5G NR Band n5 10MHz BPSK Low Channel RB1-1

5G NR Band n5 10MHz 16QAM Low Channel RB1-1

5G NR Band n5 10MHz BPSK Middle Channel RB1-1

5G NR Band n5 10MHz 16QAM Middle Channel RB1-1

5G NR Band n5 10MHz BPSK High Channel RB1-1

5G NR Band n5 10MHz 16QAM High Channel RB1-1

5G NR Band n5 15MHz BPSK Low Channel RB1-1

5G NR Band n5 15MHz 16QAM Low Channel RB1-1

5G NR Band n5 15MHz BPSK Middle Channel RB1-1

5G NR Band n5 15MHz 16QAM Middle Channel RB1-1

5G NR Band n5 15MHz BPSK High Channel RB1-1

5G NR Band n5 15MHz 16QAM High Channel RB1-1

5G NR Band n5 20MHz BPSK Low Channel RB1-1

5G NR Band n5 20MHz 16QAM Low Channel RB1-1

5G NR Band n5 20MHz BPSK Middle Channel RB1-1

5G NR Band n5 20MHz 16QAM Middle Channel RB1-1

5G NR Band n5 20MHz BPSK High Channel RB1-1

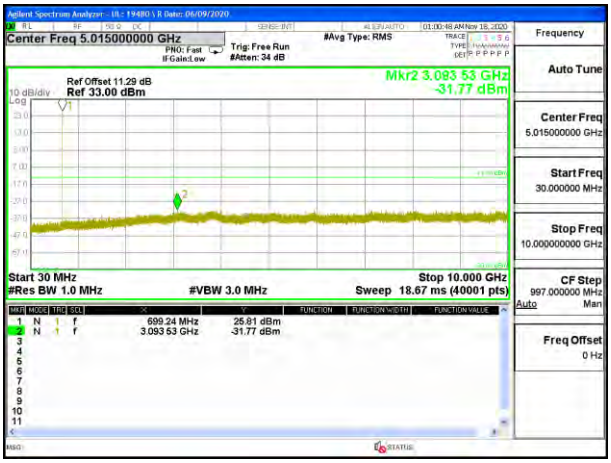
5G NR Band n5 20MHz 16QAM High Channel RB1-1

8.3.8. LTE BAND 12

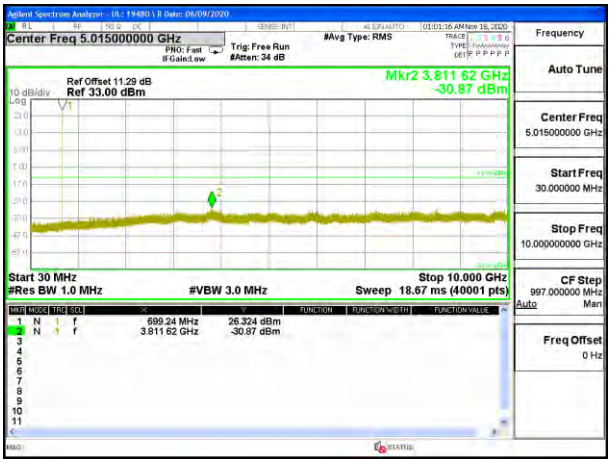
LIMITS

FCC: §27.53 (g)
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.

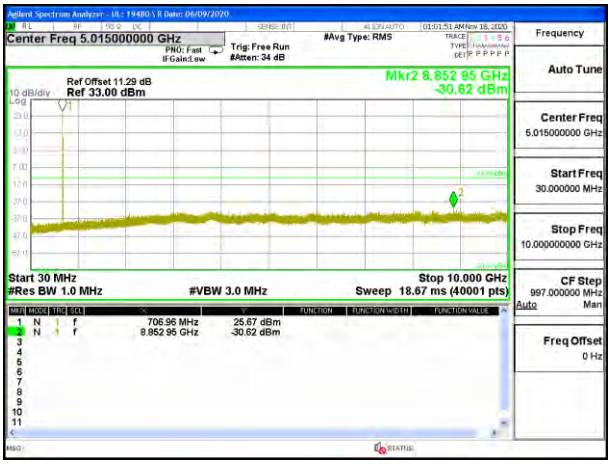
ISED: RSS130§4.7
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



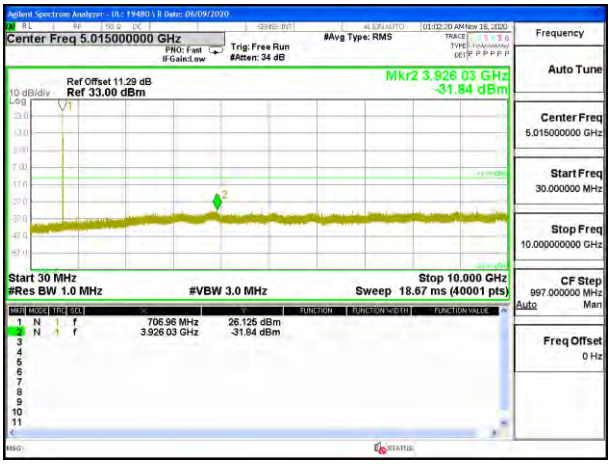
LTE B12 1.4MHz QPSK Low Channel RB1-0



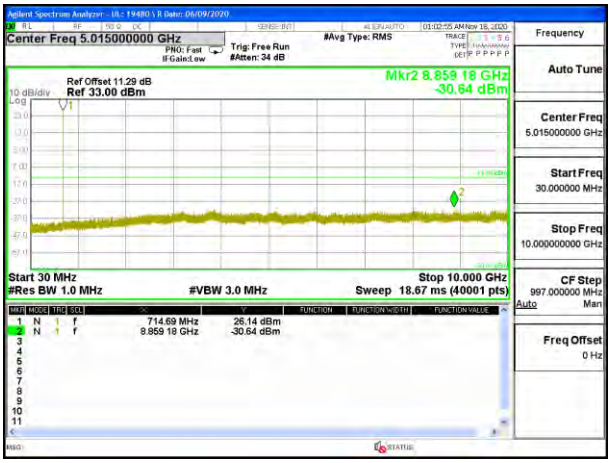
LTE B12 1.4MHz 16QAM Low Channel RB1-0



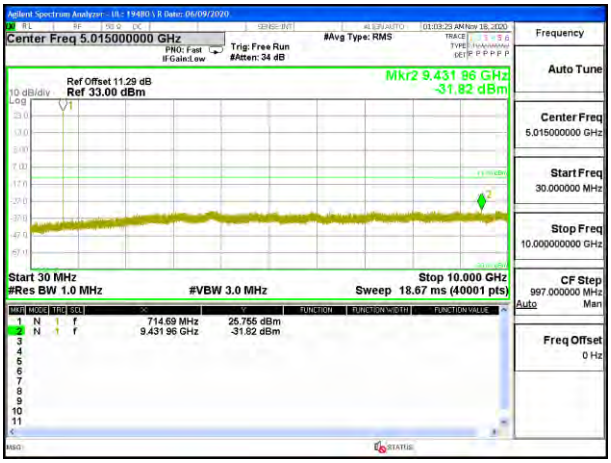
LTE B12 1.4MHz QPSK Middle Channel RB1-0



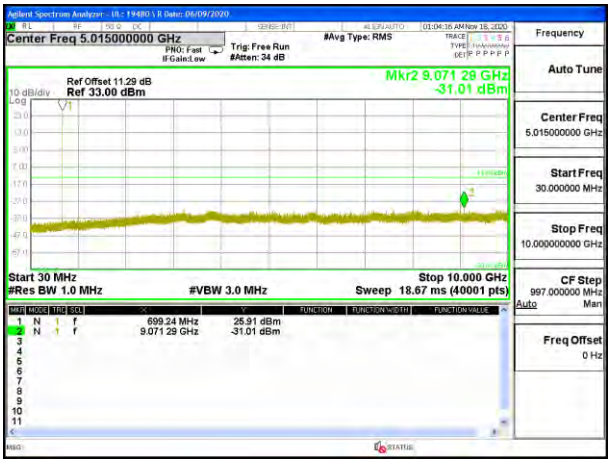
LTE B12 1.4MHz 16QAM Middle Channel RB1-0



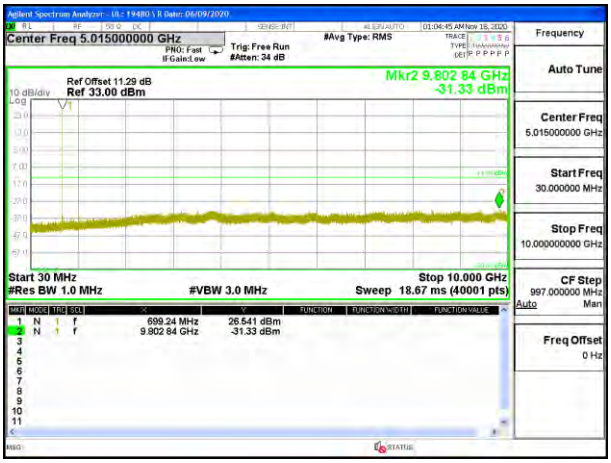
LTE B12 1.4MHz QPSK High Channel RB1-0



LTE B12 1.4MHz 16QAM High Channel RB1-0



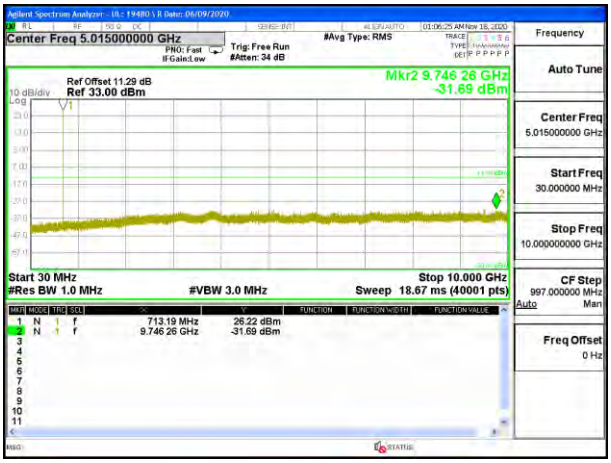
LTE B12 3MHz QPSK Low Channel RB1-0



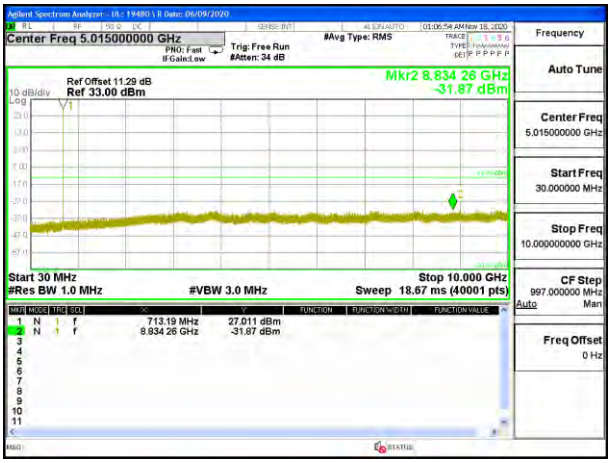
LTE B12 3MHz 16QAM Low Channel RB1-0

LTE B12 3MHz QPSK Middle Channel RB1-0

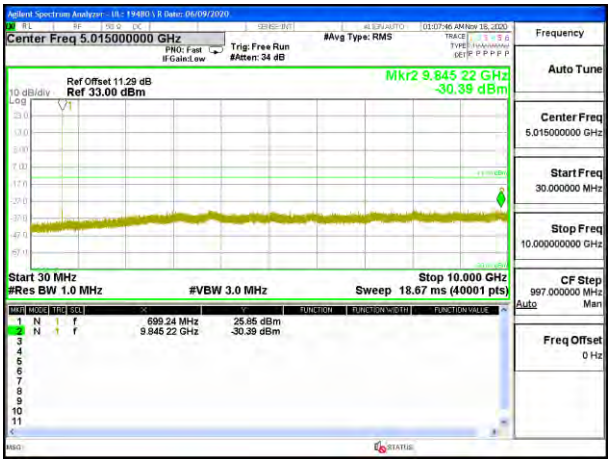
LTE B12 3MHz 16QAM Middle Channel RB1-0



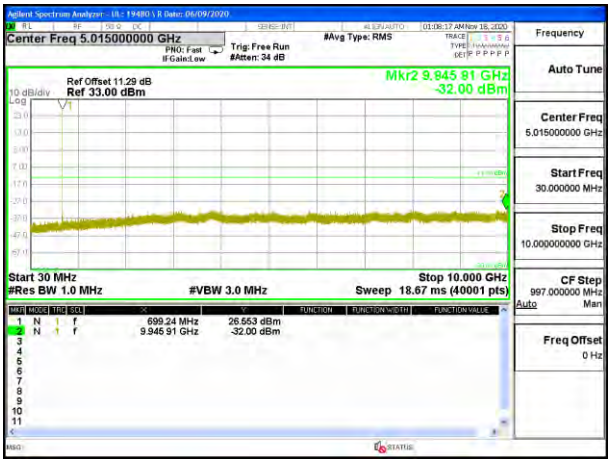
LTE B12 3MHz QPSK High Channel RB1-0



LTE B12 3MHz 16QAM High Channel RB1-0

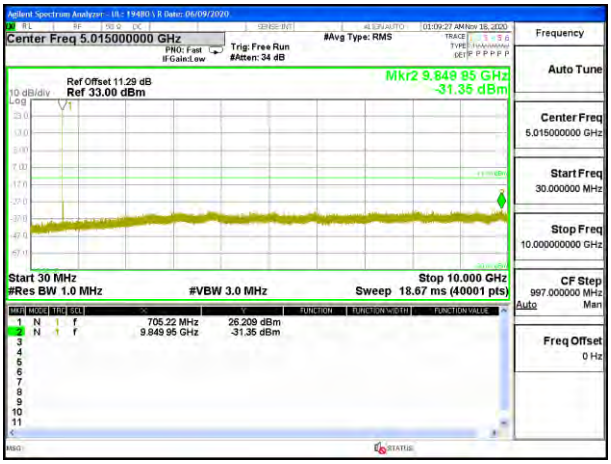


LTE B12 5MHz QPSK Low Channel RB1-0

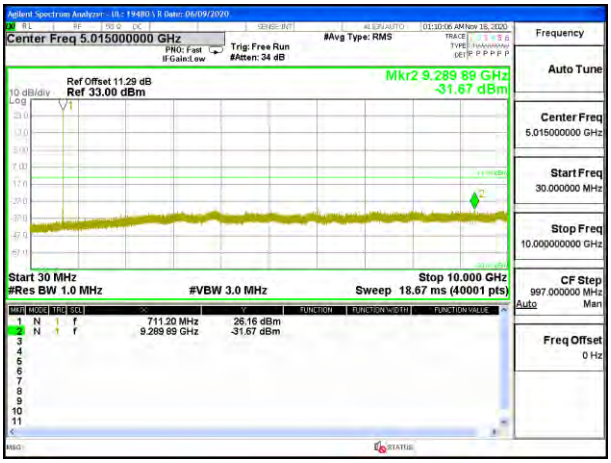


LTE B12 5MHz 16QAM Low Channel RB1-0

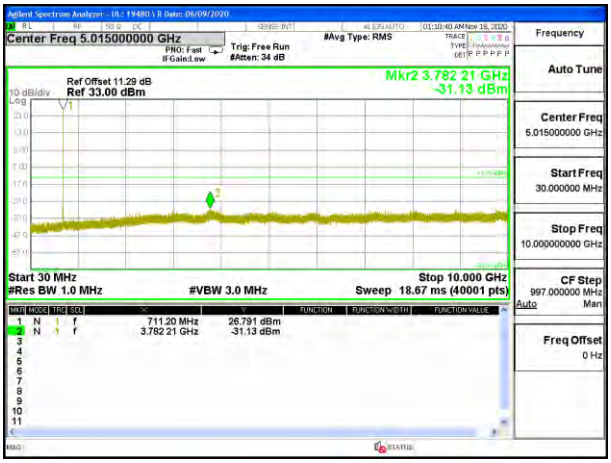
LTE B12 5MHz QPSK Middle Channel RB1-0



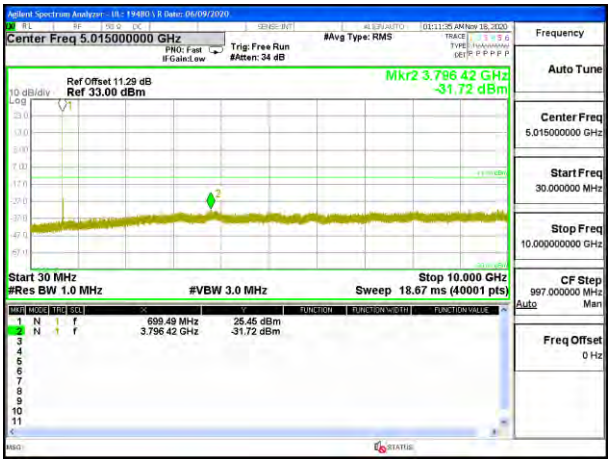
LTE B12 5MHz 16QAM Middle Channel RB1-0



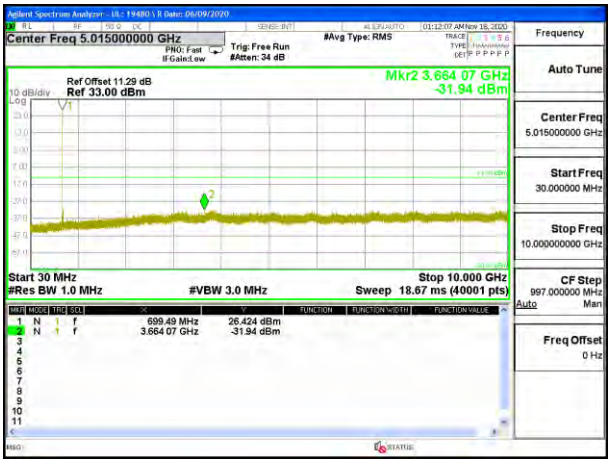
LTE B12 5MHz QPSK High Channel RB1-0



LTE B12 5MHz 16QAM High Channel RB1-0

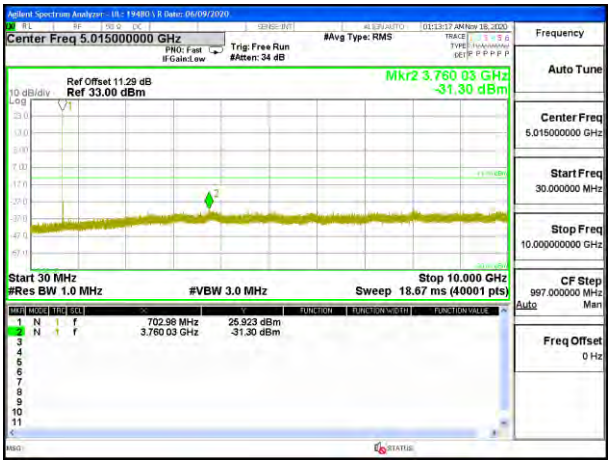


LTE B12 10MHz QPSK Low Channel RB1-0

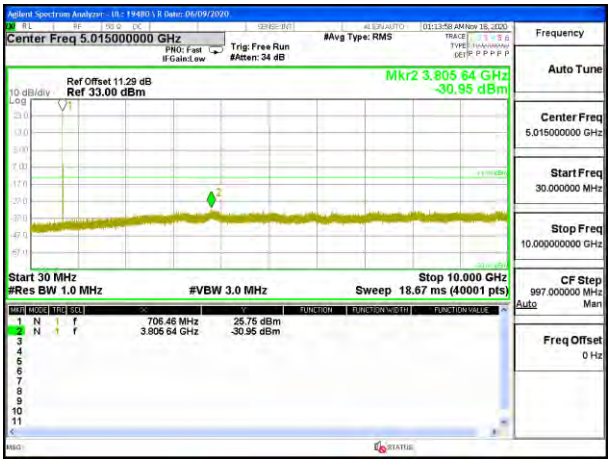


LTE B12 10MHz 16QAM Low Channel RB1-0

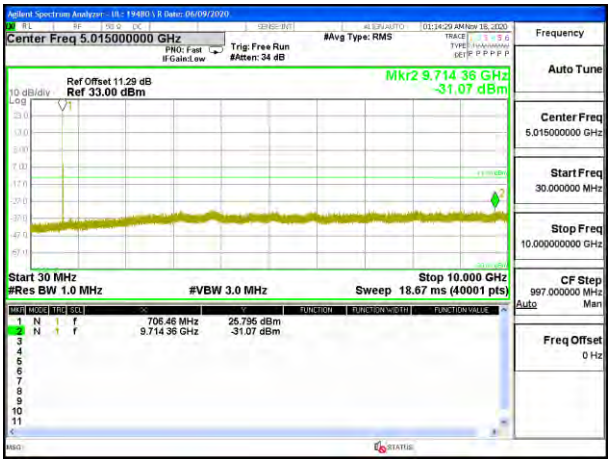
LTE B12 10MHz QPSK Middle Channel RB1-0



LTE B12 10MHz 16QAM Middle Channel RB1-0



LTE B12 10MHz QPSK High Channel RB1-0

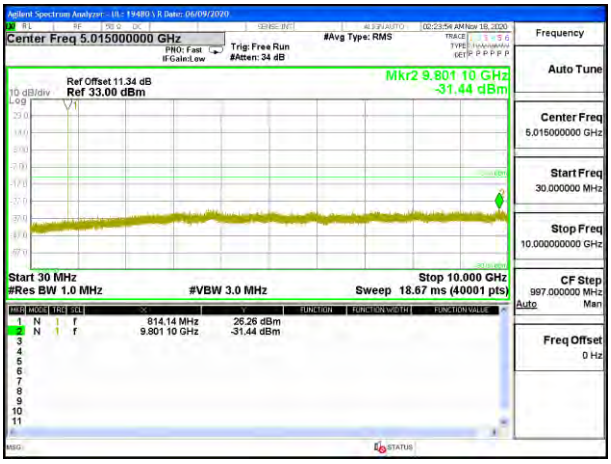


LTE B12 10MHz 16QAM High Channel RB1-0

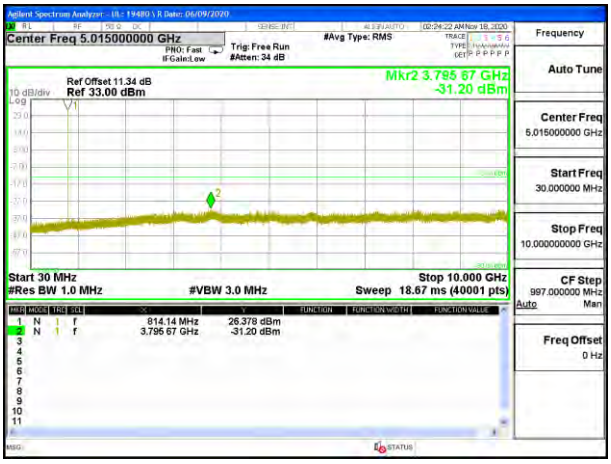
8.3.9. LTE BAND 26 (FCC PART 90S)

