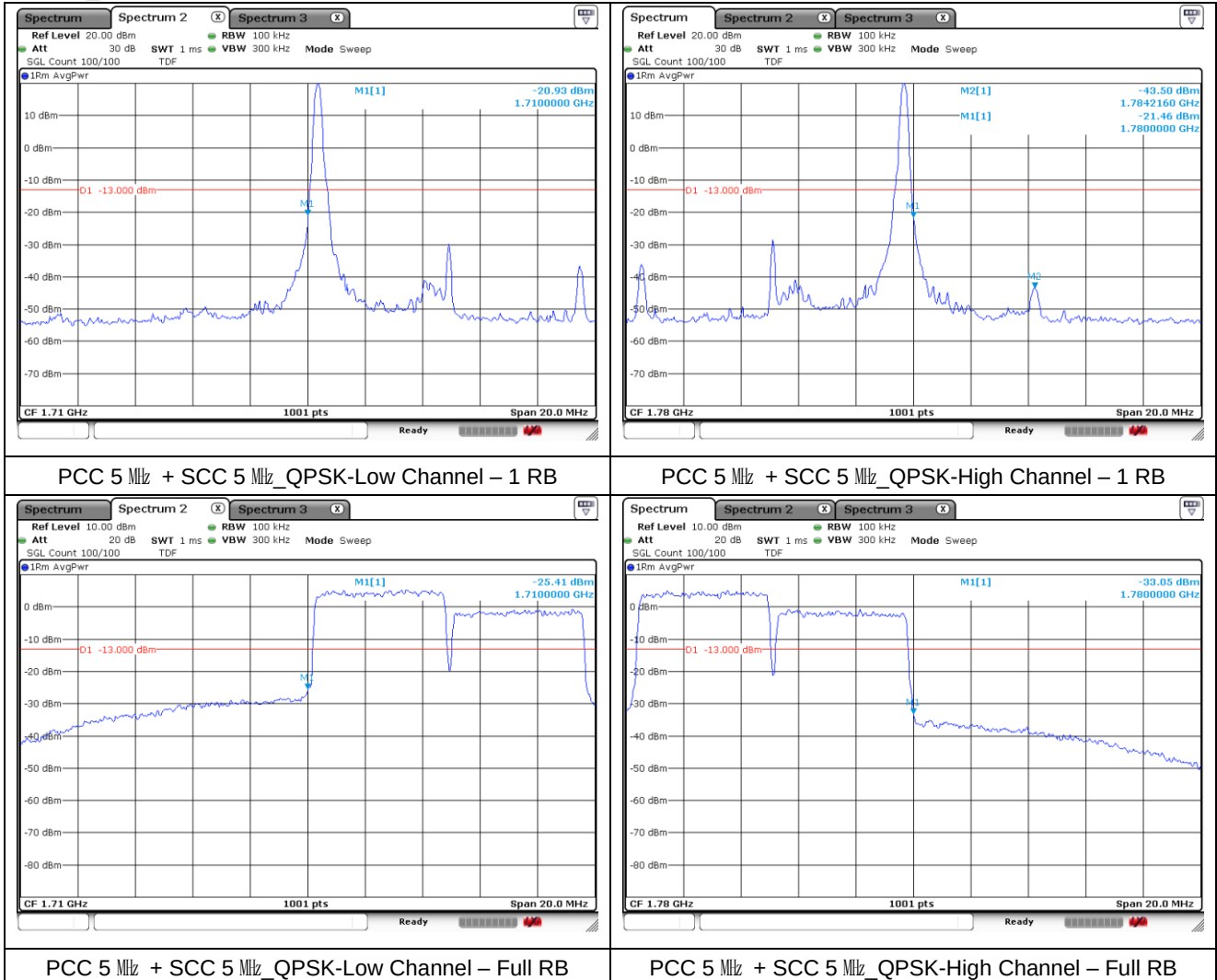
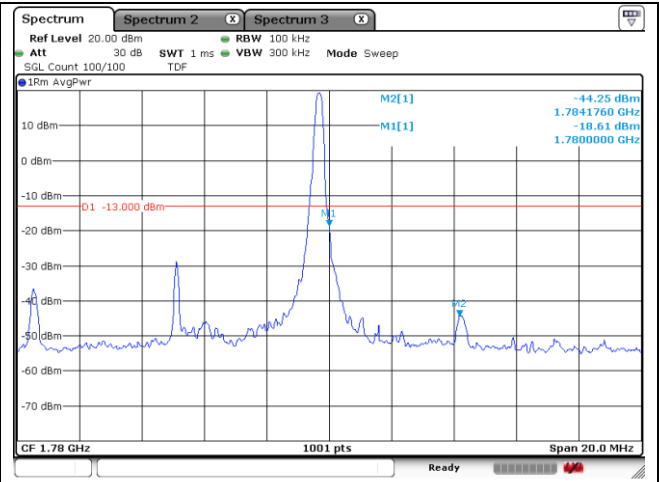
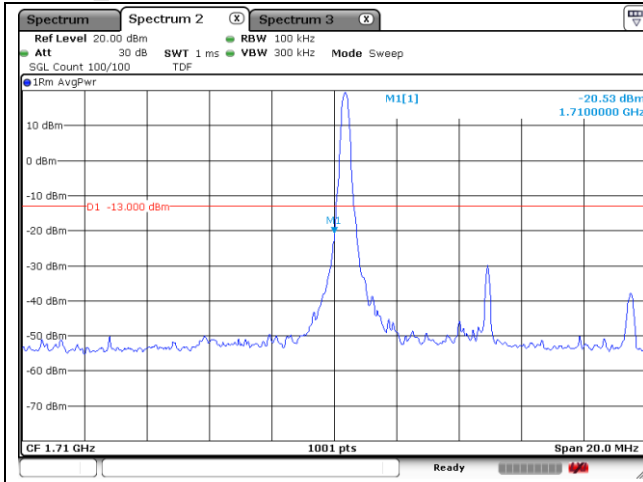


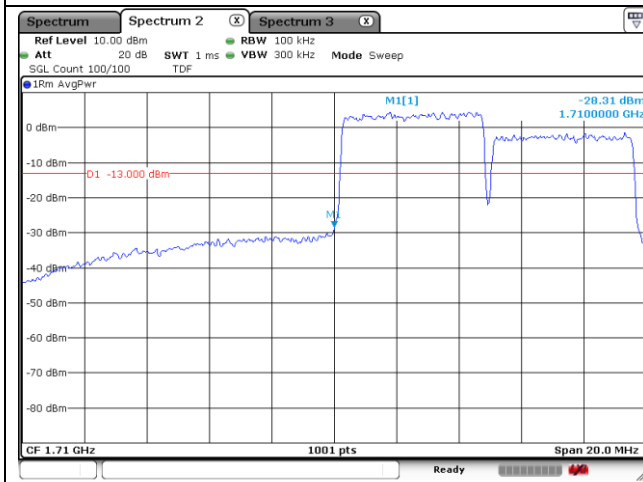
ULCA_66B



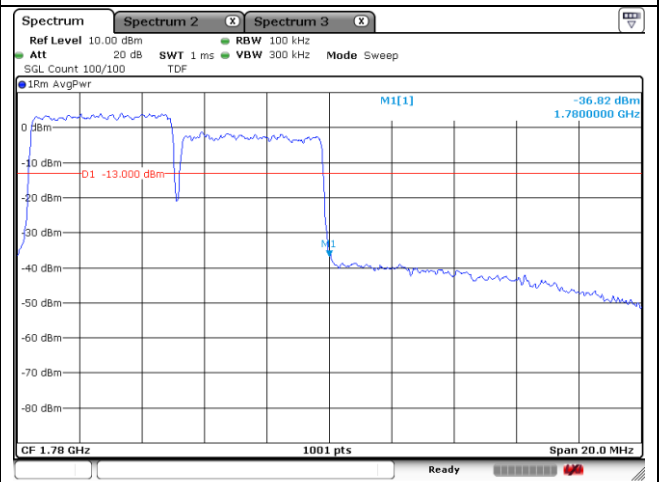
ULCA_66B



PCC 5 MHz + SCC 5 MHz_16QAM-Low Channel – 1 RB



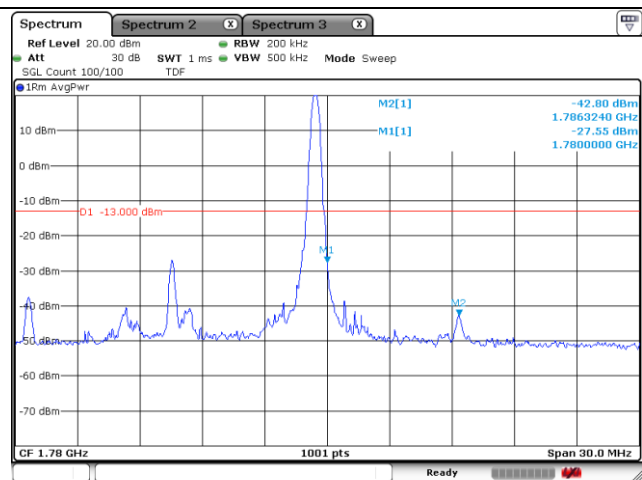
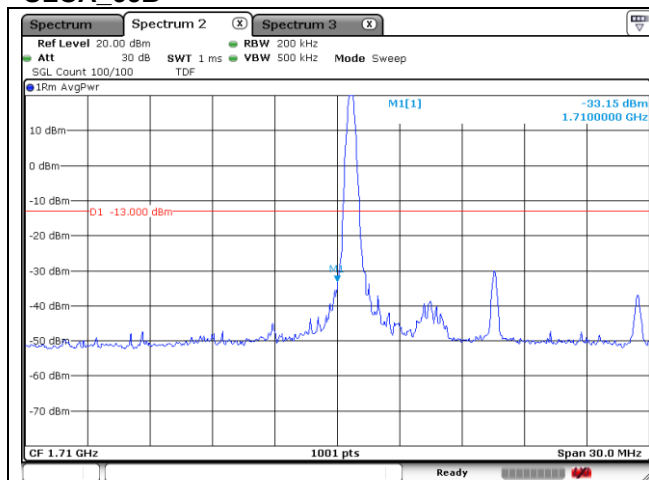
PCC 5 MHz + SCC 5 MHz_16QAM-High Channel – 1 RB



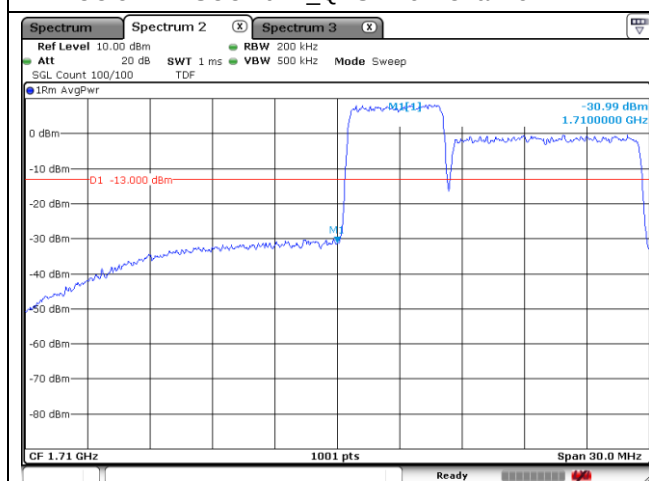
PCC 5 MHz + SCC 5 MHz_16QAM-Low Channel – Full RB

PCC 5 MHz + SCC 5 MHz_16QAM-High Channel – Full RB

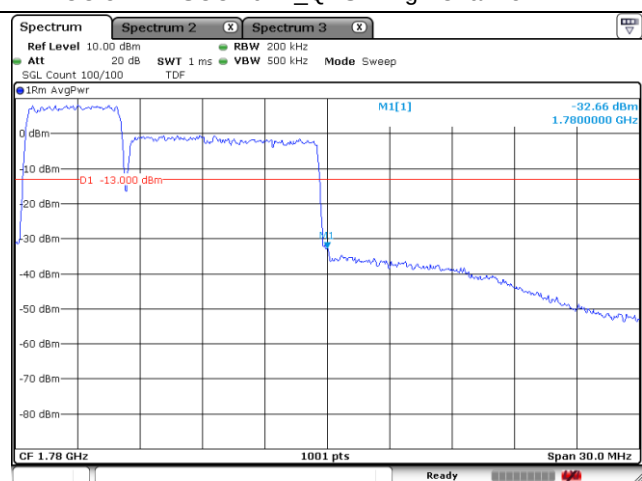
ULCA 66B



PCC 5 MHz + SCC 10 MHz QPSK-Low Channel – 1 RB



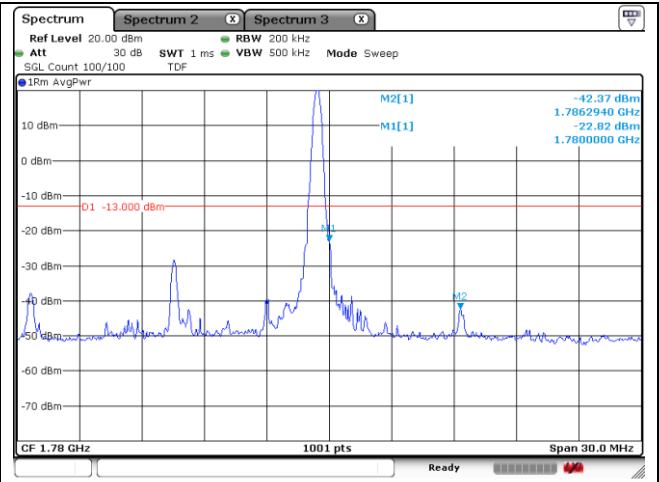
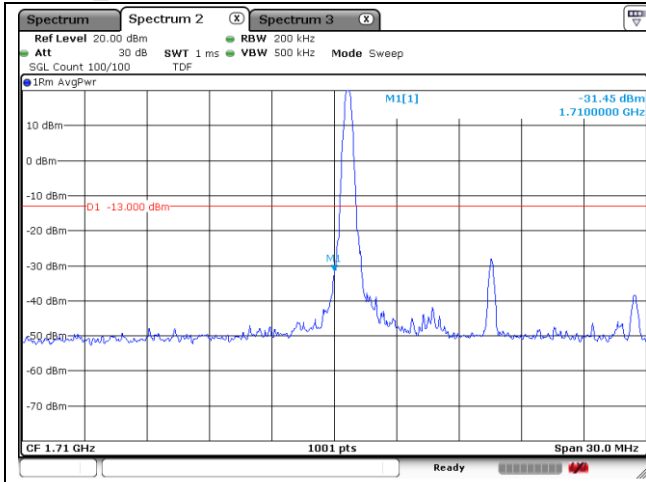
PCC 5 MHz + SCC 10 MHz QPSK-High Channel – 1 RB



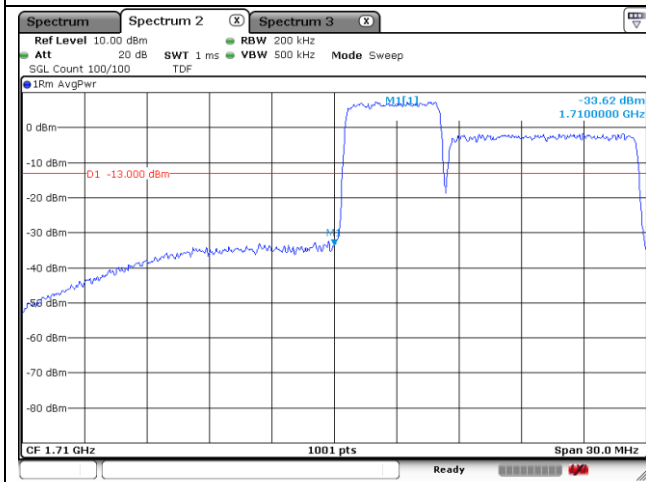
PCC 5 MHz + SCC 10 MHz QPSK-Low Channel – Full RB

PCC 5 MHz + SCC 10 MHz QPSK-High Channel – Full RB

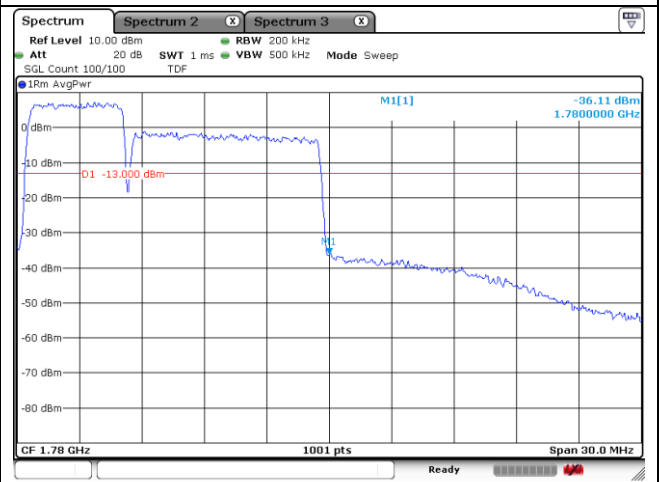
ULCA_66B



PCC 5 MHz + SCC 10 MHz_16QAM-Low Channel – 1 RB



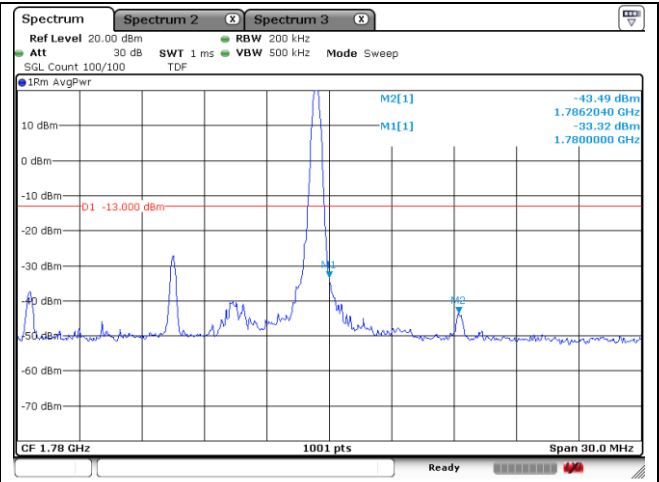
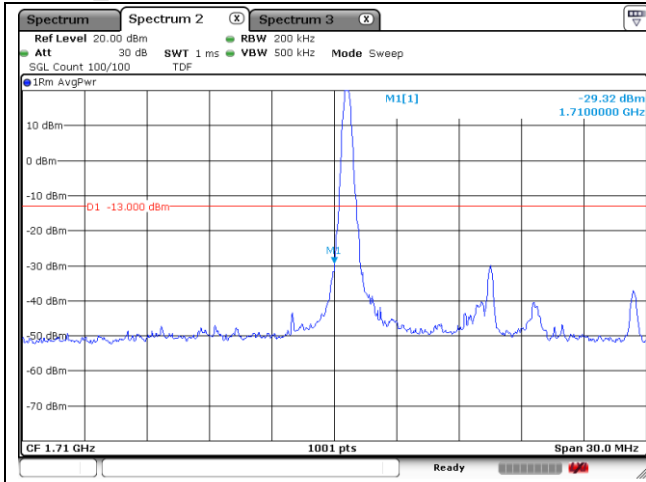
PCC 5 MHz + SCC 10 MHz_16QAM-High Channel – 1 RB



