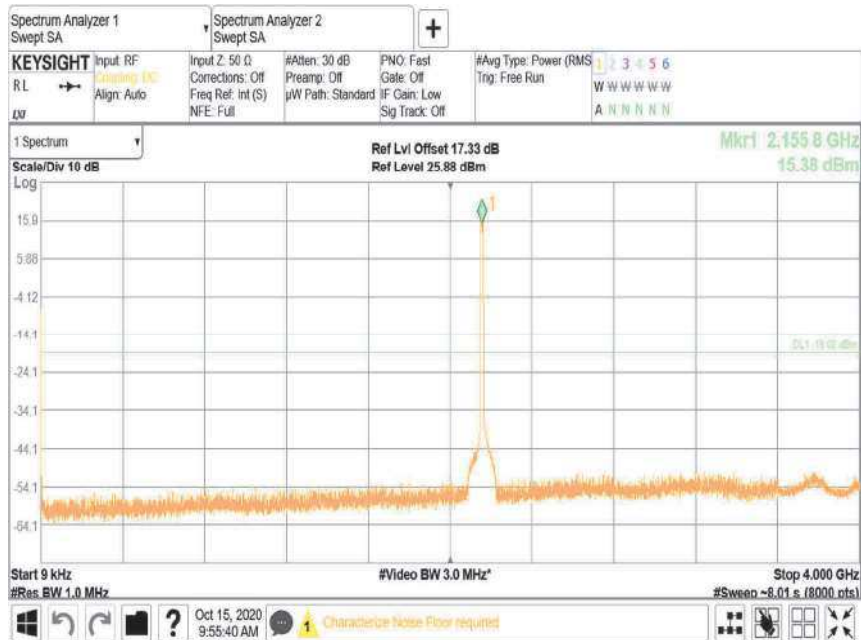


Modulation LTE: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3 - Range 0.009 to 1000 MHz

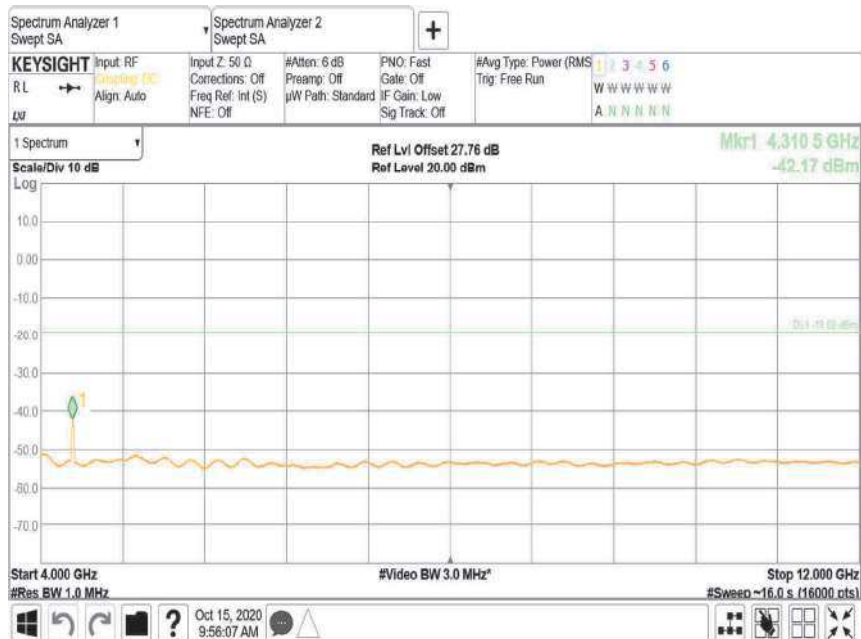




Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1000 MHz



Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1000 to 8000 MHz





Modulation NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3 - Range 0.009 to 1000 MHz