LIMITS

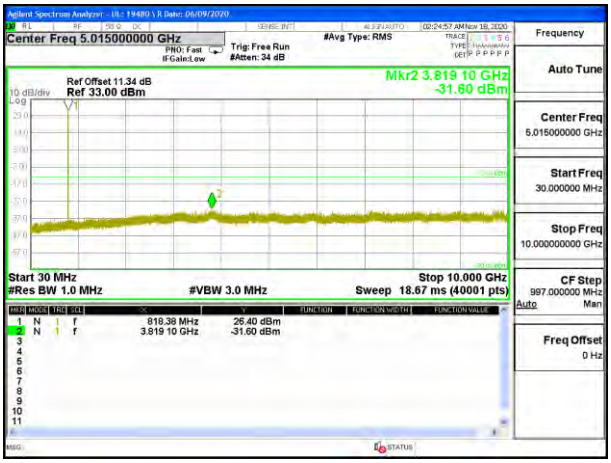
FCC: §90.691
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



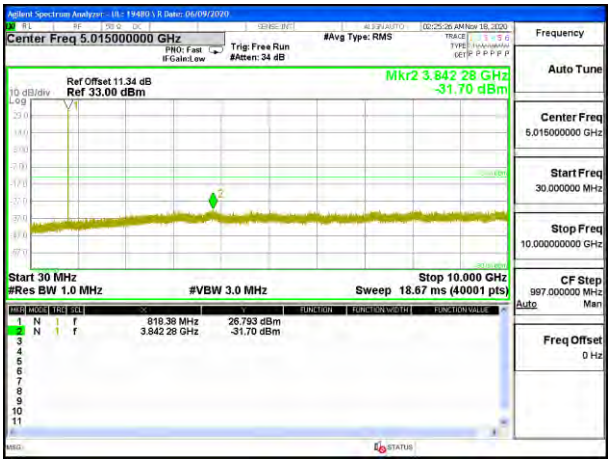
LTE B26 1.4MHz QPSK Low Channel RB1-0



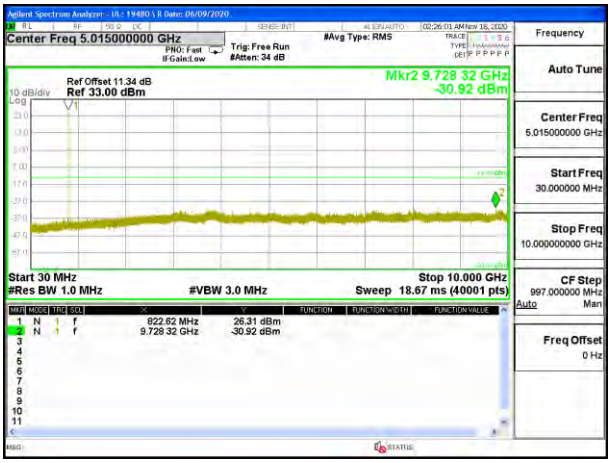
LTE B26 1.4MHz 16QAM Low Channel RB1-0



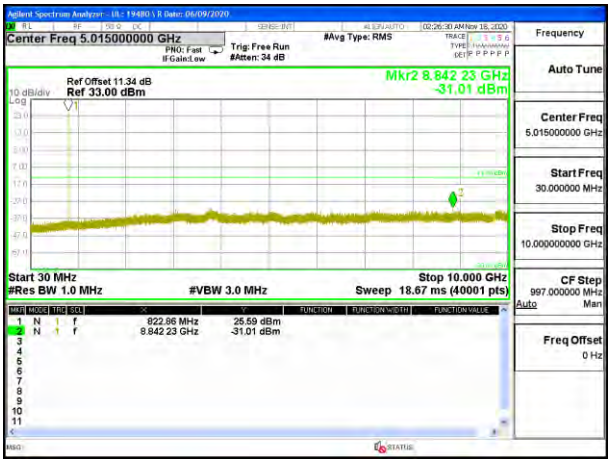
LTE B26 1.4MHz QPSK Middle Channel RB1-0



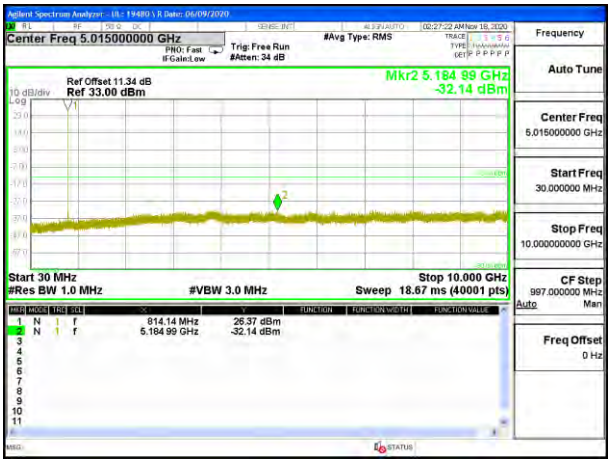
LTE B26 1.4MHz 16QAM Middle Channel RB1-0



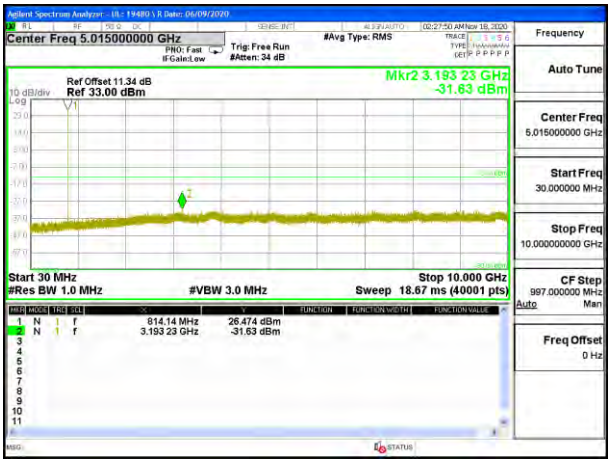
LTE B26 1.4MHz QPSK High Channel RB1-0



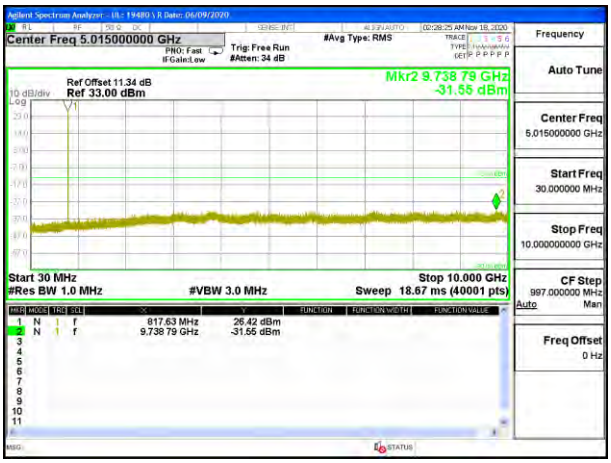
LTE B26 1.4MHz 16QAM High Channel RB1-0



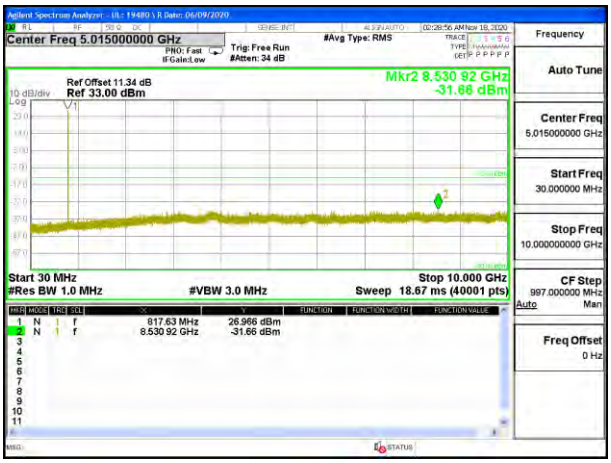
LTE B26 3MHz QPSK Low Channel RB1-0



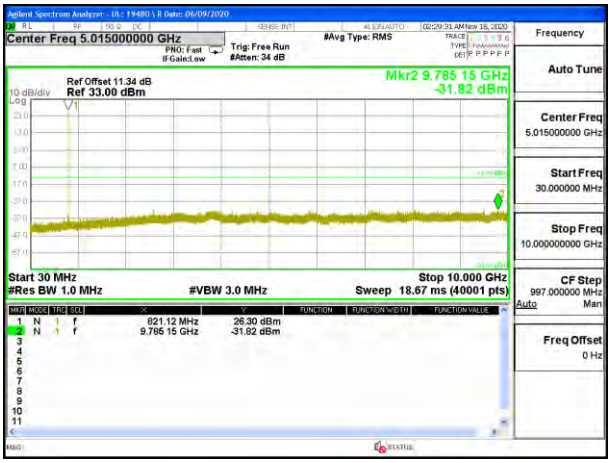
LTE B26 3MHz 16QAM Low Channel RB1-0



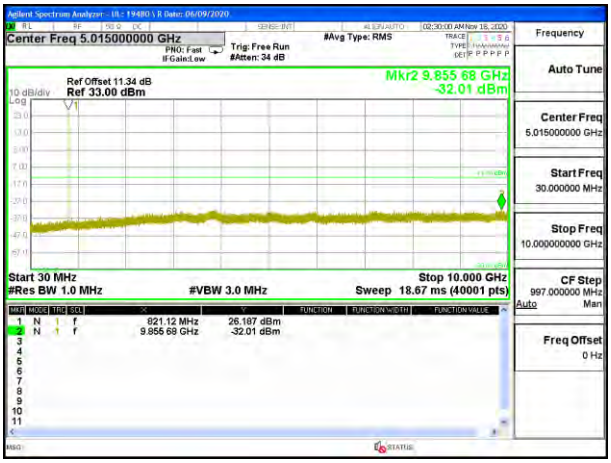
LTE B26 3MHz QPSK Middle Channel RB1-0



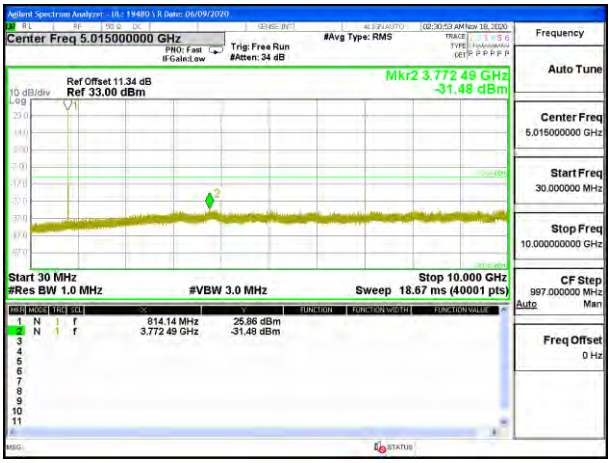
LTE B26 3MHz 16QAM Middle Channel RB1-0



LTE B26 3MHz QPSK High Channel RB1-0

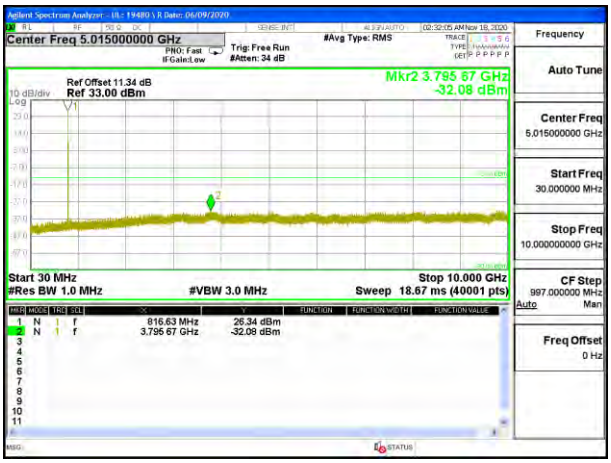


LTE B26 3MHz 16QAM High Channel RB1-0

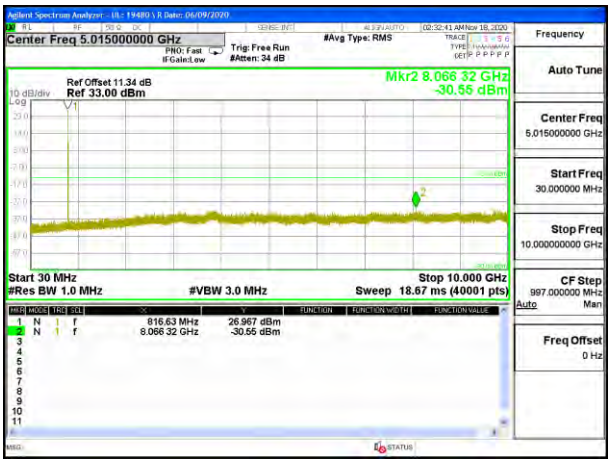


LTE B26 5MHz QPSK Low Channel RB1-0

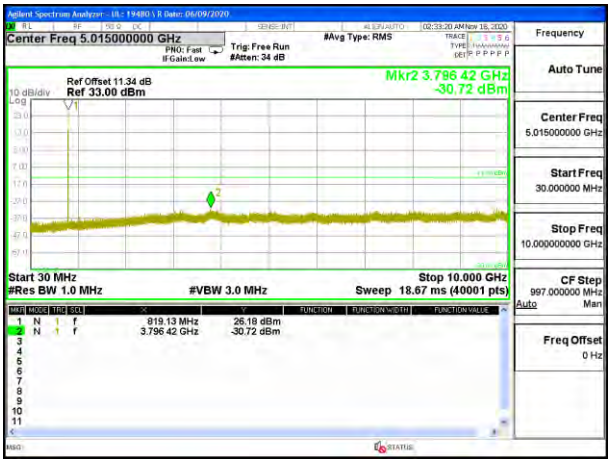
LTE B26 5MHz 16QAM Low Channel RB1-0



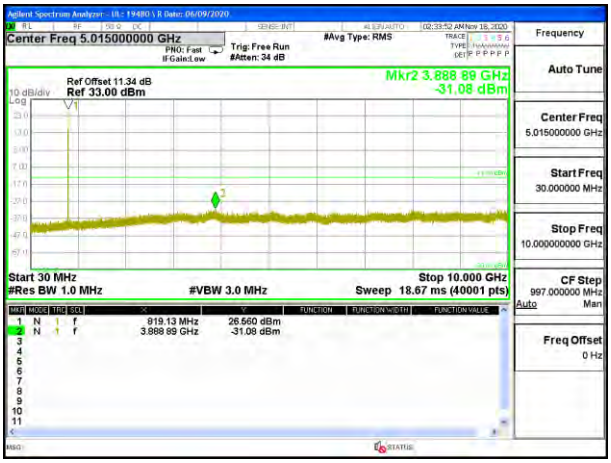
LTE B26 5MHz QPSK Middle Channel RB1-0



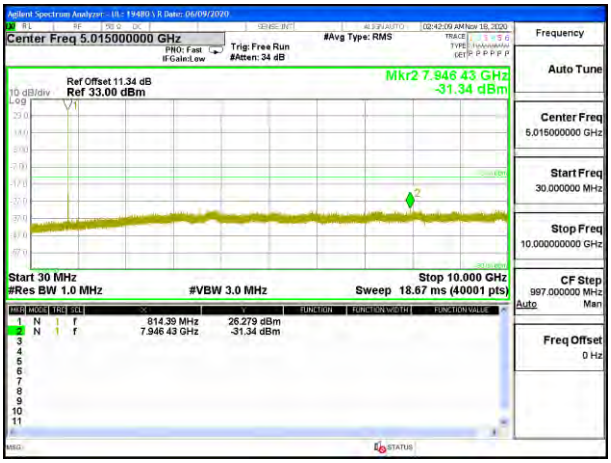
LTE B26 5MHz 16QAM Middle Channel RB1-0



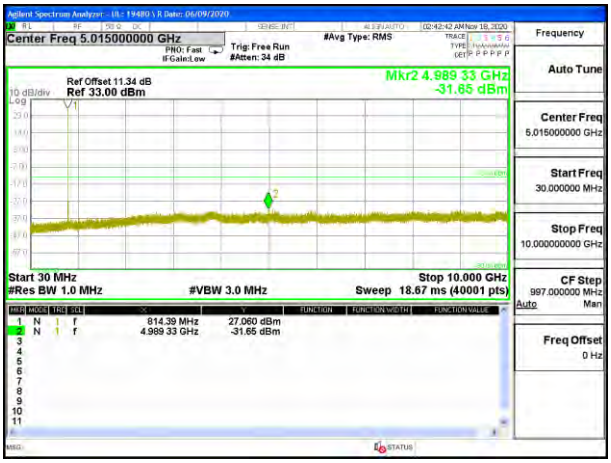
LTE B26 5MHz QPSK High Channel RB1-0



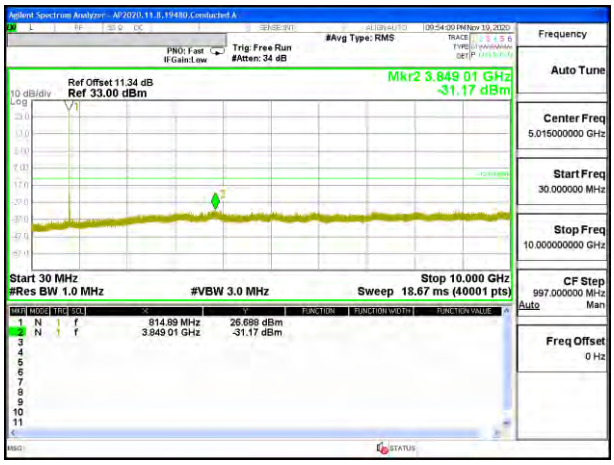
LTE B26 5MHz 16QAM High Channel RB1-0



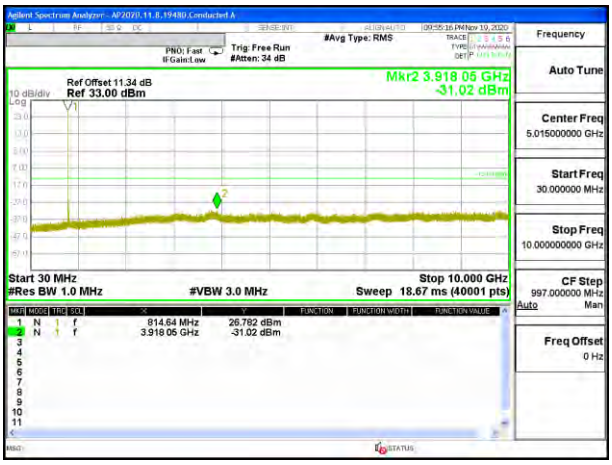
LTE B26 10MHz QPSK Middle Channel RB1-0



LTE B26 10MHz 16QAM Middle Channel RB1-0



LTE B26 15MHz QPSK Middle Channel RB1-0

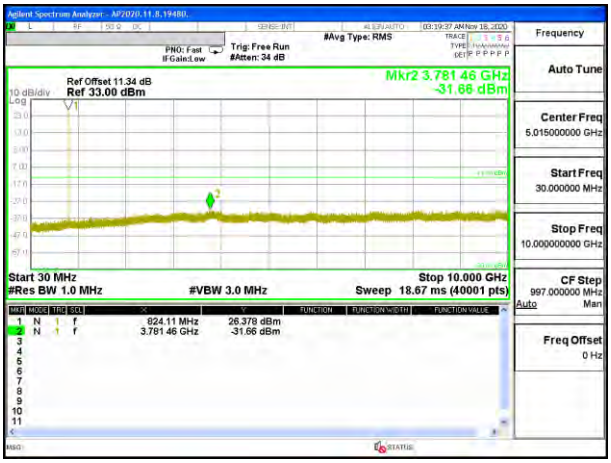


LTE B26 15MHz 16QAM Middle Channel RB1-0

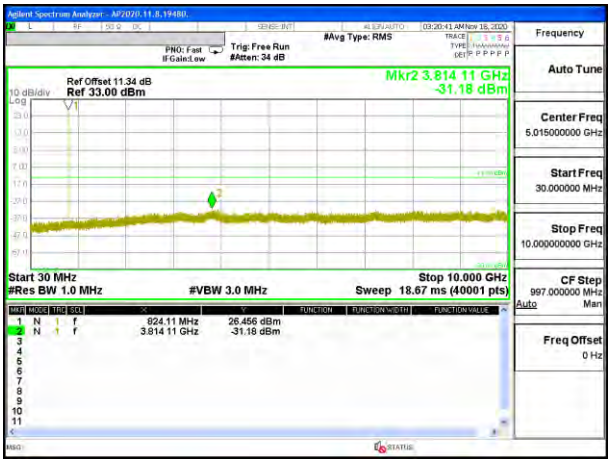
8.3.10. LTE BAND 26 (FCC PART 22)

LIMITS

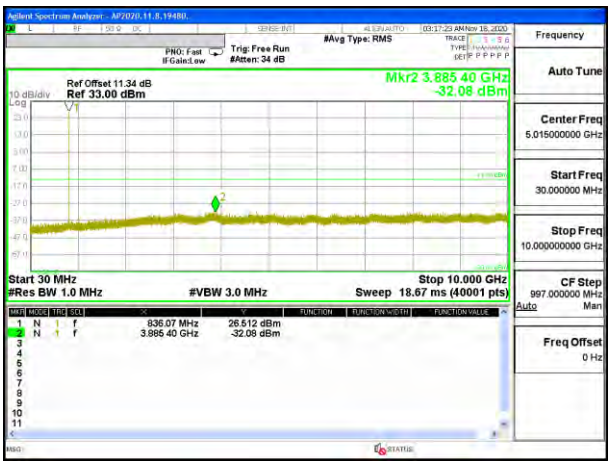
FCC: §22.917
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.