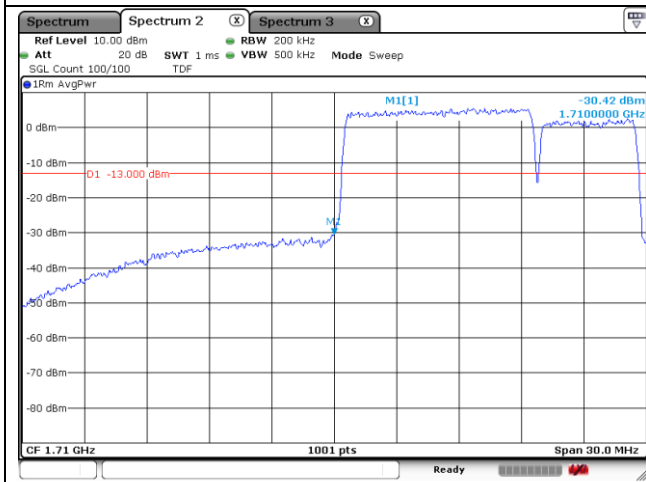
PCC 5 MHz + SCC 10 MHz_16QAM-Low Channel – Full RB

PCC 5 MHz + SCC 10 MHz_16QAM-High Channel – Full RB

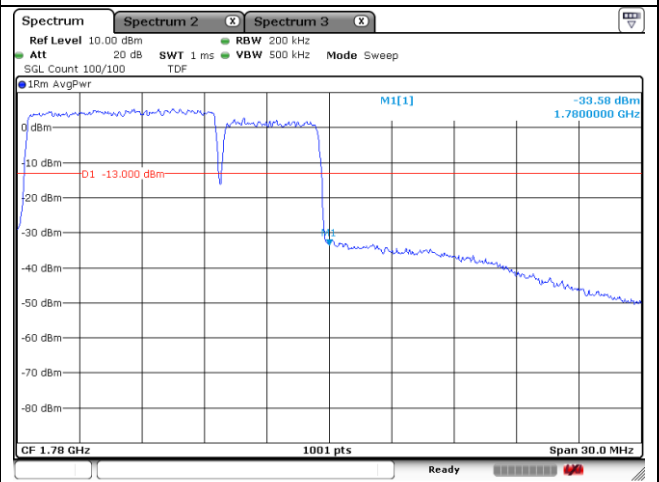
ULCA_66B



PCC 10 MHz + SCC 5 MHz_QPSK-Low Channel – 1 RB

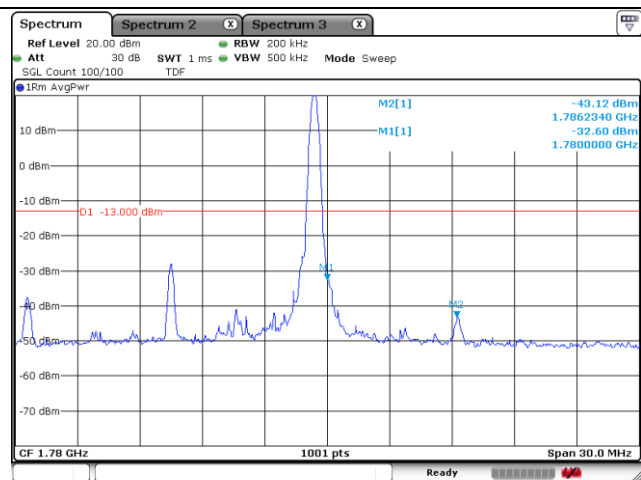
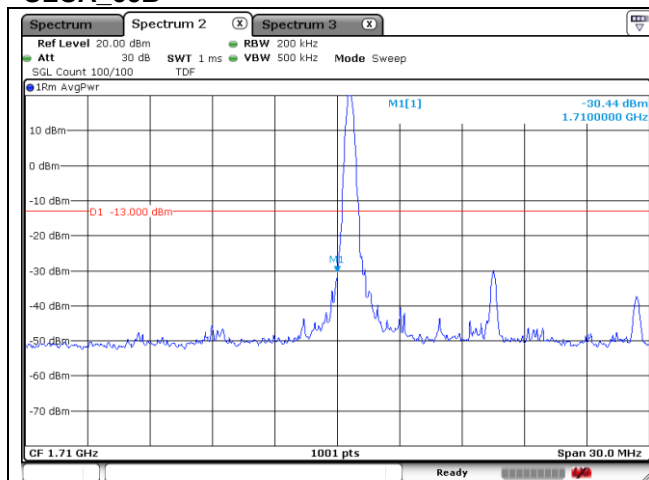


PCC 10 MHz + SCC 5 MHz_QPSK-High Channel – 1 RB

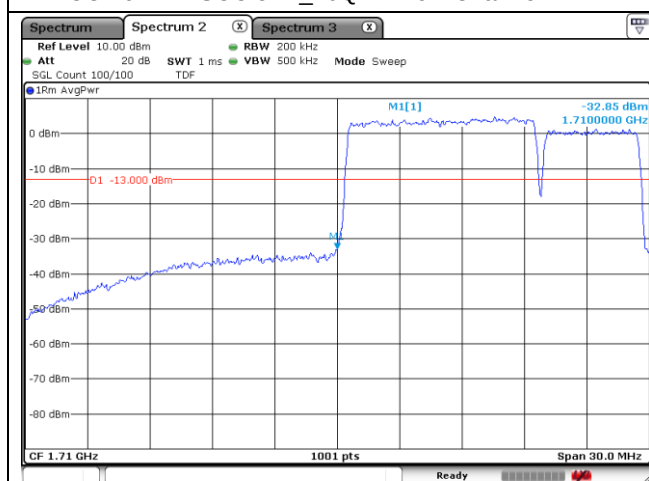


PCC 10 MHz + SCC 5 MHz_QPSK-Low Channel – Full RB

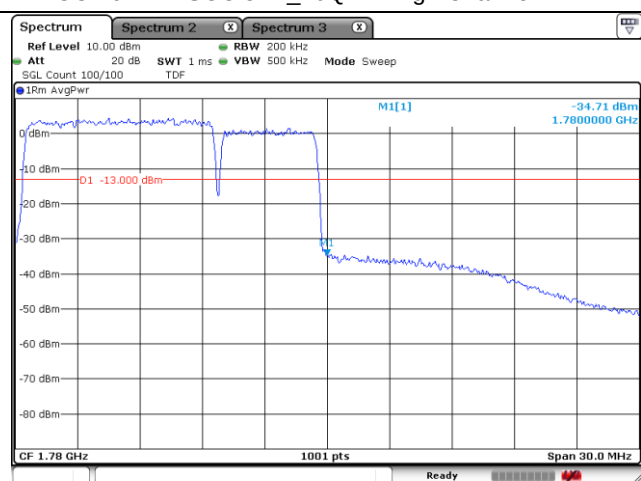
PCC 10 MHz + SCC 5 MHz_QPSK-High Channel – Full RB

ULCA 66B

PCC 10 MHz + SCC 5 MHz 16QAM-Low Channel – 1 RB



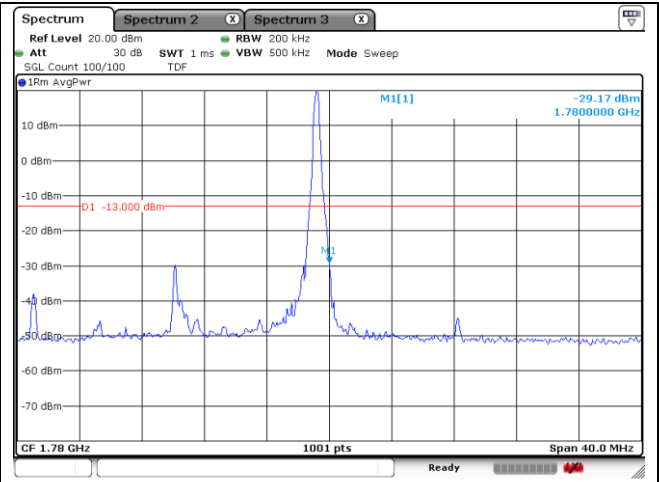
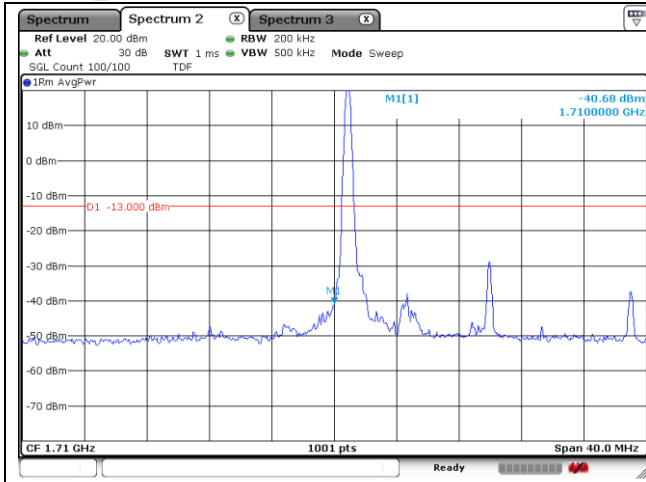
PCC 10 MHz + SCC 5 MHz 16QAM-High Channel – 1 RB



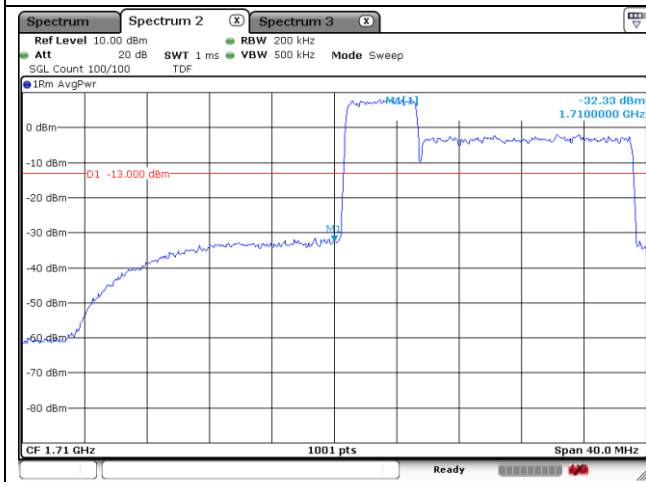
PCC 10 MHz + SCC 5 MHz 16QAM-Low Channel – Full RB

PCC 10 MHz + SCC 5 MHz 16QAM-High Channel – Full RB

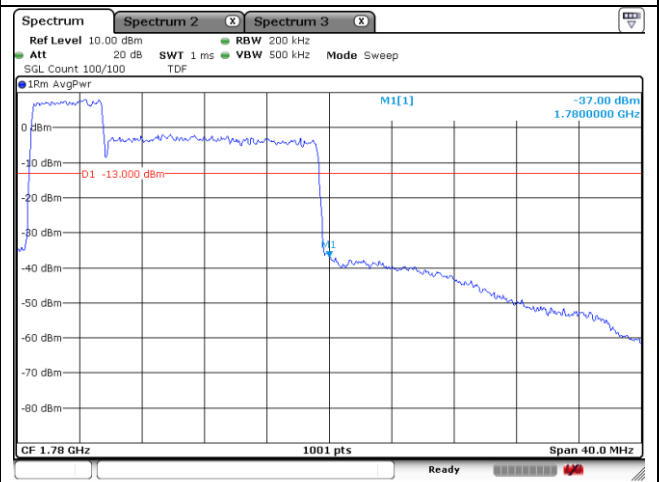
ULCA_66B



PCC 5 MHz + SCC 15 MHz_QPSK-Low Channel – 1 RB



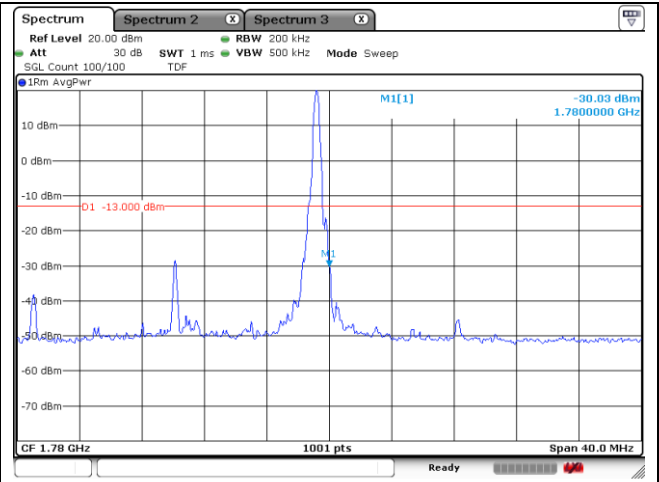
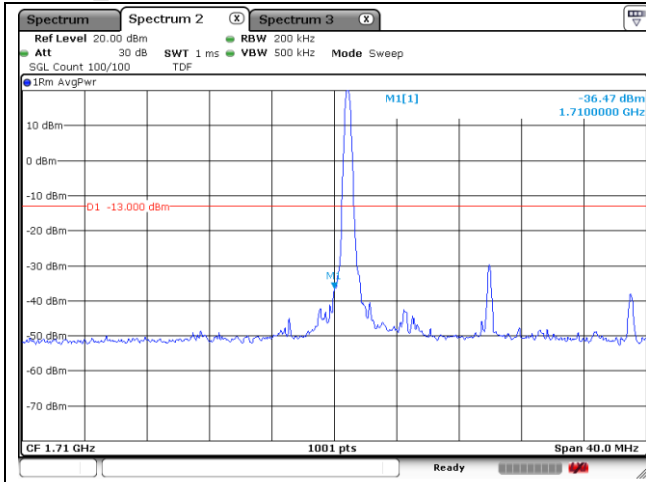
PCC 5 MHz + SCC 15 MHz_QPSK-High Channel – 1 RB



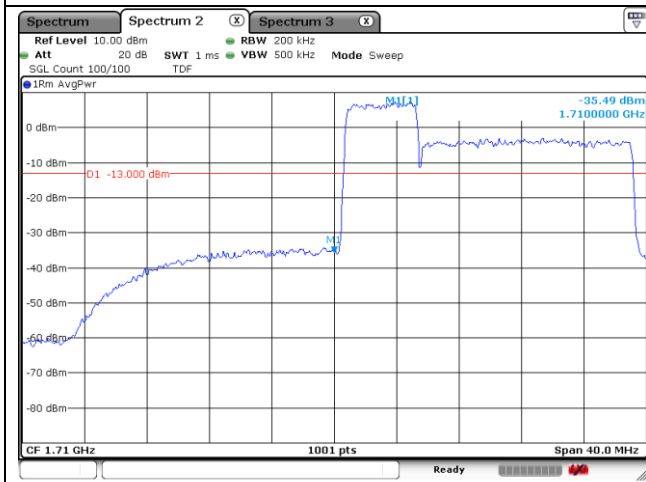
PCC 5 MHz + SCC 15 MHz_QPSK-Low Channel – Full RB

PCC 5 MHz + SCC 15 MHz_QPSK-High Channel – Full RB

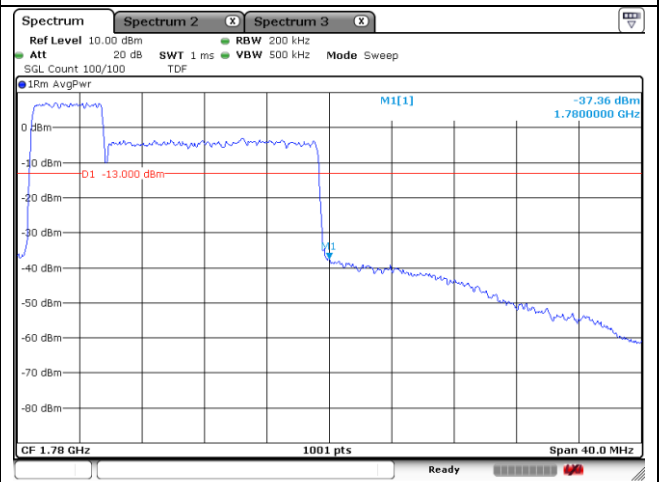
ULCA_66B



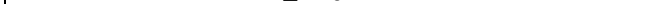
PCC 5 MHz + SCC 15 MHz_16QAM-Low Channel – 1 RB



PCC 5 MHz + SCC 15 MHz_16QAM-High Channel – 1 RB



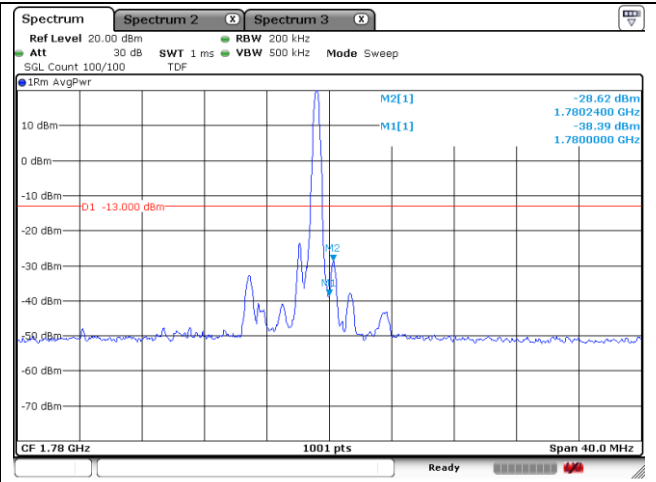
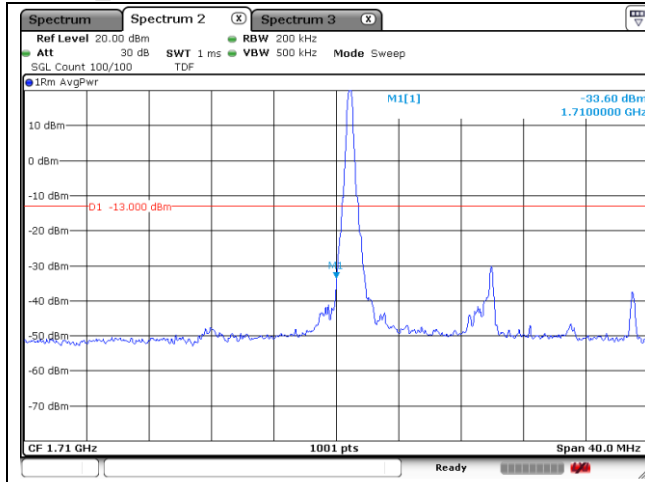
PCC 5 MHz + SCC 15 MHz_16QAM-Low Channel – Full RB