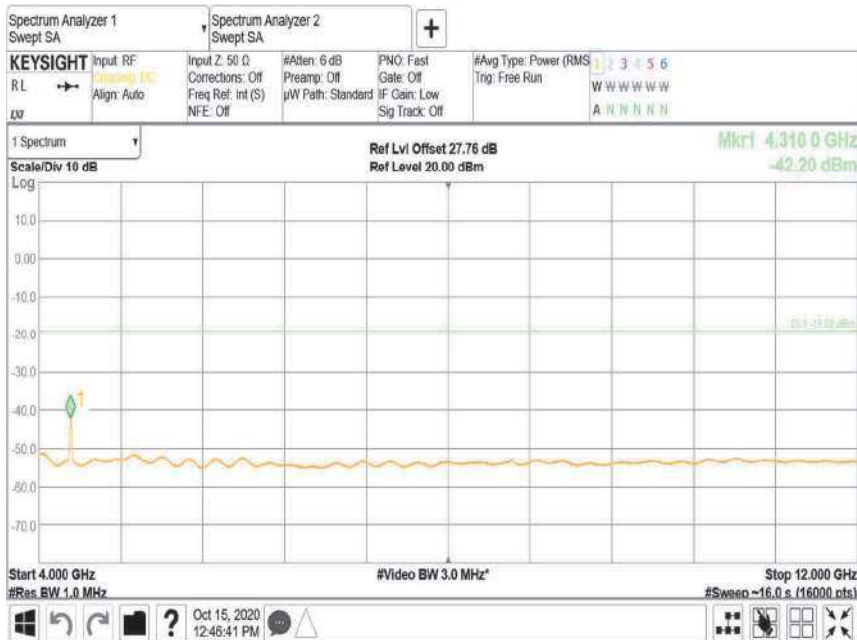


Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 0.009 to 1000 MHz

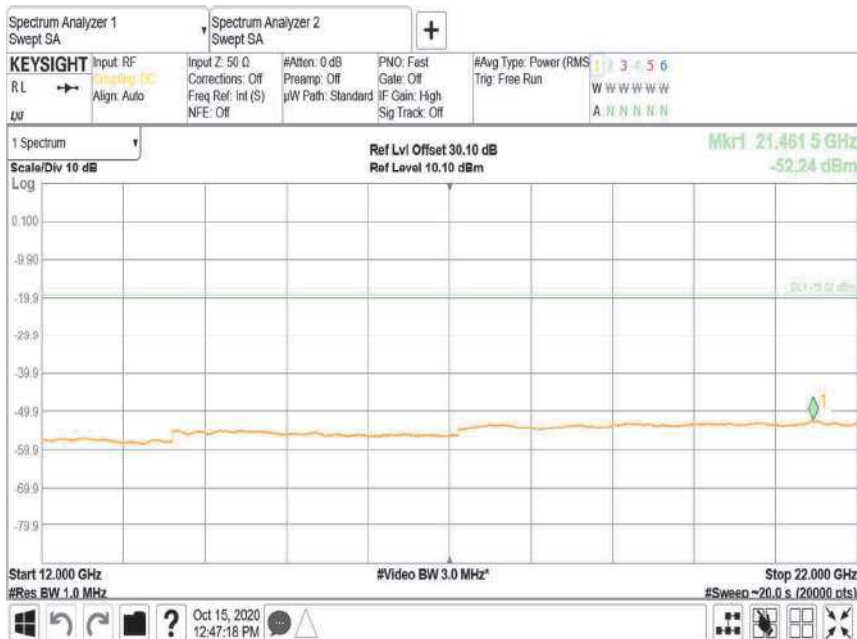




Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1000 to 8000 MHz

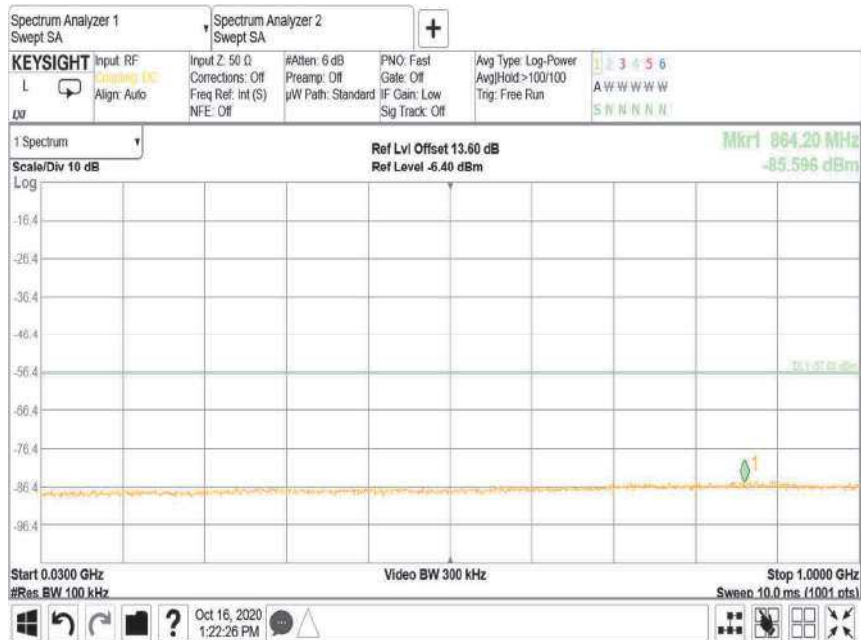


Modulation LTE+NR: QPSK - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 3 - Range 0.009 to 1000 MHz