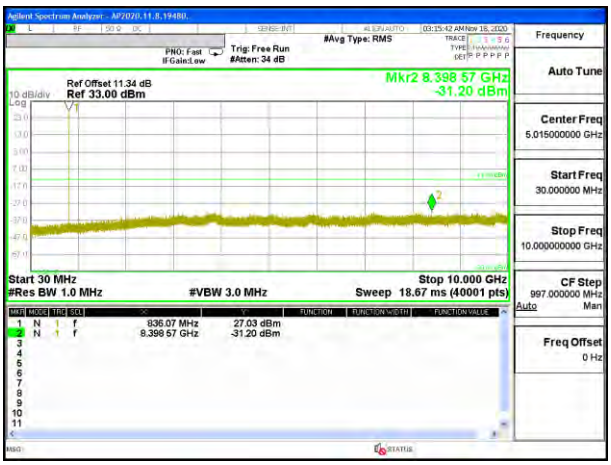
LTE B26 1.4MHz QPSK Low Channel RB1-0



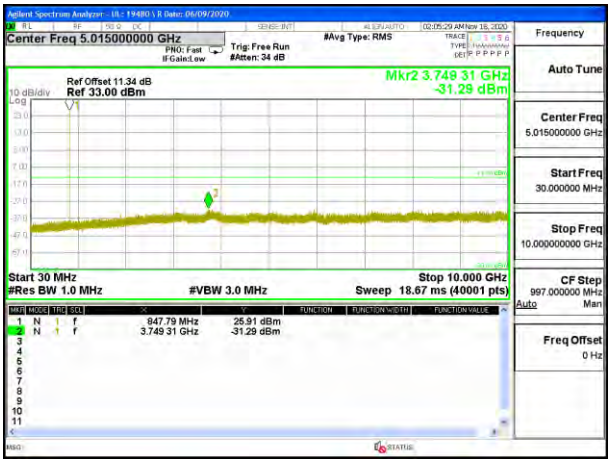
LTE B26 1.4MHz 16QAM Low Channel RB1-0



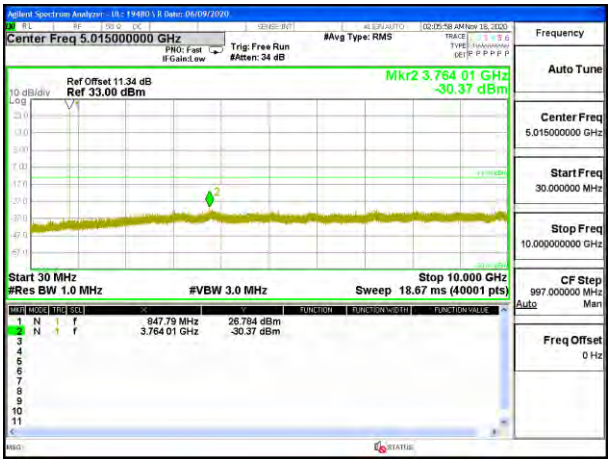
LTE B26 1.4MHz QPSK Middle Channel RB1-0



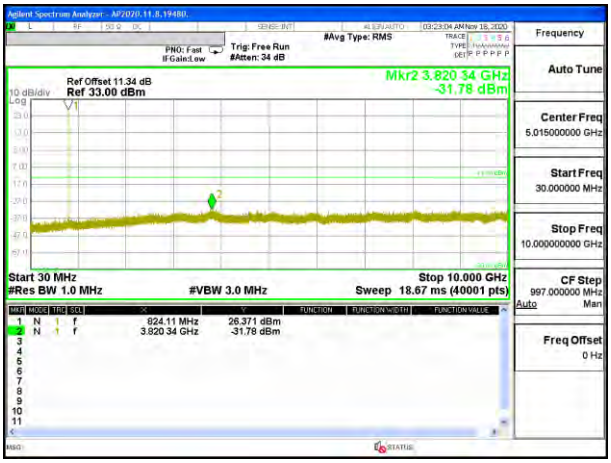
LTE B26 1.4MHz 16QAM Middle Channel RB1-0



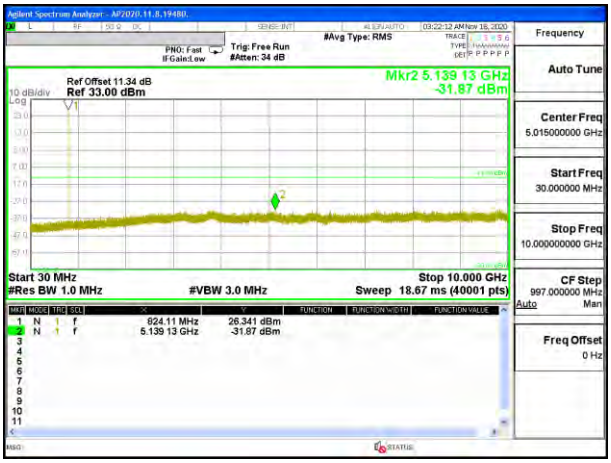
LTE B26 1.4MHz QPSK High Channel RB1-0



LTE B26 1.4MHz 16QAM High Channel RB1-0

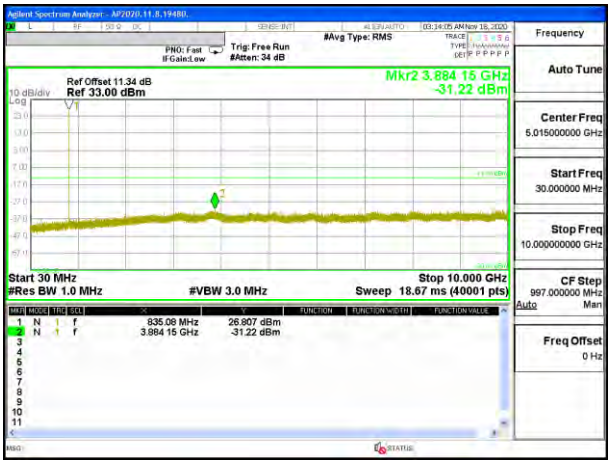


LTE B26 3MHz QPSK Low Channel RB1-0

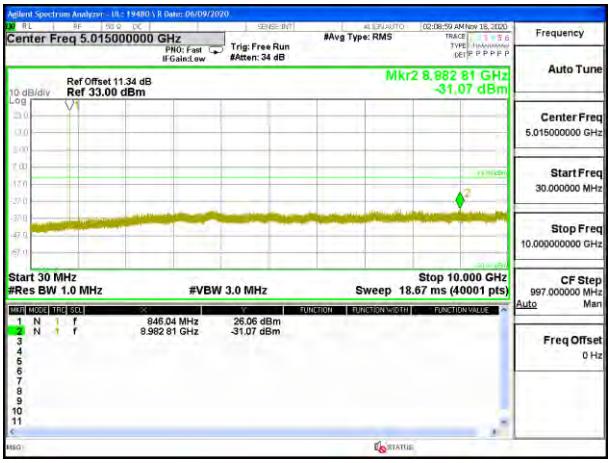


LTE B26 3MHz 16QAM Low Channel RB1-0

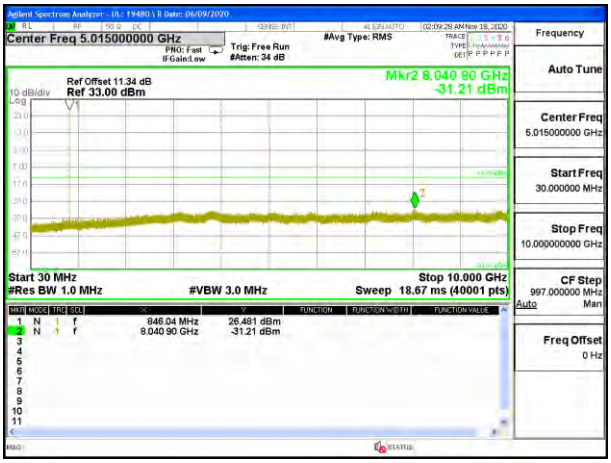
LTE B26 3MHz QPSK Middle Channel RB1-0



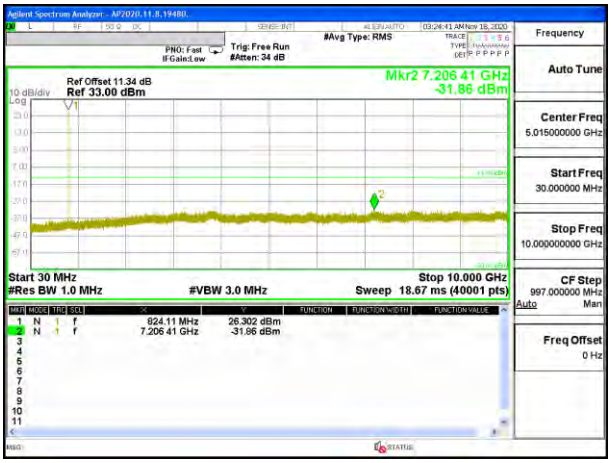
LTE B26 3MHz 16QAM Middle Channel RB1-0



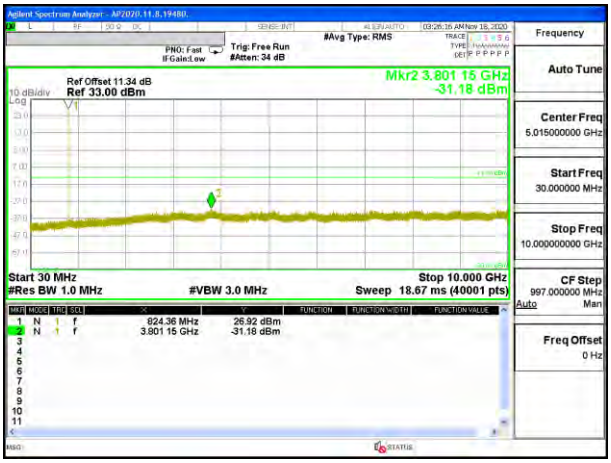
LTE B26 3MHz QPSK High Channel RB1-0



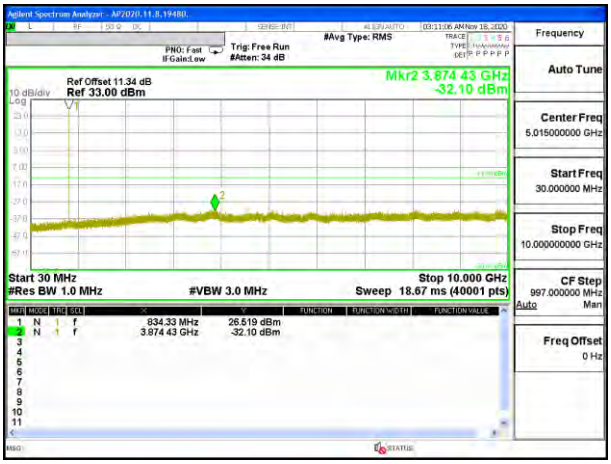
LTE B26 3MHz 16QAM High Channel RB1-0



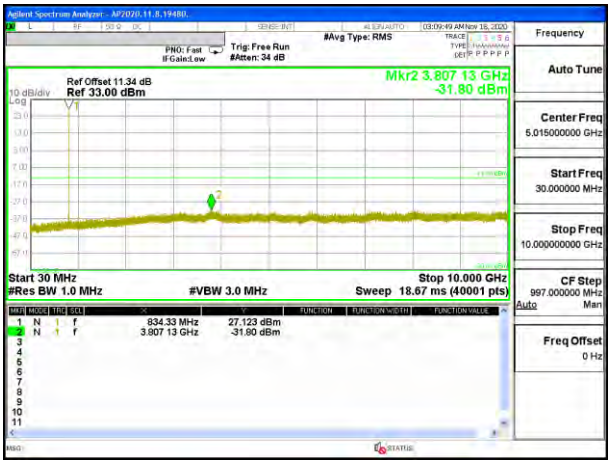
LTE B26 5MHz QPSK Low Channel RB1-0



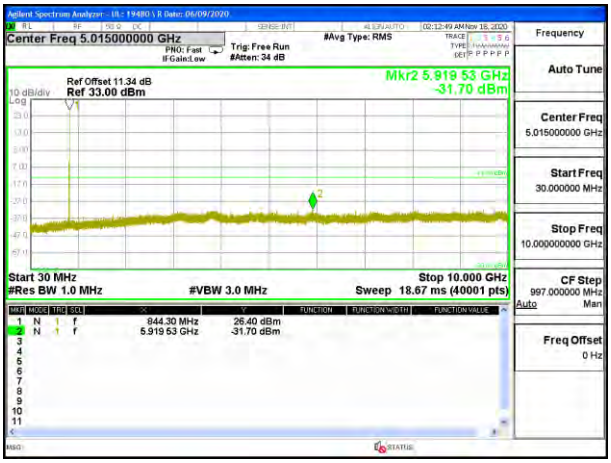
LTE B26 5MHz 16QAM Low Channel RB1-0



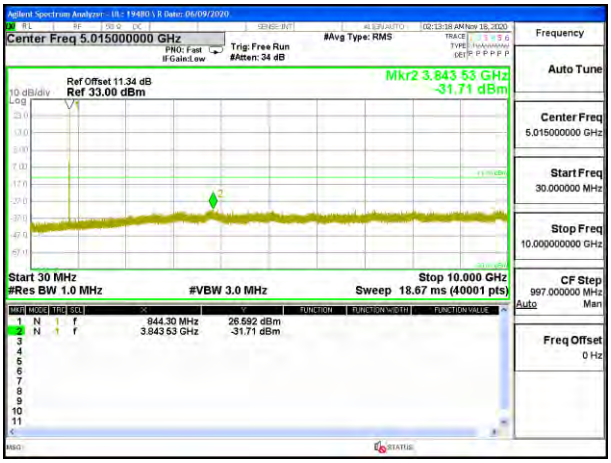
LTE B26 5MHz QPSK Middle Channel RB1-0



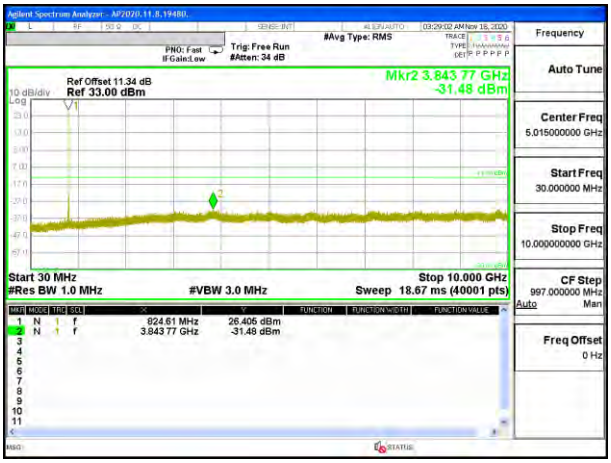
LTE B26 5MHz 16QAM Middle Channel RB1-0



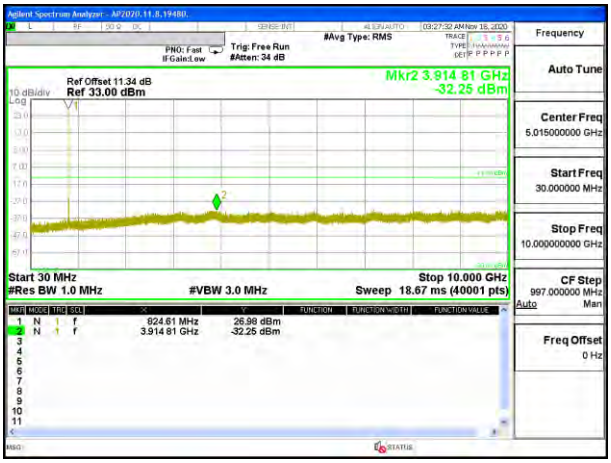
LTE B26 5MHz QPSK High Channel RB1-0



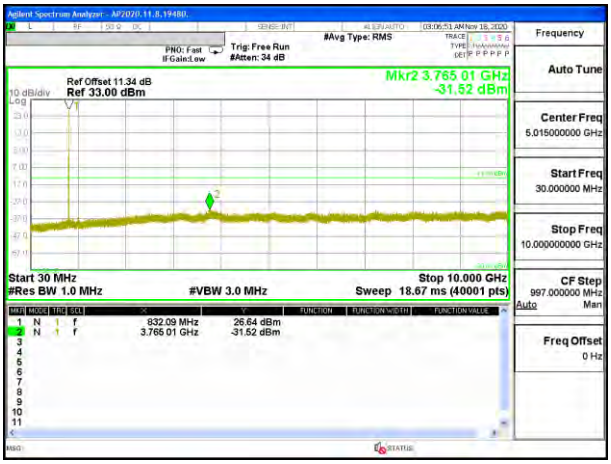
LTE B26 5MHz 16QAM High Channel RB1-0



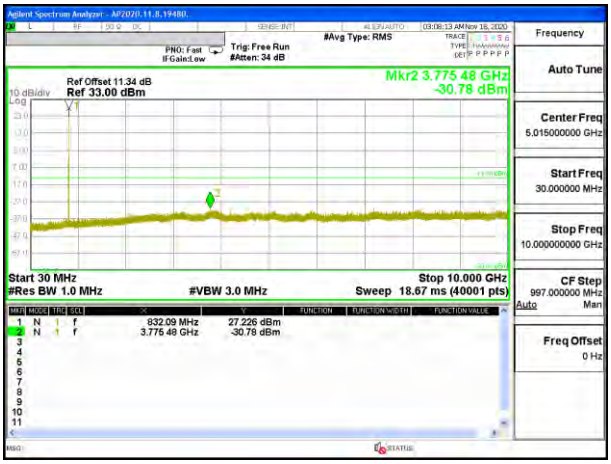
LTE B26 10MHz QPSK Low Channel RB1-0



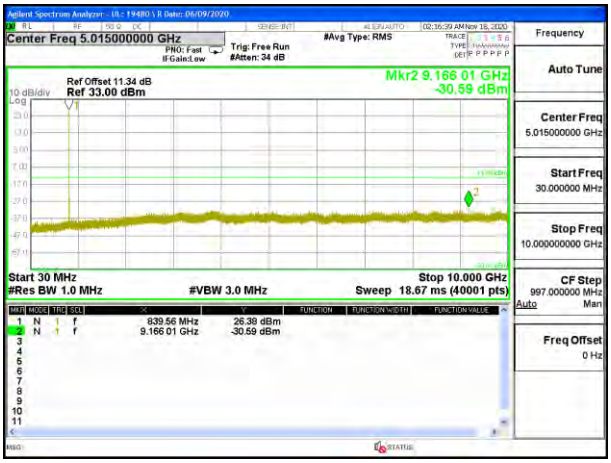
LTE B26 10MHz 16QAM Low Channel RB1-0



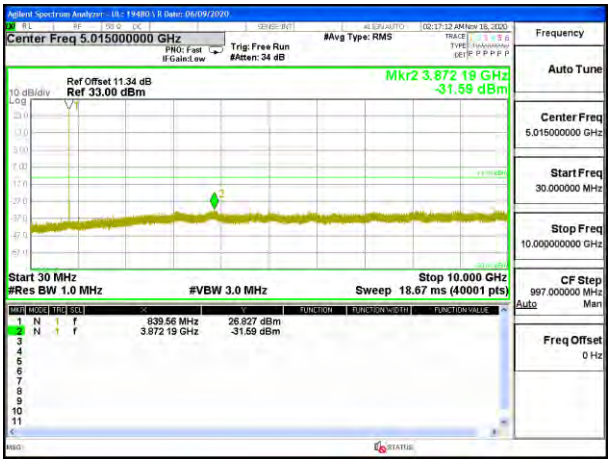
LTE B26 10MHz QPSK Middle Channel RB1-0



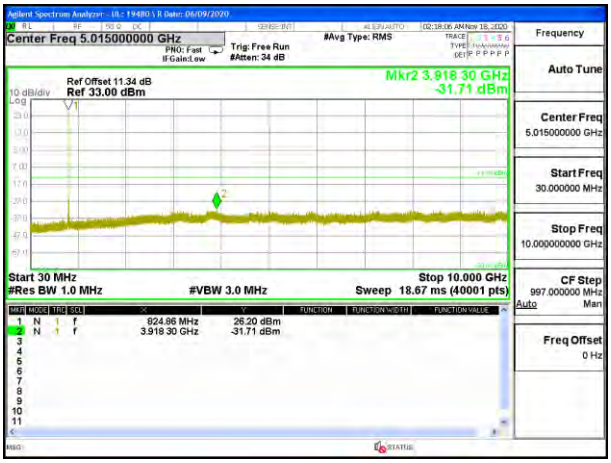
LTE B26 10MHz 16QAM Middle Channel RB1-0



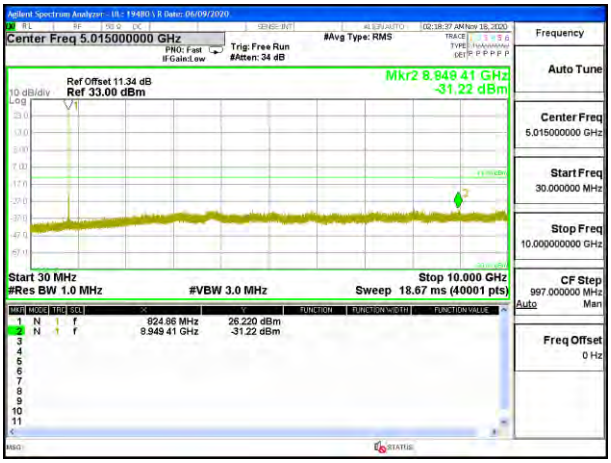
LTE B26 10MHz QPSK High Channel RB1-0



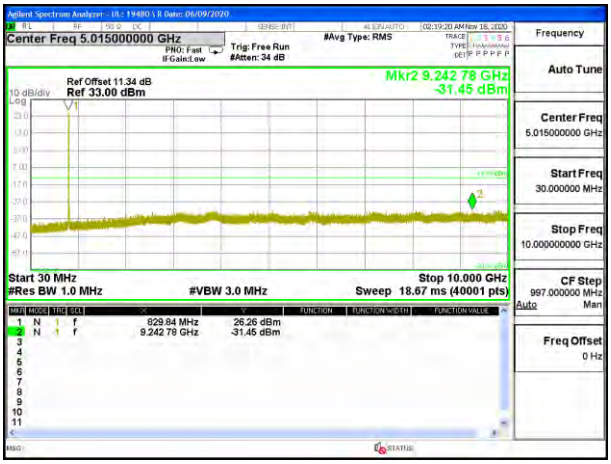
LTE B26 10MHz 16QAM High Channel RB1-0



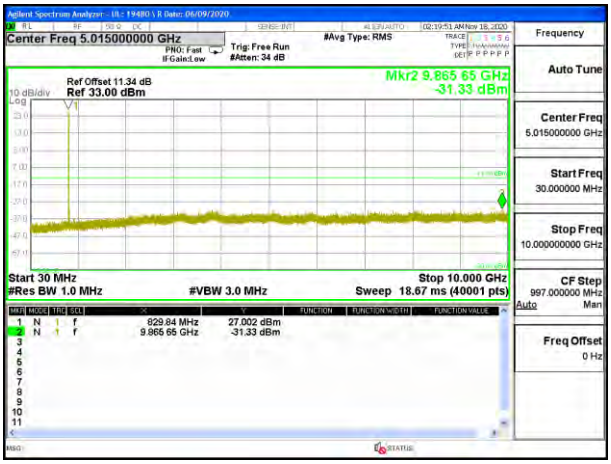
LTE B26 15MHz QPSK Low Channel RB1-0



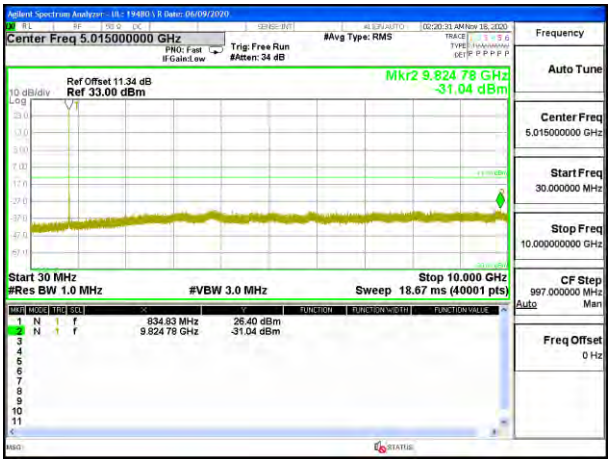
LTE B26 15MHz 16QAM Low Channel RB1-0



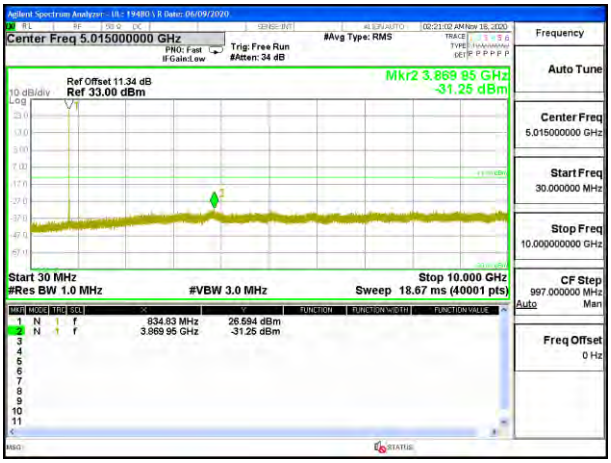
LTE B26 15MHz QPSK Middle Channel RB1-0



LTE B26 15MHz 16QAM Middle Channel RB1-0



LTE B26 15MHz QPSK High Channel RB1-0



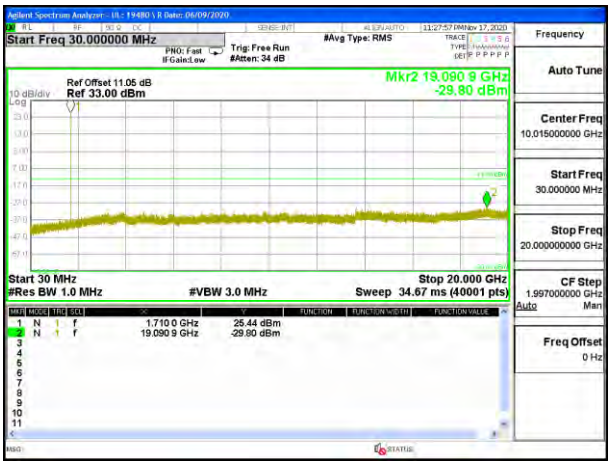
LTE B26 15MHz 16QAM High Channel RB1-0

8.3.11. LTE BAND 66 AND 5G NR BAND n66

LIMITS

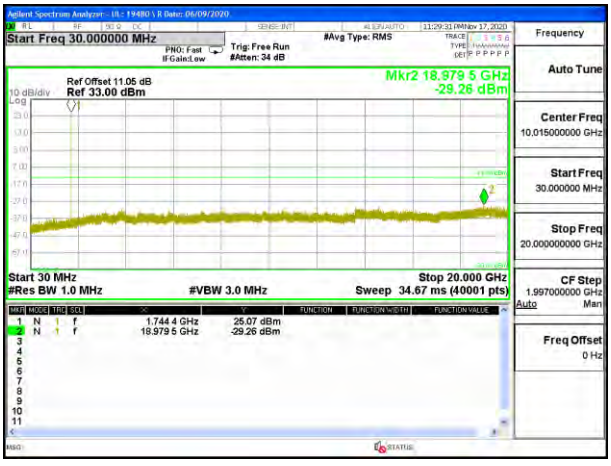
FCC: §27.53 (h)
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.
ISED: RSS139§6.6
The minimum permissible attenuation level of any spurious emissions is 43 + 10 log (P) dB where transmitting power (P) in Watts.