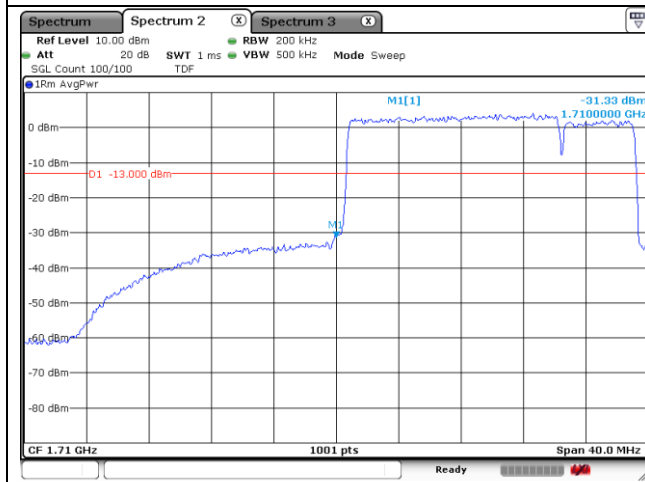
PCC 5 MHz + SCC 15 MHz_16QAM-High Channel – Full RB



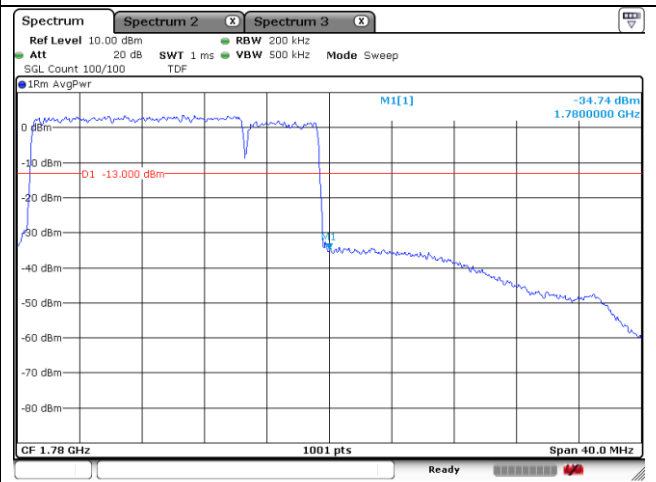
ULCA_66B



PCC 15 MHz + SCC 5 MHz_QPSK-Low Channel – 1 RB



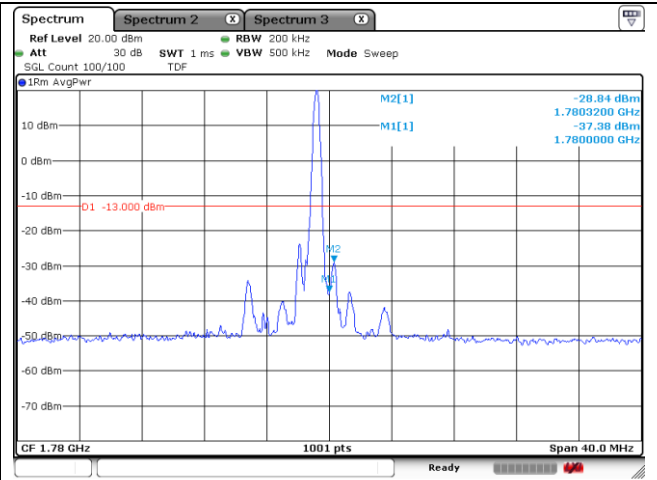
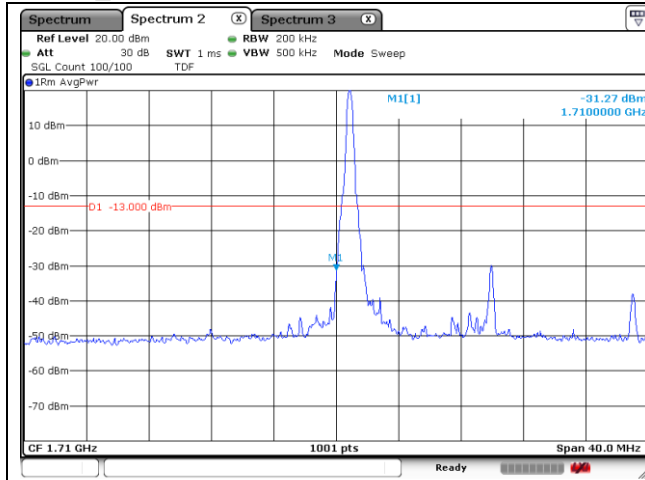
PCC 15 MHz + SCC 5 MHz_QPSK-High Channel – 1 RB



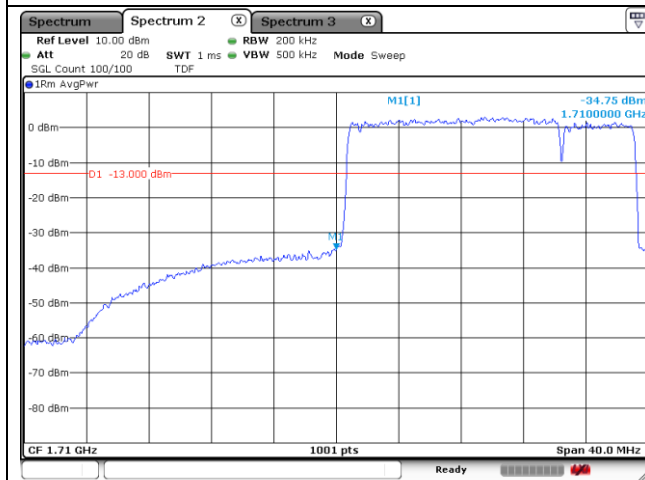
PCC 15 MHz + SCC 5 MHz_QPSK-Low Channel – Full RB

PCC 15 MHz + SCC 5 MHz_QPSK-High Channel – Full RB

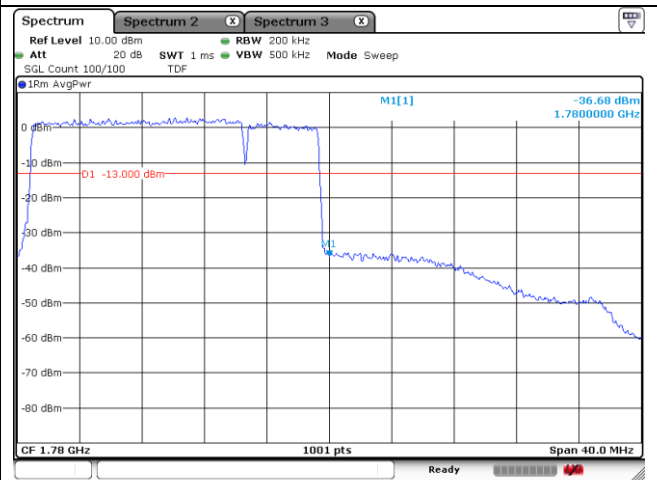
ULCA_66B



PCC 15 MHz + SCC 5 MHz_16QAM-Low Channel – 1 RB



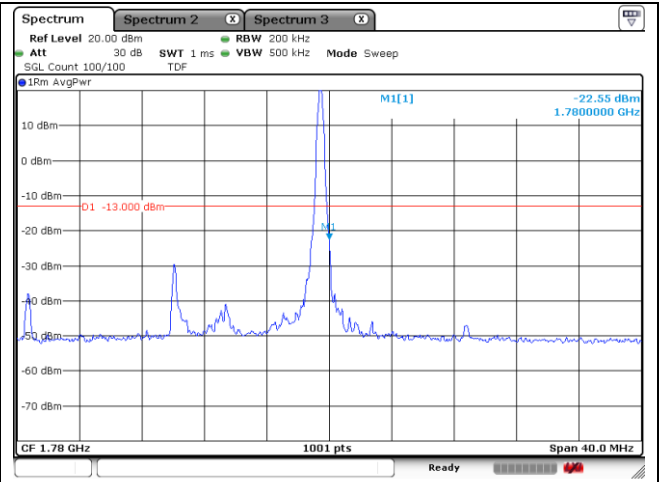
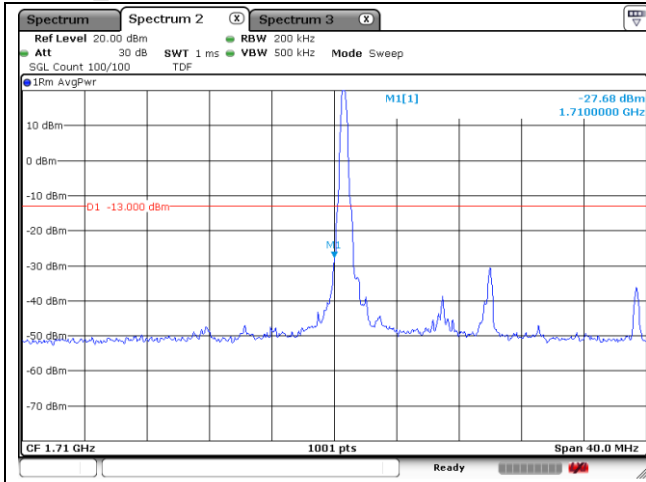
PCC 15 MHz + SCC 5 MHz_16QAM-High Channel – 1 RB



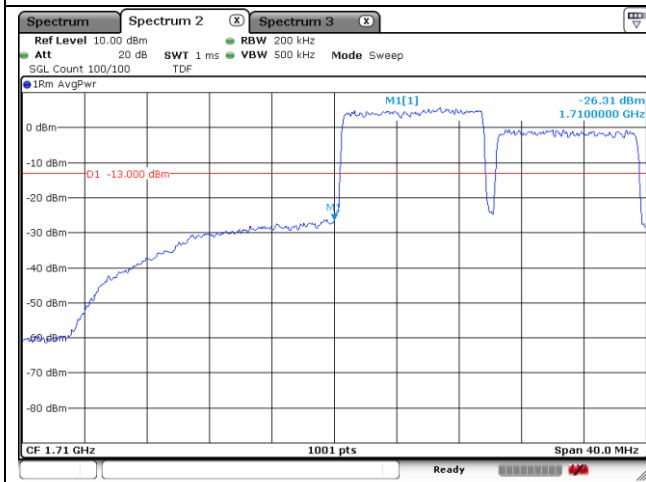
PCC 15 MHz + SCC 5 MHz_16QAM-Low Channel – Full RB

PCC 15 MHz + SCC 5 MHz_16QAM-High Channel – Full RB

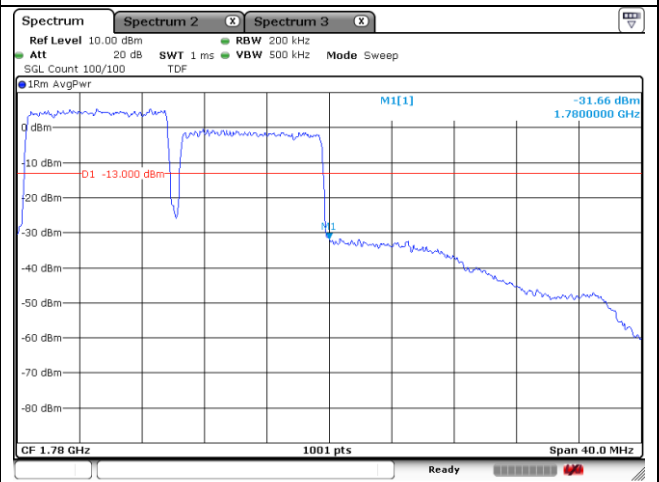
ULCA_66B



PCC 10 MHz + SCC 10 MHz_QPSK-Low Channel – 1 RB



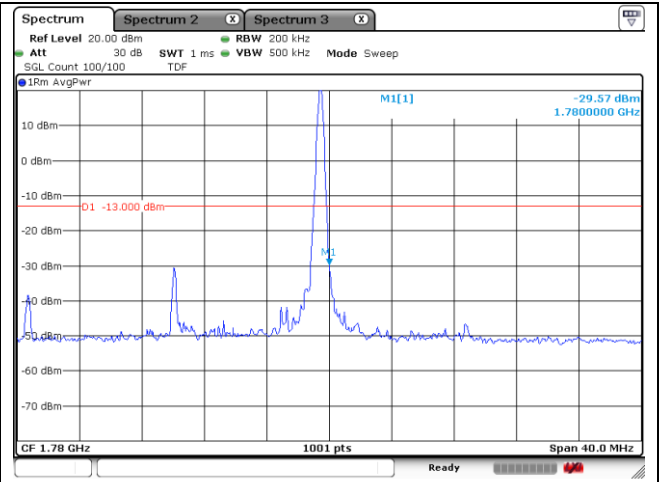
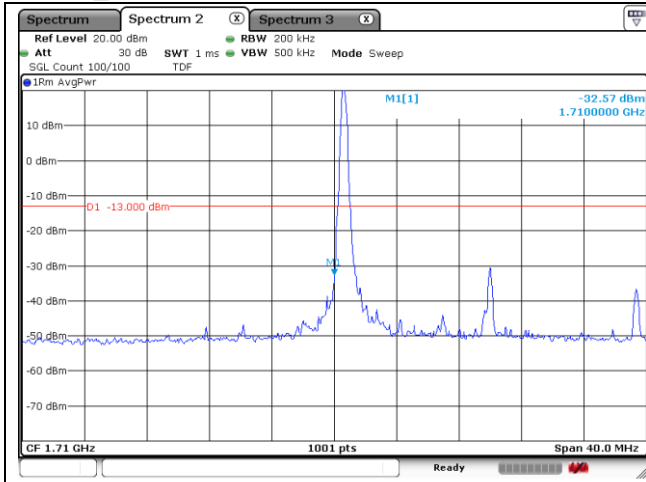
PCC 10 MHz + SCC 10 MHz_QPSK-High Channel – 1 RB



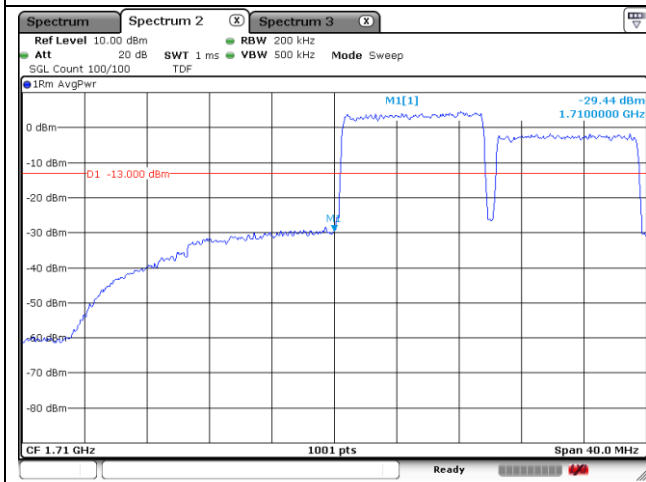
PCC 10 MHz + SCC 10 MHz_QPSK-Low Channel – Full RB

PCC 10 MHz + SCC 10 MHz_QPSK-High Channel – Full RB

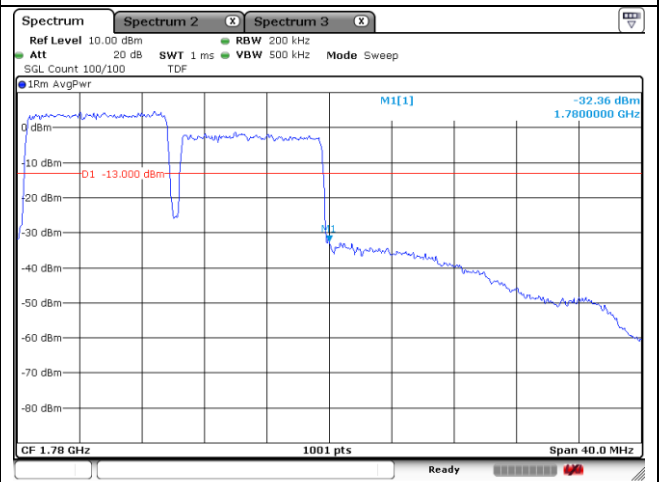
ULCA_66B



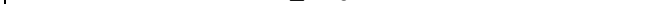
PCC 10 MHz + SCC 10 MHz_16QAM-Low Channel – 1 RB



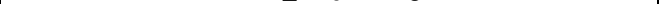
PCC 10 MHz + SCC 10 MHz_16QAM-High Channel – 1 RB



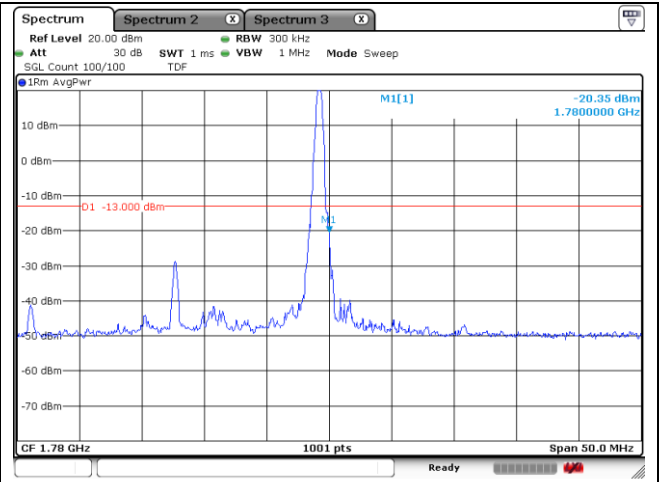
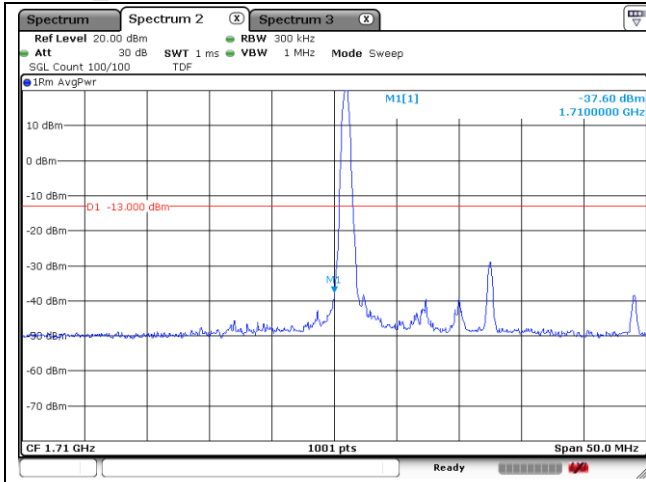
PCC 10 MHz + SCC 10 MHz_16QAM-Low Channel – Full RB