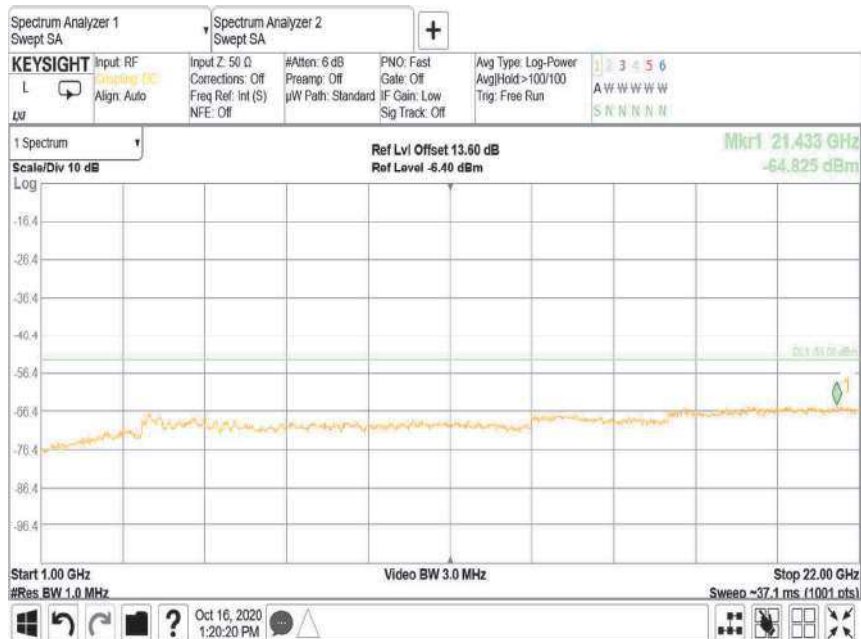




Modulation Receiver Spurious - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 1 - Range 30 MHz to 1000 MHz



Modulation Receiver Spurious - Carrier Bandwidth 5.0 MHz - Channel Position M - Band 2 - Range 1000 to 20000 MHz



Limit	-19dBm
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2.5 FREQUENCY STABILITY

2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1055
 FCC CFR 47 Part 27, Clause 27.54
 Industry Canada RSS-139, Clause 6.3
 RSS-170, Clause 5.2

2.5.2 Date of Test and Modification State

16 October 2020 - Modification State 0

2.5.3 Test Equipment Used

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

2.5.4 Environmental Conditions

Ambient Temperature 26.7°C
 Relative Humidity 32.2%

2.5.5 Test Method

All measurements were made in accordance with FCC KDB 971168 D01.

2.5.6 Test Results

Configuration A

Maximum Output Power 22 dBm / Port

Temperature	Voltage	Frequency Error (Hz)
		Channel Position M - 2155.0 MHz
-30°C	-48.0 V DC	N/A
-20°C	-48.0 V DC	N/A
-10°C	-48.0 V DC	40.70
0°C	-48.0 V DC	40.70
+10°C	-48.0 V DC	41.10
+20°C	-40.5 V DC	41.20
+20°C	-48.0 V DC	40.00
+20°C	-57.5 V DC	39.60
+30°C	-48.0 V DC	41.60
+40°C	-48.0 V DC	41.20
+50°C	-48.0 V DC	40.06

Limit	The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.
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SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Spectrum Analyzer	Keysight	PXAN9030B	MY57144347	24	24/04/2022
Digital Multimeter	Fluke	75	54041218	24	16/11/2020
Thermometer	VWR	61161-364	192595396	24	25-10-2021
PSU	Xantrex	XKW60-50	E00109862	-	O/P Mon
Attenuator (10dB)	Mini-Circuits	EWK10-2W4+	-	-	O/P Mon
RF Switch	Ericsson	RAR5FW4x1	1	-	O/P Mon
Switching Control Unit	HP	11713A	3748A06C876	-	O/P Mon
Climate Chamber	Burnsco	RTC-37P-3-3	0707	-	O/P Mon

N/A – Not Applicable

O/P Mon – Output Monitored with Calibrated Equipment



3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	Frequency / Parameter	MU	
Conducted Maximum Peak Output Power	30 MHz to 20 GHz Amplitude	± 0.7 dB	
Conducted Emissions	30 MHz to 20 GHz Amplitude	± 2.1 dB	
Frequency Stability	30 MHz to 2 GHz	± 5.0 Hz	
Occupied Bandwidth	Up to 20 MHz Bandwidth	5 MHz Bandwidth	± 11547 Hz
		10 MHz Bandwidth	± 23094 Hz
		15 MHz Bandwidth	± 34641 Hz
		20 MHz Bandwidth	± 46188 Hz
Band Edge	30 MHz to 20 GHz Amplitude	±0.8 dB	
Radiated Spurious Emissions	30 MHz to 1 GHz	± 5.2 dB	
	1 GHz to 40GHz	± 6.3 dB	

Measurement Uncertainty Decision Rule

Determination of conformity with the specification limits is based on the decision rule according to IEC Guide 115: 2007, clause 4.4.3 and 4.5.1.



SECTION 5

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

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ANNEX A

MODULE LIST



Configuration A			
Product	Product No	R-State	Serial No
CT11	LPC 102 494/1	R2A	T01G495060
LPRU 4420 B25B66	KRC 161 906/1	R1B	ID3F082/79
Software Version:			
	CXP 901 3268/17	Revision:	R84FH