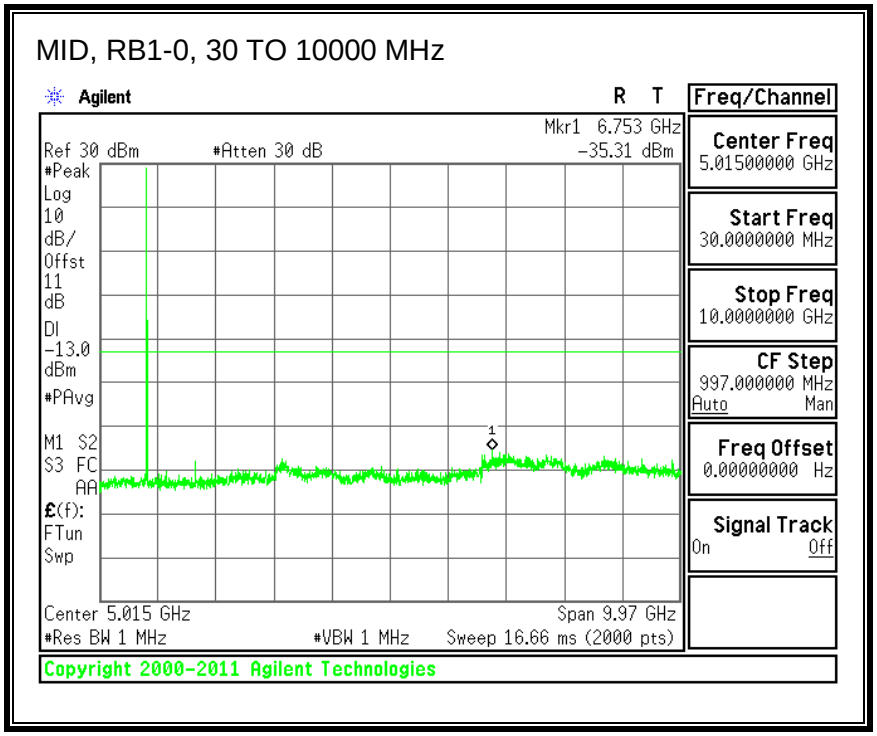
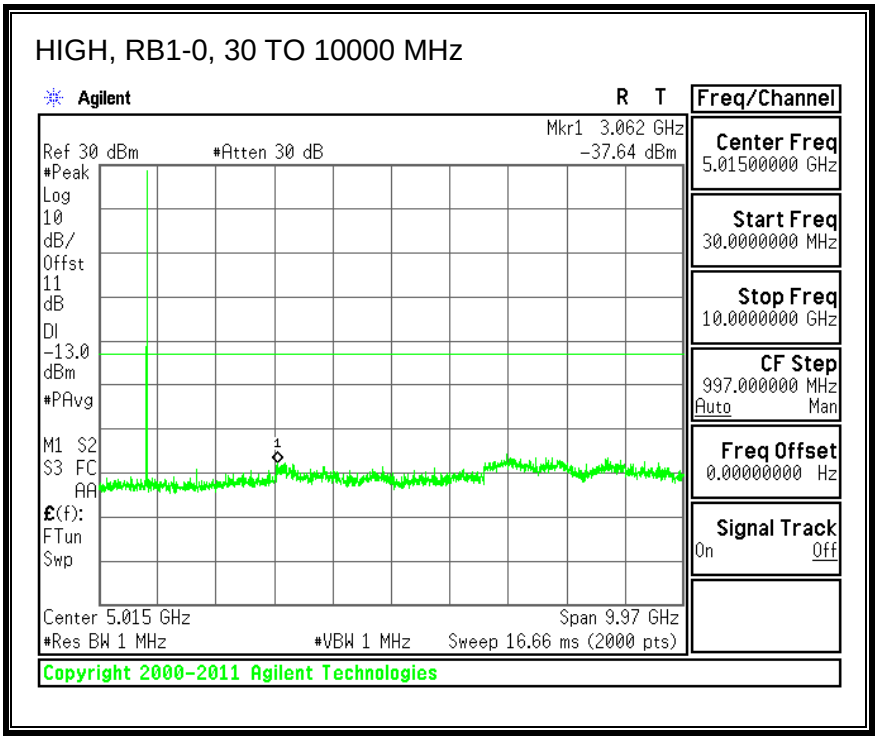
MID, RB1-0, 30 TO 10000 MHz

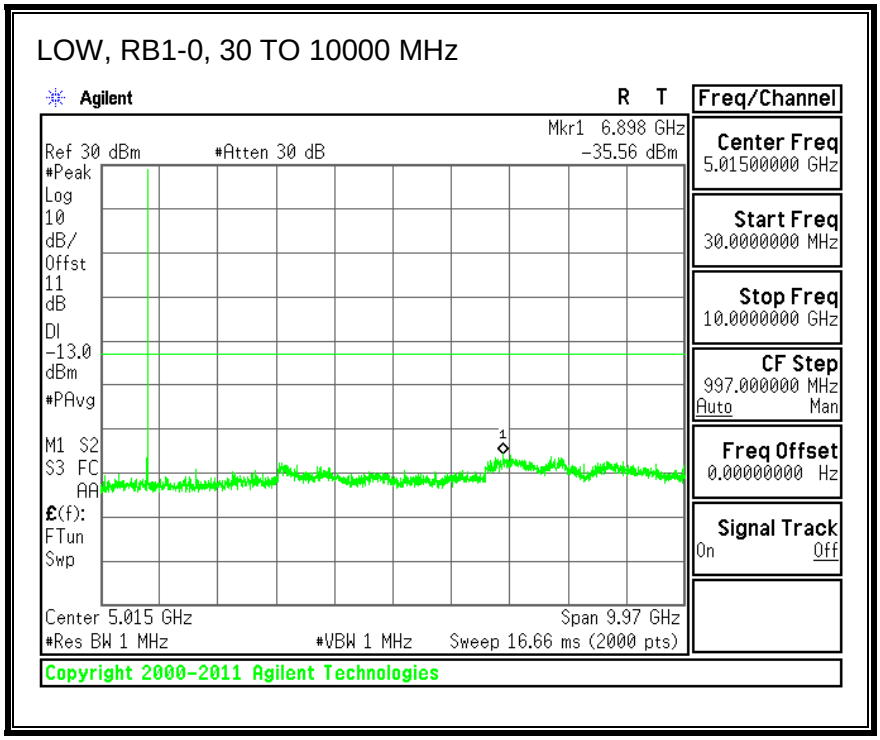


HIGH, RB1-0, 30 TO 10000 MHz

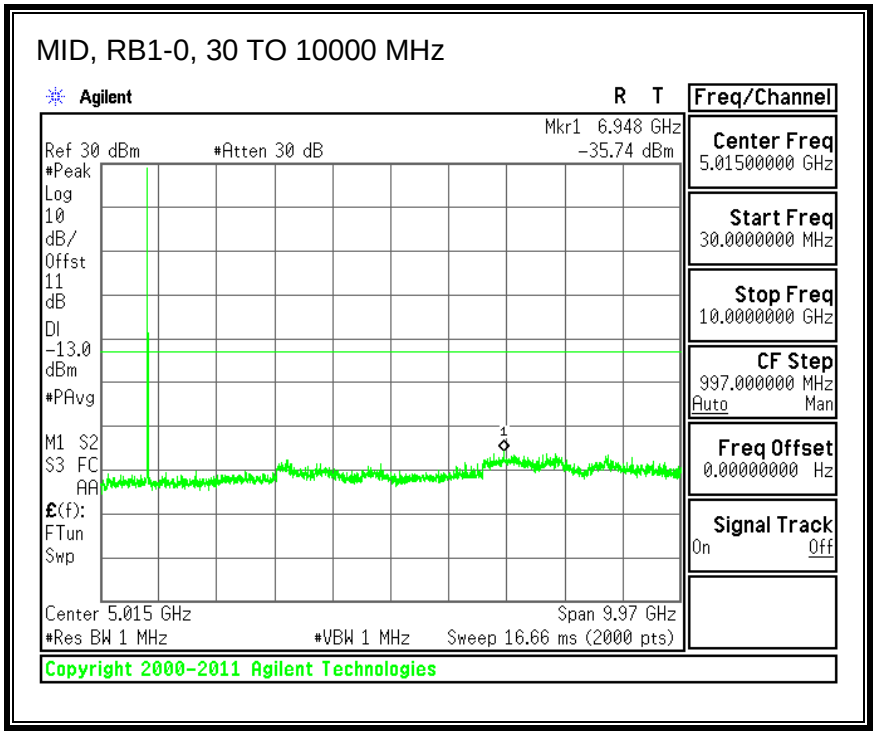


QPSK, (5.0 MHz BAND WIDTH)

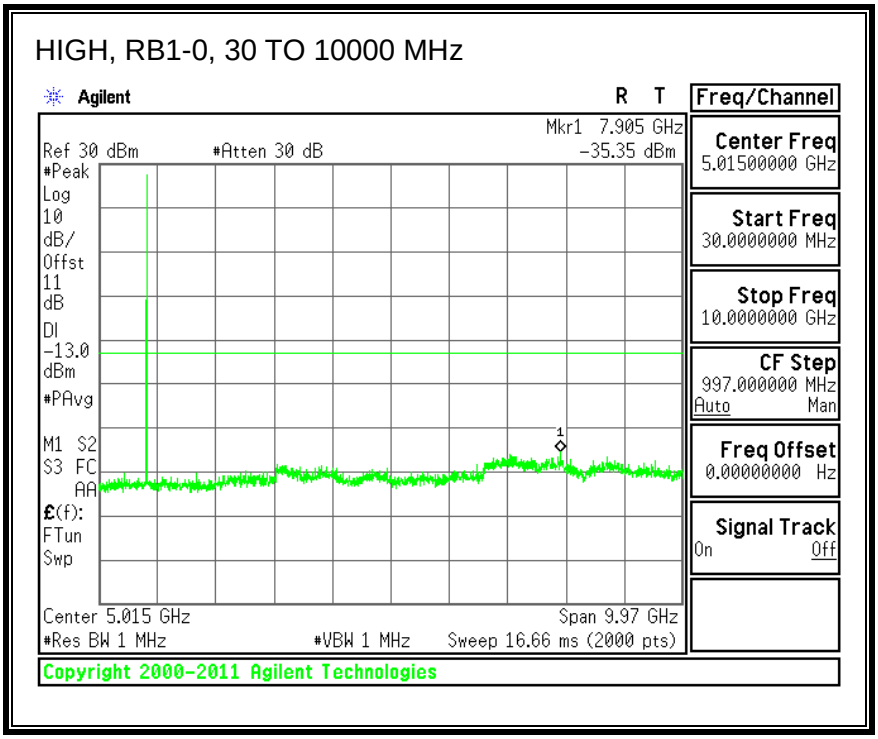
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

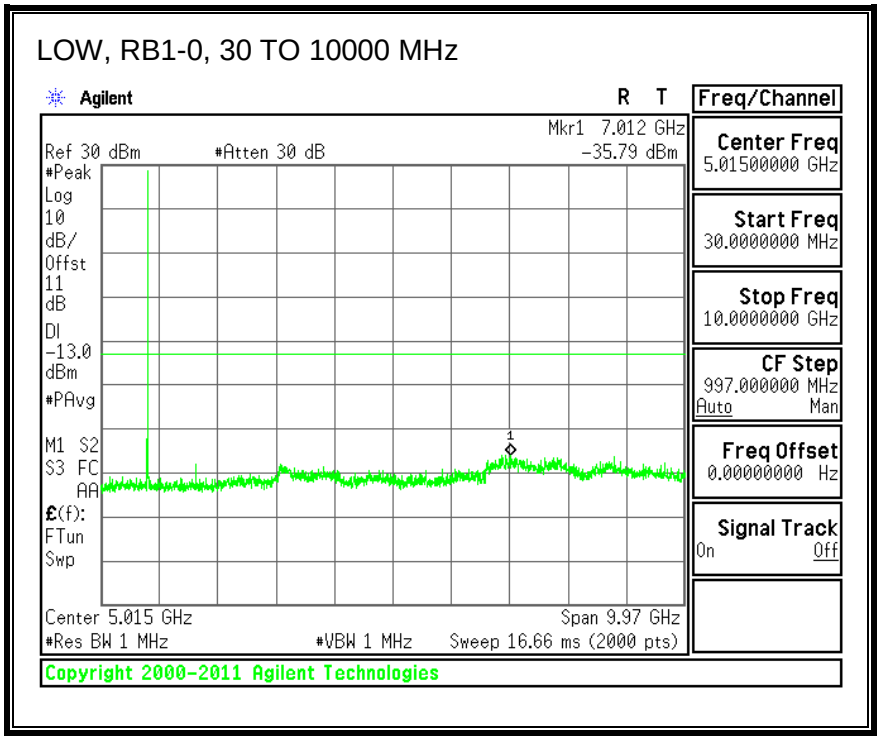


HIGH, RB1-0, 30 TO 10000 MHz

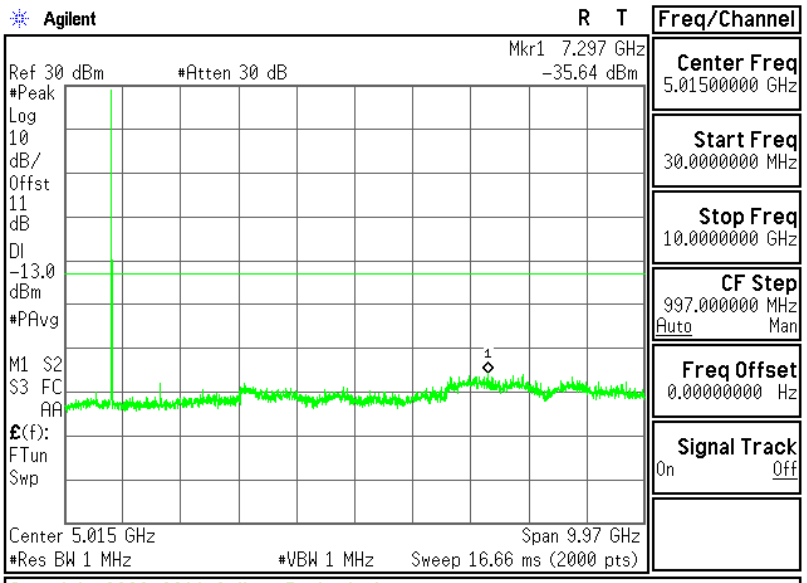


16QAM, (5.0 MHz BAND WIDTH)