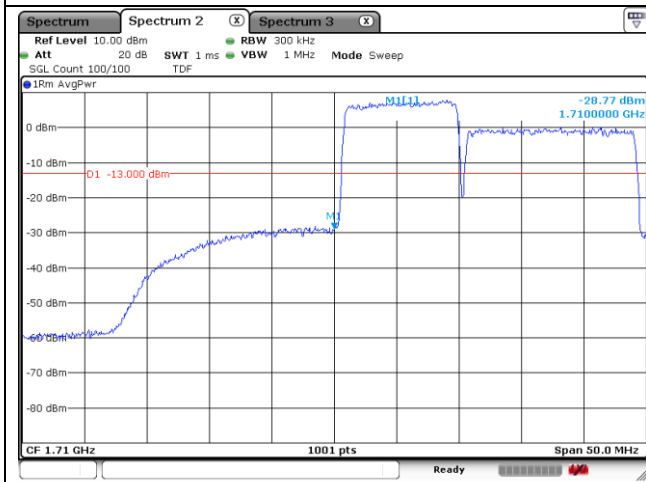
PCC 10 MHz + SCC 10 MHz_16QAM-High Channel – Full RB



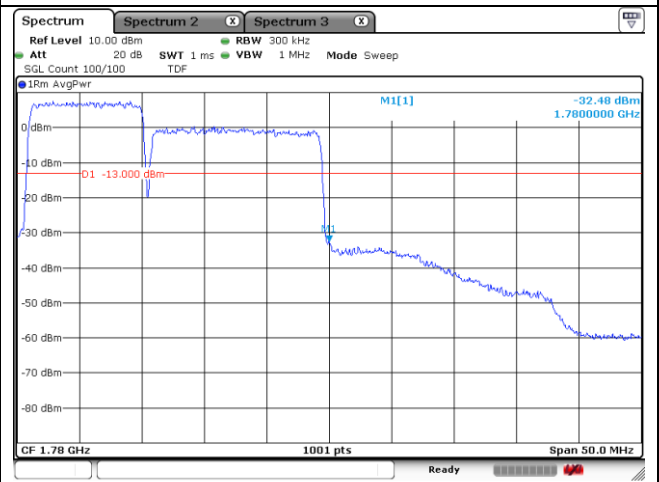
ULCA_66C



PCC 10 MHz + SCC 15 MHz_QPSK-Low Channel – 1 RB



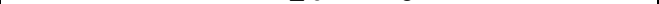
PCC 10 MHz + SCC 15 MHz_QPSK-High Channel – 1 RB



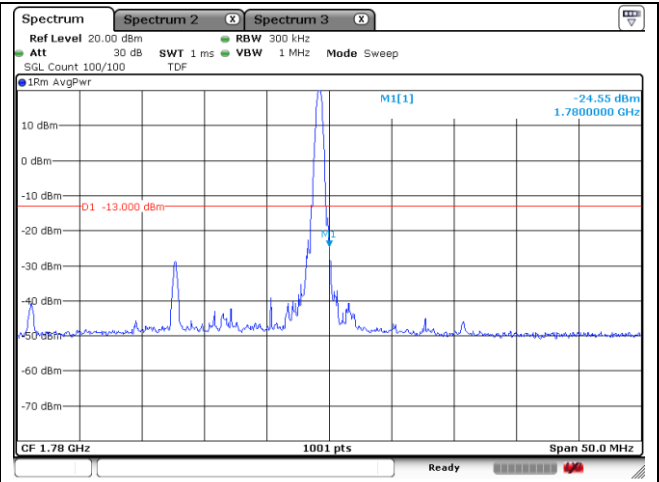
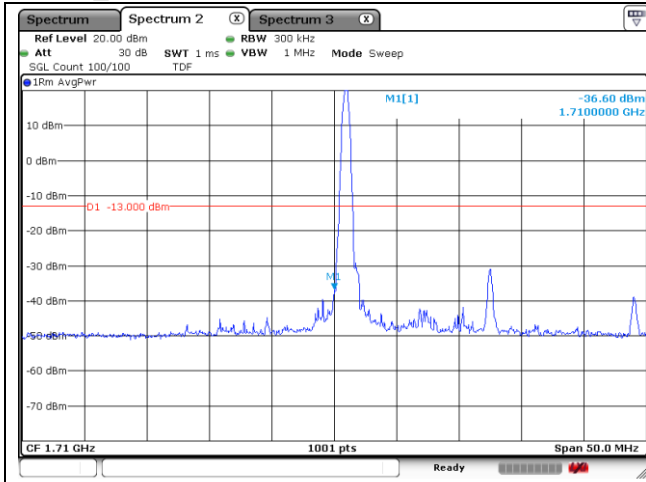
PCC 10 MHz + SCC 15 MHz_QPSK-Low Channel – Full RB



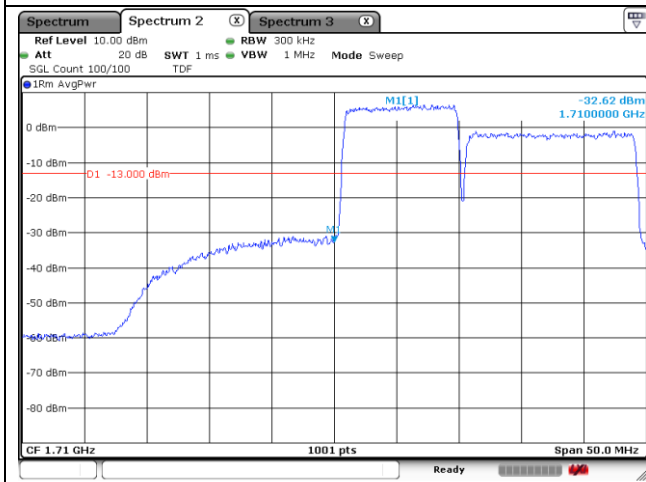
PCC 10 MHz + SCC 15 MHz_QPSK-High Channel – Full RB



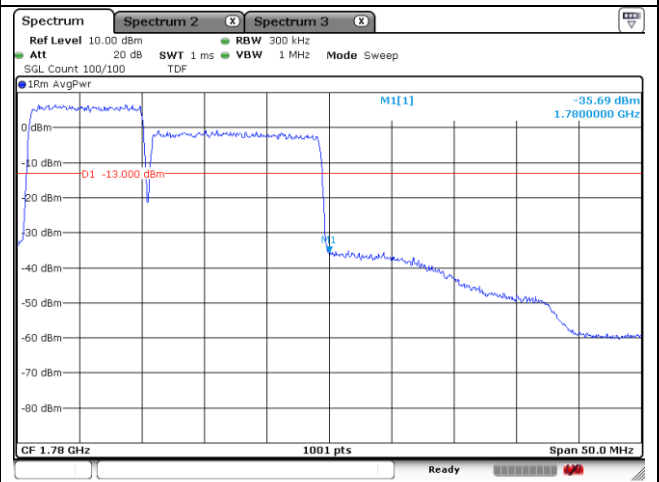
ULCA_66C



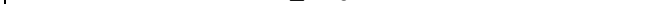
PCC 10 MHz + SCC 15 MHz_16QAM-Low Channel – 1 RB



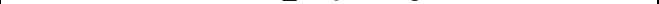
PCC 10 MHz + SCC 15 MHz_16QAM-High Channel – 1 RB



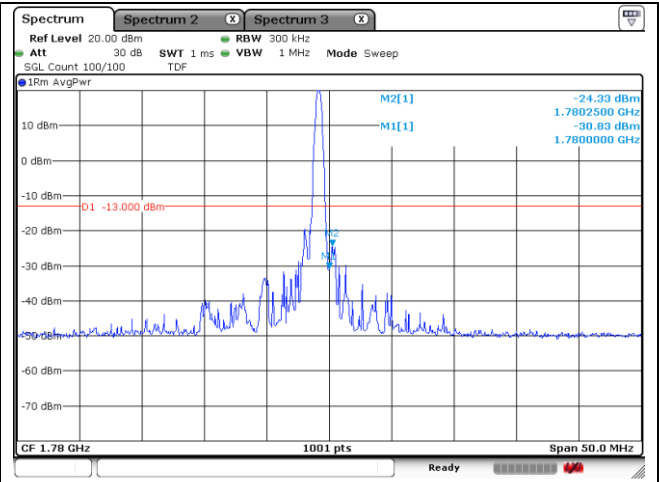
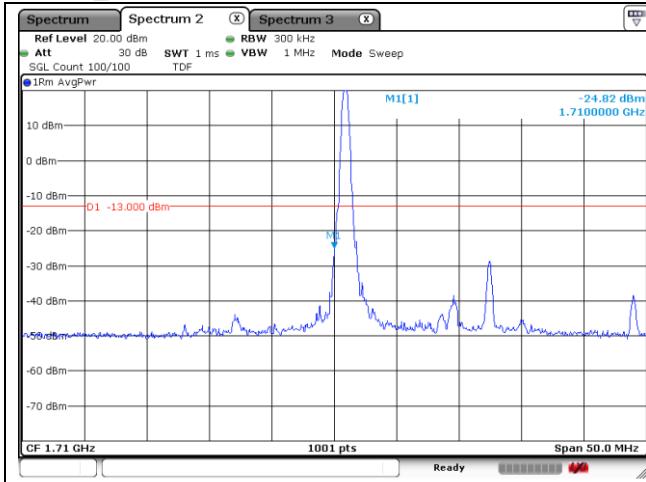
PCC 10 MHz + SCC 15 MHz_16QAM-Low Channel – Full RB



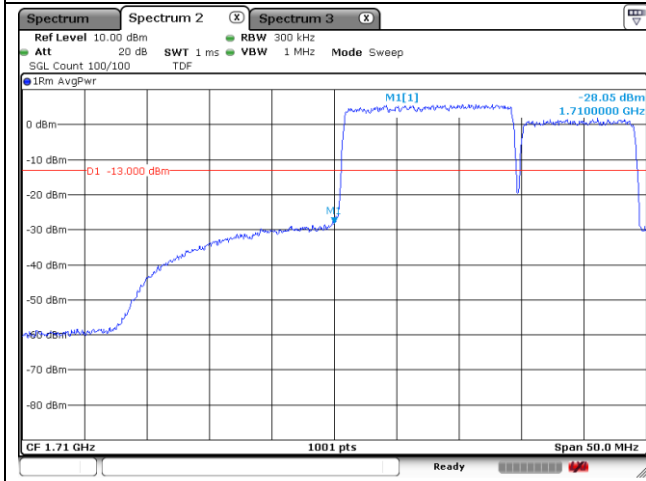
PCC 10 MHz + SCC 15 MHz_16QAM-High Channel – Full RB



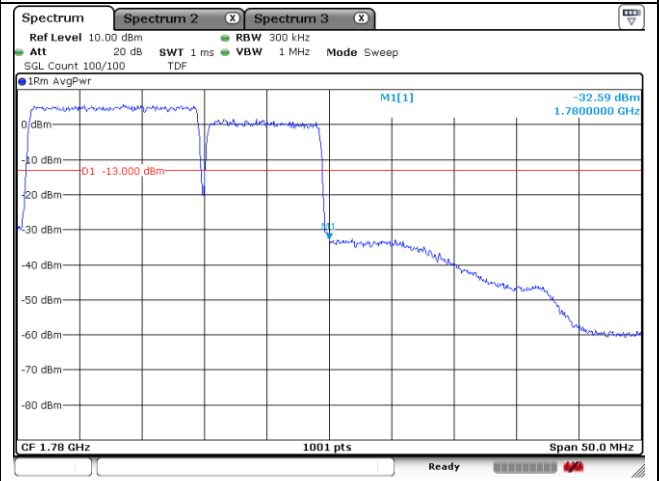
ULCA_66C



PCC 15 MHz + SCC 10 MHz_QPSK-Low Channel – 1 RB



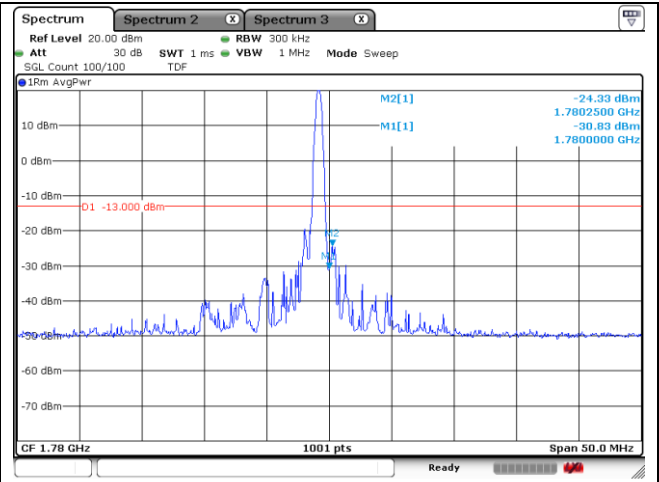
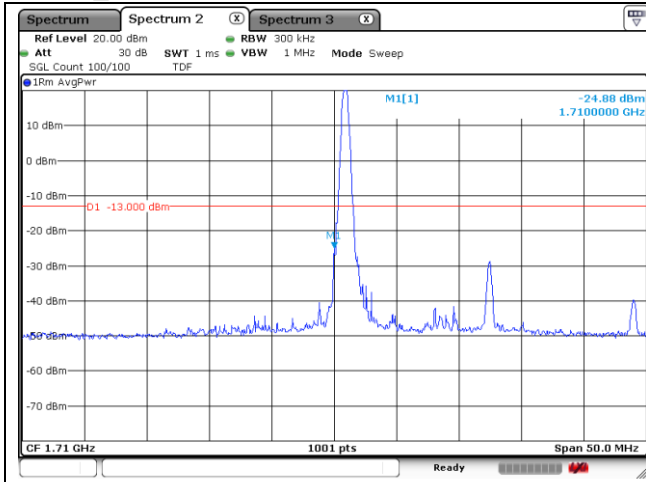
PCC 15 MHz + SCC 10 MHz_QPSK-High Channel – 1 RB



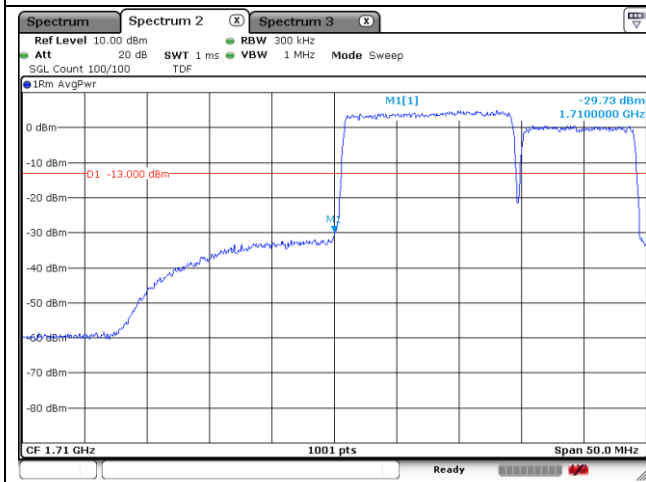
PCC 15 MHz + SCC 10 MHz_QPSK-Low Channel – Full RB

PCC 15 MHz + SCC 10 MHz_QPSK-High Channel – Full RB

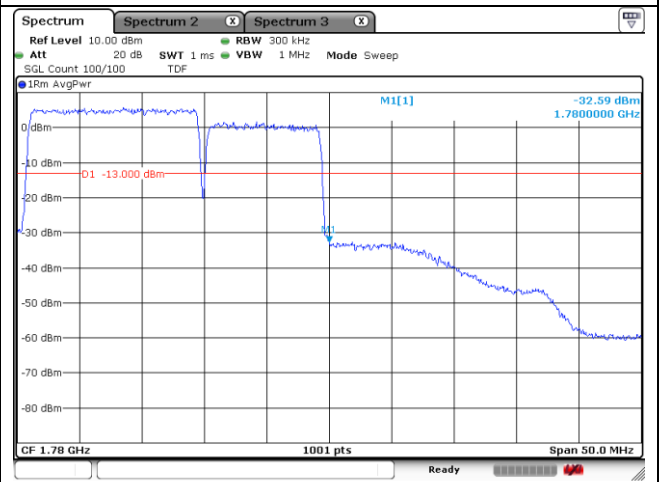
ULCA_66C



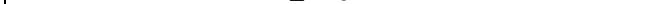
PCC 15 MHz + SCC 10 MHz_16QAM-Low Channel – 1 RB



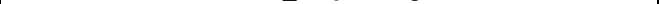
PCC 15 MHz + SCC 10 MHz_16QAM-High Channel – 1 RB



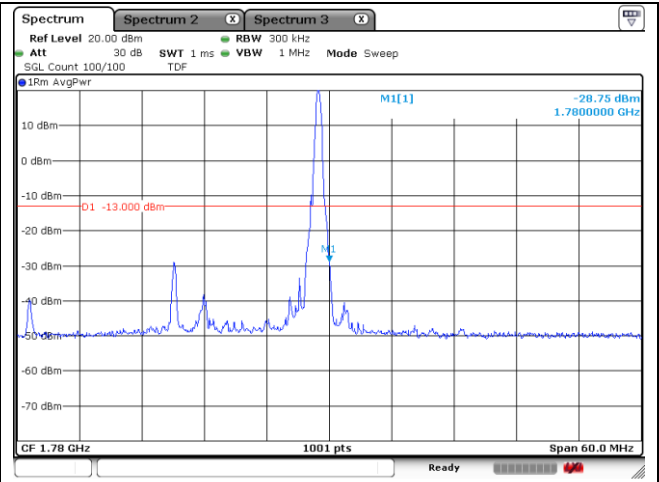
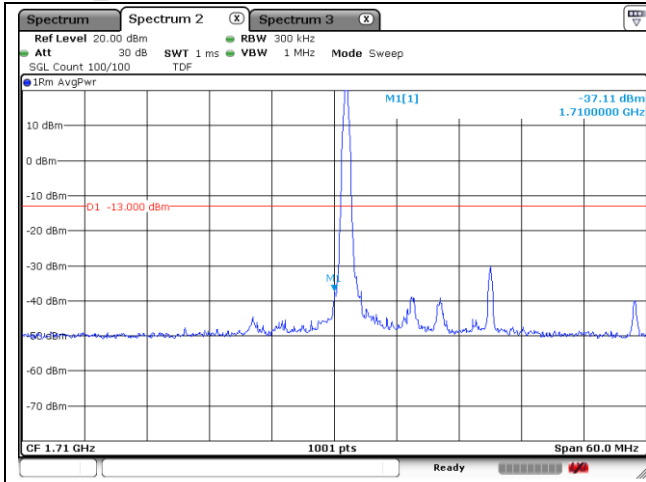
PCC 15 MHz + SCC 10 MHz_16QAM-Low Channel – Full RB