LTE BAND 66

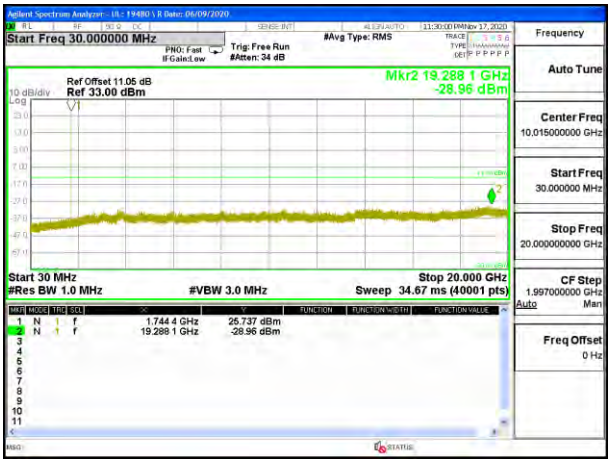


LTE B66 1.4MHz QPSK Low Channel RB1-0

LTE B66 1.4MHz 16QAM Low Channel RB1-0



LTE B66 1.4MHz QPSK Middle Channel RB1-0



LTE B66 1.4MHz 16QAM Middle Channel RB1-0

LTE B66 1.4MHz QPSK High Channel RB1-0

LTE B66 1.4MHz 16QAM High Channel RB1-0

LTE B66 3MHz QPSK Low Channel RB1-0

LTE B66 3MHz 16QAM Low Channel RB1-0

LTE B66 3MHz QPSK Middle Channel RB1-0

LTE B66 3MHz 16QAM Middle Channel RB1-0

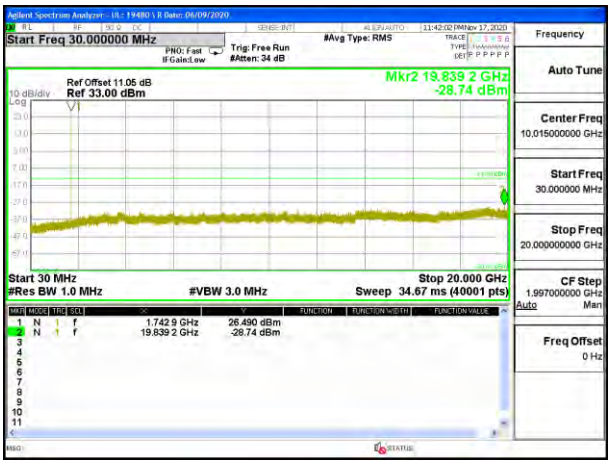
LTE B66 3MHz QPSK High Channel RB1-0

LTE B66 3MHz 16QAM High Channel RB1-0

LTE B66 5MHz QPSK Low Channel RB1-0

LTE B66 5MHz 16QAM Low Channel RB1-0

LTE B66 5MHz QPSK Middle Channel RB1-0



LTE B66 5MHz 16QAM Middle Channel RB1-0

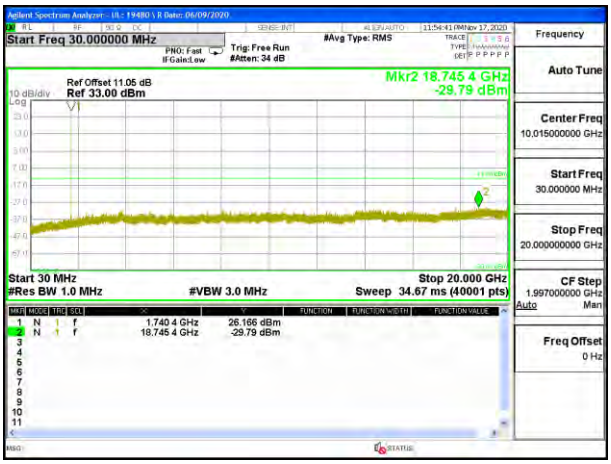
LTE B66 5MHz QPSK High Channel RB1-0

LTE B66 5MHz 16QAM High Channel RB1-0

LTE B66 10MHz QPSK Low Channel RB1-0

LTE B66 10MHz 16QAM Low Channel RB1-0

LTE B66 10MHz QPSK Middle Channel RB1-0



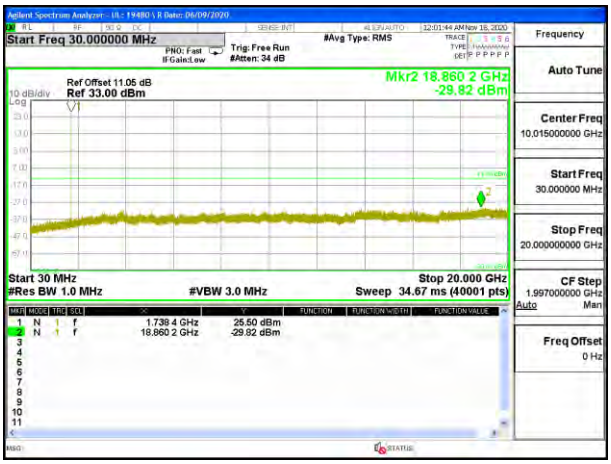
LTE B66 10MHz 16QAM Middle Channel RB1-0

LTE B66 10MHz QPSK High Channel RB1-0

LTE B66 10MHz 16QAM High Channel RB1-0

LTE B66 15MHz QPSK Low Channel RB1-0

LTE B66 15MHz 16QAM Low Channel RB1-0



LTE B66 15MHz QPSK Middle Channel RB1-0

LTE B66 15MHz 16QAM Middle Channel RB1-0

LTE B66 15MHz QPSK High Channel RB1-0

LTE B66 15MHz 16QAM High Channel RB1-0

LTE B66 20MHz QPSK Low Channel RB1-0

LTE B66 20MHz 16QAM Low Channel RB1-0

LTE B66 20MHz QPSK Middle Channel RB1-0

LTE B66 20MHz 16QAM Middle Channel RB1-0

LTE B66 20MHz QPSK High Channel RB1-0

LTE B66 20MHz 16QAM High Channel RB1-0

5G NR BAND n66

5G NR Band n66 5MHz BPSK Low Channel RB1-1

5G NR Band n66 5MHz 16QAM Low Channel RB1-1

5G NR Band n66 5MHz BPSK Middle Channel RB1-1

5G NR Band n66 5MHz 16QAM Middle Channel RB1-1

5G NR Band n66 5MHz BPSK High Channel RB1-1

5G NR Band n66 5MHz 16QAM High Channel RB1-1

5G NR Band n66 10MHz BPSK Low Channel RB1-1

5G NR Band n66 10MHz 16QAM Low Channel RB1-1

5G NR Band n66 10MHz BPSK Middle Channel RB1-1

5G NR Band n66 10MHz 16QAM Middle Channel RB1-1

5G NR Band n66 10MHz BPSK High Channel RB1-1

5G NR Band n66 10MHz 16QAM High Channel RB1-1

5G NR Band n66 15MHz BPSK Low Channel RB1-1

5G NR Band n66 15MHz 16QAM Low Channel RB1-1

5G NR Band n66 15MHz BPSK Middle Channel RB1-1

5G NR Band n66 15MHz 16QAM Middle Channel RB1-1

5G NR Band n66 15MHz BPSK High Channel RB1-1

5G NR Band n66 15MHz 16QAM High Channel RB1-1

5G NR Band n66 20MHz BPSK Low Channel RB1-1

5G NR Band n66 20MHz 16QAM Low Channel RB1-1

5G NR Band n66 20MHz BPSK Middle Channel RB1-1

5G NR Band n66 20MHz 16QAM Middle Channel RB1-1

5G NR Band n66 20MHz BPSK High Channel RB1-1

5G NR Band n66 20MHz 16QAM High Channel RB1-1

8.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54, §90.213
ISED: RSS130§4.5, RSS132§5.3; RSS133§6.3, RSS139§6.4

LIMITS

FCC: §22.355, §90.213
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

FCC: §24.235 & §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

RSS130§4.5
For equipment that is capable of transmitting numerous channels simultaneously for different applications (e.g. LTE and narrowband – Internet of Things (IoT)), the occupied bandwidth shall be the bandwidth representing the sum of the occupied bandwidths of these channels.

The frequency stability shall be sufficient to ensure that the occupied bandwidth remains within each frequency block range when tested at the temperature and supply voltage variations specified in RSS-Gen.

RSS132§5.3
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 SRSP for mobile stations and±1.5 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the occupied bandwidth stays within each of the sub-bands (see Section 5.1) when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS133§6.3
The carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS139§6.4, RSS140§4.2
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.

The applicant shall ensure frequency stability by showing that fL minus the frequency offset and fH plus the frequency offset shall be within the frequency range that the equipment is designed to operate.

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30°C to +50°C
- Voltage = (85% - 115%)

  Low voltage, 3.65DC, Normal, 3.86VDC and High voltage, 4.4VDC.
  End Voltage, 2.65VDC.

Frequency Stability vs Temperature:
The EUT is place inside a temperature chamber. The temperature is set to 20ºC and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50ºC is reached.

Frequency Stability vs Voltage:
The peak frequency error is recorded (worst-case).

RESULTS

See the following pages.

8.4.1. GSM

Test Engineer ID:	39005	Test Date:	11/20/2020

GPRS 850

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)		824.0398	848.9556		
Extreme (50C)		824.0398	848.9557	18.0	0.022
Extreme (40C)		824.0398	848.9557	18.3	0.022
Extreme (30C)		824.0398	848.9557	25.0	0.030
Extreme (10C)	Normal	824.0398	848.9557	23.5	0.028
Extreme (0C)		824.0398	848.9557	21.6	0.026
Extreme (-10C)		824.0398	848.9557	20.6	0.025
Extreme (-20C)		824.0398	848.9557	16.5	0.020
Extreme (-30C)		824.0398	848.9557	15.2	0.018
	15%	824.0398	848.9557	24.0	0.029
20C	-15%	824.0398	848.9557	21.3	0.025
	End Point	824.0398	848.9557	24.0	0.029

GPRS 1900

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)		1850.0470	1909.9576		
Extreme (50C)		1850.0470	1909.9576	16.5	0.009
Extreme (40C)		1850.0470	1909.9576	15.4	0.008
Extreme (30C)		1850.0470	1909.9576	18.5	0.010
Extreme (10C)	Normal	1850.0470	1909.9576	24.8	0.013
Extreme (0C)		1850.0470	1909.9576	27.0	0.014
Extreme (-10C)		1850.0470	1909.9576	24.0	0.013
Extreme (-20C)		1850.0470	1909.9576	22.0	0.012
Extreme (-30C)		1850.0470	1909.9576	18.0	0.010
	15%	1850.0470	1909.9576	24.1	0.013
20C	-15%	1850.0470	1909.9576	26.0	0.014
	End Point	1850.0470	1909.9576	26.8	0.014

8.4.2. WCDMA

Test Engineer ID:	39005	Test Date:	11/23/2020

WCDMA REL 99 BAND 5

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.0958	848.9006		
Extreme (50C)		824.0958	848.9006	-3.0	-0.0036
Extreme (40C)		824.0958	848.9006	-3.2	-0.0038
Extreme (30C)		824.0958	848.9006	-5.3	-0.0064
Extreme (10C)		824.0958	848.9006	-6.9	-0.0083
Extreme (0C)		824.0958	848.9006	-4.4	-0.0052
Extreme (-10C)		824.0958	848.9006	-4.0	-0.0048
Extreme (-20C)		824.0958	848.9006	-4.2	-0.0050
Extreme (-30C)		824.0958	848.9006	-4.9	-0.0059
20C	15%	824.0958	848.9006	-11.0	-0.0132
	-15%	824.0958	848.9006	-9.1	-0.0109
	End Point	824.0958	848.9006	-8.1	-0.0097

WCDMA REL 99 BAND 2

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.1029	1909.8941		
Extreme (50C)		1850.1030	1909.8941	15.1	0.0080
Extreme (40C)		1850.1030	1909.8941	16.5	0.0088
Extreme (30C)		1850.1030	1909.8941	17.7	0.0094
Extreme (10C)		1850.1030	1909.8941	16.5	0.0088
Extreme (0C)		1850.1030	1909.8941	13.7	0.0073
Extreme (-10C)		1850.1030	1909.8941	20.0	0.0106
Extreme (-20C)		1850.1030	1909.8941	19.6	0.0104
Extreme (-30C)		1850.1030	1909.8941	12.7	0.0067
20C	15%	1850.1030	1909.8941	16.3	0.0087
	-15%	1850.1030	1909.8941	17.0	0.0090
	End Point	1850.1030	1909.8941	16.3	0.0087

WCDMA REL 99 BAND 4

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.1127	1754.8888		
Extreme (50C)		1710.1127	1754.8888	19.3	0.0112
Extreme (40C)		1710.1127	1754.8888	16.5	0.0095
Extreme (30C)		1710.1127	1754.8888	18.3	0.0106
Extreme (10C)		1710.1127	1754.8888	18.3	0.0106
Extreme (0C)		1710.1127	1754.8888	16.3	0.0094
Extreme (-10C)		1710.1127	1754.8888	17.4	0.0101
Extreme (-20C)		1710.1127	1754.8888	18.4	0.0106
Extreme (-30C)		1710.1127	1754.8888	16.0	0.0092
20C	15%	1710.1127	1754.8888	15.9	0.0092
	-15%	1710.1127	1754.8888	14.9	0.0086
	End Point	1710.1127	1754.8888	15.4	0.0089

8.4.3. LTE BAND 2

LIMITS

FCC: §24.235
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

ISED: RSS133§6.3
The carrier frequency shall not depart from the reference frequency, in excess of ±2.5 ppm for mobile stations and ±1.0 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

Test Engineer ID:	39005	Test Date:	11/20/2020

QPSK (20MHz BANDWIDTH)

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1851.0213	1908.9824		
Extreme (50C)		1851.0213	1908.9824	9.5	0.005
Extreme (40C)		1851.0213	1908.9824	8.4	0.004
Extreme (30C)		1851.0213	1908.9824	8.5	0.005
Extreme (10C)		1851.0213	1908.9824	6.4	0.003
Extreme (0C)		1851.0213	1908.9823	-4.7	-0.002
Extreme (-10C)		1851.0213	1908.9824	6.3	0.003
Extreme (-20C)		1851.0213	1908.9824	5.5	0.003
Extreme (-30C)		1851.0213	1908.9824	5.5	0.003
20C	15%	1851.0213	1908.9824	6.8	0.004
	-15%	1851.0213	1908.9824	7.3	0.004
	End Point	1851.0213	1908.9824	6.8	0.004

8.4.4. LTE BAND 5 AND 5G NR BAND n5

LIMITS

FCC: §22.355
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

ISED: RSS132§5.3
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 SRSP for mobile stations and±1.5 ppm for base stations.
In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the occupied bandwidth stays within each of the sub-bands (see Section 5.1) when tested to the temperature and supply voltage variations specified in RSS-Gen.

Test Engineer ID:	39005	Test Date:	11/20/2020

LTE BAND 5 QPSK (10MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.4915	848.5061		
Extreme (50C)		824.4915	848.5061	-8.6	-0.010
Extreme (40C)		824.4915	848.5061	-9.3	-0.011
Extreme (30C)		824.4915	848.5061	-9.4	-0.011
Extreme (10C)		824.4915	848.5061	-8.7	-0.010
Extreme (0C)		824.4915	848.5061	-8.5	-0.010
Extreme (-10C)		824.4915	848.5061	-8.5	-0.010
Extreme (-20C)		824.4915	848.5061	-7.9	-0.009
Extreme (-30C)		824.4915	848.5061	-8.2	-0.010
20C	15%	824.4915	848.5061	-6.8	-0.008
	-15%	824.4915	848.5061	-9.6	-0.011
	End Point	824.4915	848.5061	-7.7	-0.009

5G NR BAND n5 BPSK (20MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.4646	847.4675		
Extreme (50C)		824.4646	847.4675	-8.7	-0.010
Extreme (40C)		824.4646	847.4675	-9.4	-0.011
Extreme (30C)		824.4646	847.4675	-8.3	-0.010
Extreme (10C)		824.4646	847.4675	-8.7	-0.010
Extreme (0C)		824.4646	847.4675	-8.5	-0.010
Extreme (-10C)		824.4646	847.4675	-8.8	-0.011
Extreme (-20C)		824.4646	847.4675	-10.0	-0.012
Extreme (-30C)		824.4646	847.4675	-8.2	-0.010
20C	15%	824.4646	847.4675	-6.9	-0.008
	-15%	824.4646	847.4675	-8.3	-0.010
	End Point	824.4646	847.4675	-7.7	-0.009

8.4.5. LTE BAND 12

LIMITS

FCC: §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

ISED: RSS130§4.5
For equipment that is capable of transmitting numerous channels simultaneously for different applications (e.g. LTE and narrowband – Internet of Things (IoT)), the occupied bandwidth shall be the bandwidth representing the sum of the occupied bandwidths of these channels.

The frequency stability shall be sufficient to ensure that the occupied bandwidth remains within each frequency block range when tested at the temperature and supply voltage variations specified in RSS-Gen.

Test Engineer ID:	39005	Test Date:	11/20/2020

QPSK (10MHz BANDWIDTH)

Limit		699	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	699.4945	715.5194		
Extreme (50C)		699.4946	715.5194	14.4	0.020
Extreme (40C)		699.4946	715.5194	13.9	0.020
Extreme (30C)		699.4946	715.5194	12.5	0.018
Extreme (10C)		699.4945	715.5194	10.6	0.015
Extreme (0C)		699.4945	715.5194	10.2	0.014
Extreme (-10C)		699.4945	715.5194	8.2	0.012
Extreme (-20C)		699.4945	715.5194	7.5	0.011
Extreme (-30C)		699.4945	715.5194	7.9	0.011
20C	15%	699.4945	715.5194	10.5	0.015
	-15%	699.4946	715.5194	12.3	0.017
	End Point	699.4946	715.5194	13.0	0.018

8.4.6. LTE BAND 26(FCC PART 90S)

LIMITS

FCC: §90.213
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

Test Engineer ID:	39005	Test Date:	11/20/2020

QPSK (5MHz BANDWIDTH)

Limit		814	824	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)		814.5009	823.5212		
Extreme (50C)		814.5009	823.5212	-8.2	-0.010
Extreme (40C)		814.5009	823.5212	-7.6	-0.009
Extreme (30C)		814.5009	823.5212	-8.3	-0.010
Extreme (10C)	Normal	814.5009	823.5212	-7.8	-0.010
Extreme (0C)		814.5009	823.5212	-8.5	-0.010
Extreme (-10C)		814.5009	823.5212	7.5	0.009
Extreme (-20C)		814.5009	823.5212	-6.8	-0.008
Extreme (-30C)		814.5009	823.5212	-7.9	-0.010
20C	15%	814.5009	823.5212	-7.6	-0.009
	-15%	814.5009	823.5212	-8.5	-0.010
	End Point	814.5009	823.5212	-6.5	-0.008

8.4.7. LTE BAND 26(FCC PART 22)

LIMITS

FCC: §22.355
The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

Test Engineer ID:	39005	Test Date:	11/23/2020

QPSK (15MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.7498	848.2565		
Extreme (50C)		824.7498	848.2565	12.8	0.015
Extreme (40C)		824.7498	848.2565	13.0	0.016
Extreme (30C)		824.7498	848.2565	14.0	0.017
Extreme (10C)		824.7498	848.2565	14.0	0.017
Extreme (0C)		824.7498	848.2565	14.3	0.017
Extreme (-10C)		824.7498	848.2565	14.5	0.017
Extreme (-20C)		824.7498	848.2565	16.4	0.020
Extreme (-30C)		824.7498	848.2565	17.7	0.021
20C	15%	824.7498	848.2565	10.3	0.012
	-15%	824.7498	848.2565	10.2	0.012
	End Point	824.7498	848.2565	11.0	0.013

8.4.8. LTE BAND 66 AND 5G NR BAND n66

LIMITS

FCC: §27.54
The frequency stability shall be sufficient to ensure that the fundamental emission stays within the authorized frequency block.

ISED: RSS139§6.4
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.