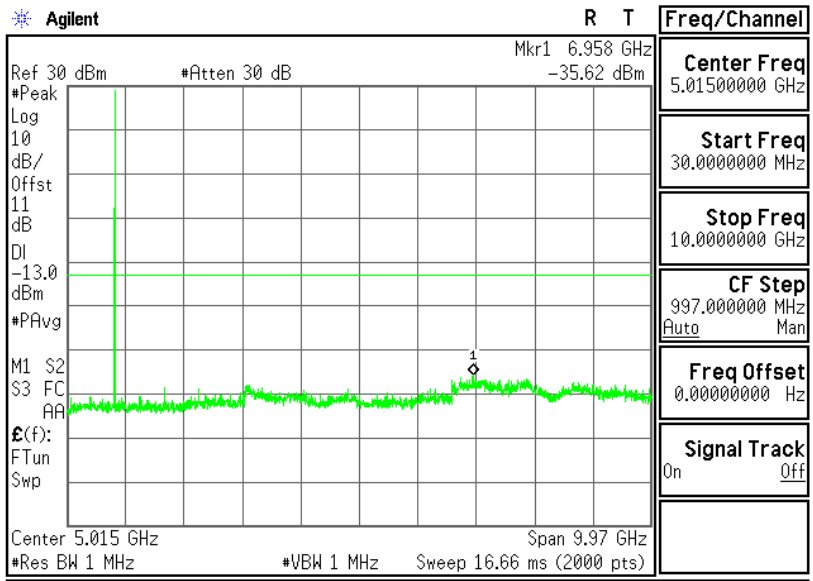
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

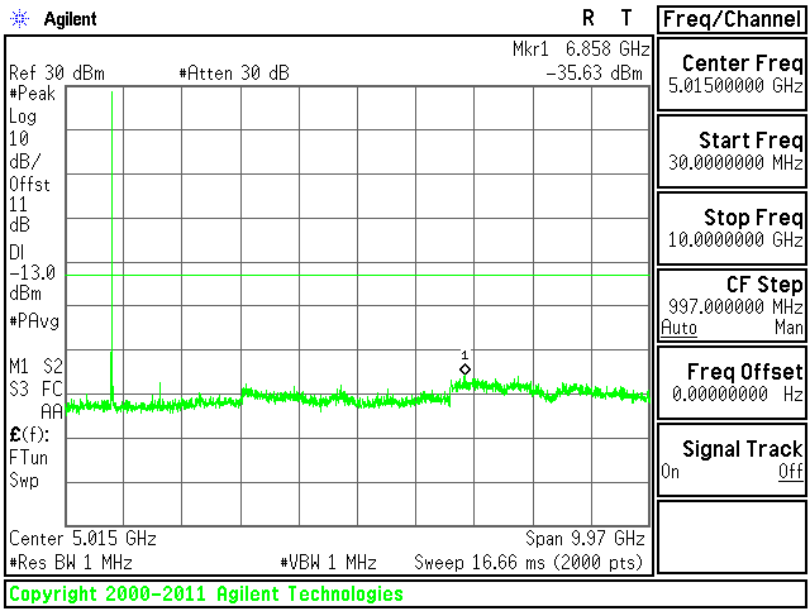


HIGH, RB1-0, 30 TO 10000 MHz

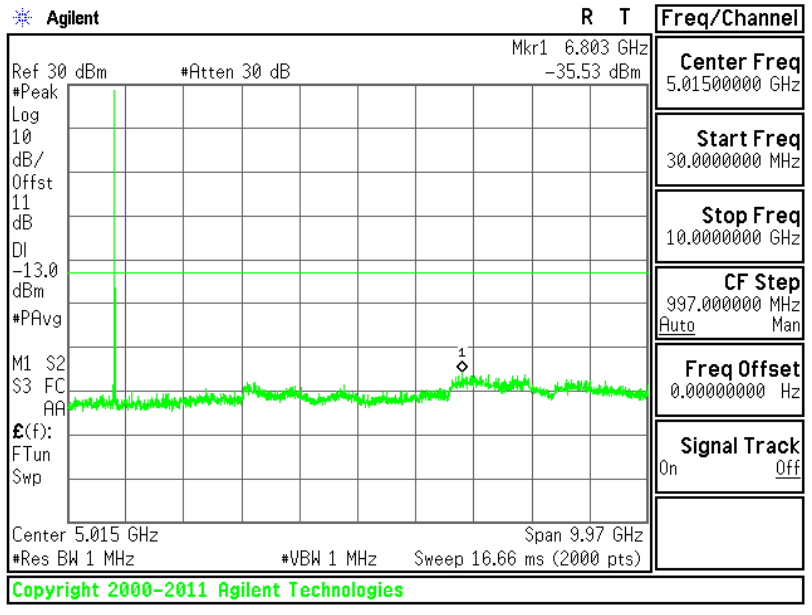


QPSK, (10.0 MHz BAND WIDTH)

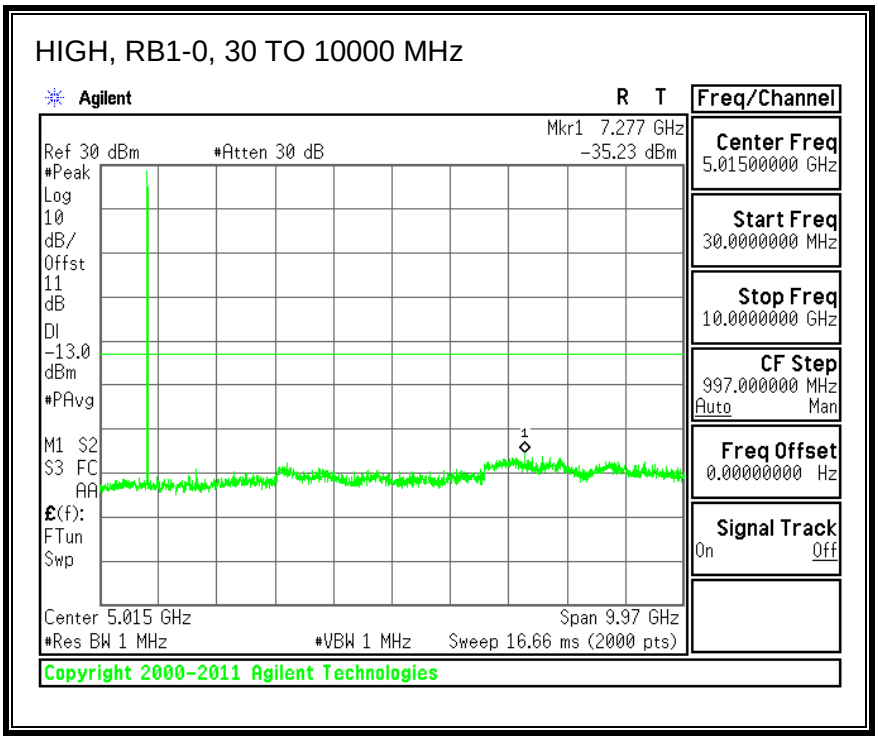
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

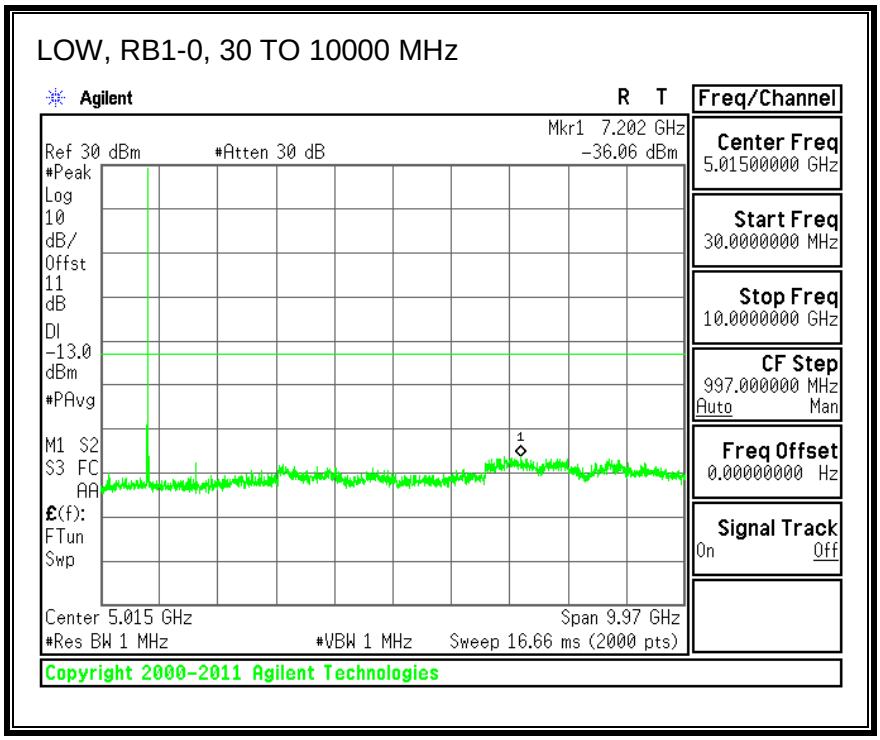


HIGH, RB1-0, 30 TO 10000 MHz

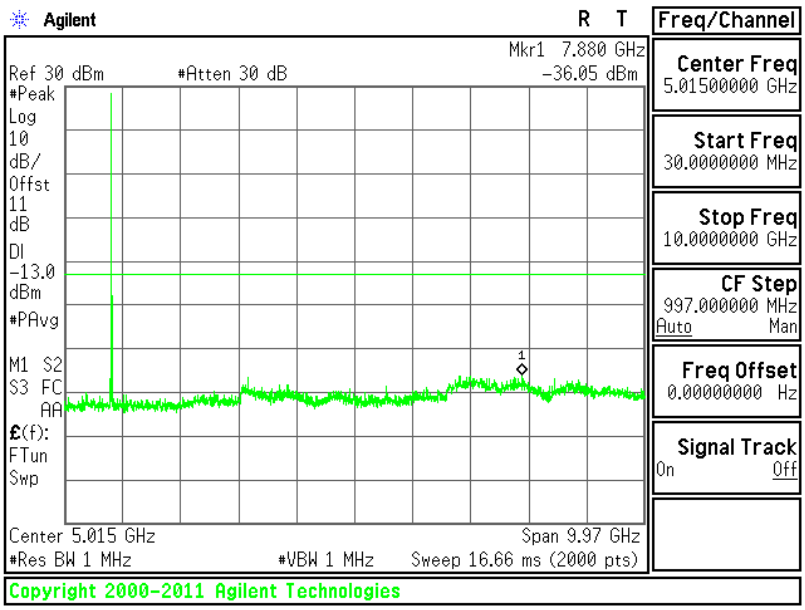


16QAM, (10.0 MHz BAND WIDTH)

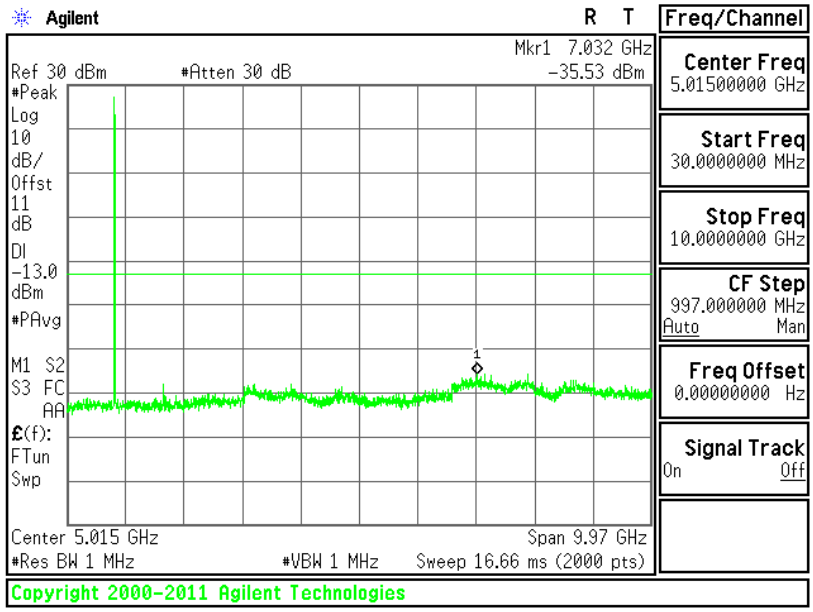
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



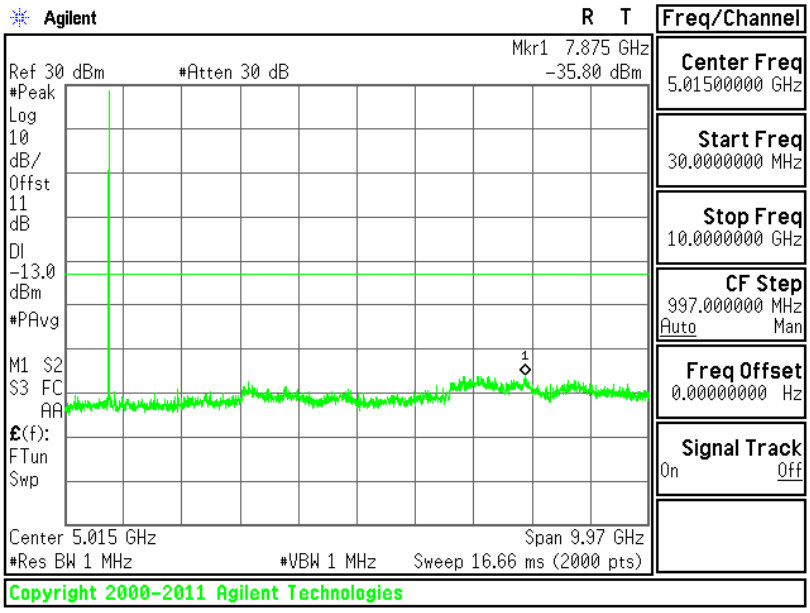
HIGH, RB1-0, 30 TO 10000 MHz



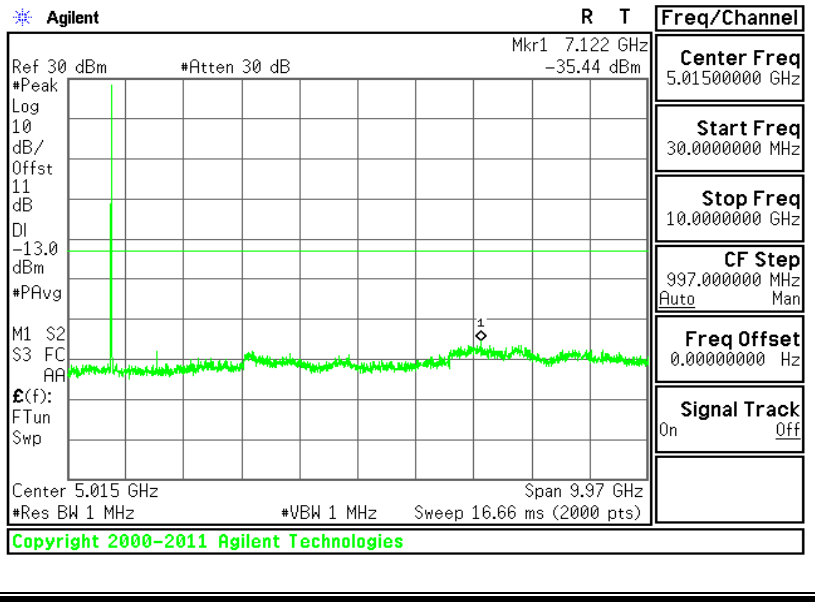
8.3.5. LTE BAND 13

QPSK, (5.0 MHz BAND WIDTH)