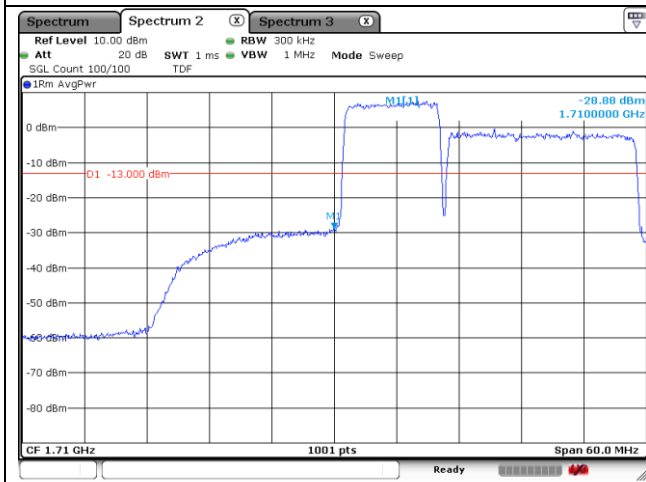
PCC 15 MHz + SCC 10 MHz_16QAM-High Channel – Full RB



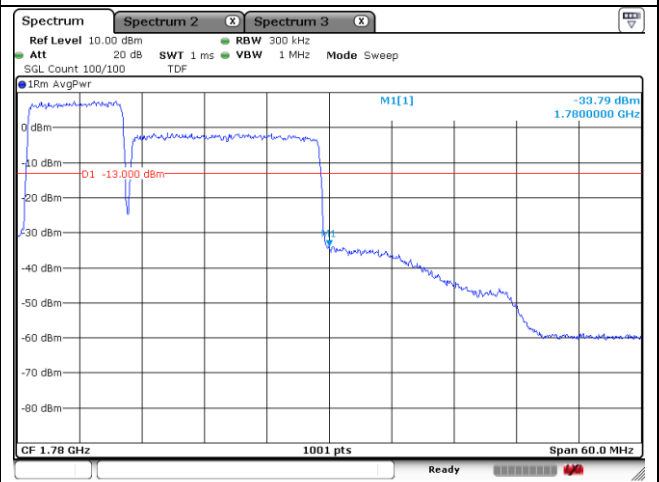
ULCA_66C



PCC 10 MHz + SCC 20 MHz_QPSK-Low Channel – 1 RB



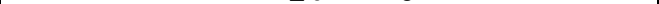
PCC 10 MHz + SCC 20 MHz_QPSK-High Channel – 1 RB



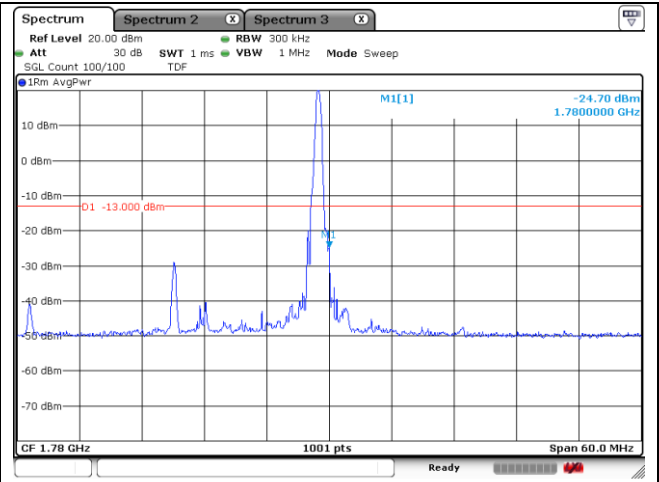
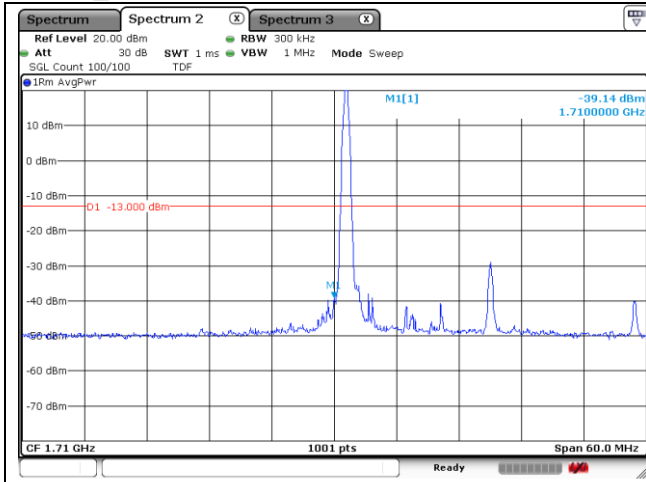
PCC 10 MHz + SCC 20 MHz_QPSK-Low Channel – Full RB



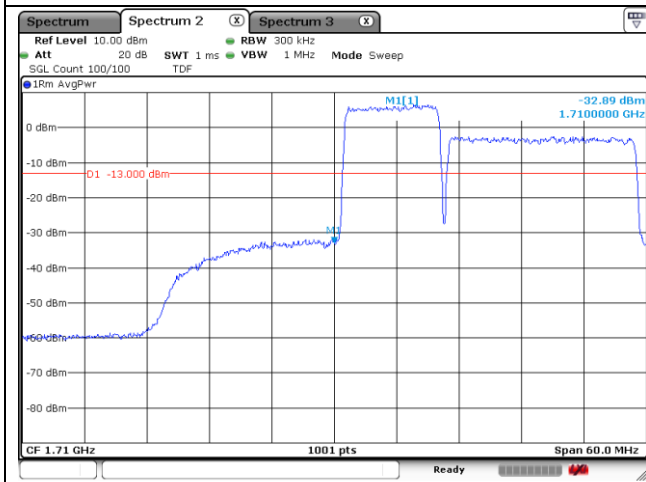
PCC 10 MHz + SCC 20 MHz_QPSK-High Channel – Full RB



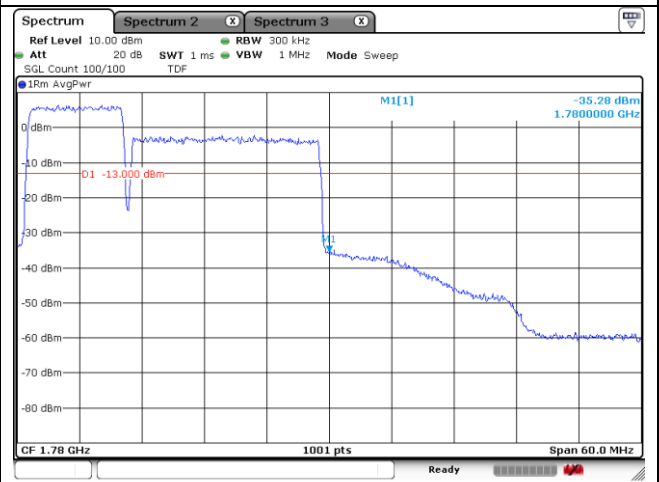
ULCA_66C



PCC 10 MHz + SCC 20 MHz_16QAM-Low Channel – 1 RB



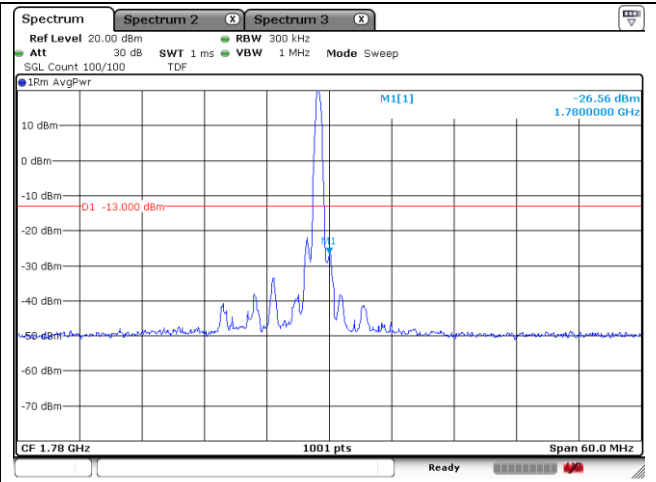
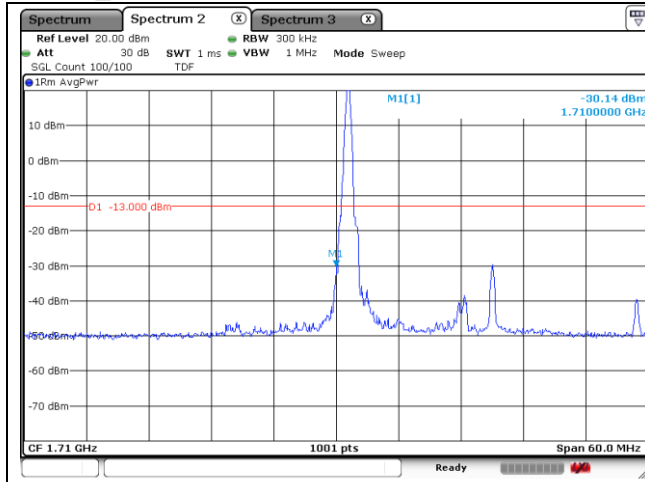
PCC 10 MHz + SCC 20 MHz_16QAM-High Channel – 1 RB



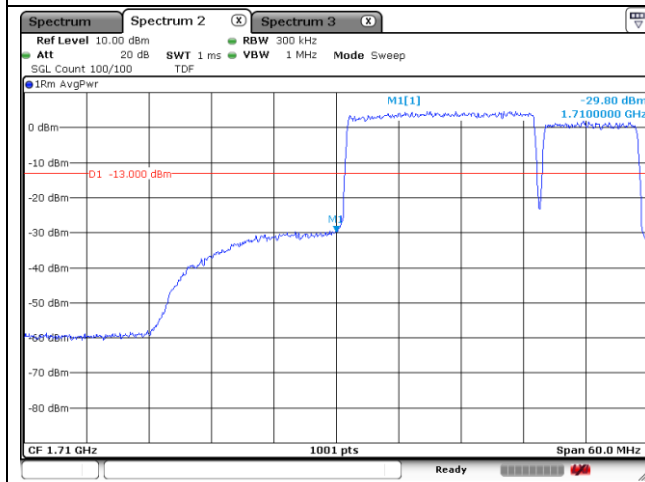
PCC 10 MHz + SCC 20 MHz_16QAM-Low Channel – Full RB

PCC 10 MHz + SCC 20 MHz_16QAM-High Channel – Full RB

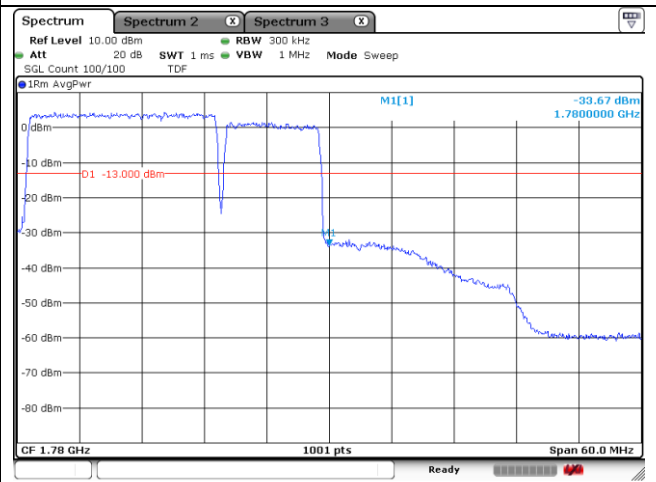
ULCA_66C



PCC 20 MHz + SCC 10 MHz_QPSK-Low Channel – 1 RB



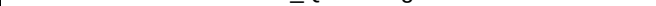
PCC 20 MHz + SCC 10 MHz_QPSK-High Channel – 1 RB



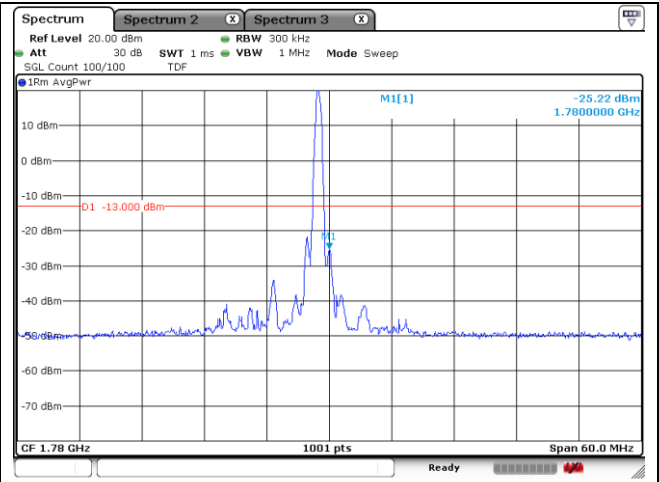
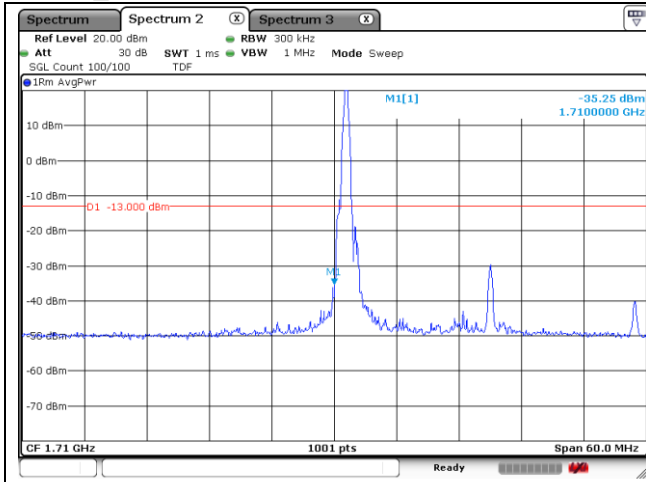
PCC 20 MHz + SCC 10 MHz_QPSK-Low Channel- Full RB



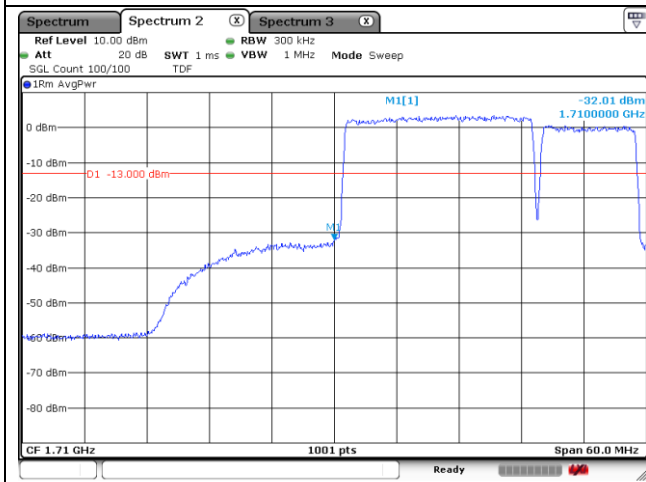
PCC 20 MHz + SCC 10 MHz_QPSK-High Channel – Full RB



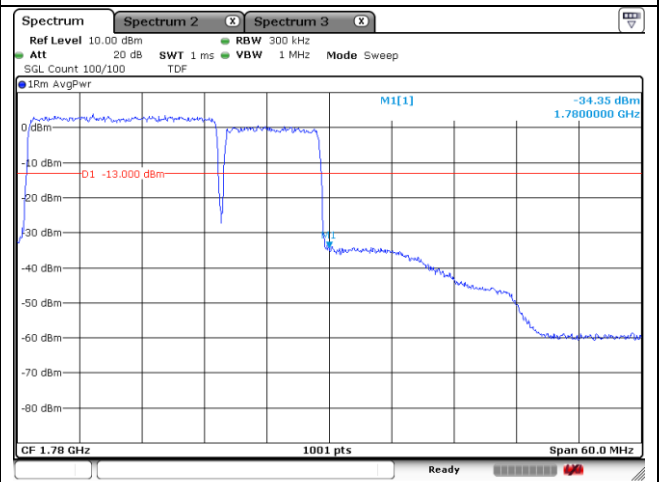
ULCA_66C



PCC 20 MHz + SCC 10 MHz_16QAM-Low Channel – 1 RB



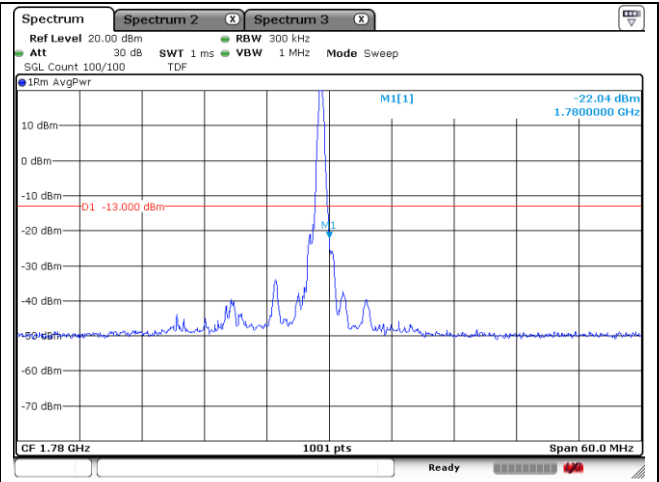
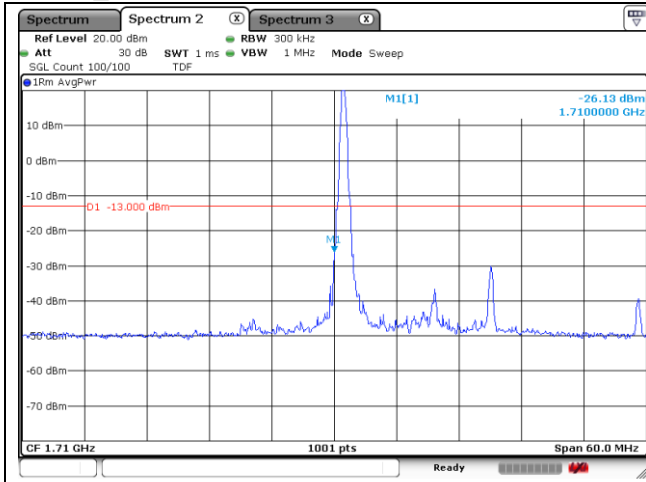
PCC 20 MHz + SCC 10 MHz_16QAM-High Channel – 1 RB



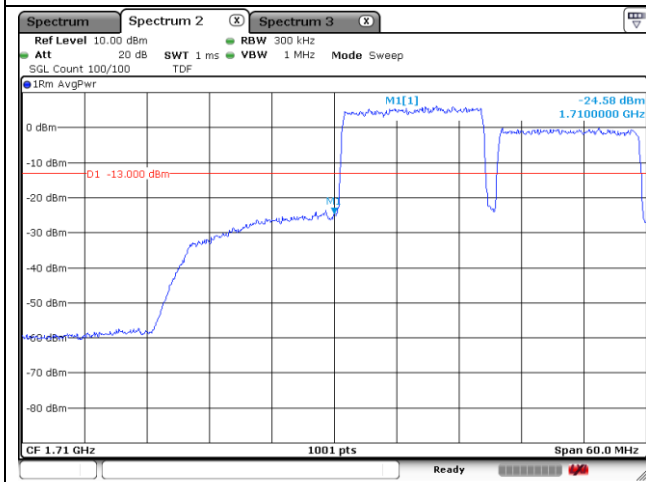
PCC 20 MHz + SCC 10 MHz_16QAM-Low Channel – Full RB