Test Engineer ID:	39005	Test Date:	11/23/2020

LTE BAND 66 QPSK (20MHz BANDWIDTH)

Limit		1710	1780		
Condition		F low @ -13dBm	F high @ -13dBm	Delta (Hz)	Frequency Stability (ppm)
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1711.0190	1778.9845		
Extreme (50C)		1711.0189	1778.9845	-5.8	-0.003
Extreme (40C)		1711.0189	1778.9845	-6.8	-0.004
Extreme (30C)		1711.0189	1778.9845	-6.8	-0.004
Extreme (10C)		1711.0189	1778.9845	-7.2	-0.004
Extreme (0C)		1711.0189	1778.9845	-8.4	-0.005
Extreme (-10C)		1711.0189	1778.9845	-7.1	-0.004
Extreme (-20C)		1711.0189	1778.9845	-7.3	-0.004
Extreme (-30C)		1711.0189	1778.9845	-6.8	-0.004
20C	15%	1711.0189	1778.9845	-5.7	-0.003
	-15%	1711.0189	1778.9845	-6.4	-0.004
	End Point	1711.0189	1778.9845	-5.0	-0.003

5G NR BAND n66 BPSK (20MHz BANDWIDTH)

Limit		1710	1780	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1711.0114	1777.4535		
Extreme (50C)		1711.0114	1777.4535	-7.0	-0.004
Extreme (40C)		1711.0114	1777.4535	-8.3	-0.005
Extreme (30C)		1711.0114	1777.4535	-8.0	-0.005
Extreme (10C)		1711.0114	1777.4535	-7.6	-0.004
Extreme (0C)		1711.0114	1777.4535	-9.0	-0.005
Extreme (-10C)		1711.0114	1777.4535	-8.4	-0.005
Extreme (-20C)		1711.0114	1777.4535	-7.9	-0.005
Extreme (-30C)		1711.0114	1777.4535	-7.0	-0.004
20C	15%	1711.0114	1777.4535	-6.6	-0.004
	-15%	1711.0114	1777.4535	-8.0	-0.005
	End Point	1711.0114	1777.4535	-6.7	-0.004

8.5. PEAK-TO-AVERAGE POWER RATIO

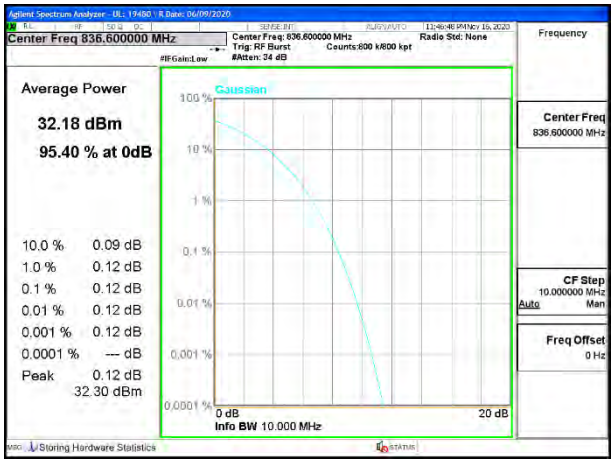
LIMIT

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

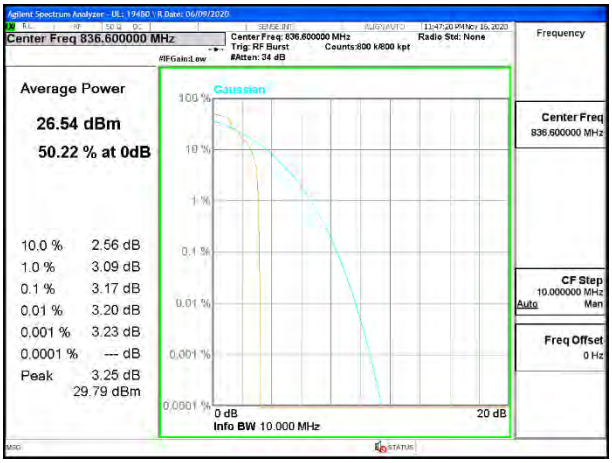
RESULT

The results from all CCDF measurements are passed with 13dB peak-to-average power ratio criteria.

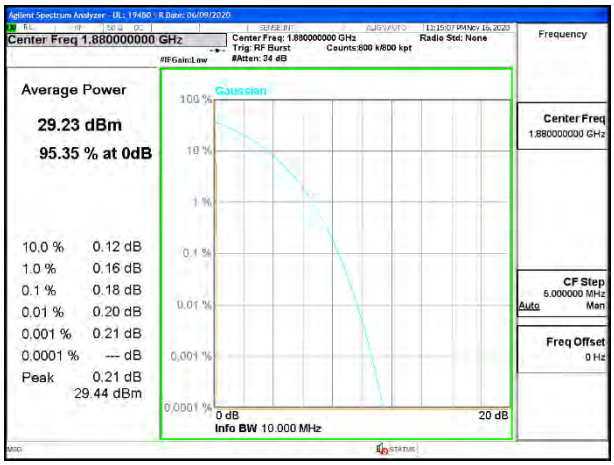
8.5.1. GSM



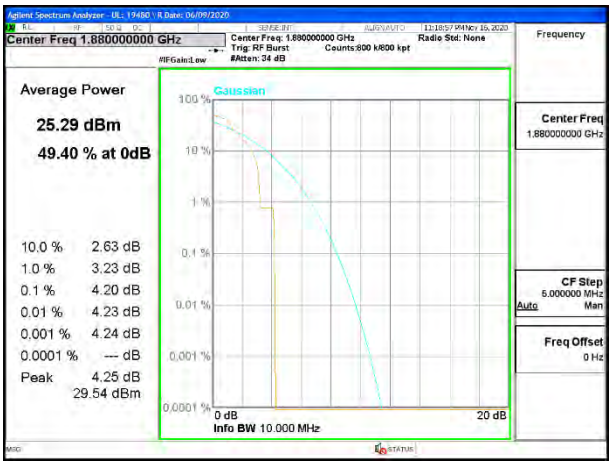
GSM 850 GPRS Middle Channel



GSM 850 EGPRS Middle Channel

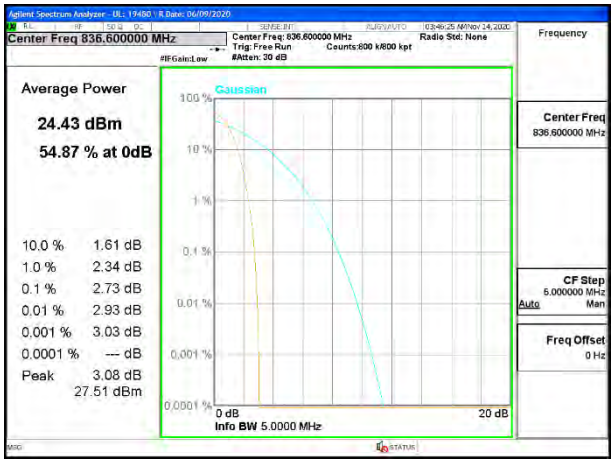


GSM 1900 GPRS Middle Channel

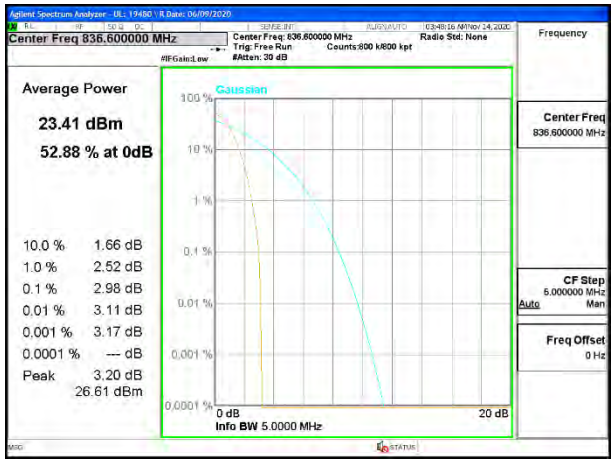


GSM 1900 EGPRS Middle Channel

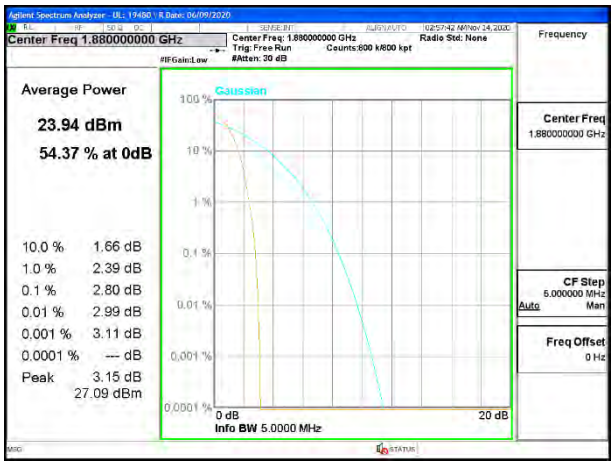
8.5.2. WCDMA



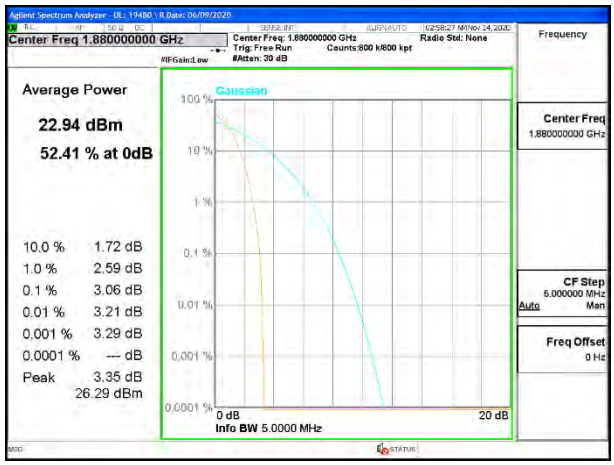
WCDMA Band 5 Rel 99 Middle Channel



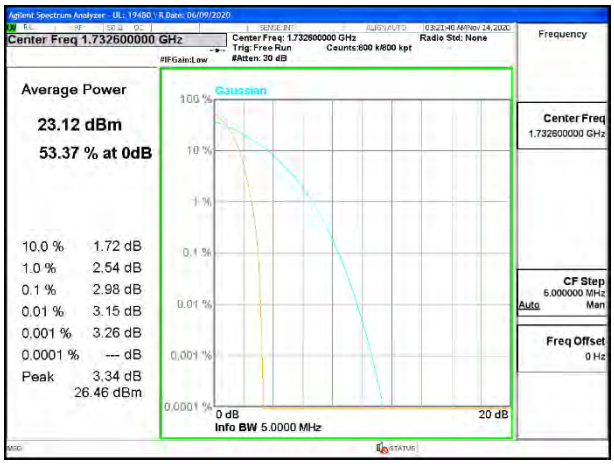
WCDMA Band 5 HSDPA Middle Channel



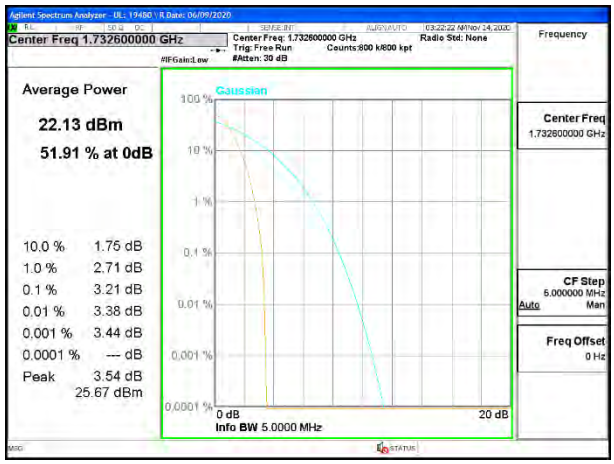
WCDMA Band 2 Rel 99 Middle Channel



WCDMA Band 2 HSDPA Middle Channel

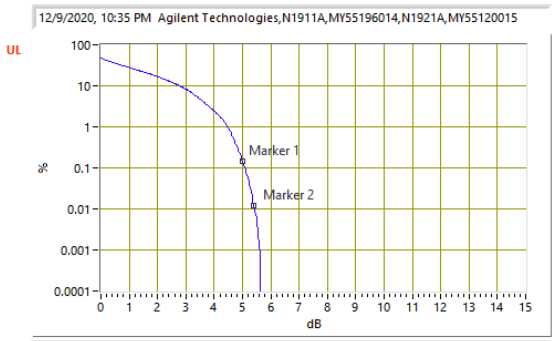


WCDMA Band 4 Rel 99 Middle Channel



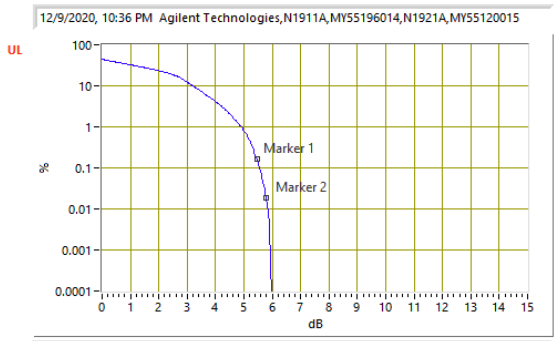
WCDMA Band 4 HSDPA Middle Channel

8.5.3. LTE BAND 2



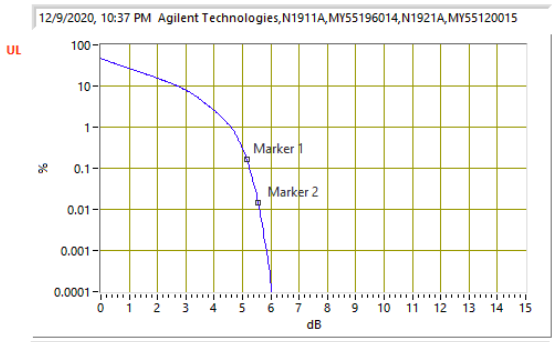
Marker 1 Power: 5.03 dB Marker 1 Probability: 0.1334%	Delta Power: 0.37 dB Delta Probability: 0.1211% Avg (A): 21.51 dBm Pk(A): 27.17dBm Pk-Avg(A): 5.66dB
Marker 2 Power: 5.40 dB Marker 2 Probability: 0.0123%	

LTE B2 1.4MHz QPSK Middle Channel



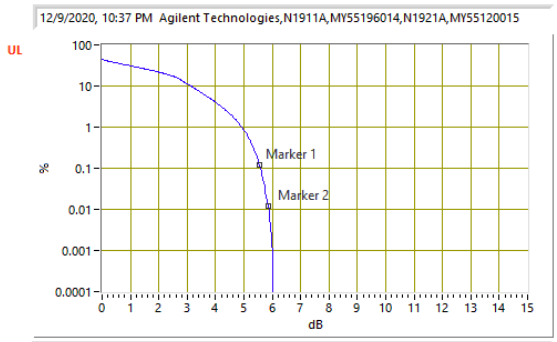
Marker 1 Power: 5.47 dB Marker 1 Probability: 0.1495%	Delta Power: 0.30 dB Delta Probability: 0.1288% Avg (A): 21.57 dBm Pk(A): 27.56dBm Pk-Avg(A): 5.98dB
Marker 2 Power: 5.78 dB Marker 2 Probability: 0.0208%	

LTE B2 1.4MHz 16QAM Middle Channel



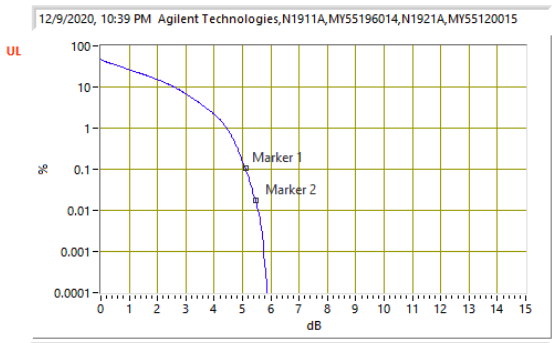
Marker 1 Power: 5.17 dB Marker 1 Probability: 0.1488%	Delta Power: 0.37 dB Delta Probability: 0.1346% Avg (A): 21.33 dBm Pk(A): 27.41dBm Pk-Avg(A): 6.08dB
Marker 2 Power: 5.55 dB Marker 2 Probability: 0.0142%	

LTE B2 3MHz QPSK Middle Channel



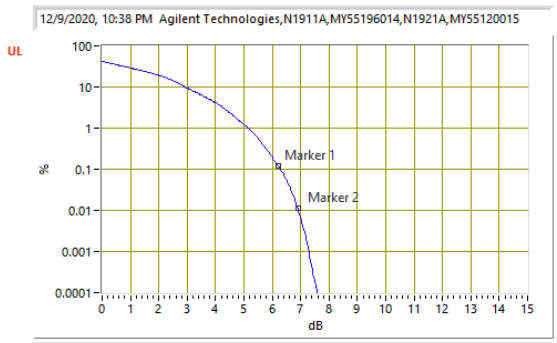
Marker 1 Power: 5.55 dB Marker 1 Probability: 0.1180%	Delta Power: 0.30 dB Delta Probability: 0.1063% Avg (A): 21.55 dBm Pk(A): 27.61dBm Pk-Avg(A): 6.06dB
Marker 2 Power: 5.85 dB Marker 2 Probability: 0.0118%	

LTE B2 3MHz 16QAM Middle Channel



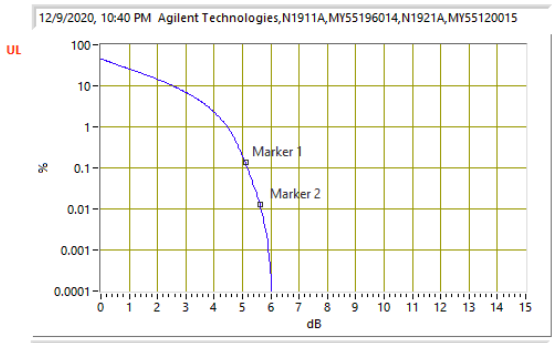
Marker 1 Power: 5.10 dB Marker 1 Probability: 0.1067%	Delta Power: 0.37 dB Delta Probability: 0.0906% Avg (A): 21.49 dBm Pk(A): 27.41dBm Pk-Avg(A): 5.92dB
Marker 2 Power: 5.47 dB Marker 2 Probability: 0.0161%	

LTE B2 5MHz QPSK Middle Channel



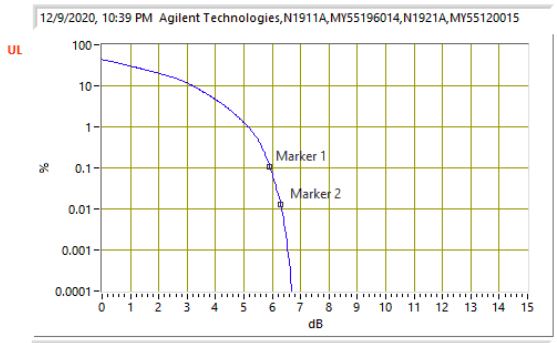
Marker 1 Power: 6.22 dB Marker 1 Probability: 0.1152%	Delta Power: 0.67 dB Delta Probability: 0.1041% Avg (A): 20.22 dBm Pk(A): 27.91dBm Pk-Avg(A): 7.69dB
Marker 2 Power: 6.90 dB Marker 2 Probability: 0.0111%	

LTE B2 5MHz 16QAM Middle Channel



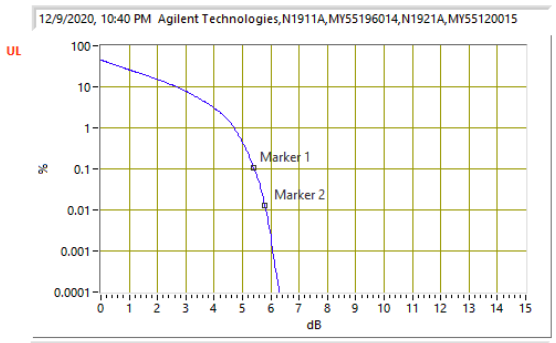
Marker 1 Power: 5.10 dB Marker 1 Probability: 0.1388%	Delta Power: 0.52 dB Delta Probability: 0.1270% Avg (A): 21.37 dBm Pk(A): 27.45dBm Pk-Avg(A): 6.08dB
Marker 2 Power: 5.62 dB Marker 2 Probability: 0.0118%	

LTE B2 10MHz QPSK Middle Channel



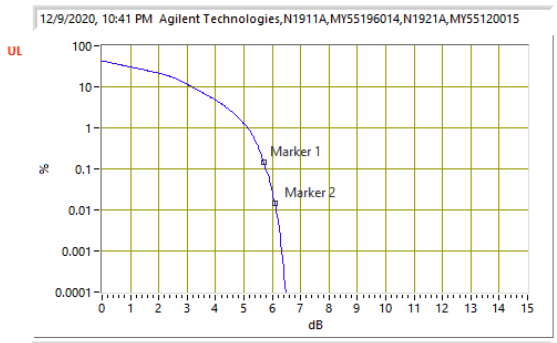
Marker 1 Power: 5.92 dB Marker 1 Probability: 0.1008%	Delta Power: 0.37 dB Delta Probability: 0.0879% Avg (A): 21.04 dBm Pk(A): 27.86dBm Pk-Avg(A): 6.81dB
Marker 2 Power: 6.30 dB Marker 2 Probability: 0.0129%	

LTE B2 10MHz 16QAM Middle Channel



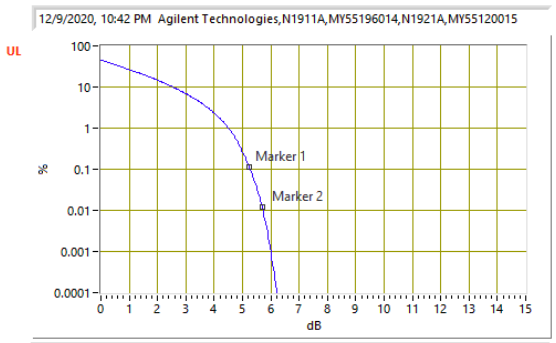
Marker 1 Power: 5.40 dB Marker 1 Probability: 0.1047%	Delta Power: 0.37 dB Delta Probability: 0.0900% Avg (A): 21.24 dBm Pk(A): 27.60dBm Pk-Avg(A): 6.36dB
Marker 2 Power: 5.78 dB Marker 2 Probability: 0.0147%	

LTE B2 15MHz QPSK Middle Channel



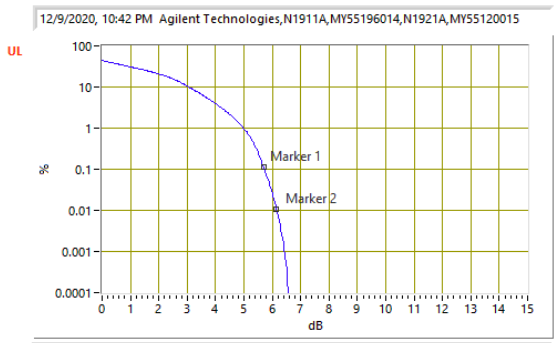
Marker 1 Power: 5.70 dB Marker 1 Probability: 0.1467%	Delta Power: 0.37 dB Delta Probability: 0.1309% Avg (A): 21.25 dBm Pk(A): 27.81dBm Pk-Avg(A): 6.56dB
Marker 2 Power: 6.08 dB Marker 2 Probability: 0.0157%	

LTE B2 15MHz 16QAM Middle Channel



Marker 1 Power: 5.25 dB Marker 1 Probability: 0.1123%	Delta Power: 0.45 dB Delta Probability: 0.1006% Avg (A): 21.23 dBm Pk(A): 27.57dBm Pk-Avg(A): 6.34dB
Marker 2 Power: 5.70 dB Marker 2 Probability: 0.0117%	