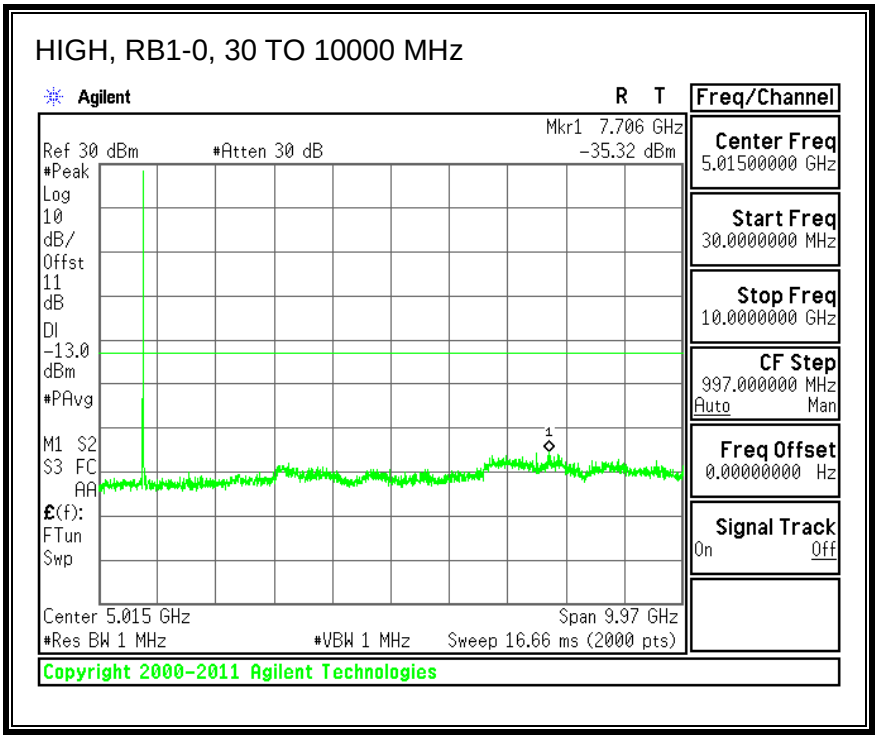
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

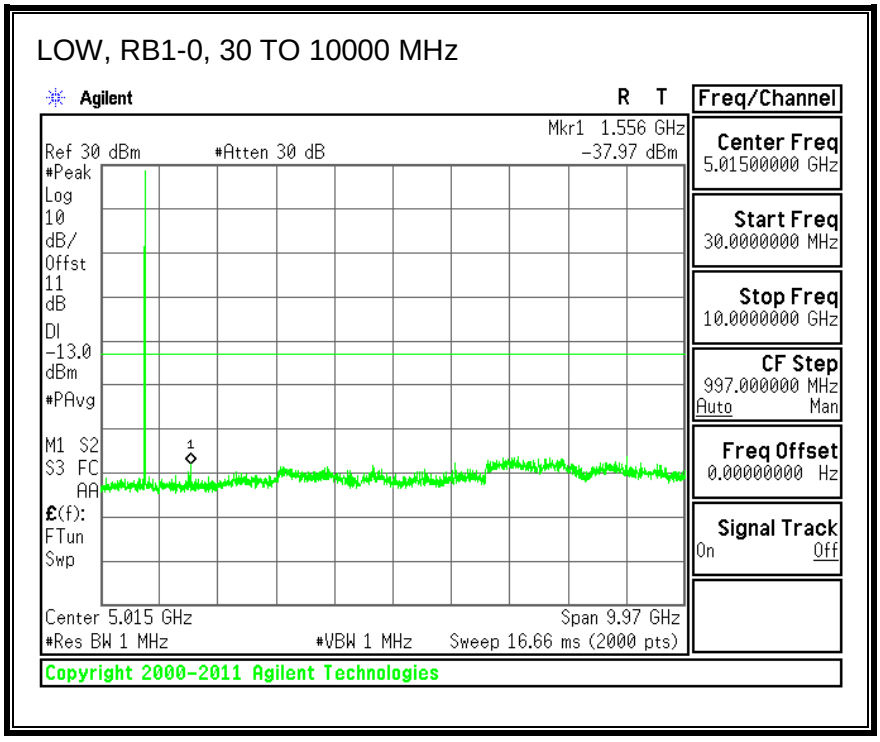


HIGH, RB1-0, 30 TO 10000 MHz

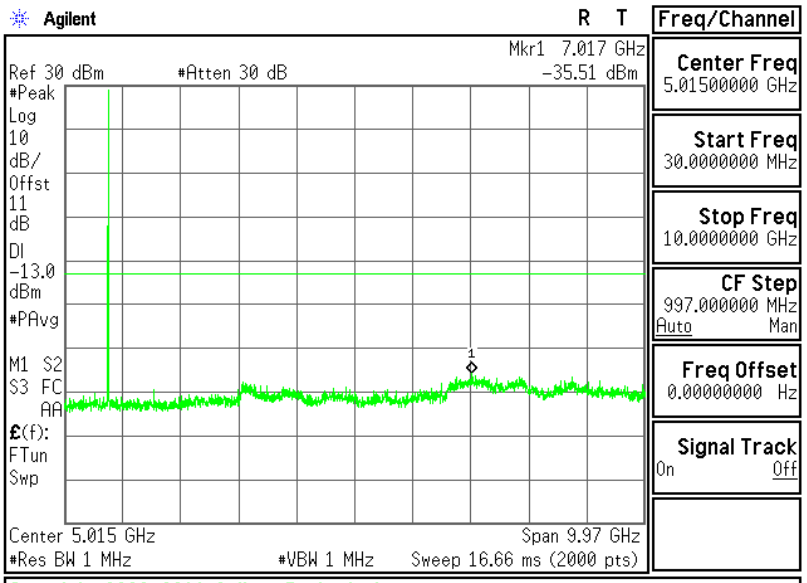


16QAM, (5.0 MHz BAND WIDTH)

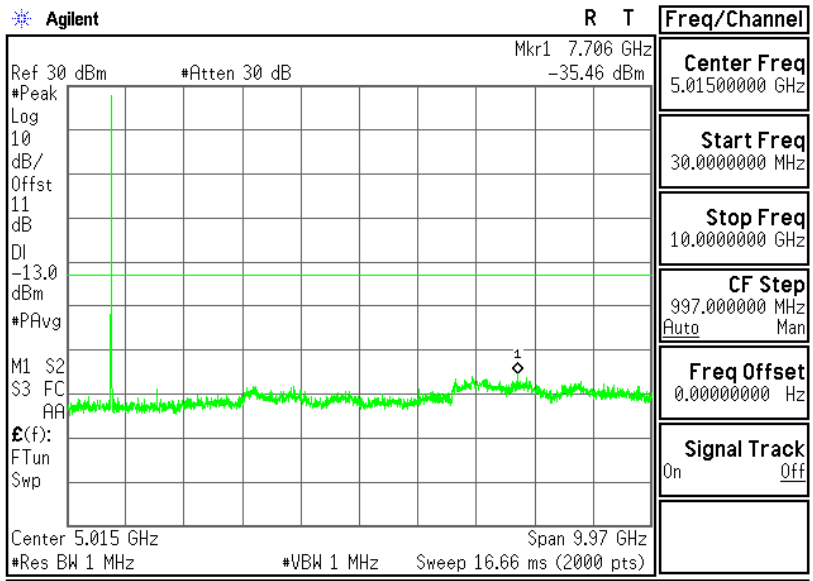
LOW, RB1-0, 30 TO 10000 MHz



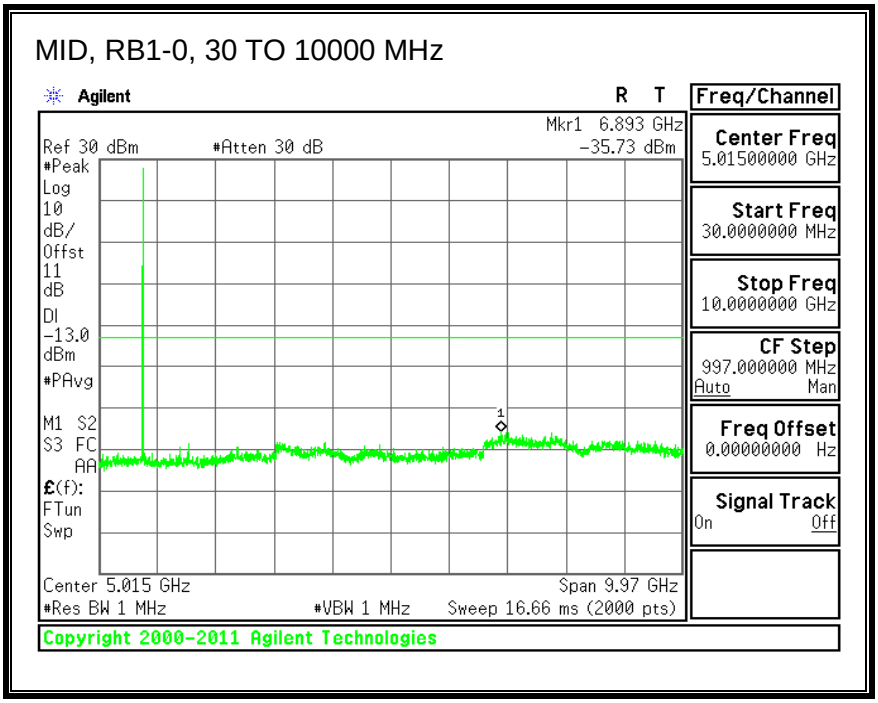
MID, RB1-0, 30 TO 10000 MHz



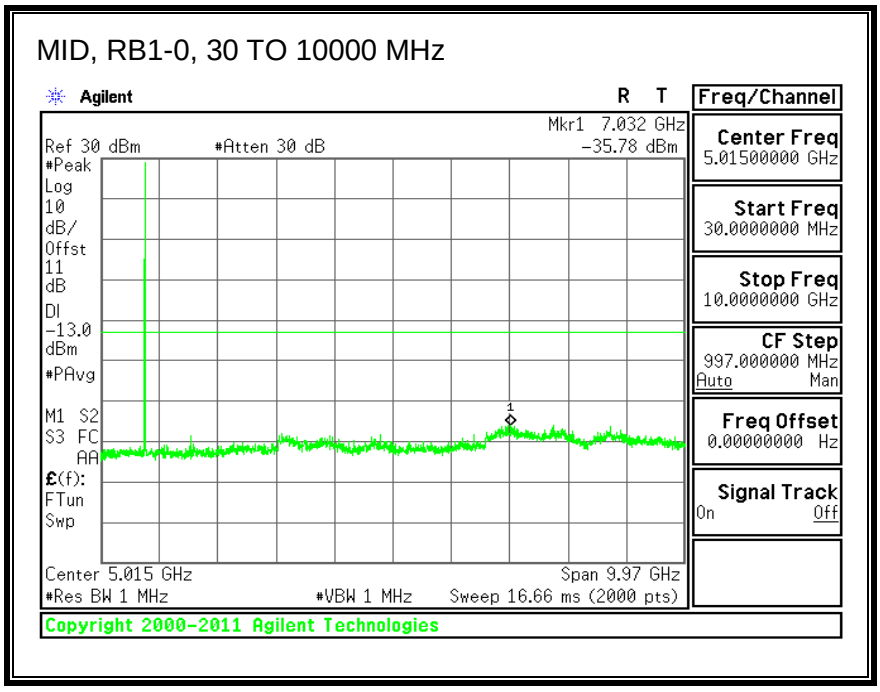
HIGH, RB1-0, 30 TO 10000 MHz



QPSK, (10.0 MHz BAND WIDTH)



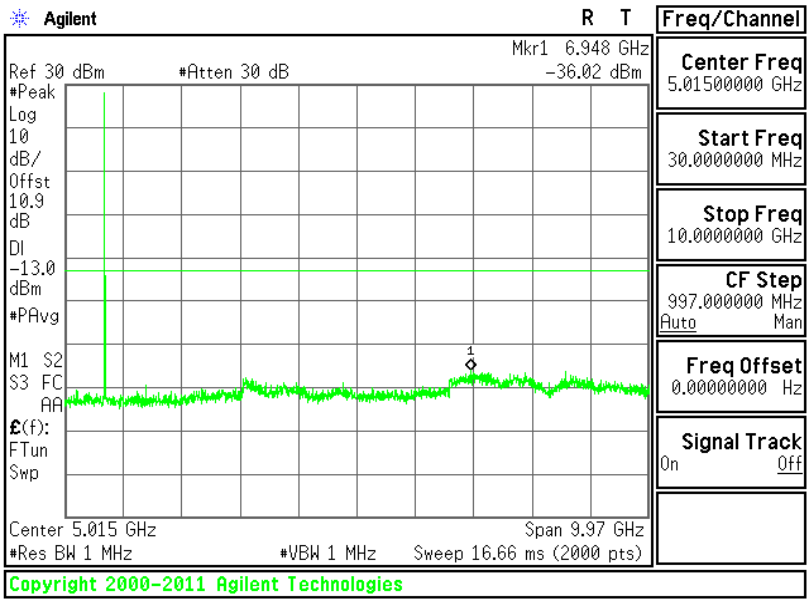
16QAM, (10.0 MHz BAND WIDTH)



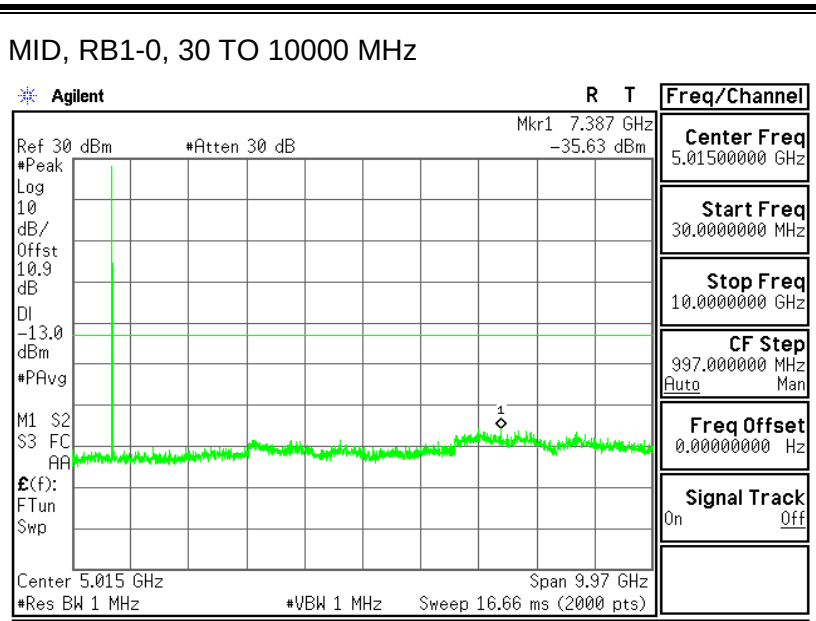
8.3.6. LTE BAND 17

QPSK, (5.0 MHz BAND WIDTH)