PCC 20 MHz + SCC 10 MHz_16QAM-High Channel – Full RB

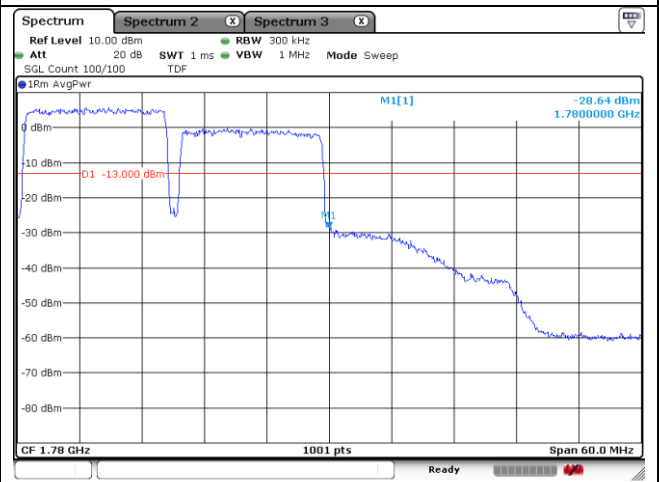
ULCA 66C



PCC 15 MHz + SCC 15 MHz_QPSK-Low Channel – 1 RB



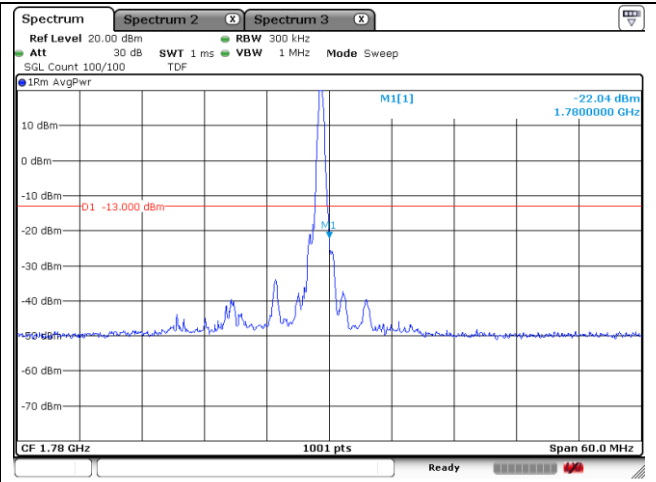
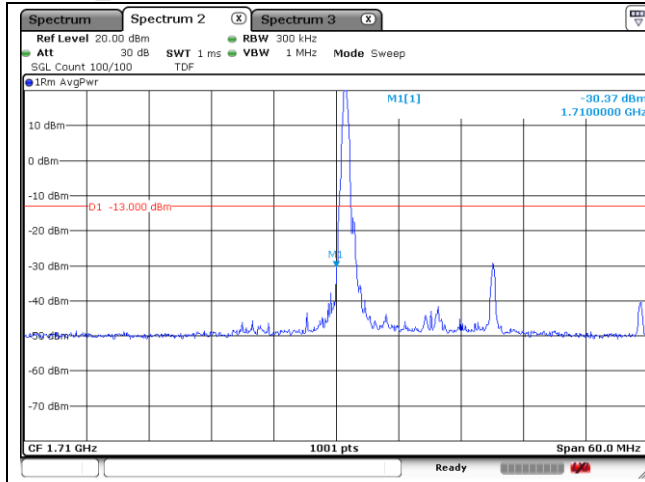
PCC 15 MHz + SCC 15 MHz_QPSK-High Channel – 1 RB



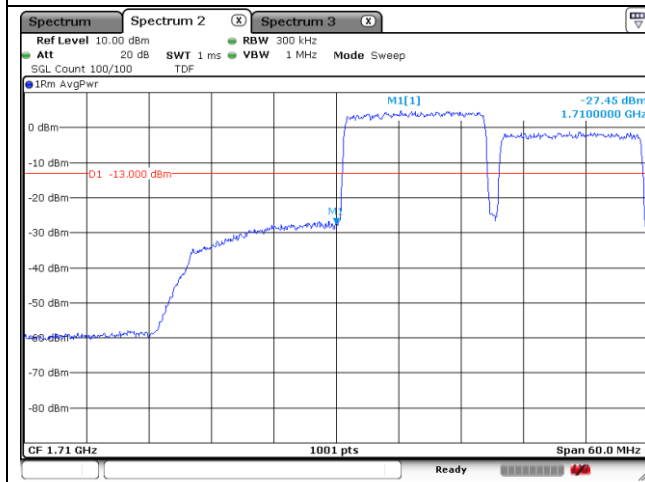
PCC 15 MHz + SCC 15 MHz_QPSK-Low Channel – Full RB

PCC 15 MHz + SCC 15 MHz_QPSK-High Channel – Full RB

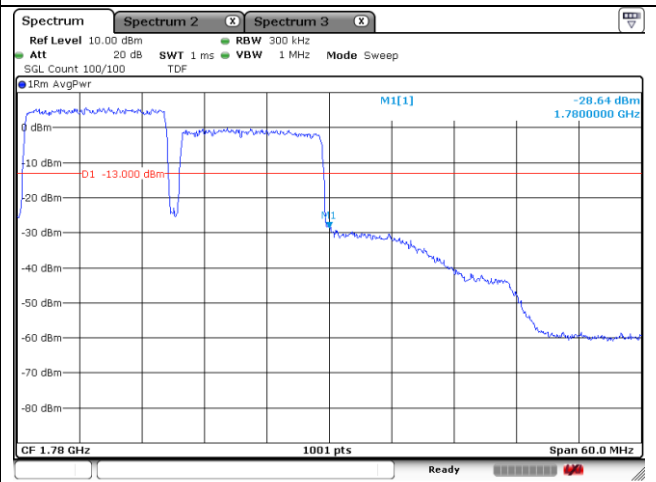
ULCA 66C



PCC 15 MHz + SCC 15 MHz_16QAM-Low Channel – 1 RB



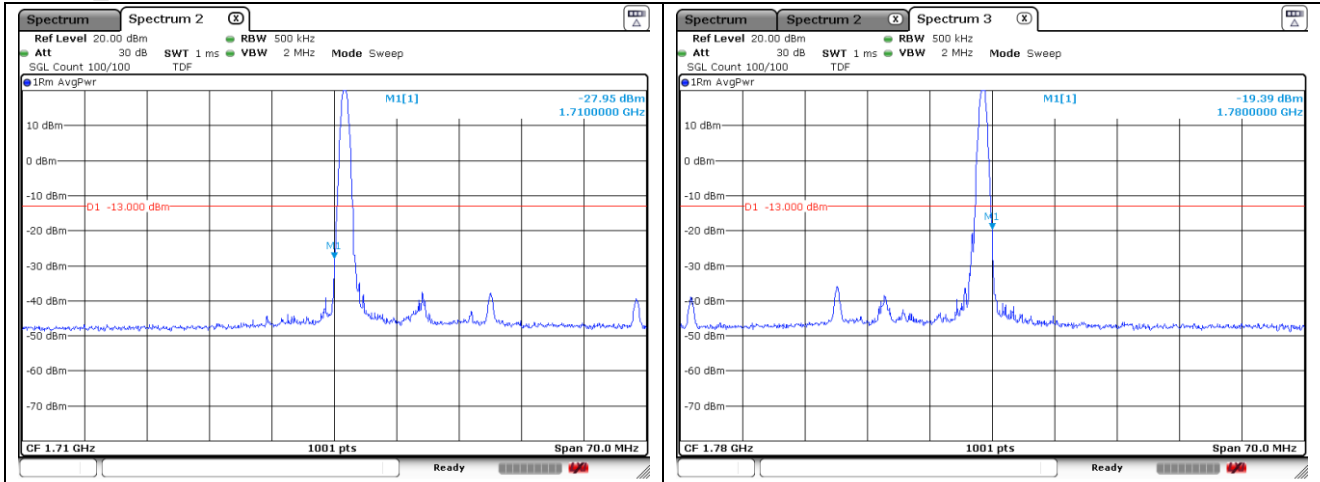
PCC 15 MHz + SCC 15 MHz_16QAM-High Channel – 1 RB



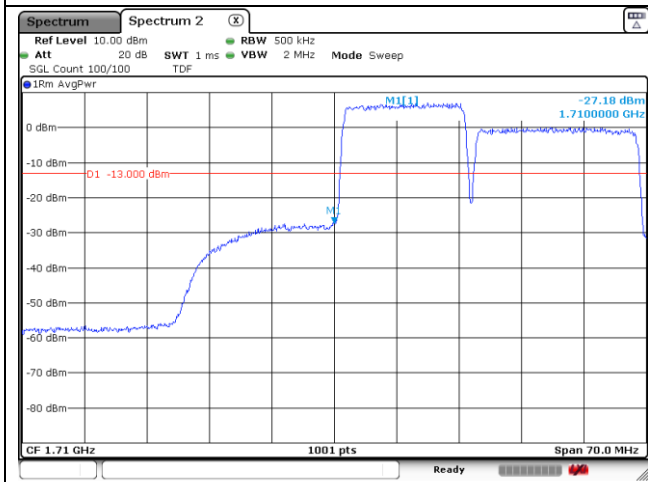
PCC 15 MHz + SCC 15 MHz_16QAM-Low Channel – Full RB

PCC 15 MHz + SCC 15 MHz_16QAM-High Channel – Full RB

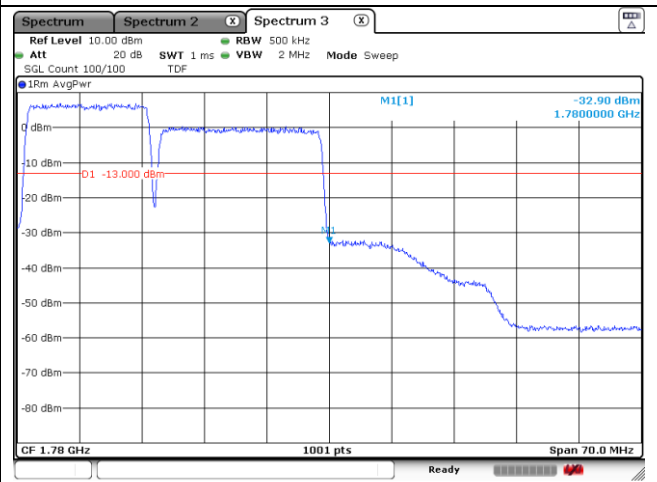
ULCA 66C



PCC 15 MHz + SCC 20 MHz_QPSK-Low Channel – 1 RB



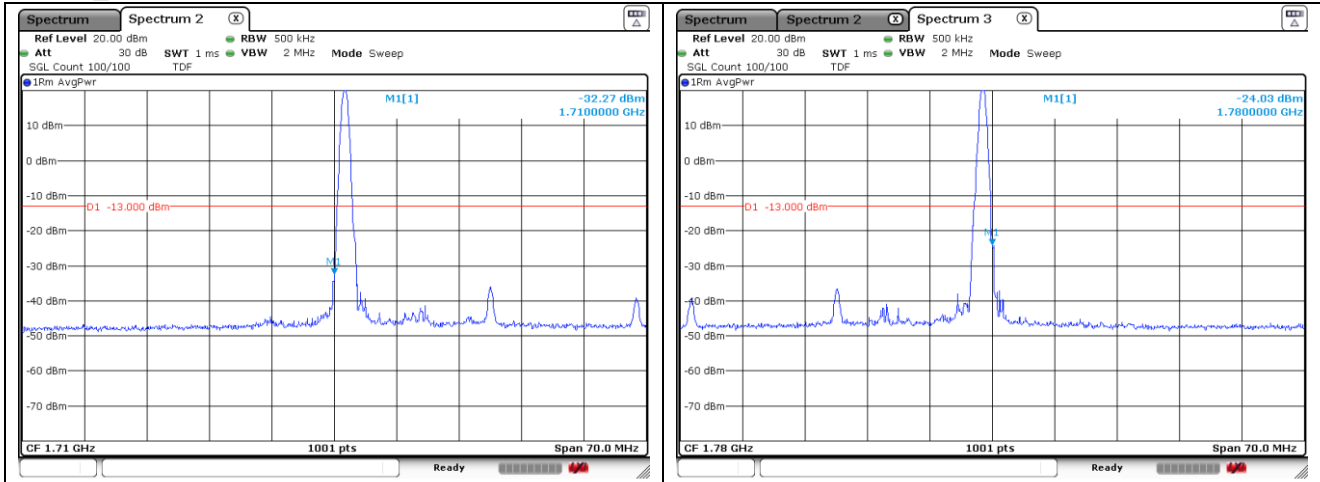
PCC 15 MHz + SCC 20 MHz_QPSK-High Channel – 1 RB



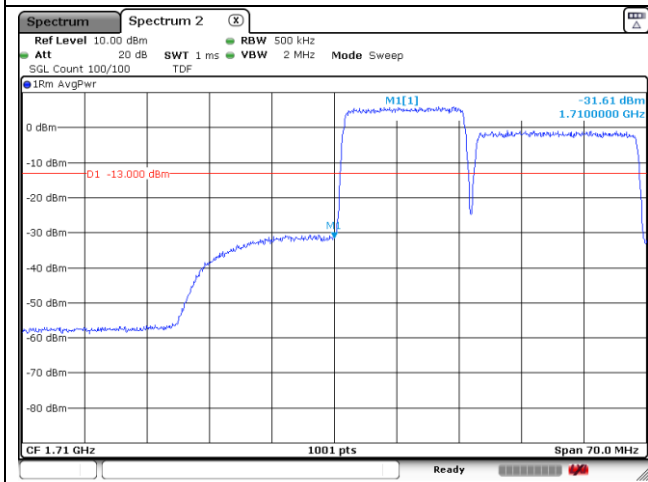
PCC 15 MHz + SCC 20 MHz_QPSK-Low Channel – Full RB

PCC 15 MHz + SCC 20 MHz_QPSK-High Channel – Full RB

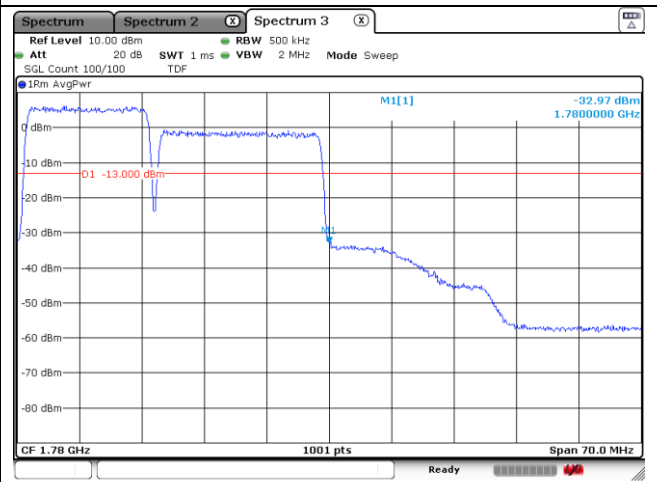
ULCA 66C



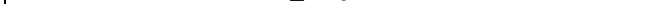
PCC 15 MHz + SCC 20 MHz_16QAM-Low Channel – 1 RB



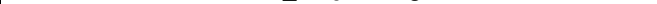
PCC 15 MHz + SCC 20 MHz_16QAM-High Channel – 1 RB



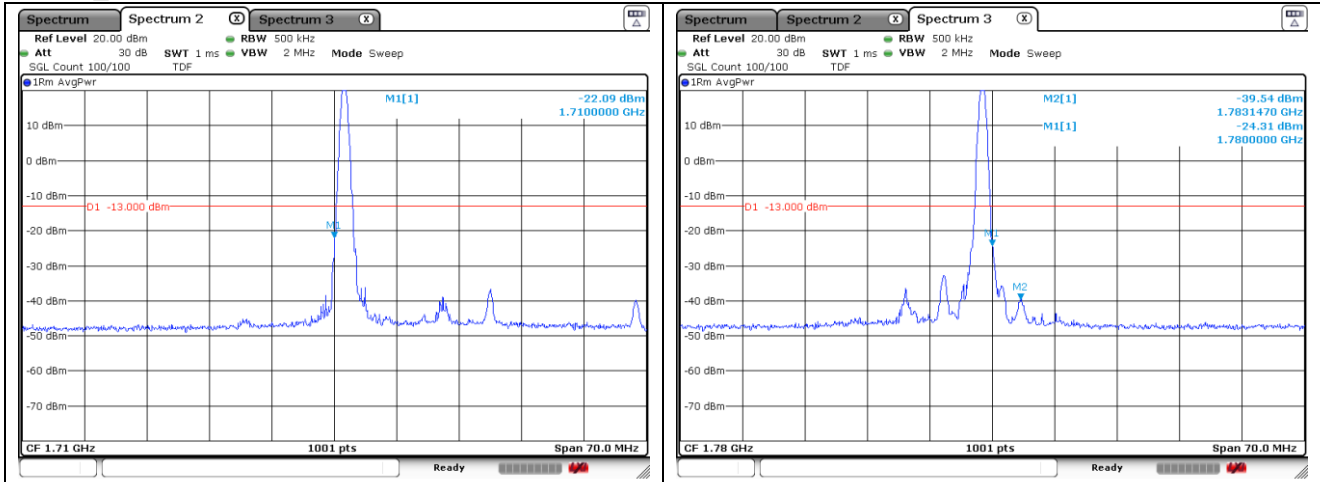
PCC 15 MHz + SCC 20 MHz_16QAM-Low Channel – Full RB



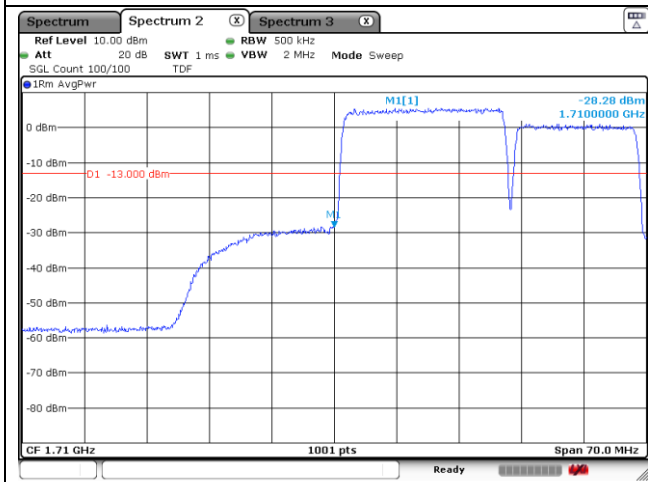
PCC 15 MHz + SCC 20 MHz_16QAM-High Channel – Full RB