LTE B2 20MHz QPSK Middle Channel

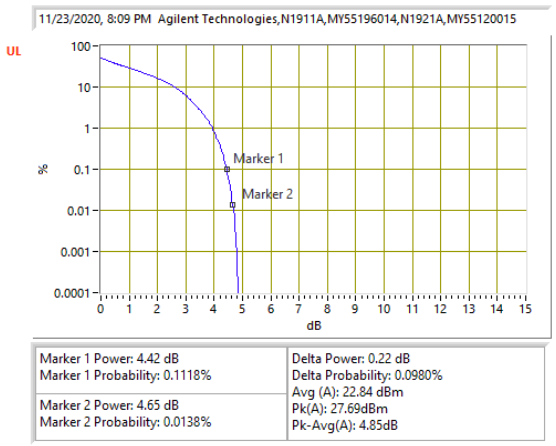


Marker 1 Power: 5.70 dB Marker 1 Probability: 0.1147%	Delta Power: 0.45 dB Delta Probability: 0.1039% Avg (A): 21.21 dBm Pk(A): 27.83dBm Pk-Avg(A): 6.62dB
Marker 2 Power: 6.15 dB Marker 2 Probability: 0.0108%	

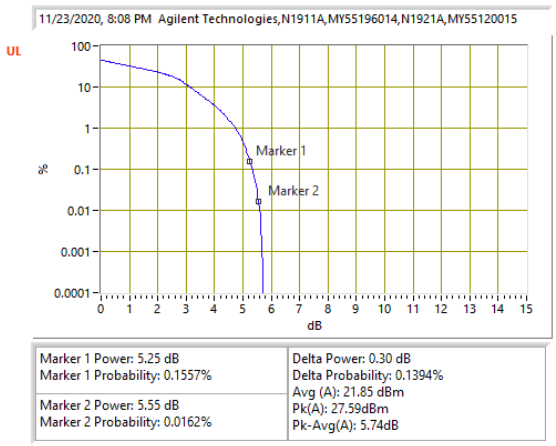
LTE B2 20MHz 16QAM Middle Channel

8.5.4. LTE BAND 5 AND 5G NR BAND n5

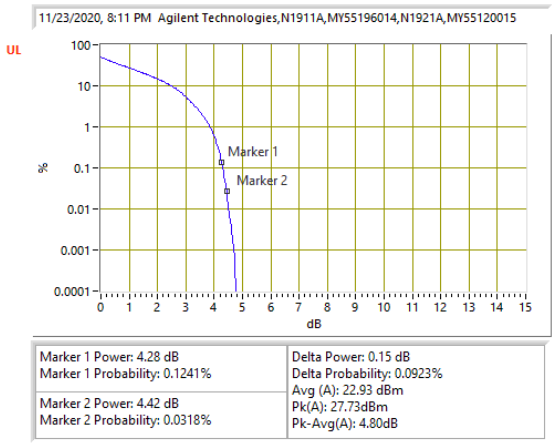
LTE BAND 5



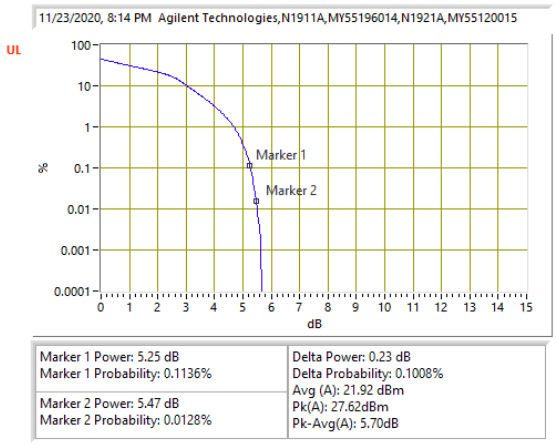
LTE B5 1.4MHz QPSK Middle Channel



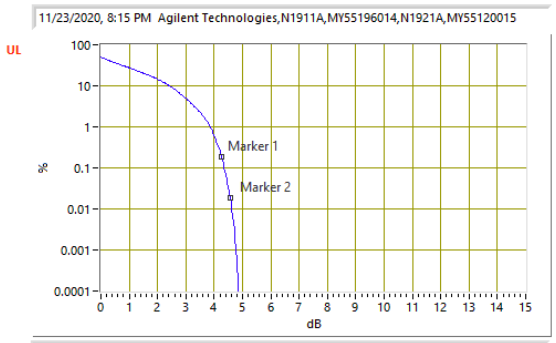
LTE B5 1.4MHz 16QAM Middle Channel



LTE B5 3MHz QPSK Middle Channel

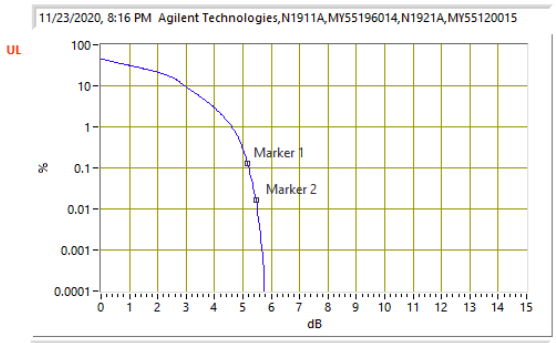


LTE B5 3MHz 16QAM Middle Channel



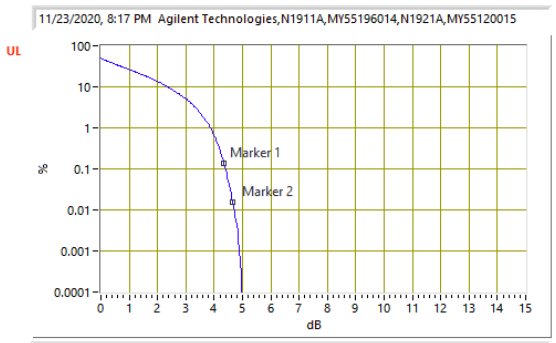
Marker 1 Power: 4.28 dB Marker 1 Probability: 0.1673%	Delta Power: 0.30 dB Delta Probability: 0.1514% Avg (A): 22.94 dBm Pk(A): 27.82dBm Pk-Avg(A): 4.87dB
Marker 2 Power: 4.58 dB Marker 2 Probability: 0.0159%	

LTE B5 5MHz QPSK Middle Channel



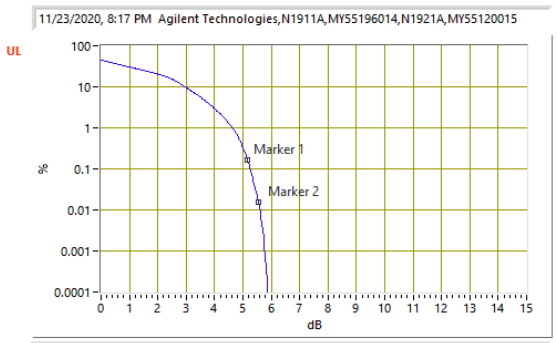
Marker 1 Power: 5.17 dB Marker 1 Probability: 0.1214%	Delta Power: 0.30 dB Delta Probability: 0.1075% Avg (A): 21.95 dBm Pk(A): 27.74dBm Pk-Avg(A): 5.79dB
Marker 2 Power: 5.47 dB Marker 2 Probability: 0.0140%	

LTE B5 5MHz 16QAM Middle Channel



Marker 1 Power: 4.35 dB Marker 1 Probability: 0.1342%	Delta Power: 0.30 dB Delta Probability: 0.1187% Avg (A): 22.85 dBm Pk(A): 27.89dBm Pk-Avg(A): 5.04dB
Marker 2 Power: 4.65 dB Marker 2 Probability: 0.0155%	

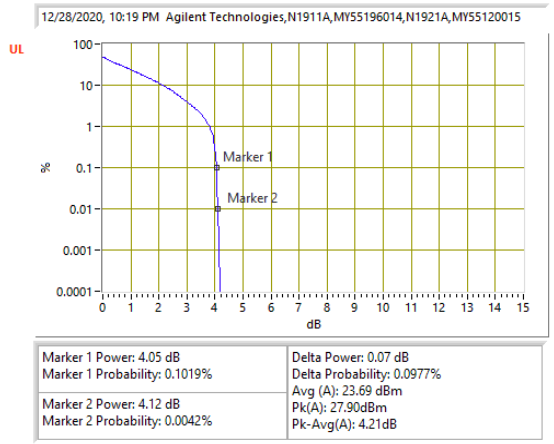
LTE B5 10MHz QPSK Middle Channel



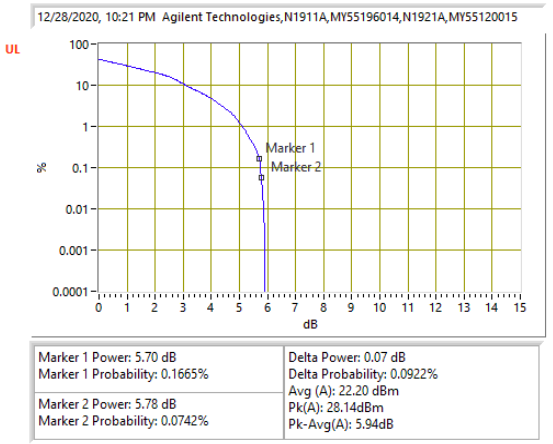
Marker 1 Power: 5.17 dB Marker 1 Probability: 0.1552%	Delta Power: 0.37 dB Delta Probability: 0.1401% Avg (A): 21.87 dBm Pk(A): 27.78dBm Pk-Avg(A): 5.90dB
Marker 2 Power: 5.55 dB Marker 2 Probability: 0.0150%	

LTE B5 10MHz 16QAM Middle Channel

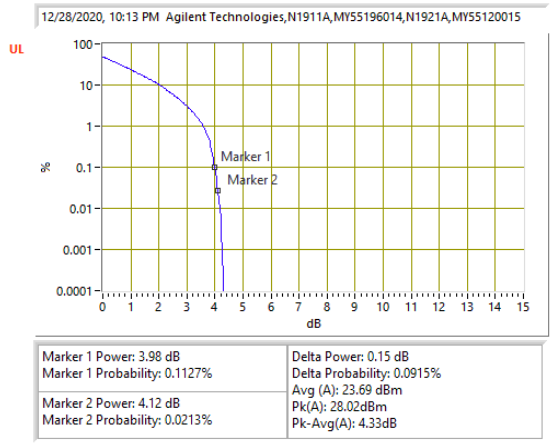
5G NR BAND n5



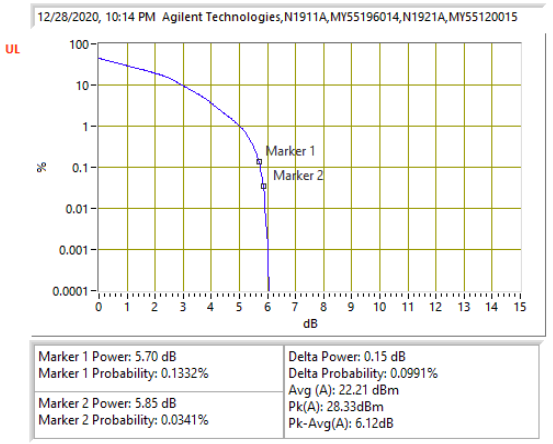
5G NR Band n5 5MHz BPSK Middle Channel



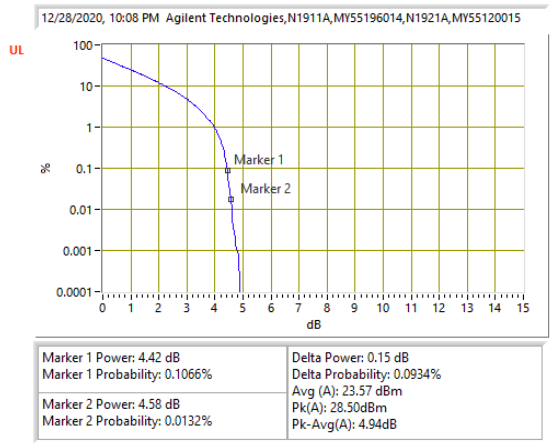
5G NR Band n5 5MHz 16QAM Middle Channel



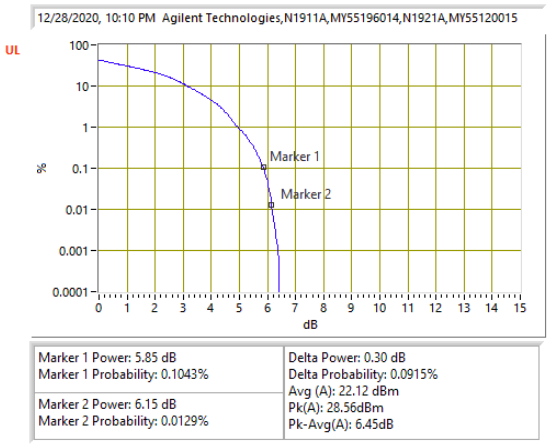
5G NR Band n5 10MHz BPSK Middle Channel



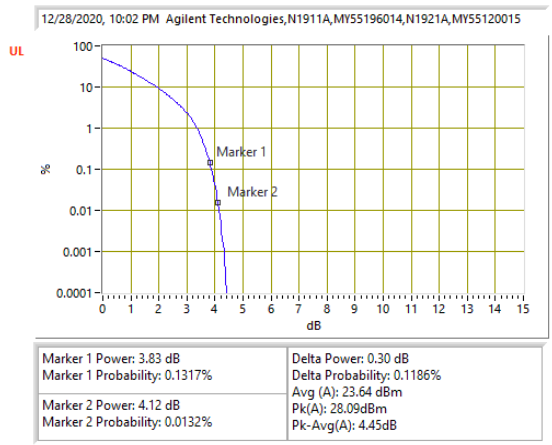
5G NR Band n5 10MHz 16QAM Middle Channel



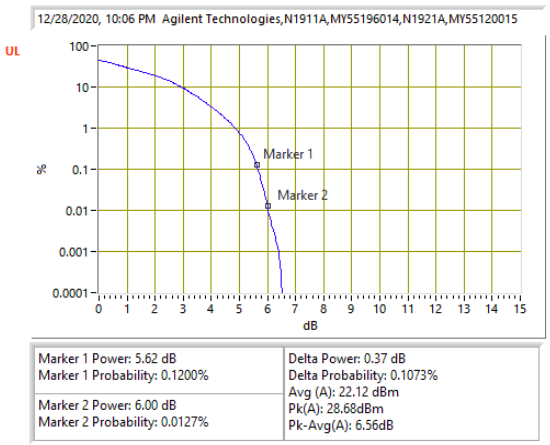
5G NR Band n5 15MHz BPSK Middle Channel



5G NR Band n5 15MHz 16QAM Middle Channel

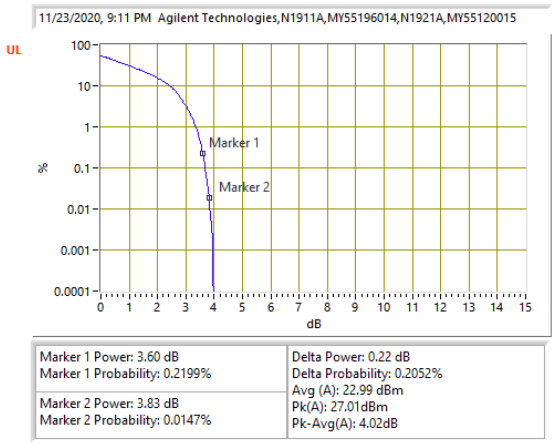


5G NR Band n5 20MHz BPSK Middle Channel

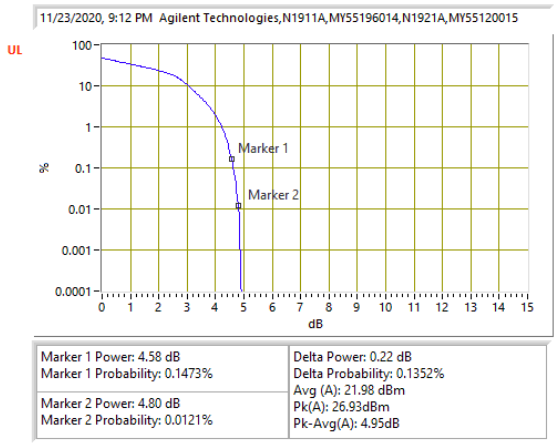


5G NR Band n5 20MHz 16QAM Middle Channel

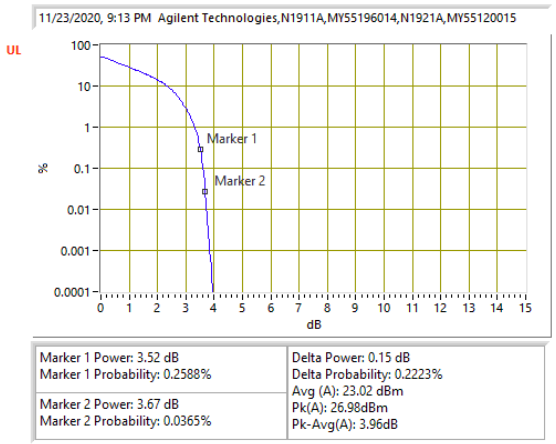
8.5.5. LTE BAND 12



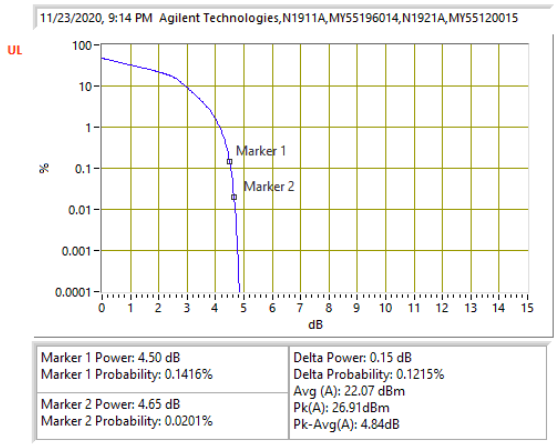
LTE B12 1.4MHz QPSK Middle Channel



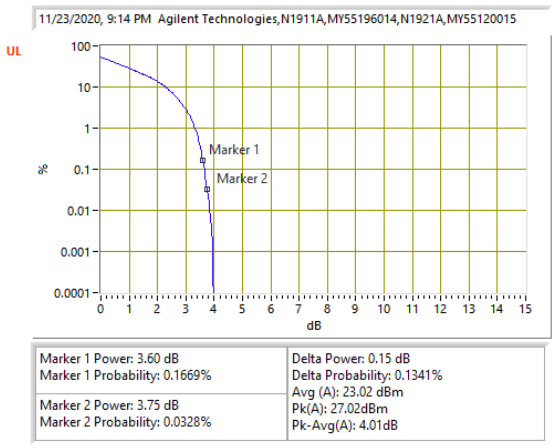
LTE B12 1.4MHz 16QAM Middle Channel



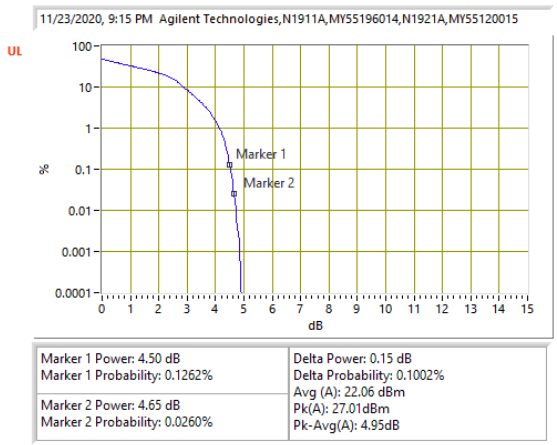
LTE B12 3MHz QPSK Middle Channel



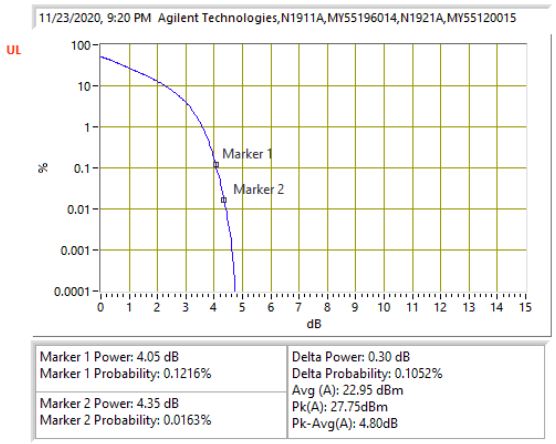
LTE B12 3MHz 16QAM Middle Channel



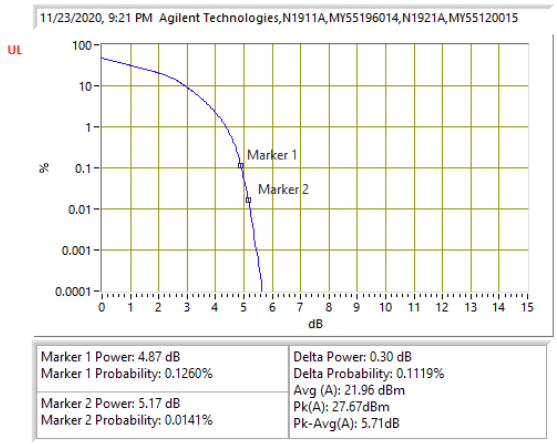
LTE B12 5MHz QPSK Middle Channel



LTE B12 5MHz 16QAM Middle Channel

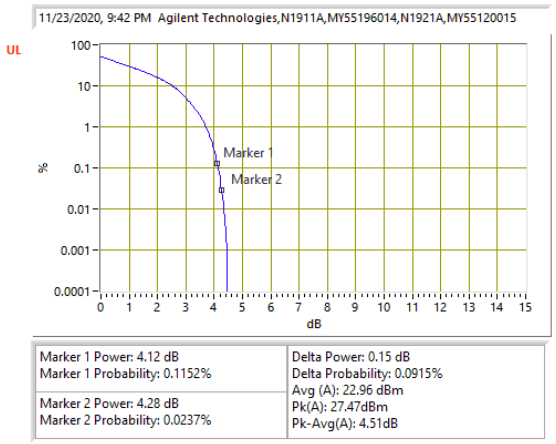


LTE B12 10MHz QPSK Middle Channel

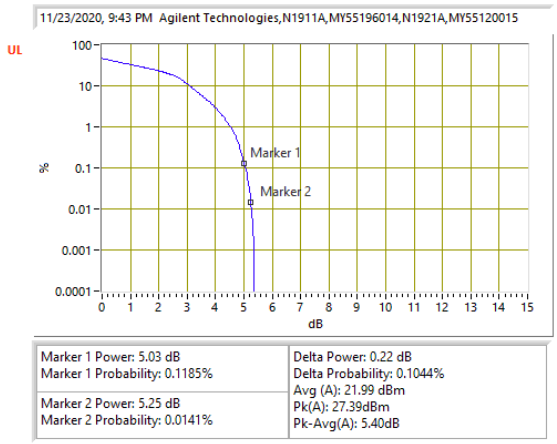


LTE B12 10MHz 16QAM Middle Channel

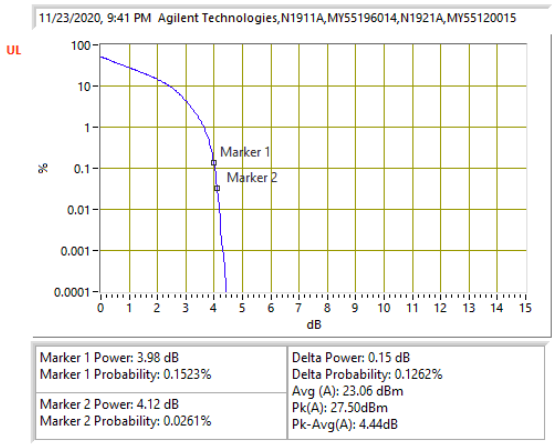
8.5.6. LTE BAND 26 (FCC PART 90S)