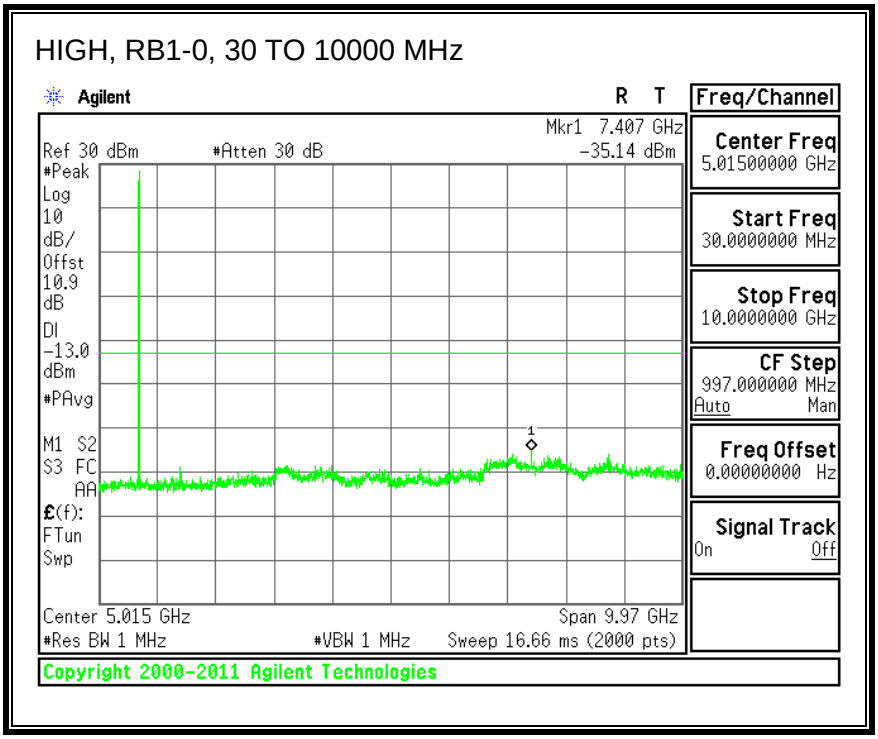
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

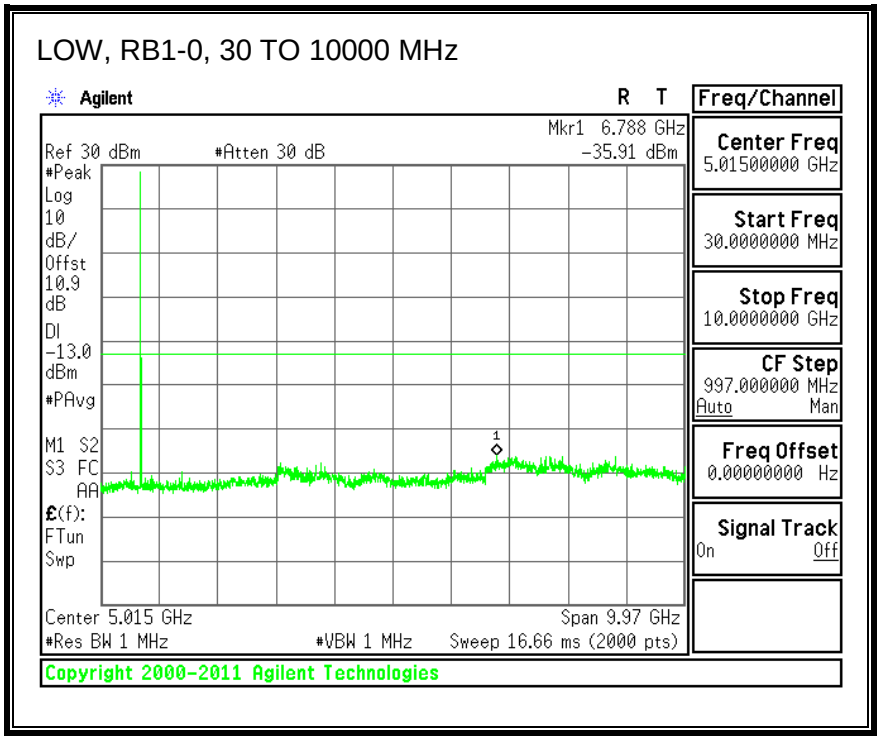


HIGH, RB1-0, 30 TO 10000 MHz

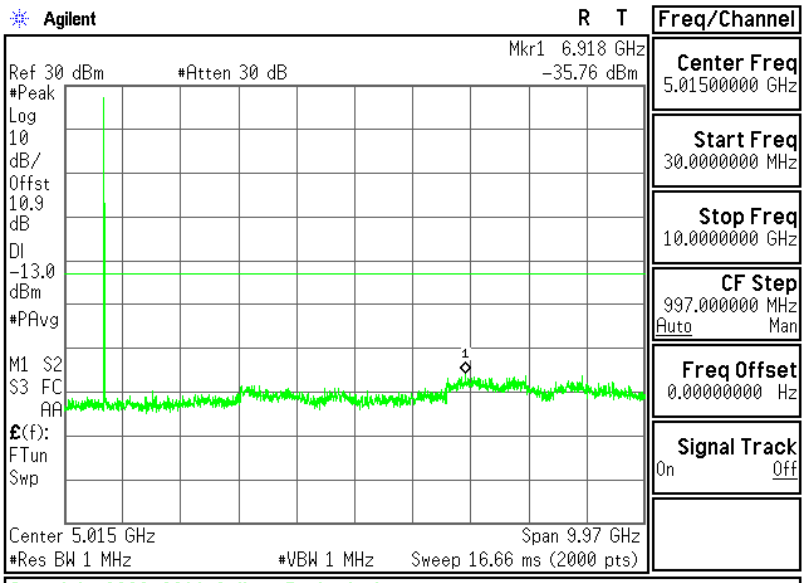


16QAM, (5.0 MHz BAND WIDTH)

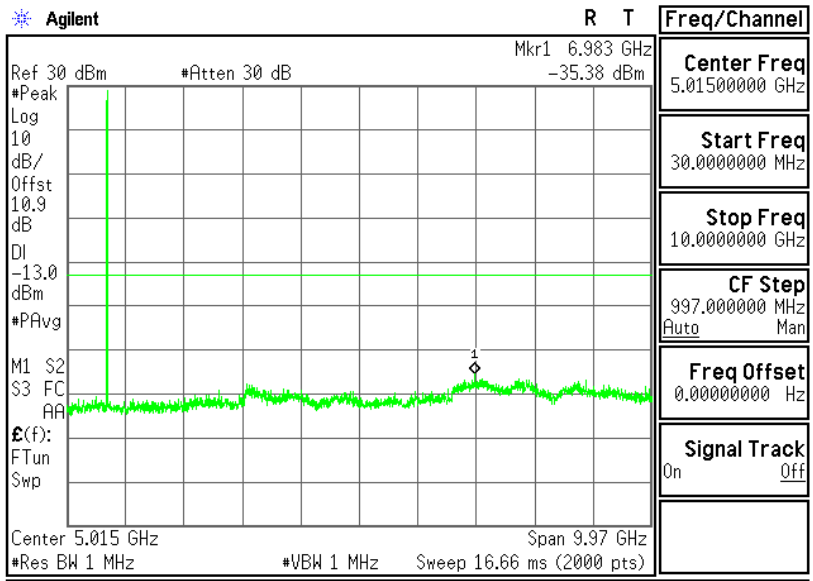
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

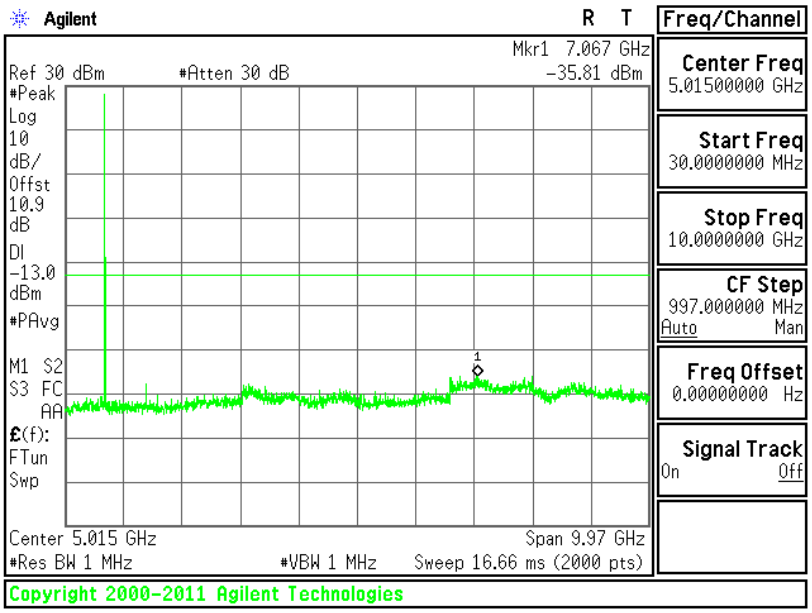


HIGH, RB1-0, 30 TO 10000 MHz

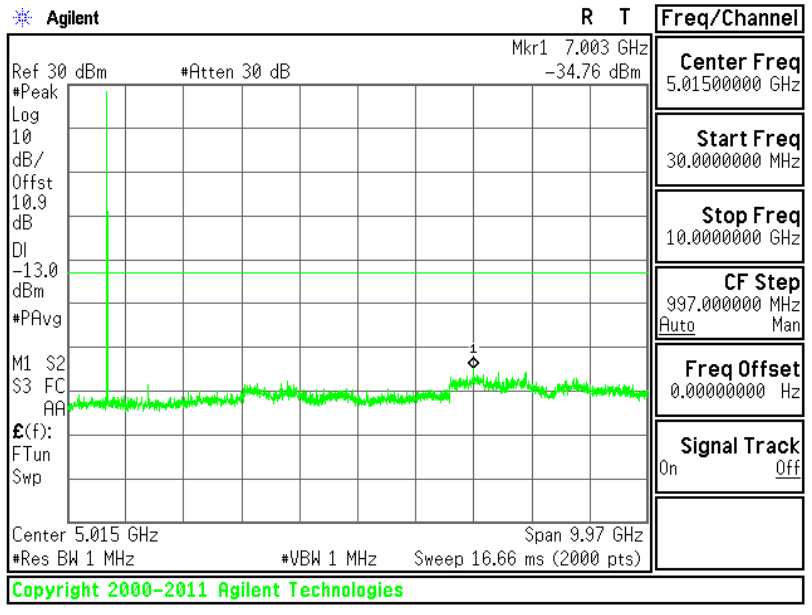


QPSK, (10.0 MHz BAND WIDTH)

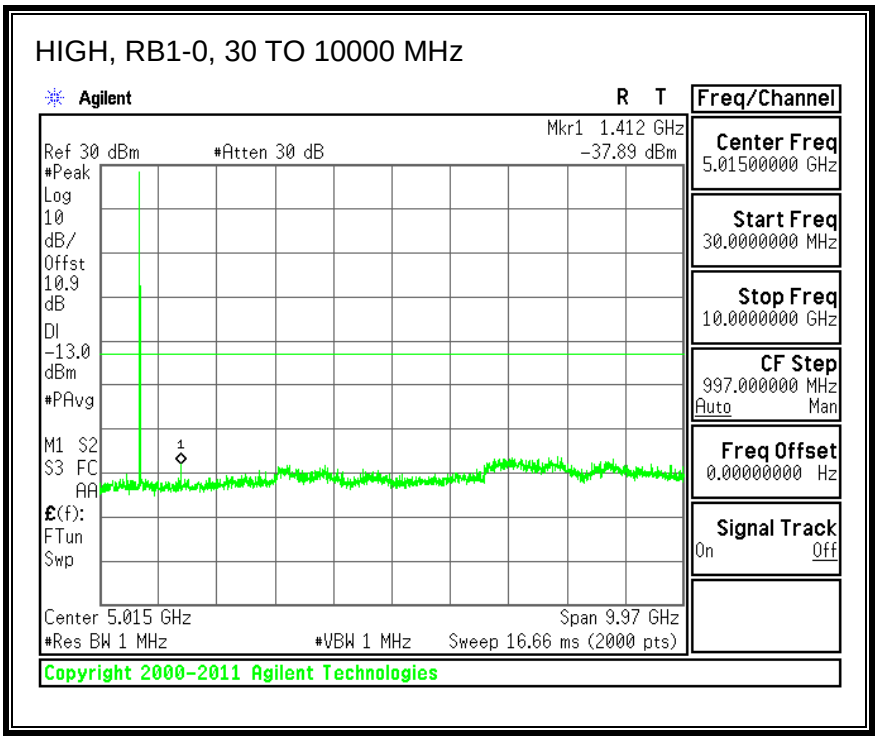
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