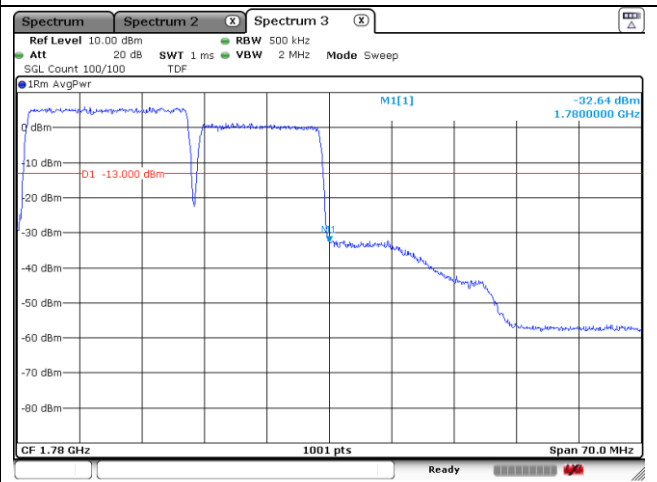
ULCA_66C



PCC 20 MHz + SCC 15 MHz_QPSK-Low Channel – 1 RB



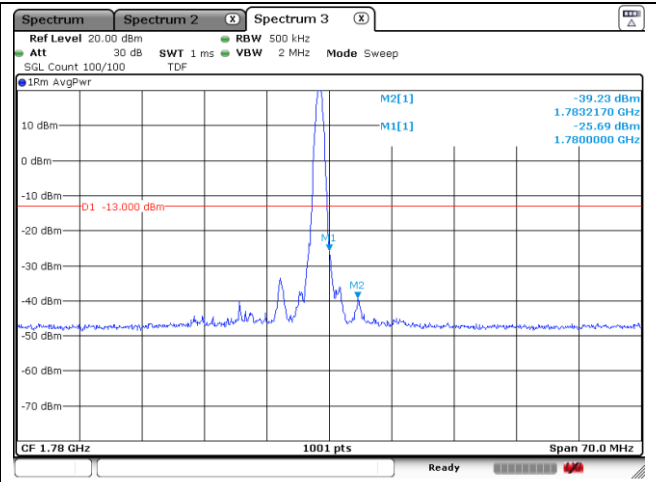
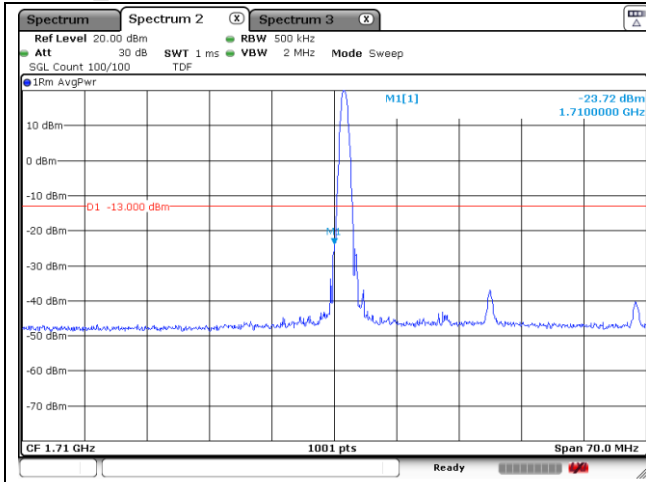
PCC 20 MHz + SCC 15 MHz_QPSK-High Channel – 1 RB



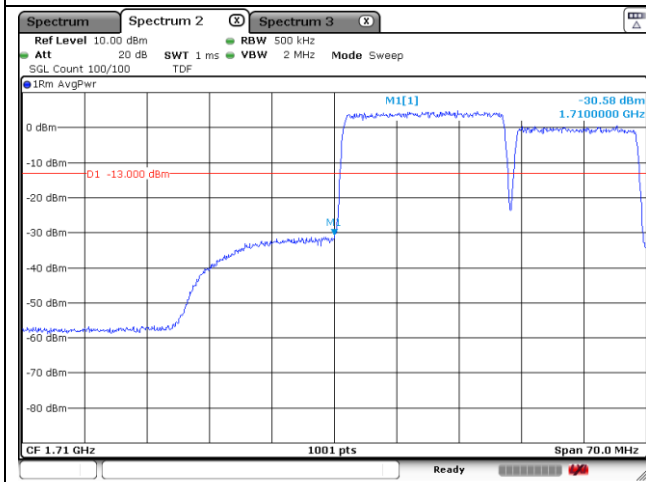
PCC 20 MHz + SCC 15 MHz_QPSK-Low Channel – Full RB

PCC 20 MHz + SCC 15 MHz_QPSK-High Channel – Full RB

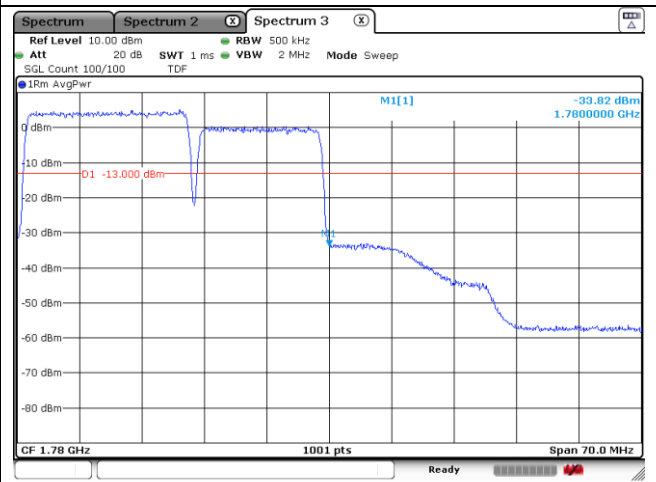
ULCA 66C



PCC 20 MHz + SCC 15 MHz_16QAM-Low Channel – 1 RB



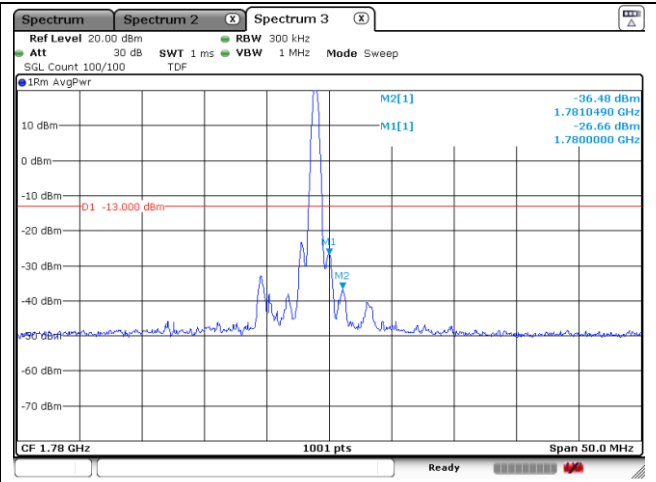
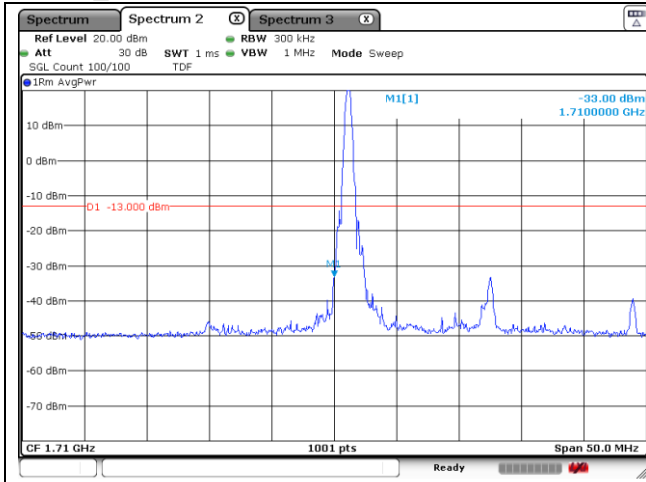
PCC 20 MHz + SCC 15 MHz_16QAM-High Channel – 1 RB



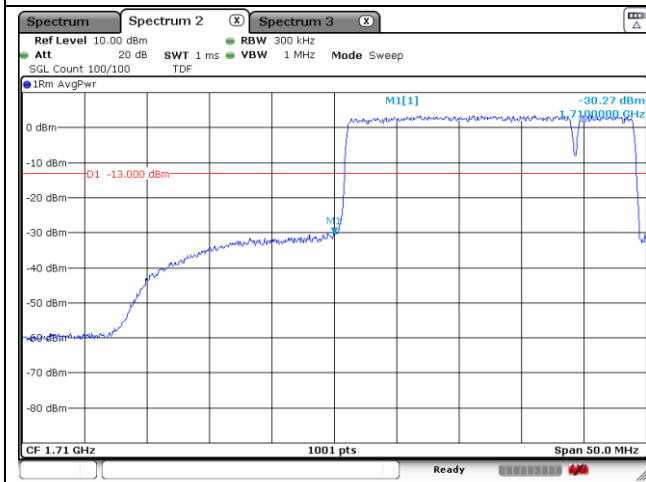
PCC 20 MHz + SCC 15 MHz_16QAM-Low Channel – Full RB

PCC 20 MHz + SCC 15 MHz_16QAM-High Channel – Full RB

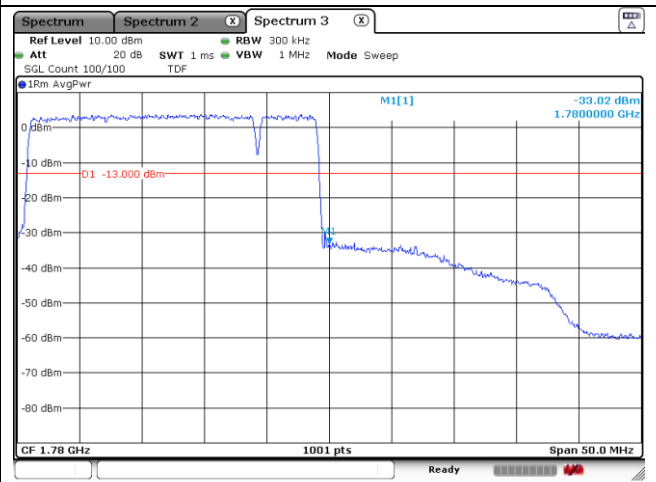
ULCA 66C



PCC 20 MHz + SCC 5 MHz_QPSK-Low Channel – 1 RB



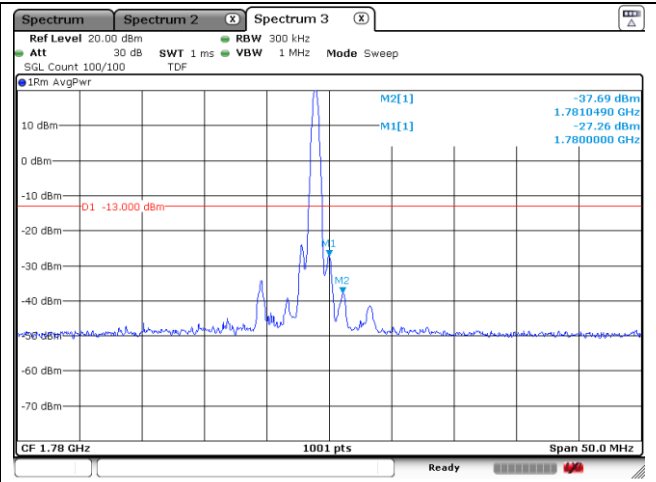
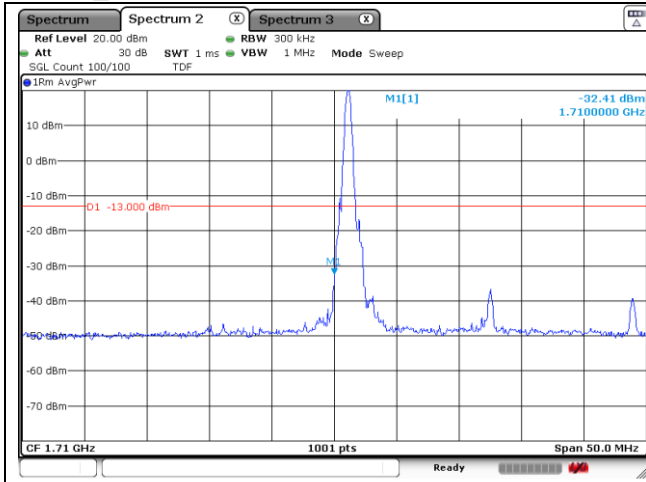
PCC 20 MHz + SCC 5 MHz_QPSK-High Channel – 1 RB



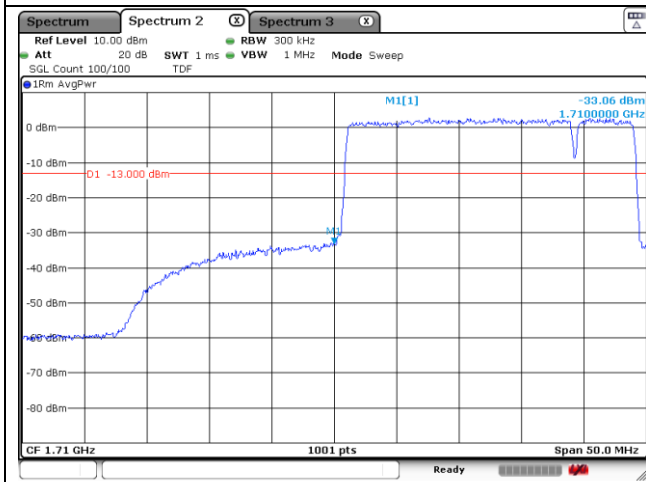
PCC 20 MHz + SCC 5 MHz_QPSK-Low Channel – Full RB

PCC 20 MHz + SCC 5 MHz_QPSK-High Channel – Full RB

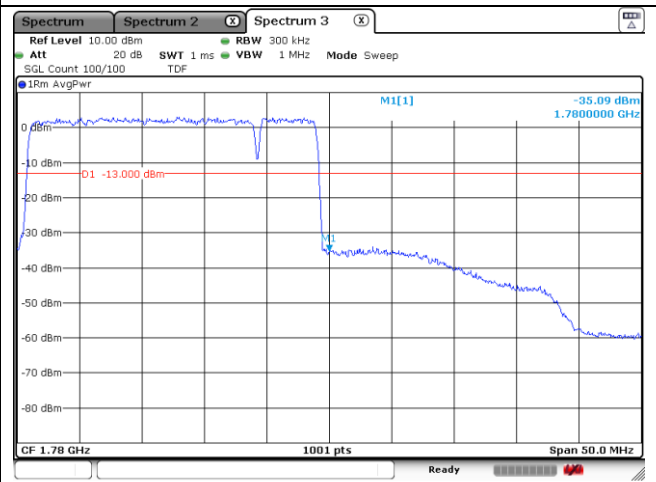
ULCA_66C



PCC 20 MHz + SCC 5 MHz_16QAM-Low Channel – 1 RB



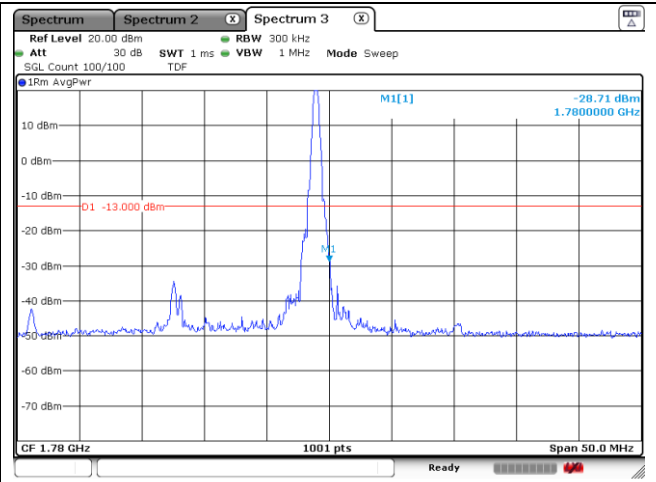
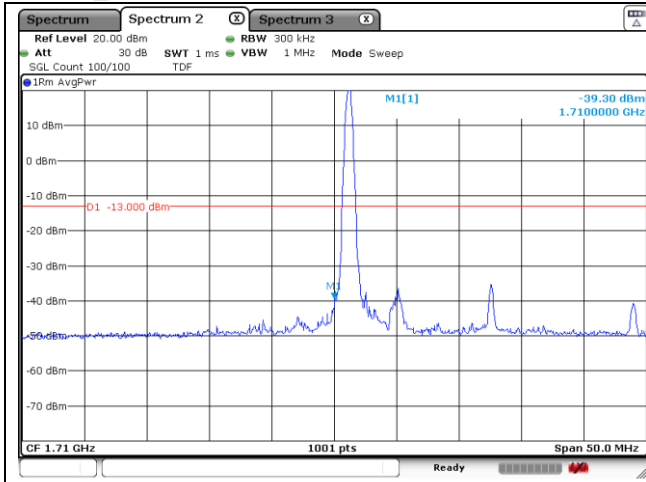
PCC 20 MHz + SCC 5 MHz_16QAM-High Channel – 1 RB



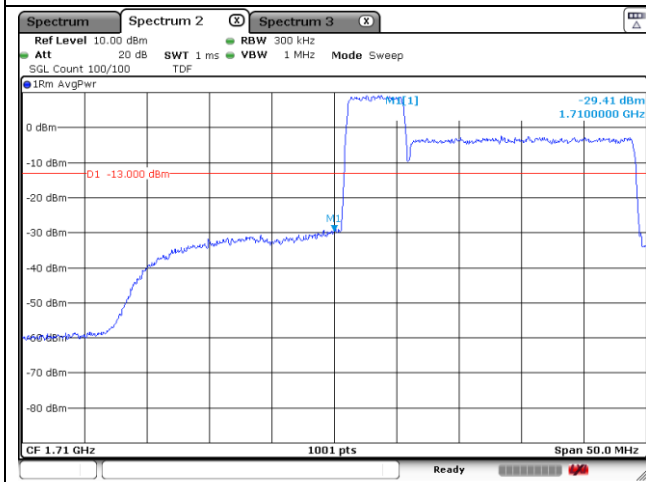
PCC 20 MHz + SCC 5 MHz_16QAM-Low Channel – Full RB