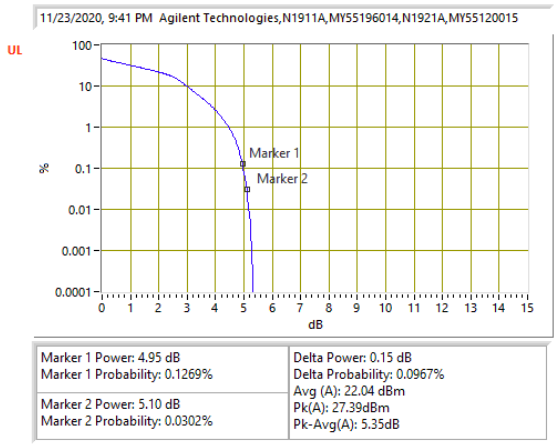
LTE B26 1.4MHz QPSK Middle Channel



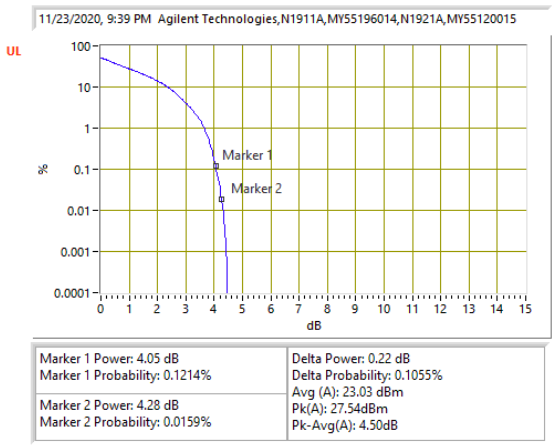
LTE B26 1.4MHz 16QAM Middle Channel



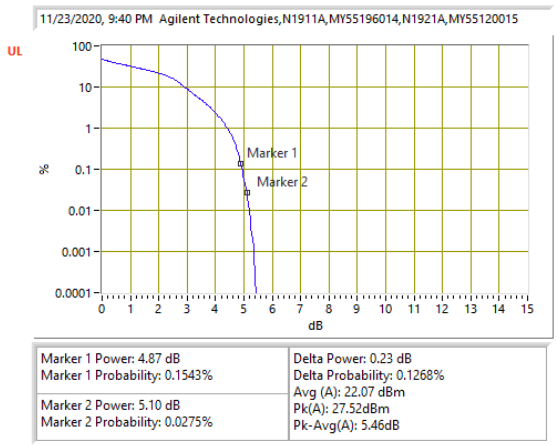
LTE B26 3MHz QPSK Middle Channel



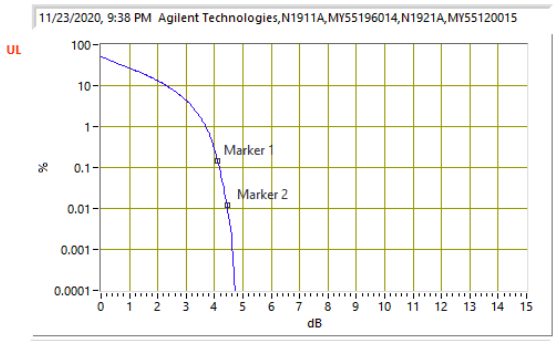
LTE B26 3MHz 16QAM Middle Channel



LTE B26 5MHz QPSK Middle Channel

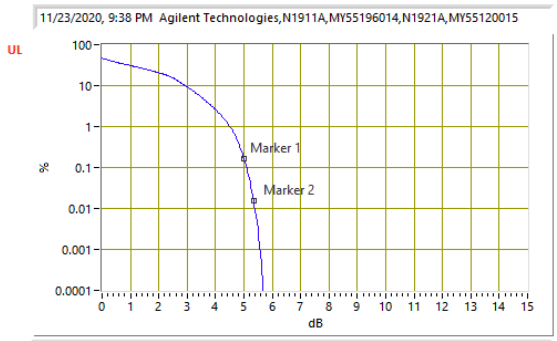


LTE B26 5MHz 16QAM Middle Channel



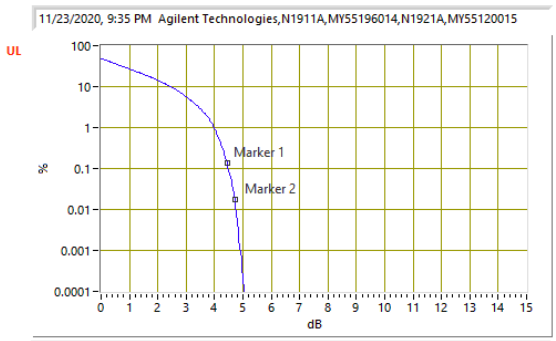
Marker 1 Power: 4.12 dB Marker 1 Probability: 0.1307%	Delta Power: 0.30 dB Delta Probability: 0.1170%
Marker 2 Power: 4.42 dB Marker 2 Probability: 0.0137%	Avg (A): 22.97 dBm Pk(A): 27.72dBm Pk-Avg(A): 4.75dB

LTE B26 10MHz QPSK Middle Channel



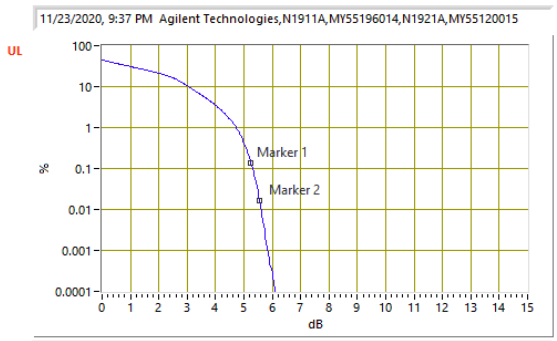
Marker 1 Power: 5.03 dB Marker 1 Probability: 0.1497%	Delta Power: 0.30 dB Delta Probability: 0.1319%
Marker 2 Power: 5.33 dB Marker 2 Probability: 0.0178%	Avg (A): 21.96 dBm Pk(A): 27.68dBm Pk-Avg(A): 5.72dB

LTE B26 10MHz 16QAM Middle Channel



Marker 1 Power: 4.42 dB Marker 1 Probability: 0.1459%	Delta Power: 0.30 dB Delta Probability: 0.1310%
Marker 2 Power: 4.72 dB Marker 2 Probability: 0.0149%	Avg (A): 22.69 dBm Pk(A): 27.83dBm Pk-Avg(A): 5.15dB

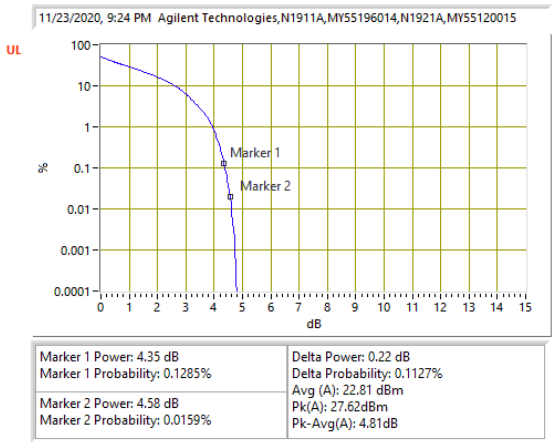
LTE B26 15MHz QPSK Middle Channel



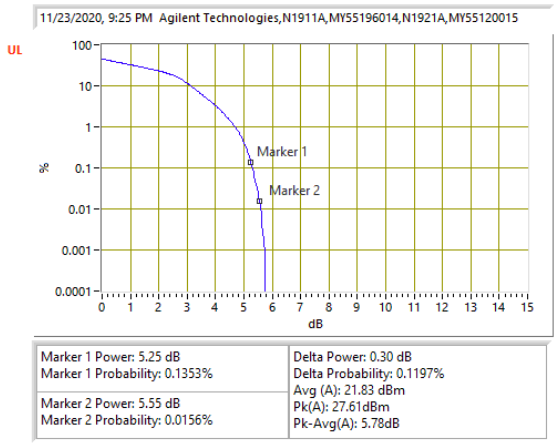
Marker 1 Power: 5.25 dB Marker 1 Probability: 0.1383%	Delta Power: 0.30 dB Delta Probability: 0.1223%
Marker 2 Power: 5.55 dB Marker 2 Probability: 0.0160%	Avg (A): 21.70 dBm Pk(A): 27.86dBm Pk-Avg(A): 6.15dB

LTE B26 15MHz 16QAM Middle Channel

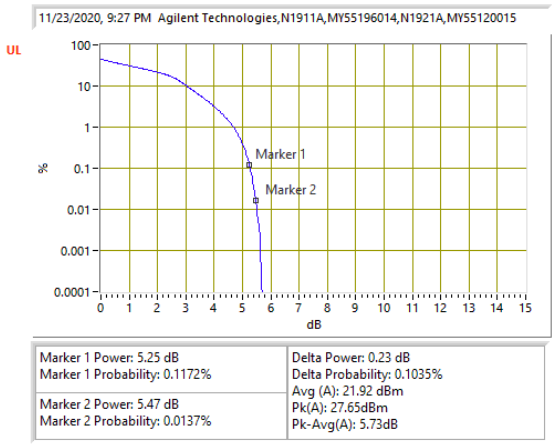
8.5.7. LTE BAND 26 (FCC PART 22)



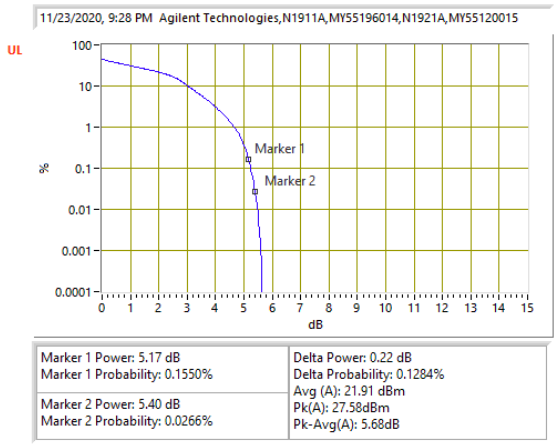
LTE B26 1.4MHz QPSK Middle Channel



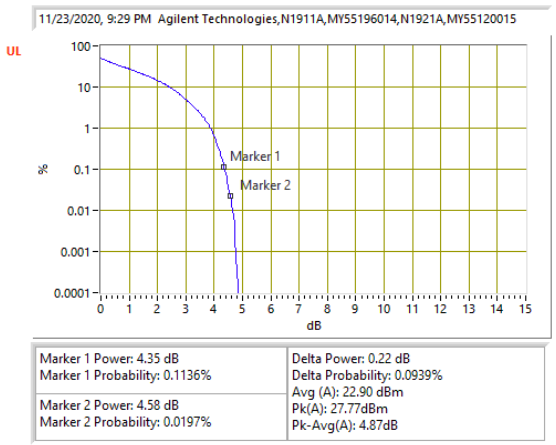
LTE B26 1.4MHz 16QAM Middle Channel



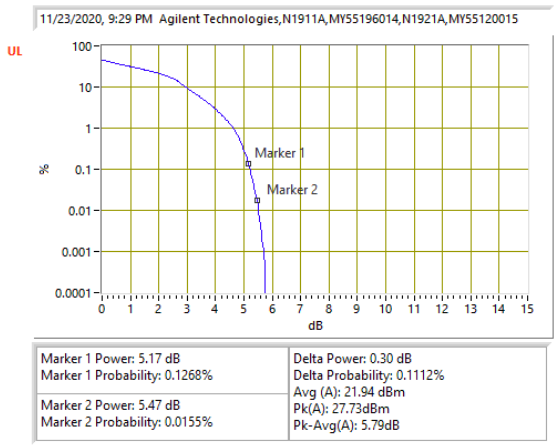
LTE B26 3MHz QPSK Middle Channel



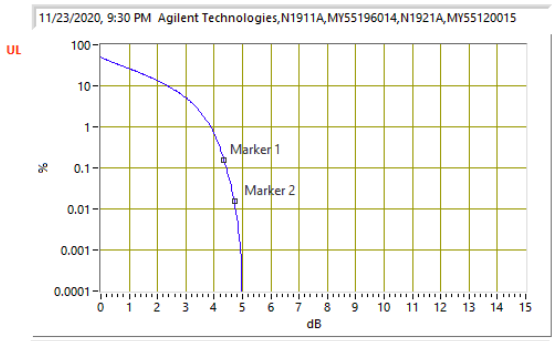
LTE B26 3MHz 16QAM Middle Channel



LTE B26 5MHz QPSK Middle Channel

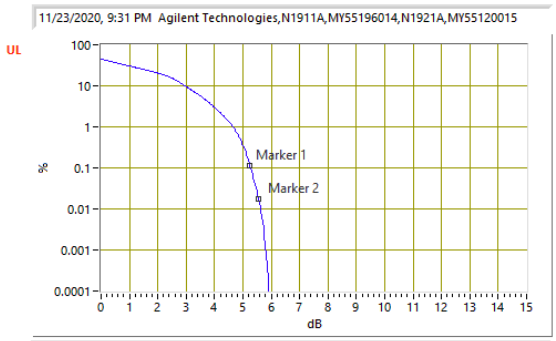


LTE B26 5MHz 16QAM Middle Channel



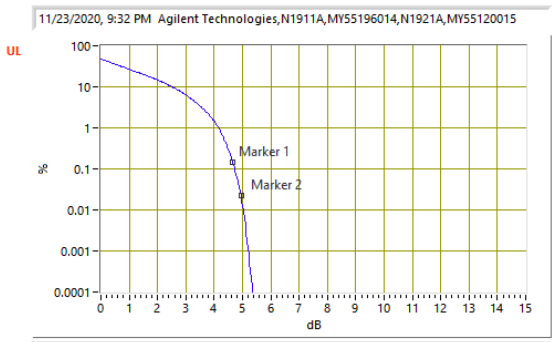
Marker 1 Power: 4.35 dB Marker 1 Probability: 0.1526%	Delta Power: 0.37 dB Delta Probability: 0.1394% Avg (A): 22.82 dBm Pk(A): 27.84dBm Pk-Avg(A): 5.02dB
Marker 2 Power: 4.72 dB Marker 2 Probability: 0.0132%	

LTE B26 10MHz QPSK Middle Channel



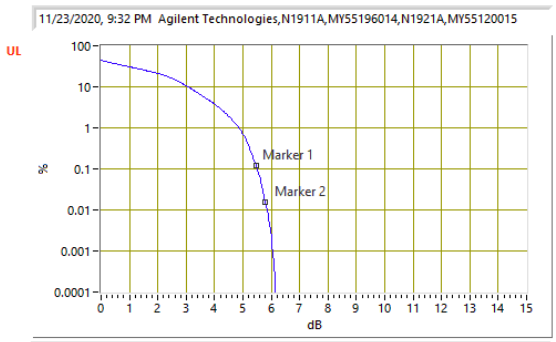
Marker 1 Power: 5.25 dB Marker 1 Probability: 0.1152%	Delta Power: 0.30 dB Delta Probability: 0.0976% Avg (A): 21.83 dBm Pk(A): 27.76dBm Pk-Avg(A): 5.92dB
Marker 2 Power: 5.55 dB Marker 2 Probability: 0.0176%	

LTE B26 10MHz 16QAM Middle Channel



Marker 1 Power: 4.65 dB Marker 1 Probability: 0.1470%	Delta Power: 0.30 dB Delta Probability: 0.1245% Avg (A): 22.61 dBm Pk(A): 28.11dBm Pk-Avg(A): 5.50dB
Marker 2 Power: 4.95 dB Marker 2 Probability: 0.0225%	

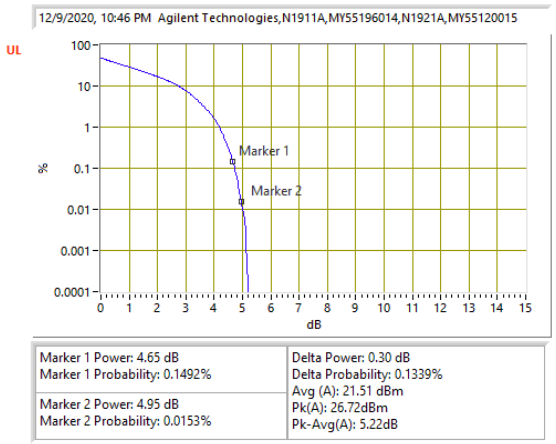
LTE B26 15MHz QPSK Middle Channel



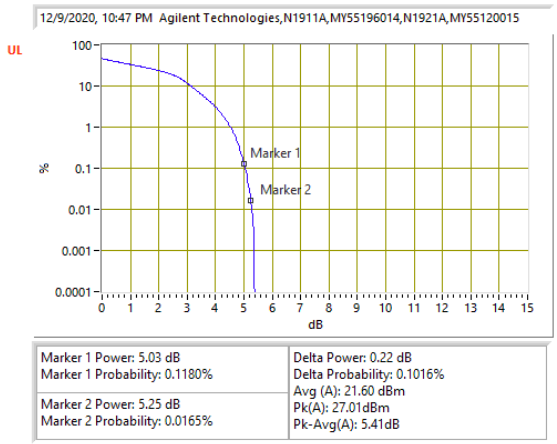
Marker 1 Power: 5.47 dB Marker 1 Probability: 0.1137%	Delta Power: 0.30 dB Delta Probability: 0.0965% Avg (A): 21.64 dBm Pk(A): 27.84dBm Pk-Avg(A): 6.20dB
Marker 2 Power: 5.78 dB Marker 2 Probability: 0.0172%	

LTE B26 15MHz 16QAM Middle Channel

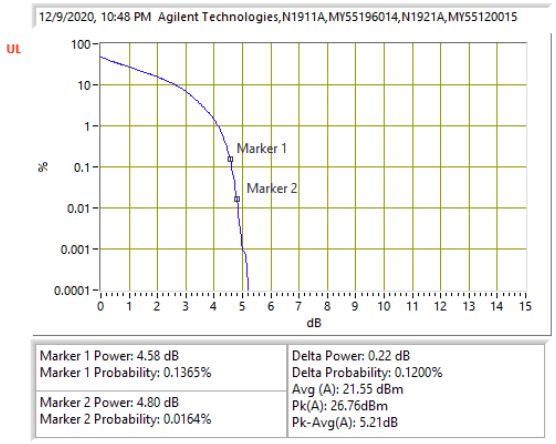
8.5.8. LTE BAND 66 AND 5G NR BAND n66



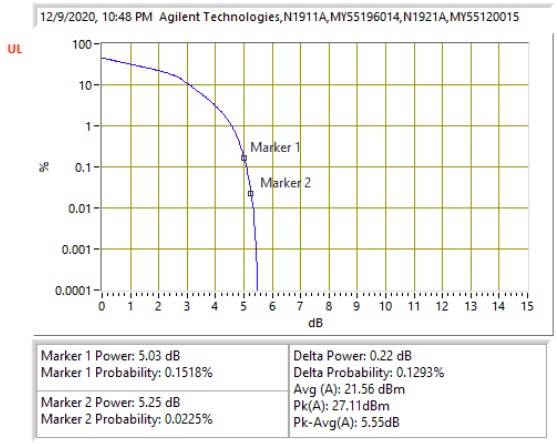
LTE B66 1.4MHz QPSK Middle Channel



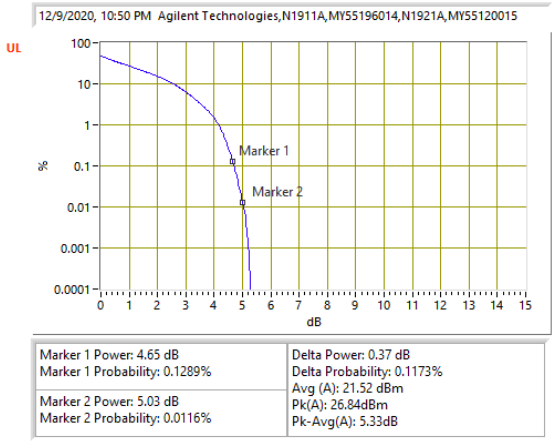
LTE B66 1.4MHz 16QAM Middle Channel



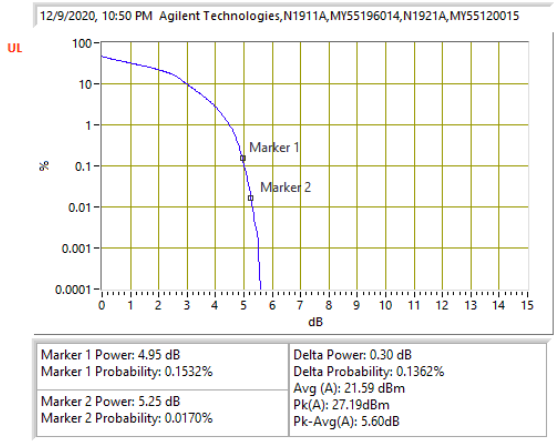
LTE B66 3MHz QPSK Middle Channel



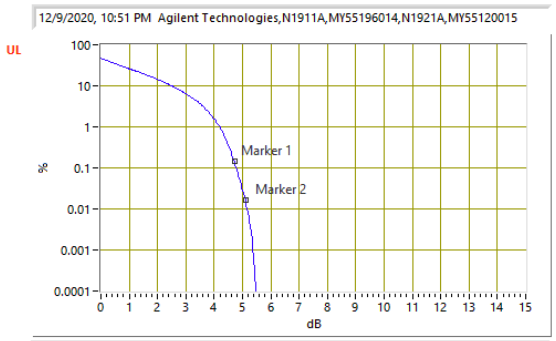
LTE B66 3MHz 16QAM Middle Channel



LTE B66 5MHz QPSK Middle Channel

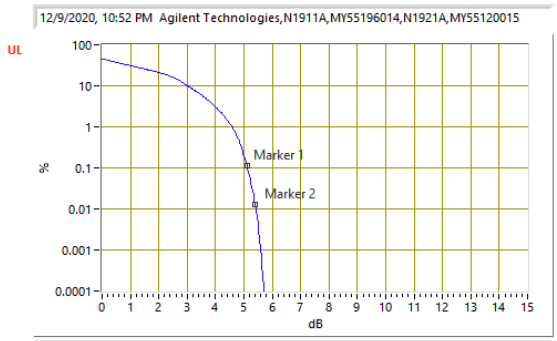


LTE B66 5MHz 16QAM Middle Channel



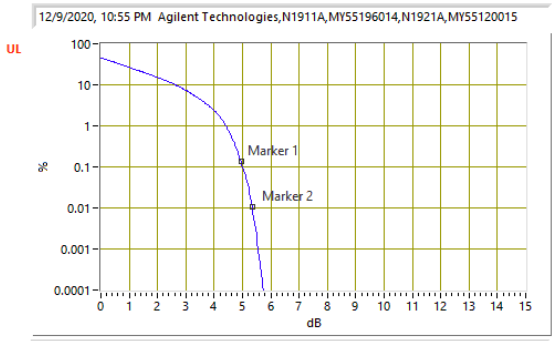
Marker 1 Power: 4.72 dB Marker 1 Probability: 0.1318%	Delta Power: 0.37 dB Delta Probability: 0.1157% Avg (A): 21.46 dBm Pk(A): 26.95dBm Pk-Avg(A): 5.49dB
Marker 2 Power: 5.10 dB Marker 2 Probability: 0.0160%	