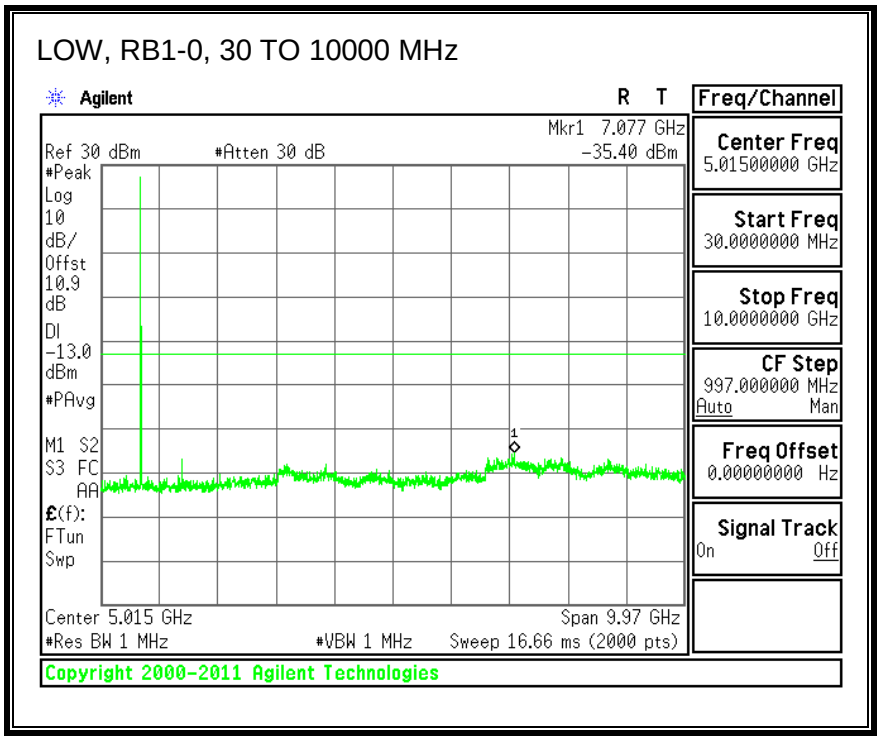


HIGH, RB1-0, 30 TO 10000 MHz

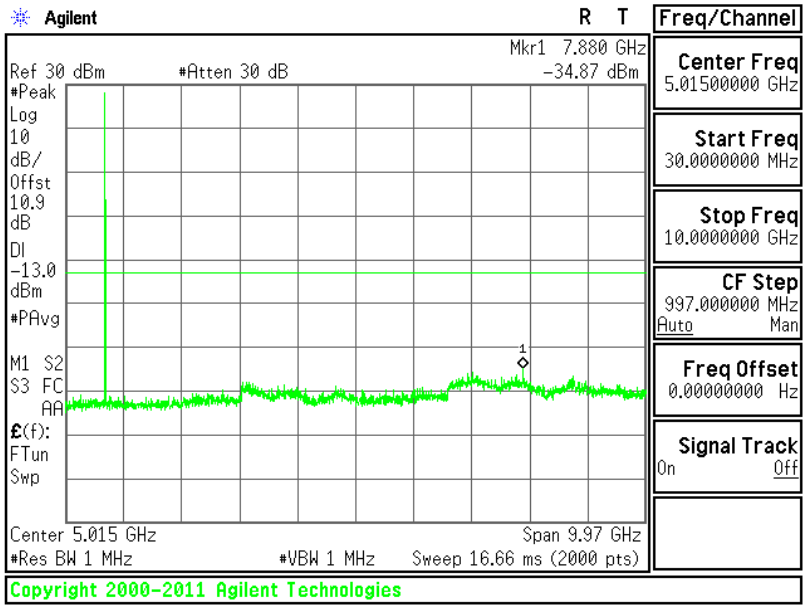


16QAM, (10.0 MHz BAND WIDTH)

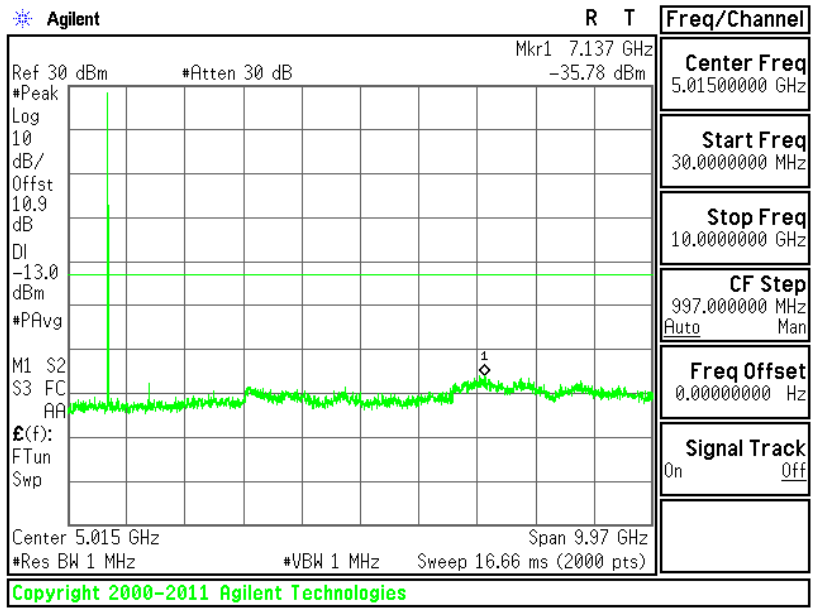
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



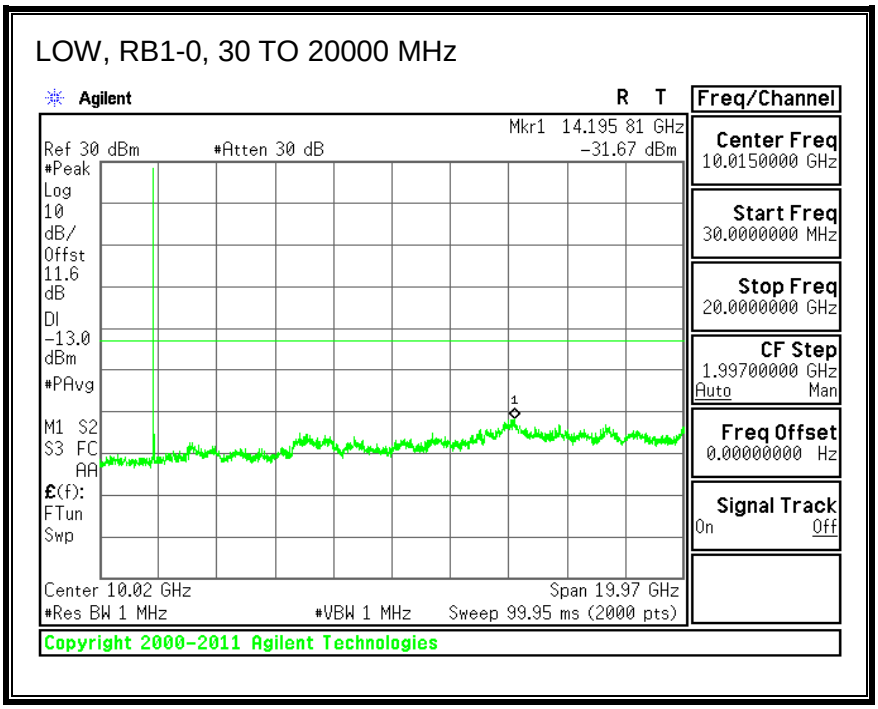
HIGH, RB1-0, 30 TO 10000 MHz



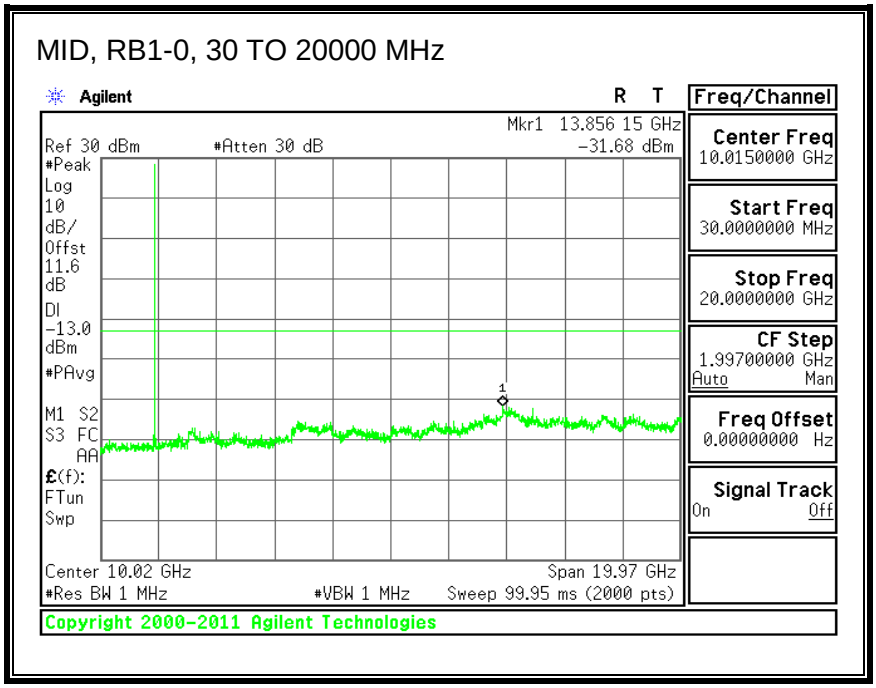
8.3.7. LTE BAND 25

QPSK, (1.4 MHz BAND WIDTH)

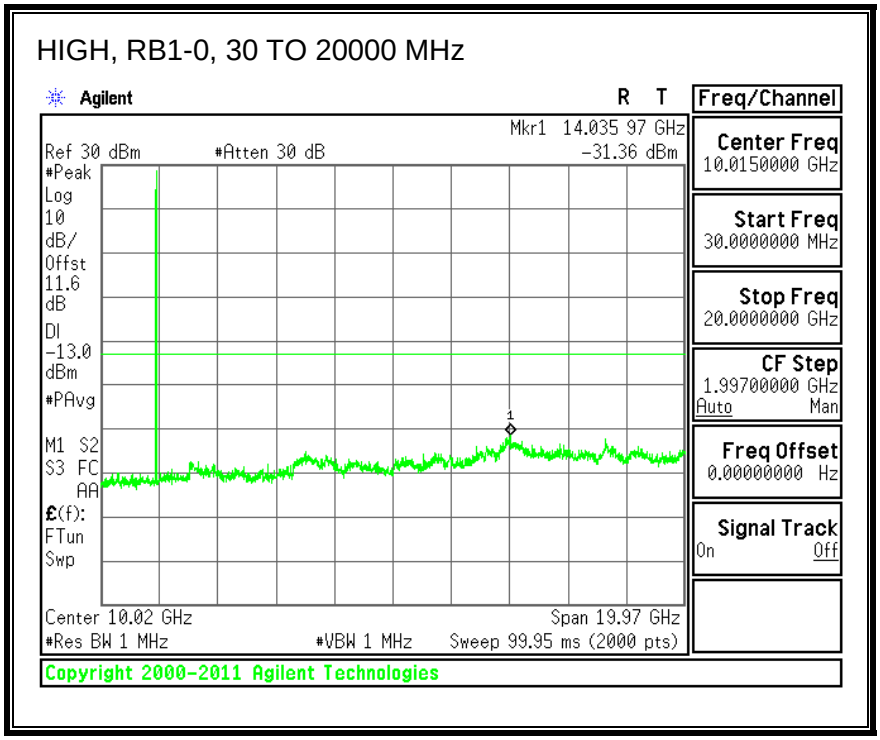
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

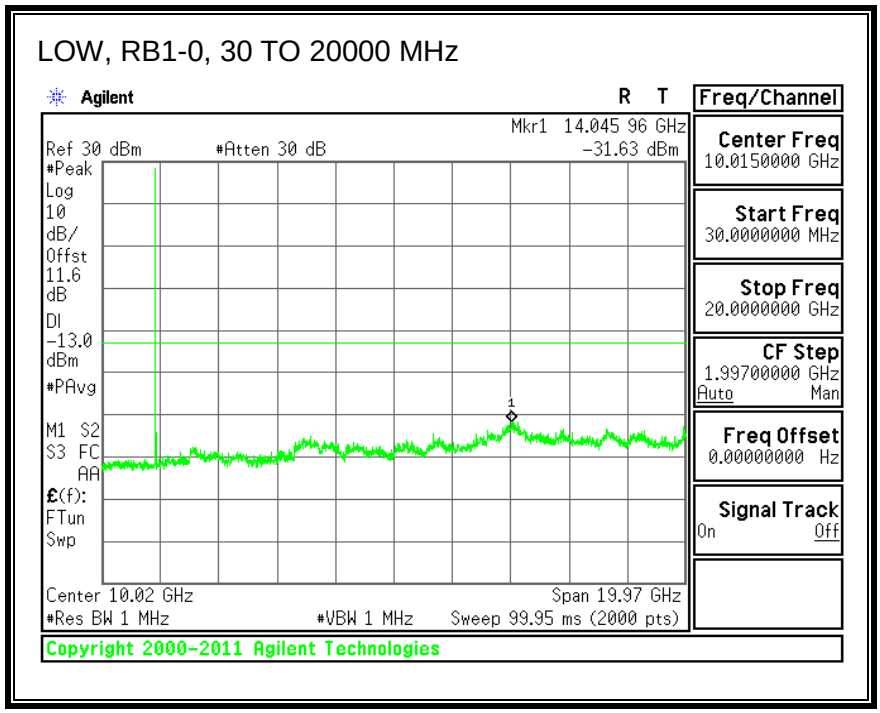


HIGH, RB1-0, 30 TO 20000 MHz

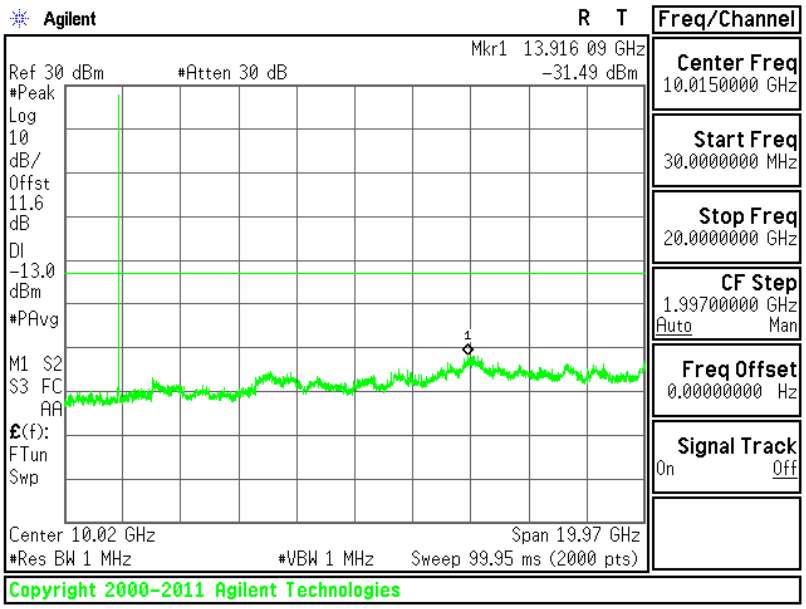


16QAM, (1.4 MHz BAND WIDTH)

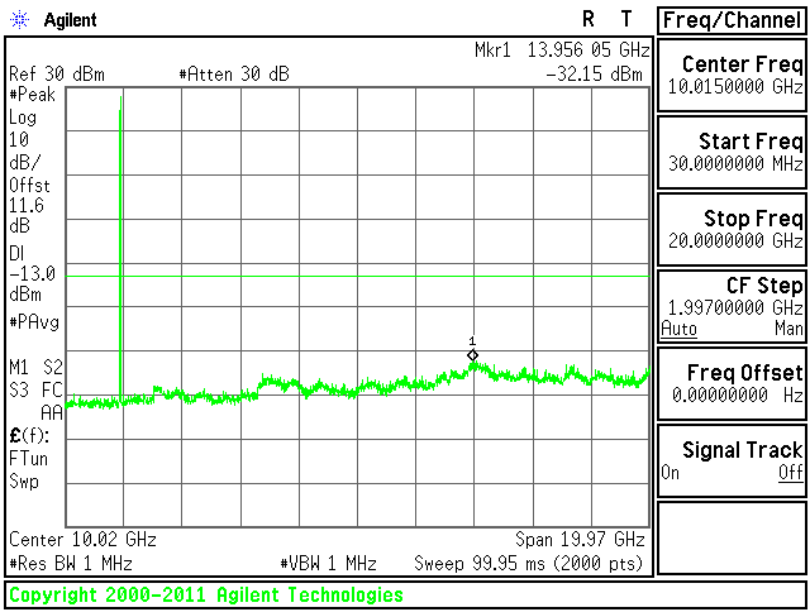
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