PCC 20 MHz + SCC 5 MHz_16QAM-High Channel – Full RB

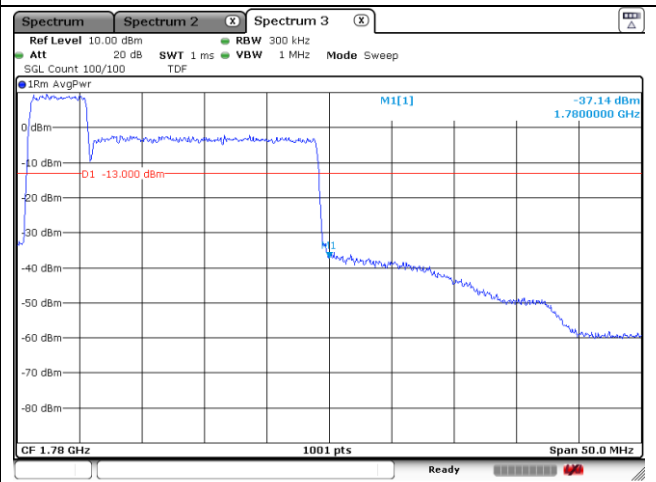
ULCA 66C



PCC 5 MHz + SCC 20 MHz_QPSK-Low Channel – 1 RB



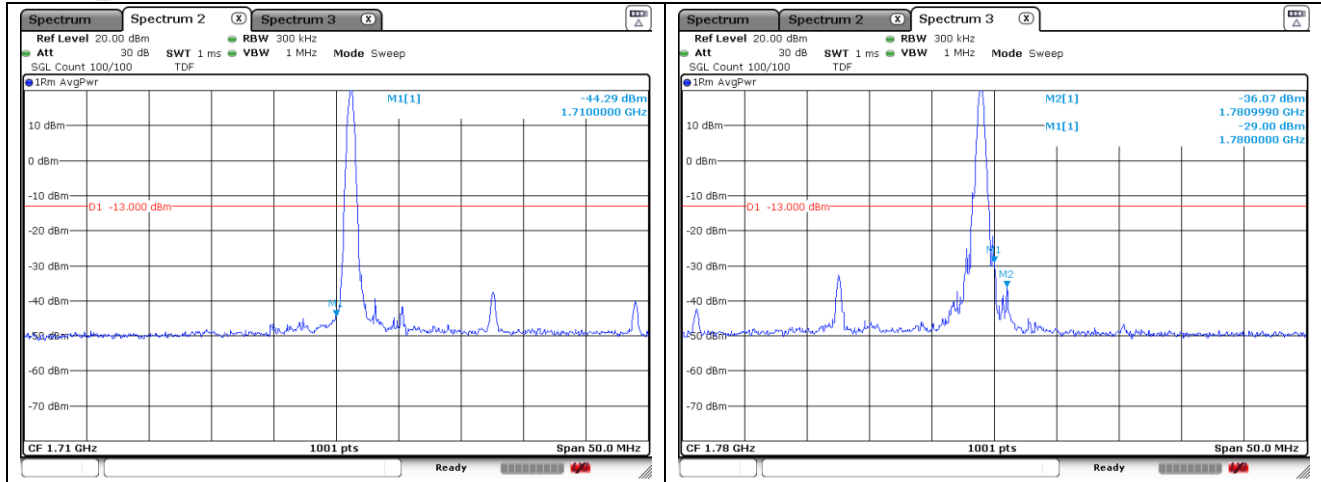
PCC 5 MHz + SCC 20 MHz_QPSK-High Channel – 1 RB



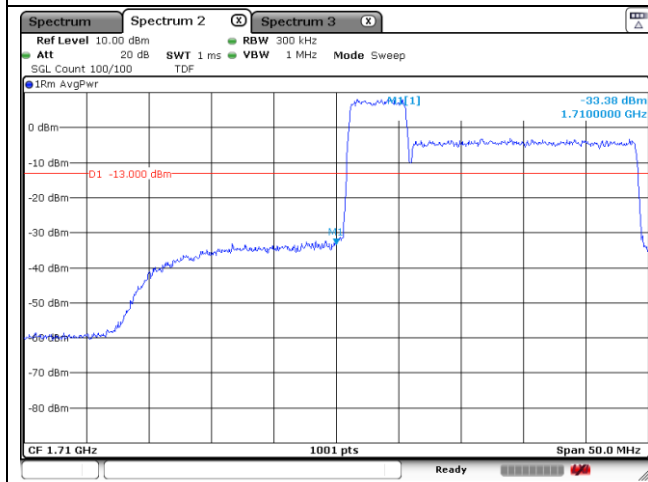
PCC 5 MHz + SCC 20 MHz_QPSK-Low Channel – Full RB

PCC 5 MHz + SCC 20 MHz_QPSK-High Channel – Full RB

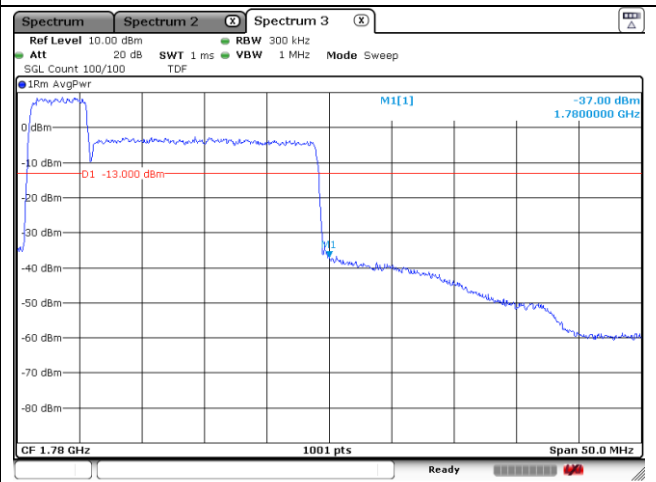
ULCA 66C



PCC 5 MHz + SCC 20 MHz_16QAM-Low Channel – 1 RB



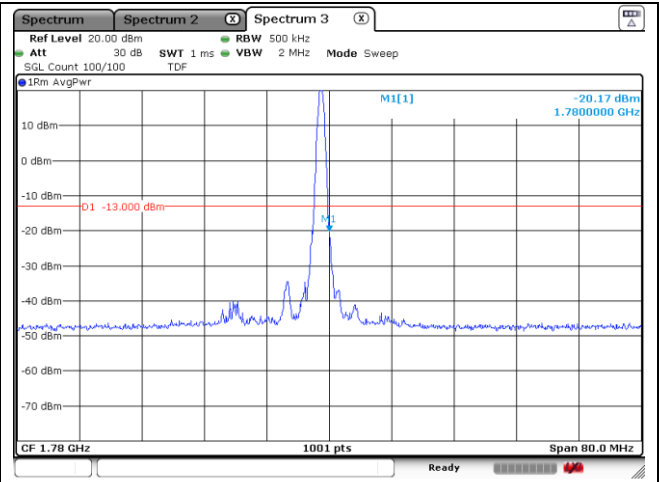
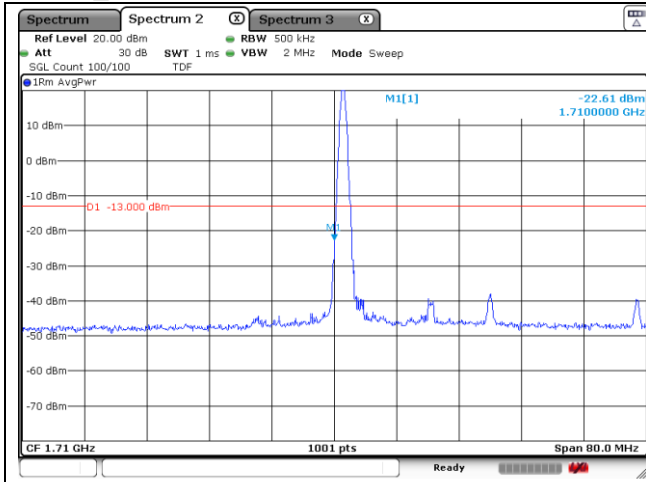
PCC 5 MHz + SCC 20 MHz_16QAM-High Channel – 1 RB



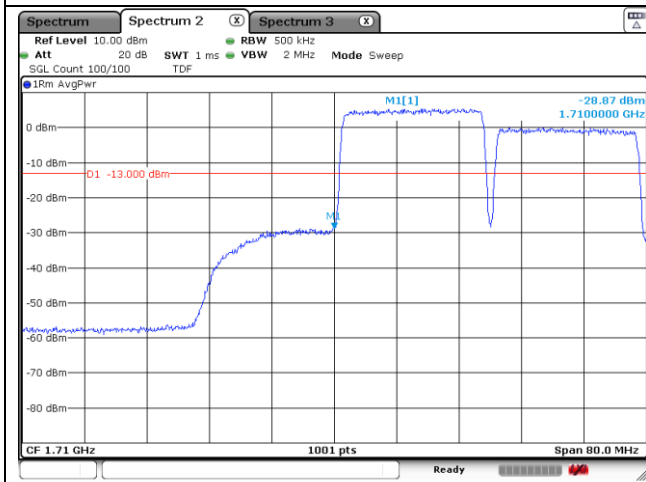
PCC 5 MHz + SCC 20 MHz_16QAM-Low Channel – Full RB

PCC 5 MHz + SCC 20 MHz_16QAM-High Channel – Full RB

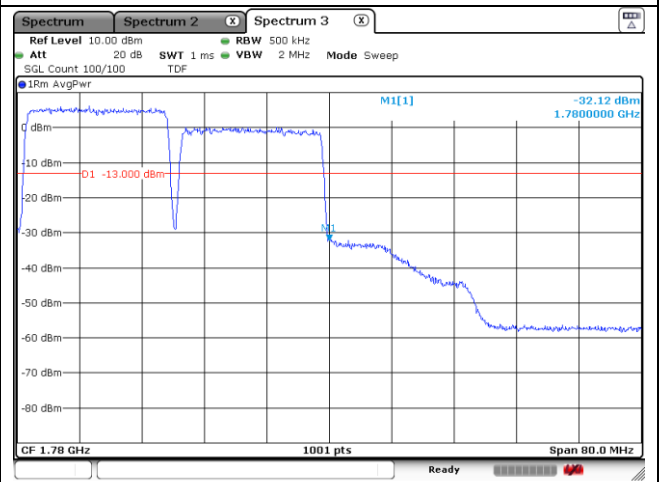
ULCA_66C



PCC 20 MHz + SCC 20 MHz_QPSK-Low Channel – 1 RB



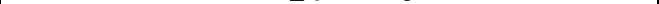
PCC 20 MHz + SCC 20 MHz_QPSK-High Channel – 1 RB



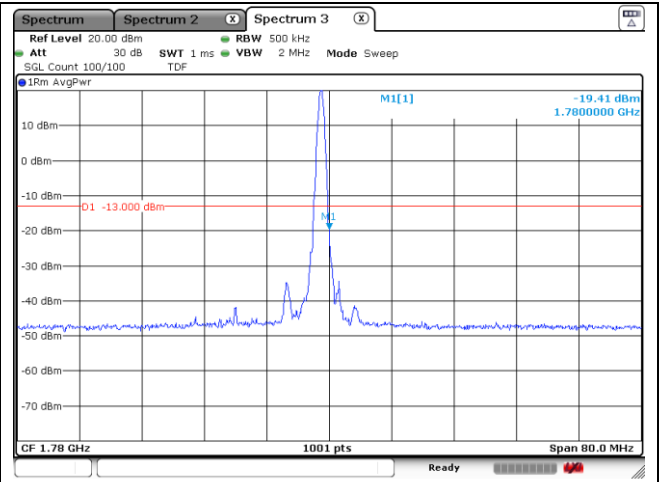
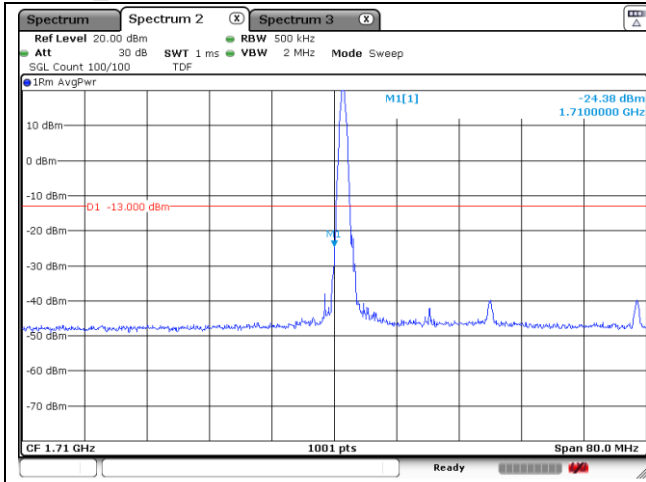
PCC 20 MHz + SCC 20 MHz_QPSK-Low Channel – Full RB



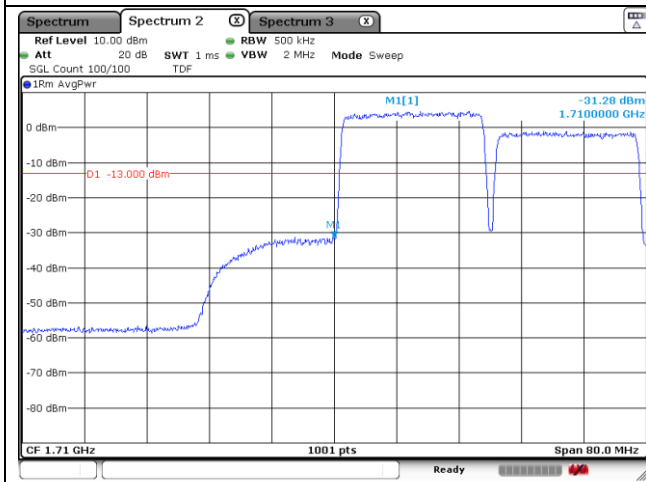
PCC 20 MHz + SCC 20 MHz_QPSK-High Channel – Full RB



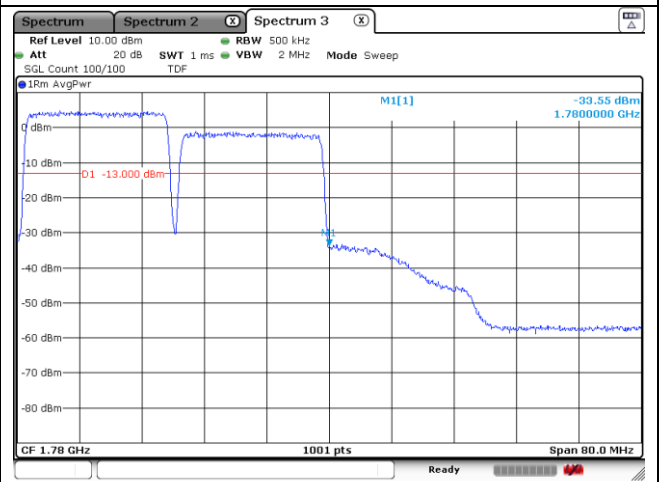
ULCA 66C



PCC 20 MHz + SCC 20 MHz_16QAM-Low Channel – 1 RB



PCC 20 MHz + SCC 20 MHz_16QAM-High Channel – 1 RB



PCC 20 MHz + SCC 20 MHz_16QAM-Low Channel – Full RB

PCC 20 MHz + SCC 20 MHz_16QAM-High Channel – Full RB

8. Frequency Stability

8.1. Limit

FCC

- § 2.1055 (a), § 2.1055 (d) & following:

- §22.355, the carrier frequency of each transmitter in the Public Mobile Services must be maintained within the tolerances given in Table of this section.

For Mobile devices operating in the 824 to 849 MHz band at a power level less than or equal to 3 Watts, the limit specified in Table C-1 is +/- 2.5 ppm.

- §27.54, the frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

IC

- RSS-Gen Issue 5

6.11, for licensed devices, the following measurement conditions apply:

a. at the temperatures of -30°C (-22°F), +20°C (+68°F) and +50°C (+122°F), and at the manufacturer's rated supply voltage

- RSS-132 Issue 3

5.3, the carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.5 ppm for base stations.

- RSS-139 Issue 4

5.4, the frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

- RSS-199 Issue 3

4.3, the transmitter frequency stability limit shall be determined as follows:

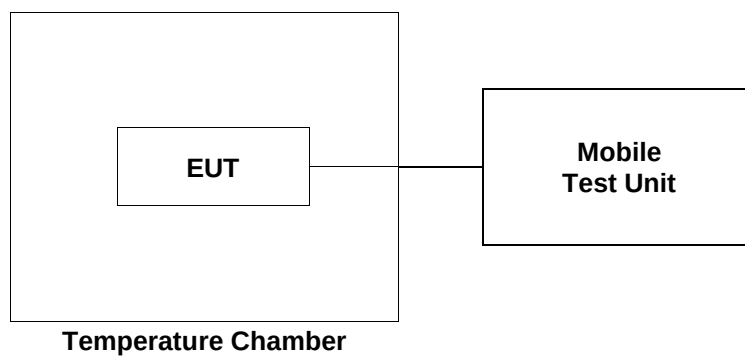
(a) the frequency offset shall be measured according to the procedure described in RSS-Gen and recorded.

(b) using a resolution bandwidth equal to that permitted within the 1 MHz band immediately outside the channel edge, as found in section 4.5, reference points will be selected at the unwanted emission limits, which comply with the attenuation specified in section 4.5 for the type of device under test, on the emission mask of the lowest and highest channels. The frequency at these points shall be recorded as f_L and f_H respectively.

The applicant shall ensure compliance with frequency stability requirements by showing that f_L minus the frequency offset and f_H plus the frequency offset is within the frequency range in which the equipment is designed to operate.

8.2. Test Procedure

1. Frequency Stability vs. Temperature: The equipment under test was connected to an external DC power supply and the RF output was connected to a Mobile Test Unit via feed-through attenuators.
2. The EUT was placed inside the temperature chamber.
3. After the temperature stabilized for approximately 20 minutes, the frequency output was recorded from Mobile Test Unit.



8.3. Test Results

Ambient temperature : (23 ± 1) °C
Relative humidity : 47 % R.H.

ULCA 5B at middle channel

Reference Frequency: PCC 834.1 MHz / SCC 838 MHz					
Frequency Stability versus Temperature					
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse			
		Frequency Error (Hz)		ppm	
		PCC	SCC	PCC	SCC
50	12.7	-11.20	2.40	-0.013 91	0.003 94
40		-8.80	4.10	-0.011 03	0.005 97
30		-9.70	-2.30	-0.012 11	-0.001 67
20(Ref.)		0.40	-0.90	-	-
10		-2.20	3.20	-0.003 12	0.004 89
0		-3.40	-5.30	-0.004 56	-0.005 25
-10		1.00	-2.40	0.000 72	-0.001 79
-20		-7.00	-8.20	-0.008 87	-0.008 71
-30		5.50	2.00	0.006 11	0.003 46
Frequency Stability versus Power Supply					
Environment Temperature (°C)	Power Supplied (V)	Frequency Measure with Time Elapse			
		Frequency Error (Hz)		Ppm	
		PCC	SCC	PCC	SCC
20	10.80 (85%)	6.00	0.50	0.006 71	0.001 67
	14.61 (115%)	10.50	4.80	0.012 11	0.006 80