LTE B66 10MHz QPSK Middle Channel



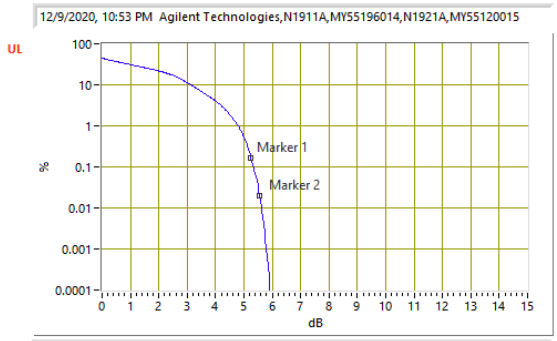
Marker 1 Power: 5.10 dB Marker 1 Probability: 0.1152%	Delta Power: 0.30 dB Delta Probability: 0.1020% Avg (A): 21.48 dBm Pk(A): 27.24dBm Pk-Avg(A): 5.76dB
Marker 2 Power: 5.40 dB Marker 2 Probability: 0.0131%	

LTE B66 10MHz 16QAM Middle Channel



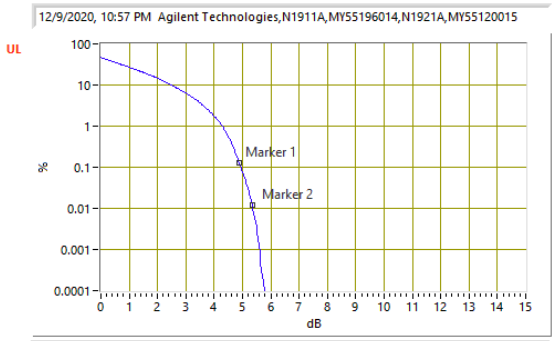
Marker 1 Power: 4.95 dB Marker 1 Probability: 0.1356%	Delta Power: 0.37 dB Delta Probability: 0.1235% Avg (A): 21.36 dBm Pk(A): 27.14dBm Pk-Avg(A): 5.78dB
Marker 2 Power: 5.33 dB Marker 2 Probability: 0.0121%	

LTE B66 15MHz QPSK Middle Channel



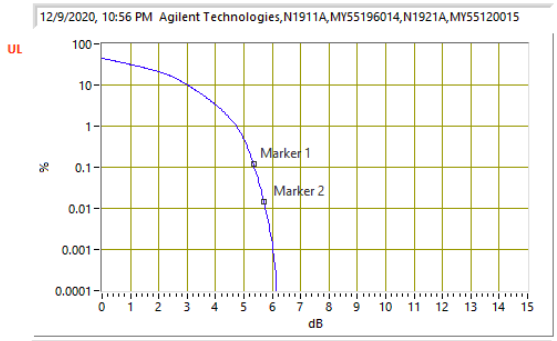
Marker 1 Power: 5.25 dB Marker 1 Probability: 0.1663%	Delta Power: 0.30 dB Delta Probability: 0.1465% Avg (A): 21.38 dBm Pk(A): 27.37dBm Pk-Avg(A): 5.99dB
Marker 2 Power: 5.55 dB Marker 2 Probability: 0.0198%	

LTE B66 15MHz 16QAM Middle Channel



Marker 1 Power: 4.87 dB Marker 1 Probability: 0.1380%	Delta Power: 0.45 dB Delta Probability: 0.1243% Avg (A): 21.32 dBm Pk(A): 27.21dBm Pk-Avg(A): 5.88dB
Marker 2 Power: 5.33 dB Marker 2 Probability: 0.0137%	

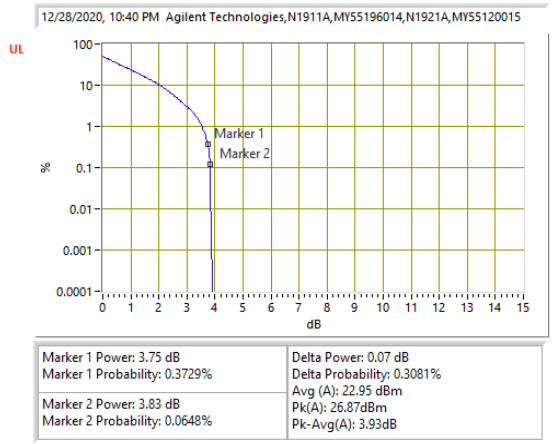
LTE B66 20MHz QPSK Middle Channel



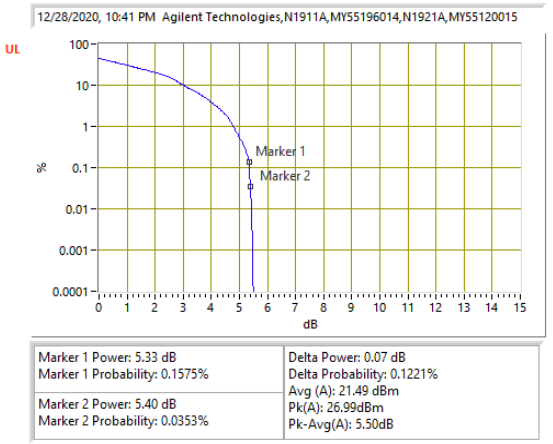
Marker 1 Power: 5.33 dB Marker 1 Probability: 0.1280%	Delta Power: 0.37 dB Delta Probability: 0.1131% Avg (A): 21.34 dBm Pk(A): 27.57dBm Pk-Avg(A): 6.23dB
Marker 2 Power: 5.70 dB Marker 2 Probability: 0.0150%	

LTE B66 20MHz 16QAM Middle Channel

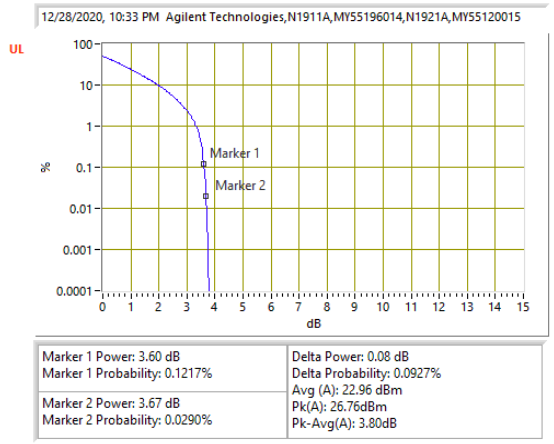
5G NR BAND n66



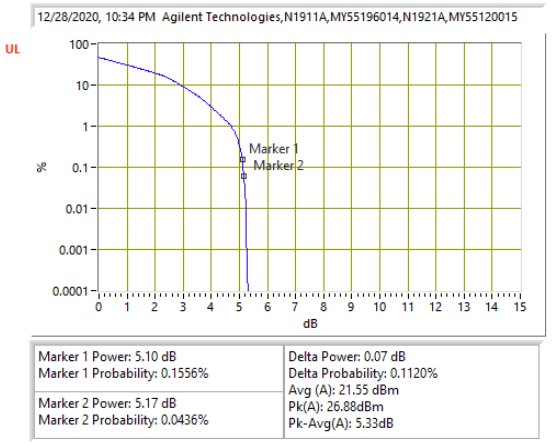
5G NR Band n66 5MHz BPSK Middle Channel



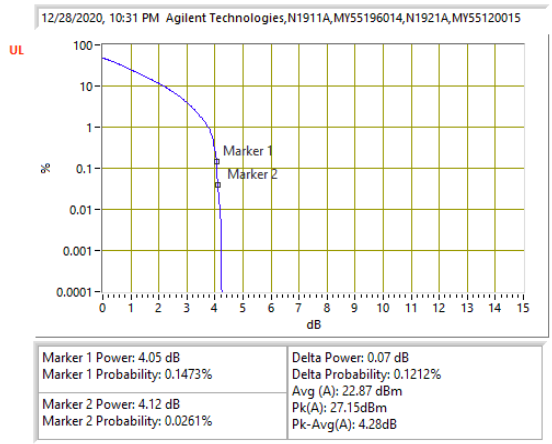
5G NR Band n66 5MHz 16QAM Middle Channel



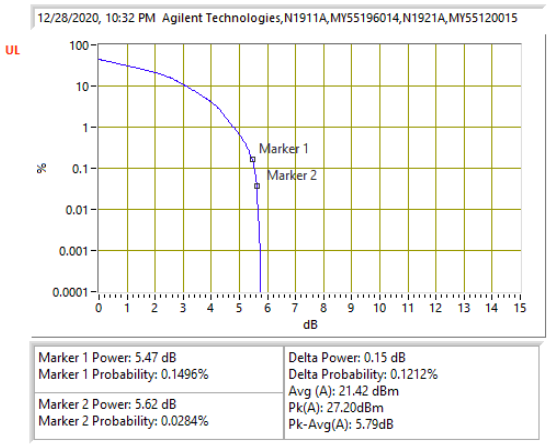
5G NR Band n66 10MHz BPSK Middle Channel



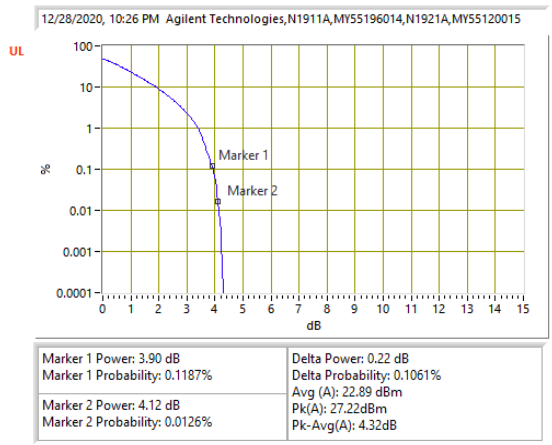
5G NR Band n66 10MHz 16QAM Middle Channel



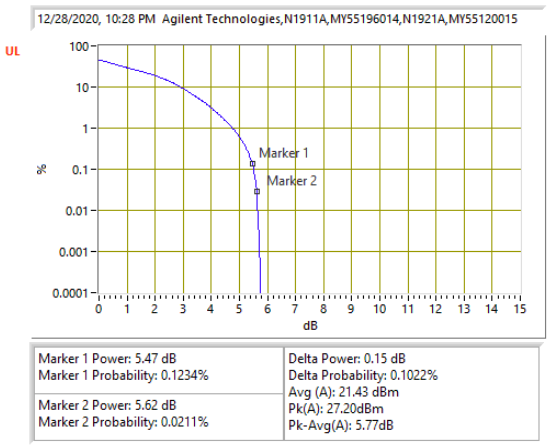
5G NR Band n66 15MHz BPSK Middle Channel



5G NR Band n66 15MHz 16QAM Middle Channel



5G NR Band n66 20MHz BPSK Middle Channel



5G NR Band n66 20MHz 16QAM Middle Channel

9. RADIATED TEST RESULTS

9.1. EFFECTIVE RADIATED POWER ERP/EIRP

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.50 and §90.691
RSS130§4.4, RSS132§5.4; RSS133§6.4, RSS139§6.5

LIMITS

22.913(a) - The ERP of mobile transmitters and auxiliary test transmitters must not exceed 7 Watts.

24.232(c) - Mobile/portable stations are limited to 2 watts e.i.r.p. peak power and the equipment must employ means to limit the power to the minimum necessary for successful communications.

27.50(c) - (10) Portable stations (hand-held devices) are limited to 3 watts ERP; (LTE B12)

27.50(d) - (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band and mobile and portable stations operating in the 1695-1710 MHz and 1755-1780 MHz bands are limited to 1 watt EIRP.(Band 66)

In addition, when the transmitter power is measured in terms of average value, the peak-to-average ratio of the power shall not exceed 13dB.

TEST PROCEDURE

ANSI / TIA / EIA 603-E (2016), Clause 2.2.17; PSA setting reference to 971168 D01 v03r01

For peak power measurement with a PSA:

a) Set the RBW ≥ OBW; b) Set VBW ≥ 3 × RBW; c) Set span ≥ 2 x RBW; d) Sweep time = auto couple; e) Detector = peak; f) Ensure that the number of measurement points ≥ span/RBW; g) Trace mode = max hold;

For average power measurement with a PSA:

a) Set span to at least 1.5 times the OBW; b) Set RBW = 1-5% of the OBW, not to exceed 1 MHz; c) Set VBW ≥ 3 x RBW; d) Set number of points in sweep ≥ 2 × span / RBW; e) Sweep time = auto-couple; f) Detector = RMS (power averaging); g) Use free run trigger If burst duty cycle ≥ 98; h) Use trigger to capture bursts If burst duty cycle < 98; i) Trace average at least 100 traces in power averaging (*i.e.*, RMS) mode. j) Compute the power by integrating the spectrum across the OBW of the signal using the instrument's band power measurement function.

MODES TESTED

GSM, WCMDA, and LTE

TEST RESULTS

GSM

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	W
GSM 850	GPRS	128	824.2	25.66	0.368129
		190	836.6	26.19	0.415911
		251	848.8	26.13	0.410204
	EGPRS	128	824.2	21.24	0.133045
		190	836.6	21.74	0.149279
		251	848.8	21.83	0.152405
GSM 1900	GPRS	512	1850.2	25.41	0.347536
		661	1880.0	25.84	0.383707
		810	1909.8	26.58	0.454988
	EGPRS	512	1850.2	22.82	0.191426
		661	1880.0	23.18	0.20797
		810	1909.8	24.07	0.25527

WCDMA

Band	Mode	Channel	f(MHz)	ERP/EIRP	
				dBm	W
Band 5	REL99	4132	826.4	17.43	0.055335
		4183	836.6	17.60	0.057544
		4233	846.6	17.52	0.056494
	HSDPA	4132	826.4	16.40	0.043652
		4183	836.6	16.48	0.044463
		4233	846.6	16.33	0.042954
Band 2	REL99	9262	1852.4	19.85	0.096605
		9400	1880	20.12	0.102802
		9538	1907.6	20.98	0.125314
	HSDPA	9262	1852.4	18.95	0.078524
		9400	1880.0	19.06	0.080538
		9538	1907.6	20.03	0.100693
Band 4	REL99	1312	1712.4	20.78	0.119674
		1413	1732.6	20.81	0.120504
		1513	1752.6	20.19	0.104472
	HSDPA	1312	1712.4	19.72	0.093756
		1413	1732.6	19.95	0.098855
		1513	1752.6	19.21	0.083368

LTE Band 2

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	W
20	QPSK	1/0	1860	19.76	0.094624
		1/0	1880	20.05	0.101158
		1/0	1900	20.70	0.11749
	16QAM	1/0	1860	19.08	0.08091
		1/0	1880	19.49	0.08892
		1/0	1900	20.12	0.102802
15	QPSK	1/0	1857.5	19.53	0.089743
		1/0	1880	19.74	0.094189
		1/0	1902.5	20.55	0.113501
	16QAM	1/0	1857.5	18.90	0.077625
		1/0	1880	19.17	0.082604
		1/0	1902.5	19.91	0.097949
10	QPSK	1/0	1855	19.64	0.092045
		1/0	1880	19.72	0.093756
		1/0	1905	20.66	0.116413
	16QAM	1/0	1855	19.15	0.082224
		1/0	1880	19.33	0.085704
		1/0	1905	19.94	0.098628
5	QPSK	1/0	1852.5	19.91	0.097949
		1/0	1880	19.81	0.095719
		1/0	1907.5	20.66	0.116413
	16QAM	1/0	1852.5	19.06	0.080538
		1/0	1880	19.16	0.082414
		1/0	1907.5	19.97	0.099312
3	QPSK	1/0	1851.5	19.77	0.094842
		1/0	1880	19.76	0.094624
		1/0	1908.5	20.58	0.114288
	16QAM	1/0	1851.5	18.98	0.079068
		1/0	1880	19.15	0.082224
		1/0	1908.5	19.94	0.098628
1.4	QPSK	1/0	1850.7	19.80	0.095499
		1/0	1880	19.90	0.097724
		1/0	1909.3	20.67	0.116681
	16QAM	1/0	1850.7	19.28	0.084723
		1/0	1880	19.31	0.08531
		1/0	1909.3	19.91	0.097949

LTE Band 5

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
10	QPSK	1/0	829	17.77	0.059841
		1/0	836.5	17.80	0.060256
		1/0	844	17.55	0.056885
	16QAM	1/0	829	17.05	0.050699
		1/0	836.5	16.99	0.050003
		1/0	844	16.64	0.046132
5	QPSK	1/0	826.5	17.85	0.060954
		1/0	836.5	17.73	0.059293
		1/0	846.5	17.29	0.05358
	16QAM	1/0	826.5	16.78	0.047643
		1/0	836.5	17.15	0.05188
		1/0	846.5	16.56	0.04529
3	QPSK	1/0	825.5	17.42	0.055208
		1/0	836.5	17.53	0.056624
		1/0	847.5	17.22	0.052723
	16QAM	1/0	825.5	16.51	0.044771
		1/0	836.5	16.92	0.049204
		1/0	847.5	16.43	0.043954
1.4	QPSK	1/0	824.7	17.13	0.051642
		1/0	836.5	17.32	0.053951
		1/0	848.3	16.88	0.048753
	16QAM	1/0	824.7	16.31	0.042756
		1/0	836.5	16.53	0.044978
		1/0	848.3	16.03	0.040087

5G NR BAND n5

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
20	BPSK	1/1	834	17.94	0.06223
		1/1	836.5	18.36	0.068549
		1/1	839	18.12	0.064863
	16QAM	1/1	834	17.13	0.051642
		1/1	836.5	17.57	0.057148
		1/1	839	17.35	0.054325
15	BPSK	1/1	831.5	17.86	0.061094
		1/1	836.5	18.48	0.070469
		1/1	841.5	17.57	0.057148
	16QAM	1/1	831.5	16.61	0.045814
		1/1	836.5	17.46	0.055719
		1/1	841.5	16.32	0.042855
10	BPSK	1/1	829	17.89	0.061518
		1/1	836.5	18.05	0.063826
		1/1	844	18.05	0.063826
	16QAM	1/1	829	16.72	0.046989
		1/1	836.5	17.14	0.051761
		1/1	844	16.82	0.048084
5	BPSK	1/1	826.5	18.14	0.065163
		1/1	836.5	18.34	0.068234
		1/1	846.5	17.62	0.05781
	16QAM	1/1	826.5	16.95	0.049545
		1/1	836.5	17.16	0.052
		1/1	846.5	16.46	0.044259

LTE Band 12

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
10	QPSK	1/0	704	18.28	0.067298
		1/0	707.5	18.58	0.072111
		1/0	711	19.15	0.082224
	16QAM	1/0	704	17.51	0.056364
		1/0	707.5	17.83	0.060674
		1/0	711	18.23	0.066527
5	QPSK	1/0	701.5	18.08	0.064269
		1/0	707.5	18.58	0.072111
		1/0	713.5	19.25	0.08414
	16QAM	1/0	701.5	17.38	0.054702
		1/0	707.5	17.72	0.059156
		1/0	713.5	18.53	0.071285
3	QPSK	1/0	700.5	17.74	0.059429
		1/0	707.5	18.36	0.068549
		1/0	714.5	19.05	0.080353
	16QAM	1/0	700.5	17.07	0.050933
		1/0	707.5	17.57	0.057148
		1/0	714.5	18.26	0.066988
1.4	QPSK	1/0	699.7	17.50	0.056234
		1/0	707.5	18.22	0.066374
		1/0	715.3	18.92	0.077983
	16QAM	1/0	699.7	16.88	0.048753
		1/0	707.5	17.67	0.058479
		1/0	715.3	18.09	0.064417

LTE Band 26 (FCC PART 22)

BW (MHz)	Mode	RB/RB Size	f(MHz)	ERP	
				dBm	W
15	QPSK	1/0	831.5	17.72	0.059156
		1/0	836.5	17.79	0.060117
		1/0	841.5	17.59	0.057412
	16QAM	1/0	831.5	16.91	0.049091
		1/0	836.5	17.04	0.050582
		1/0	841.5	16.76	0.047424
10	QPSK	1/0	829.0	17.57	0.057148
		1/0	836.5	17.88	0.061376
		1/0	844.0	17.56	0.057016
	16QAM	1/0	829.0	16.65	0.046238
		1/0	836.5	17.23	0.052845
		1/0	844.0	16.68	0.046559
5	QPSK	1/0	826.5	17.70	0.058884
		1/0	836.5	17.81	0.060395
		1/0	846.5	17.34	0.0542
	16QAM	1/0	826.5	16.63	0.046026
		1/0	836.5	17.17	0.052119
		1/0	846.5	16.49	0.044566
3	QPSK	1/0	825.5	17.36	0.05445
		1/0	836.5	17.73	0.059293
		1/0	847.5	17.15	0.05188
	16QAM	1/0	825.5	16.53	0.044978
		1/0	836.5	17.13	0.051642
		1/0	847.5	16.27	0.042364
1.4	QPSK	1/0	824.7	17.07	0.050933
		1/0	836.5	17.52	0.056494
		1/0	848.3	16.85	0.048417
	16QAM	1/0	824.7	16.24	0.042073
		1/0	836.5	16.81	0.047973
		1/0	848.3	15.94	0.039264

LTE Band 66

BW (MHz)	Mode	RB/RB Size	f(MHz)	EIRP	
				dBm	W
20	QPSK	1/0	1720	21.47	0.140281
		1/0	1745	21.98	0.157761
		1/0	1770	22.19	0.165577
	16QAM	1/0	1720	20.85	0.121619
		1/0	1745	21.41	0.138357
		1/0	1770	21.59	0.144212
15	QPSK	1/0	1717.5	21.45	0.139637
		1/0	1745	21.93	0.155955
		1/0	1772.5	22.17	0.164816
	16QAM	1/0	1717.5	20.71	0.117761
		1/0	1745	21.31	0.135207
		1/0	1772.5	21.52	0.141906
10	QPSK	1/0	1715	21.36	0.136773
		1/0	1745	21.94	0.156315
		1/0	1775	22.30	0.169824
	16QAM	1/0	1715	21.06	0.127644
		1/0	1745	21.47	0.140281
		1/0	1775	21.52	0.141906
5	QPSK	1/0	1712.5	21.50	0.141254
		1/0	1745	21.99	0.158125
		1/0	1777.5	22.27	0.168655
	16QAM	1/0	1712.5	20.62	0.115345
		1/0	1745	21.36	0.136773
		1/0	1777.5	21.48	0.140605
3	QPSK	1/0	1711.5	21.17	0.130918
		1/0	1745	21.96	0.157036
		1/0	1778.5	22.03	0.159588
	16QAM	1/0	1711.5	20.45	0.110917
		1/0	1745	21.35	0.136458
		1/0	1778.5	21.37	0.137088
1.4	QPSK	1/0	1710.7	21.14	0.130017
		1/0	1745	22.04	0.159956
		1/0	1779.3	21.96	0.157036
	16QAM	1/0	1710.7	20.63	0.115611
		1/0	1745	21.42	0.138676
		1/0	1779.3	21.41	0.138357