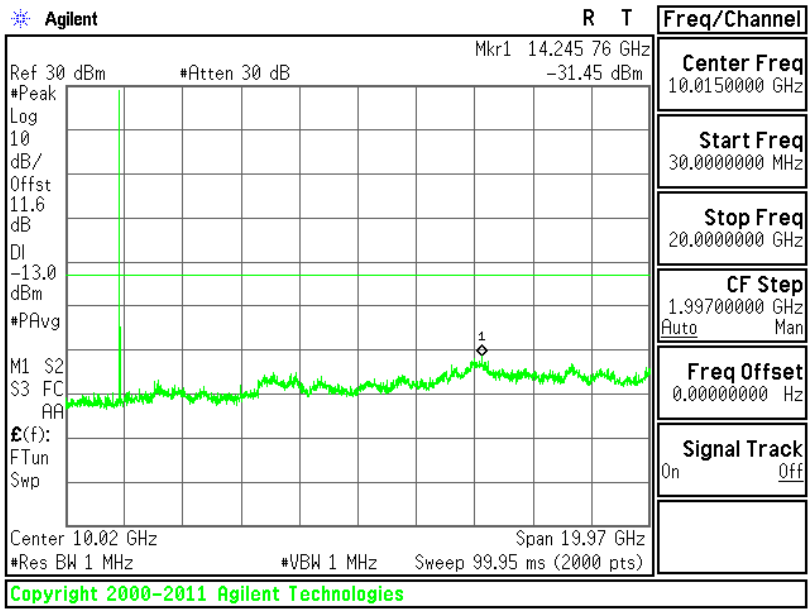


HIGH, RB1-0, 30 TO 20000 MHz

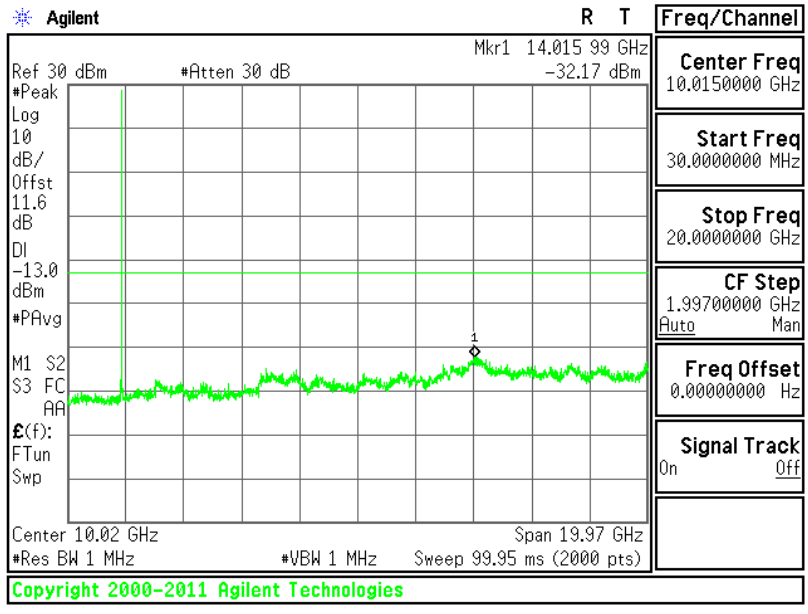


QPSK, (3.0 MHz BAND WIDTH)

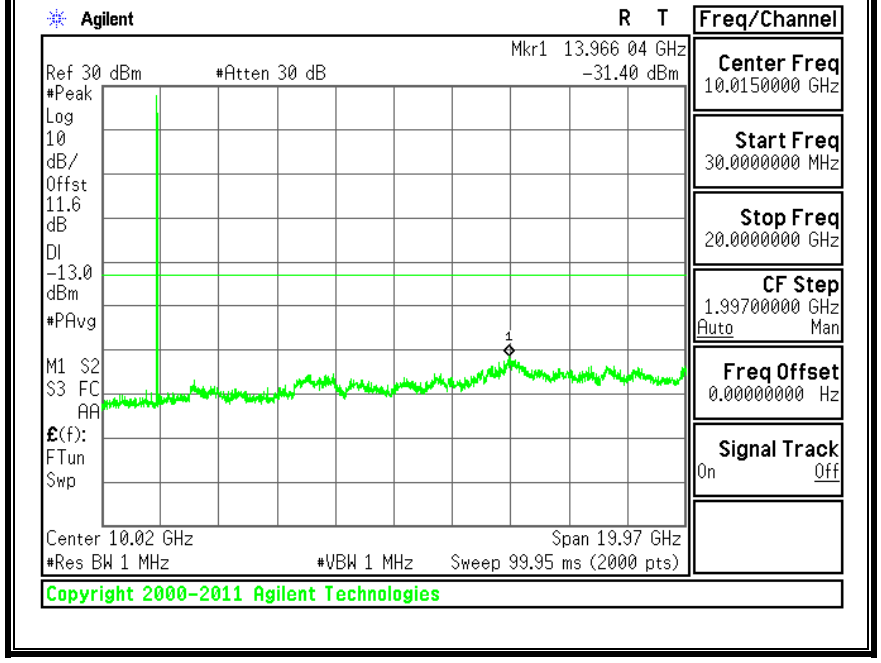
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

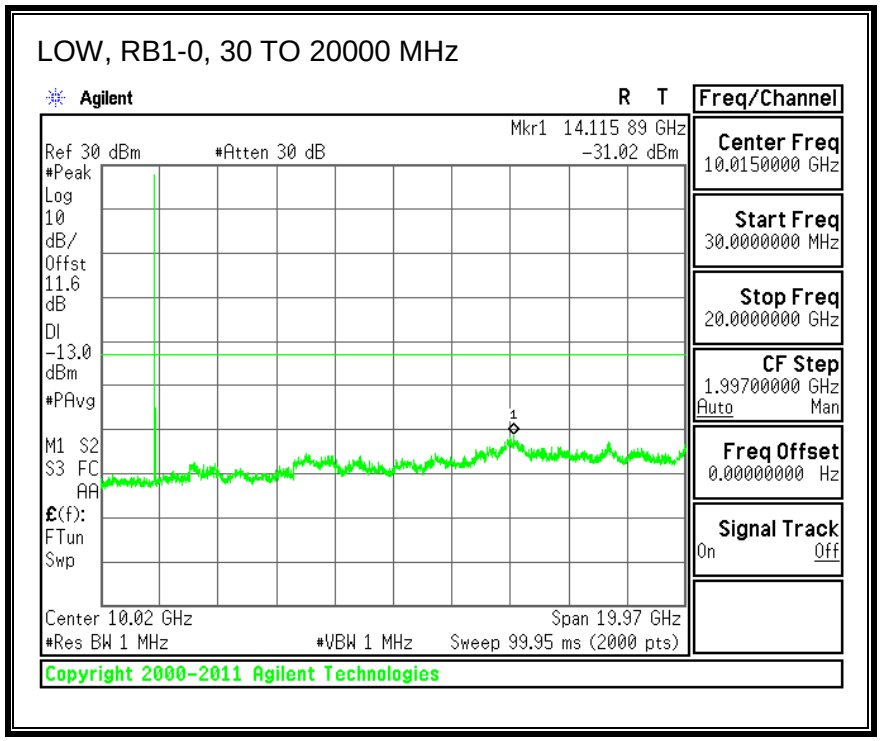


HIGH, RB1-0, 30 TO 20000 MHz

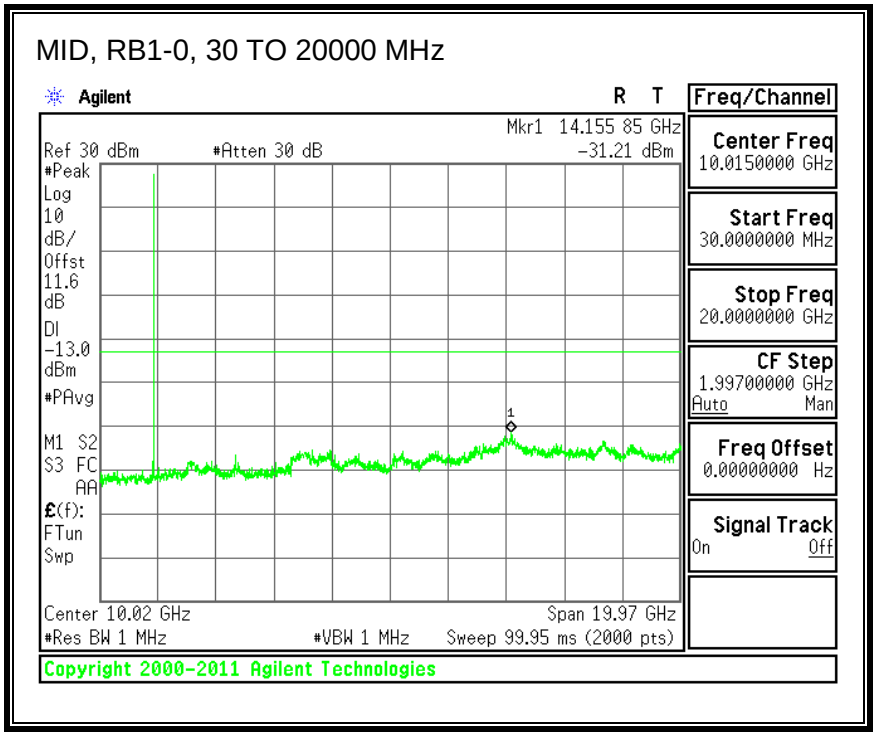


16QAM, (3.0 MHz BAND WIDTH)

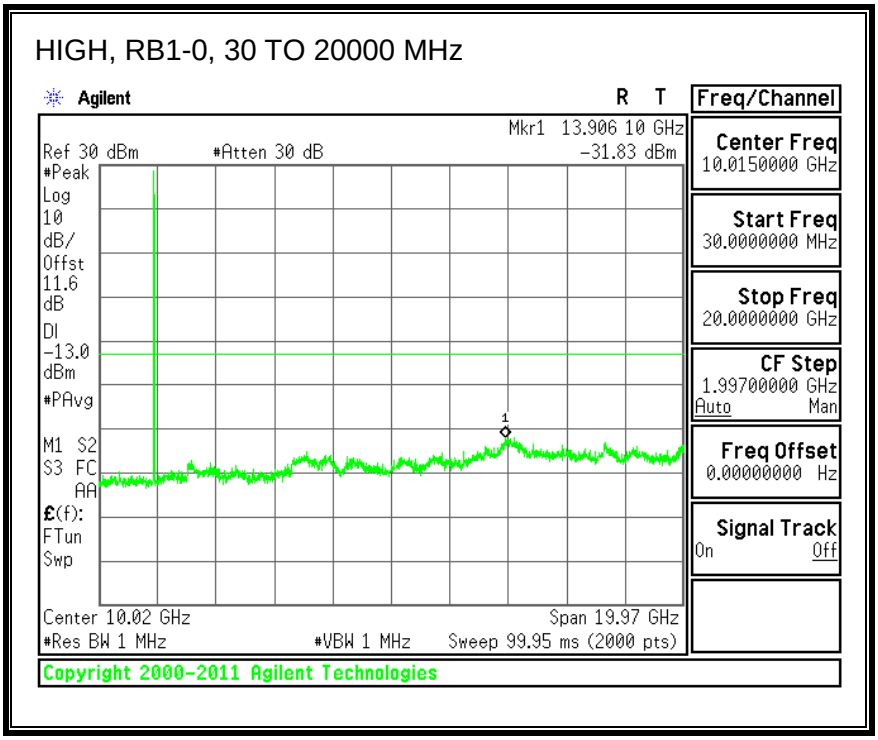
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

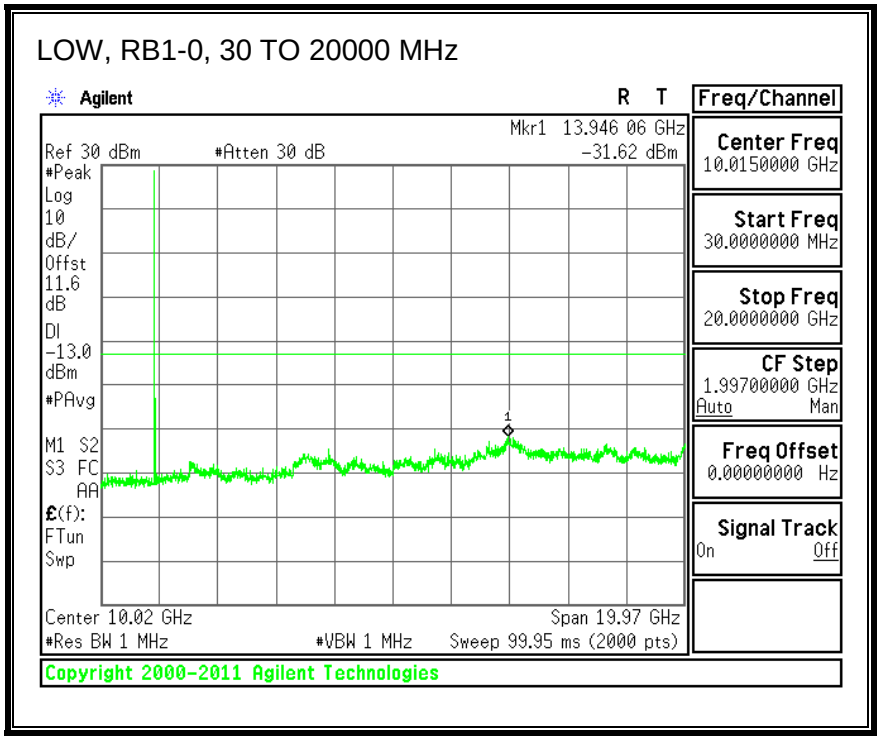


HIGH, RB1-0, 30 TO 20000 MHz

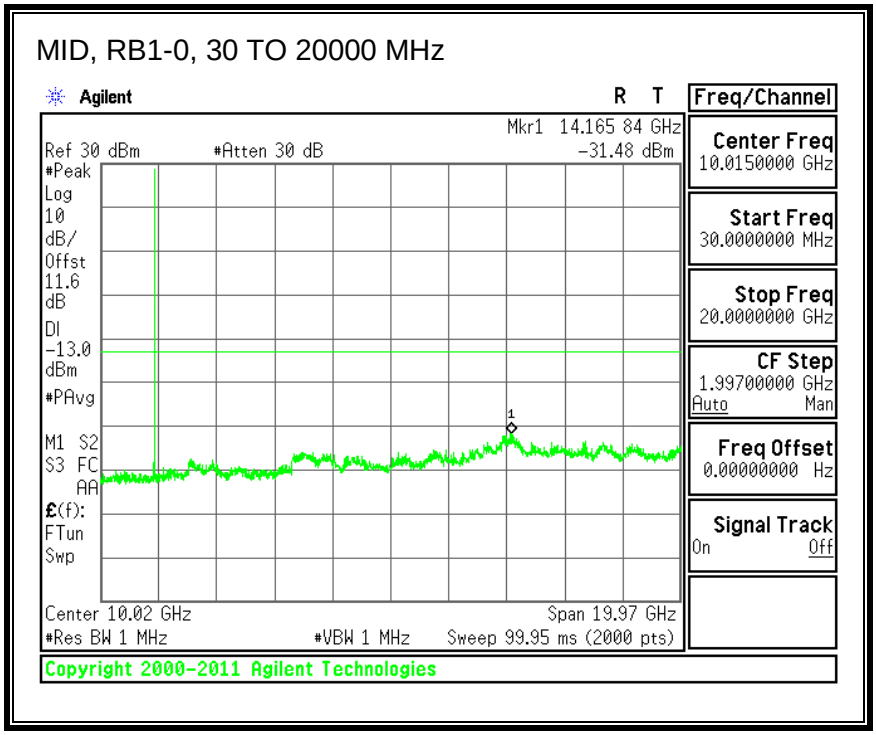


QPSK, (5.0 MHz BAND WIDTH)

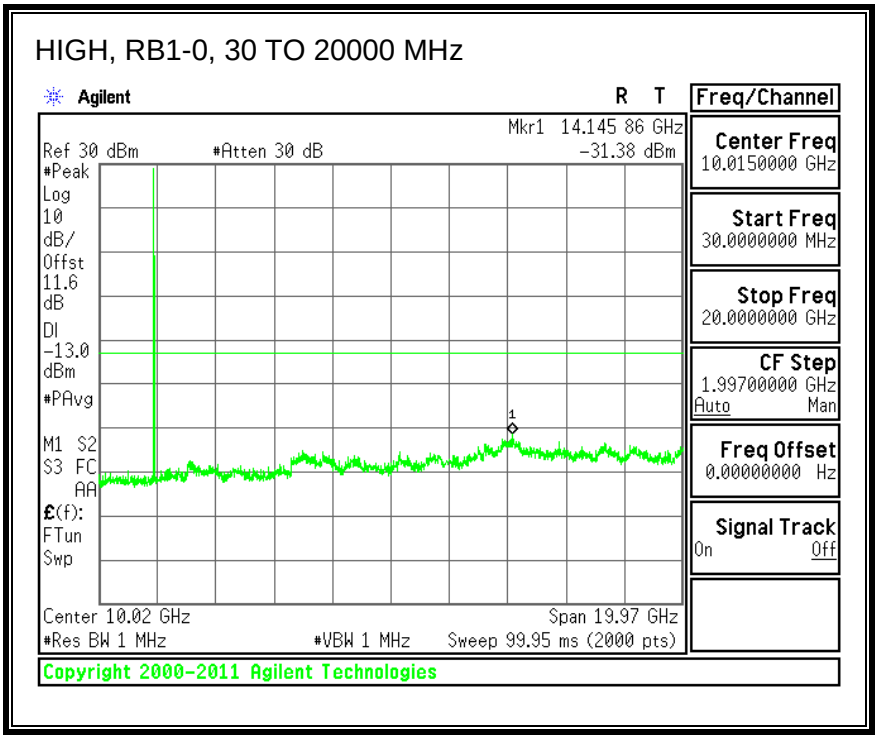
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

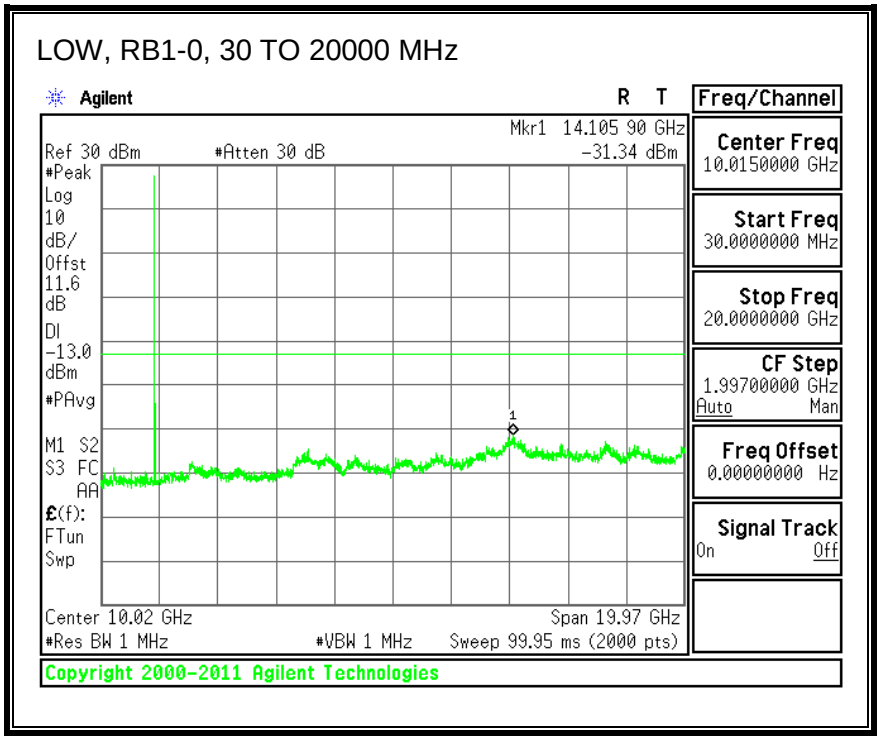


HIGH, RB1-0, 30 TO 20000 MHz

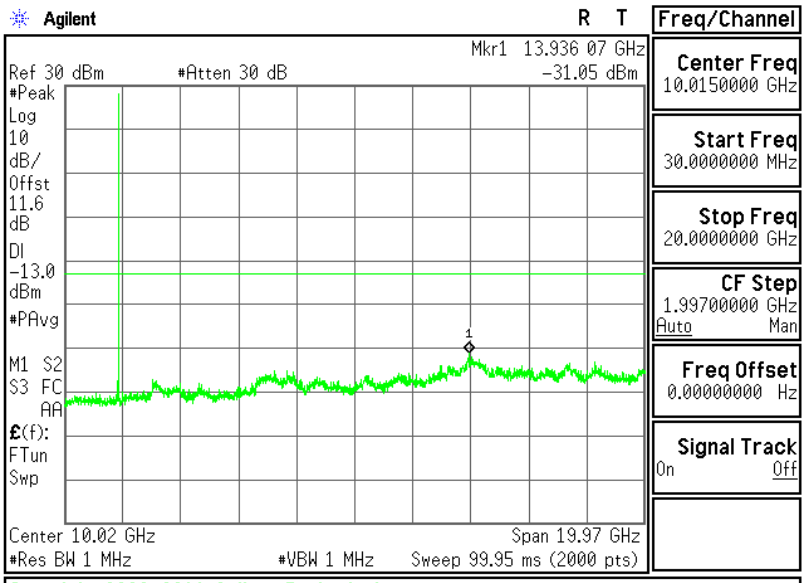


16QAM, (5.0 MHz BAND WIDTH)

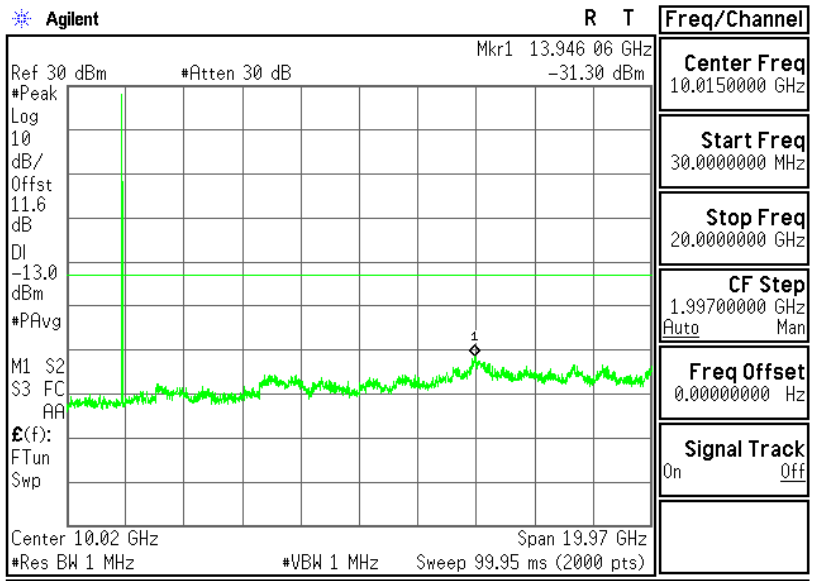
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

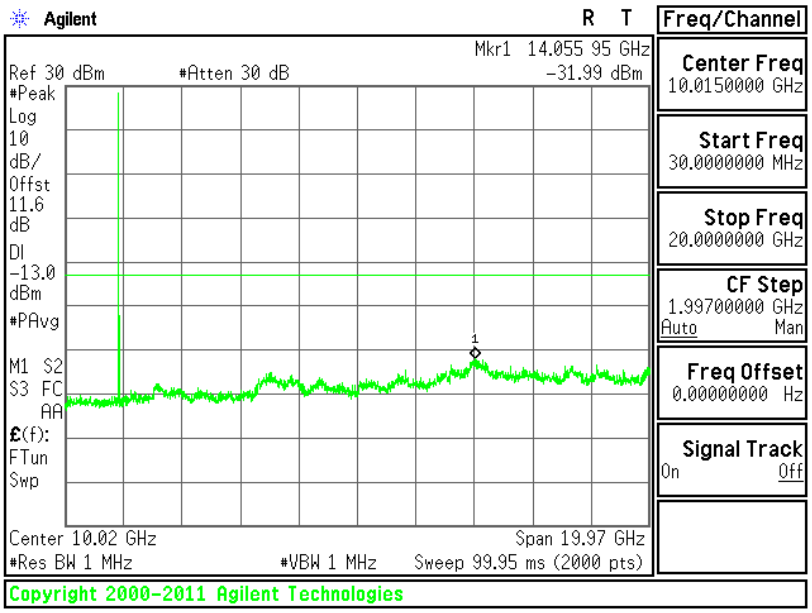


HIGH, RB1-0, 30 TO 20000 MHz

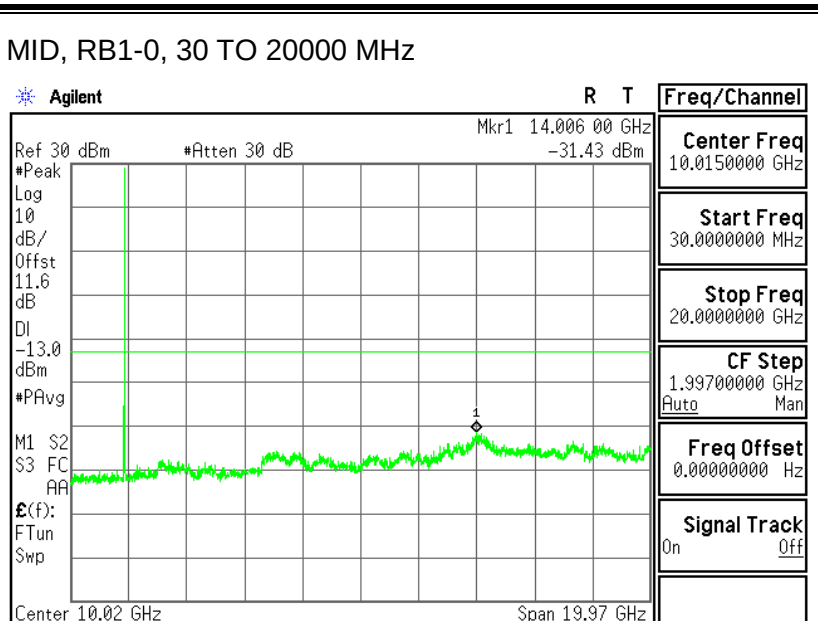


QPSK, (10.0 MHz BAND WIDTH)

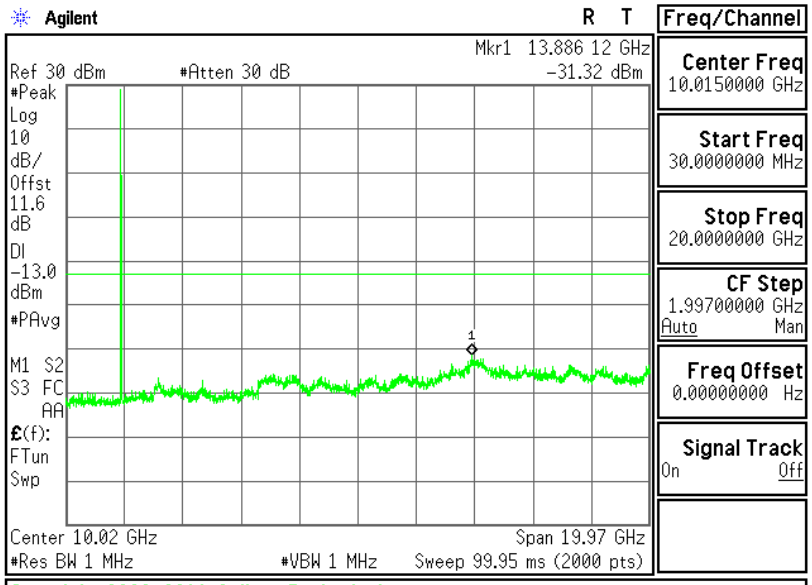
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

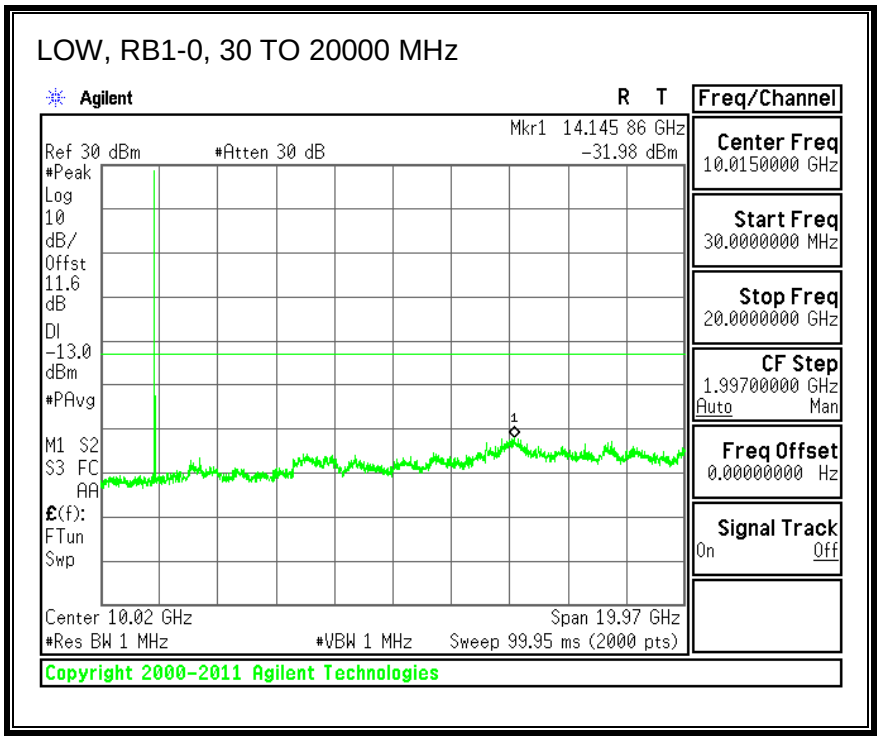


HIGH, RB1-0, 30 TO 20000 MHz

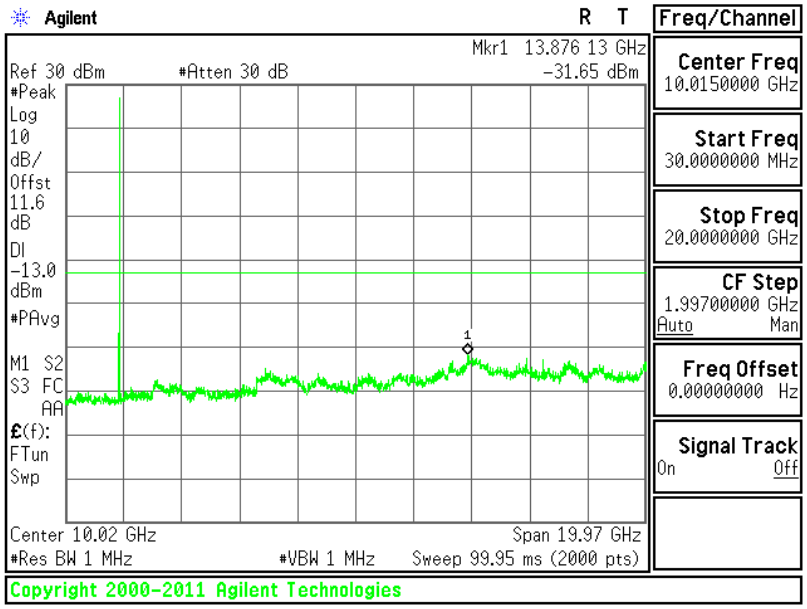


16QAM, (10.0 MHz BAND WIDTH)

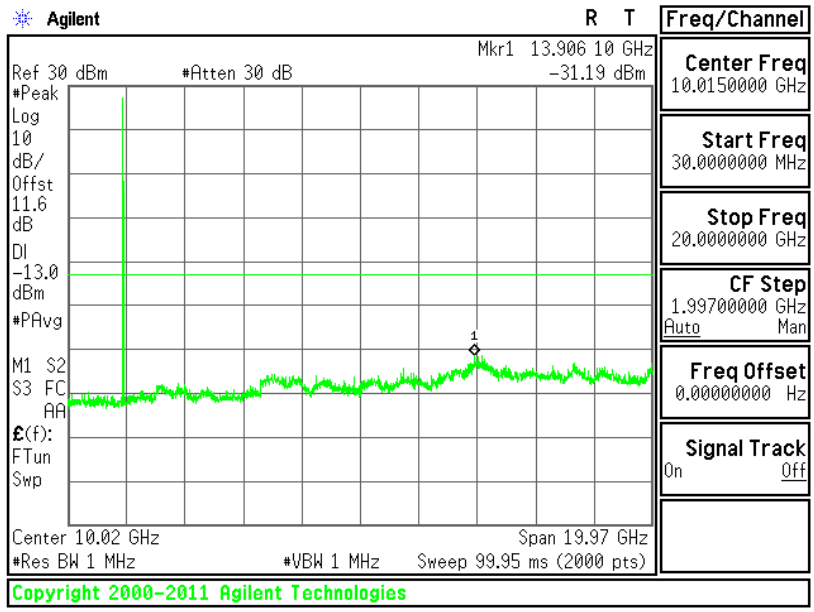
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

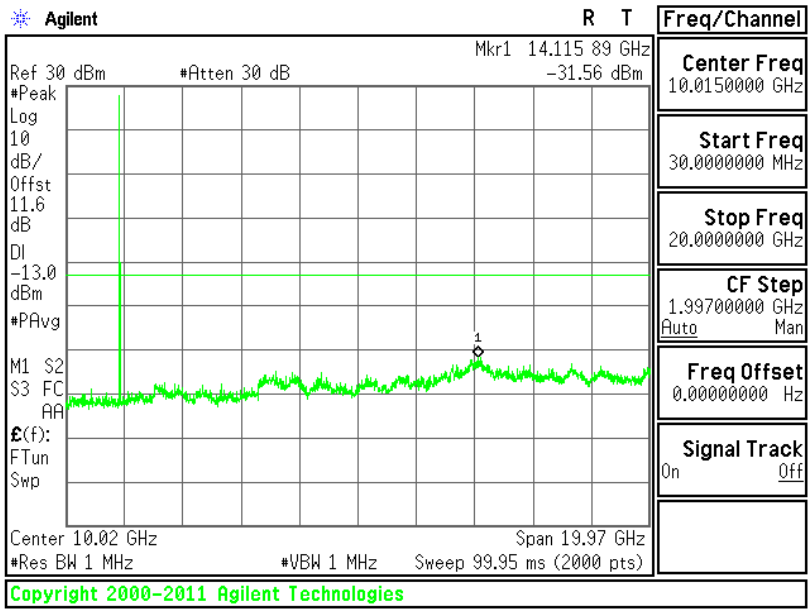


HIGH, RB1-0, 30 TO 20000 MHz

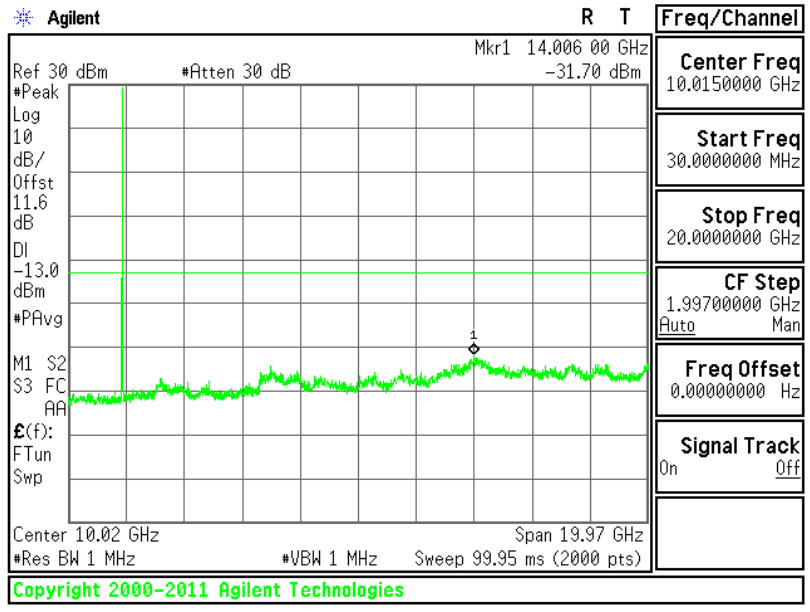


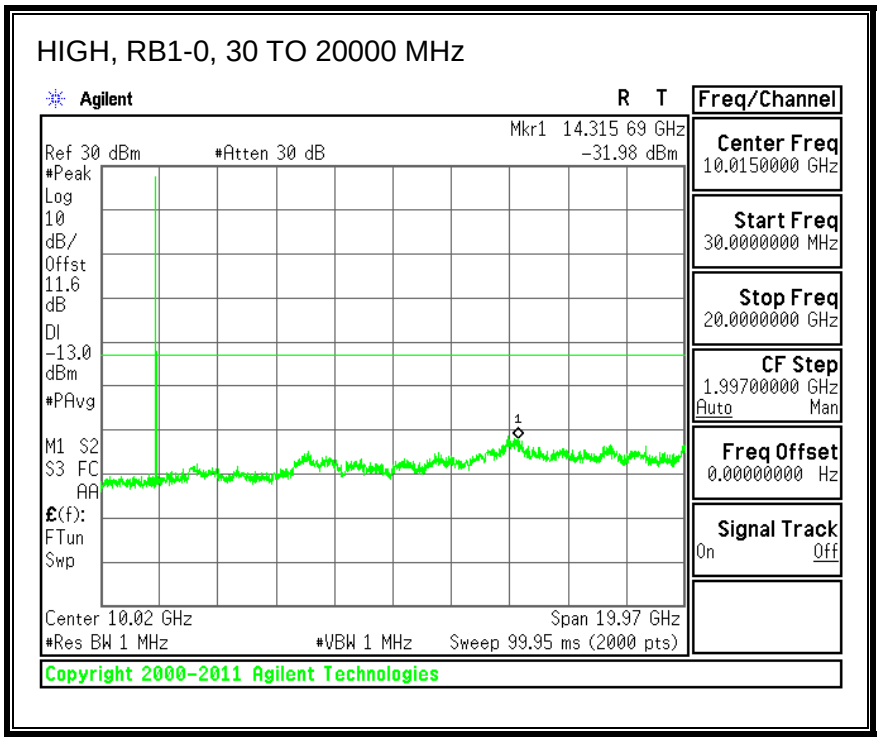
QPSK, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz

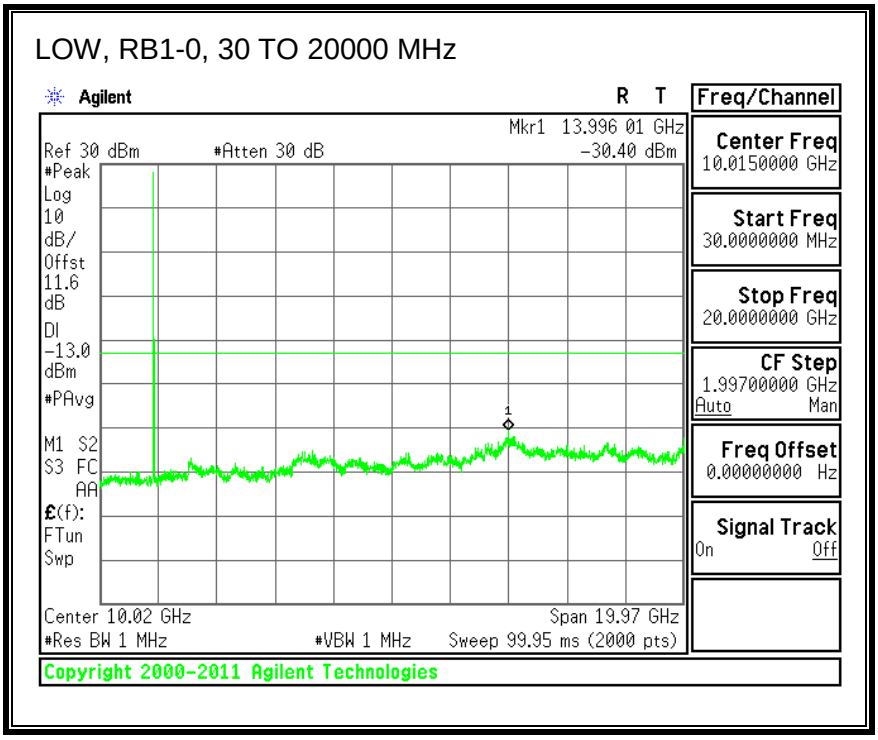


MID, RB1-0, 30 TO 20000 MHz

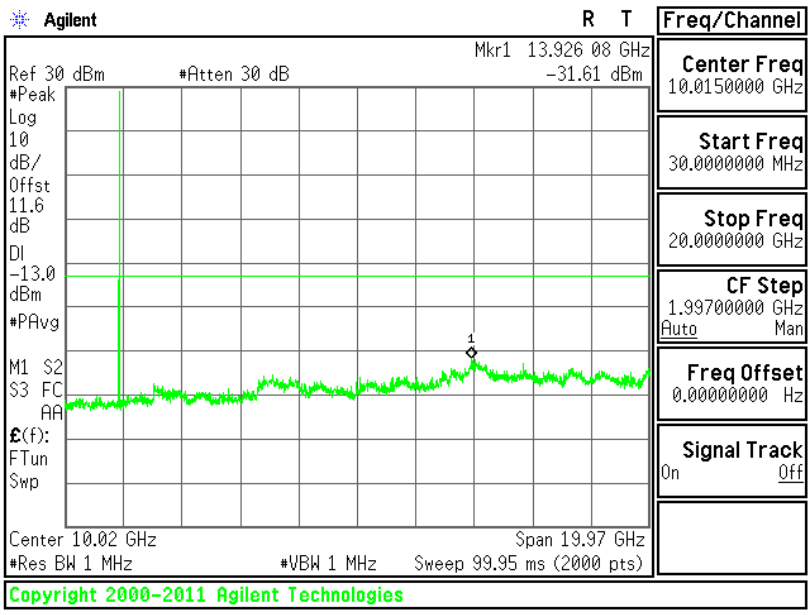




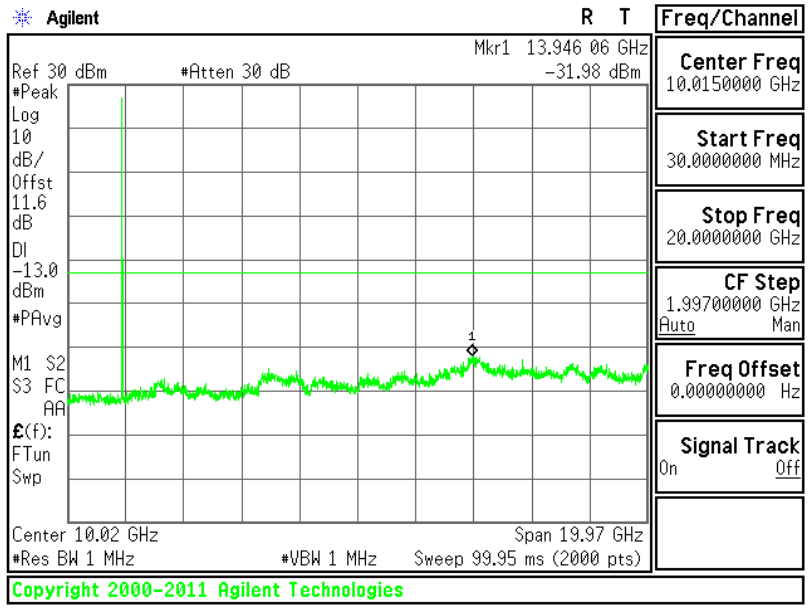
16QAM, (15.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz

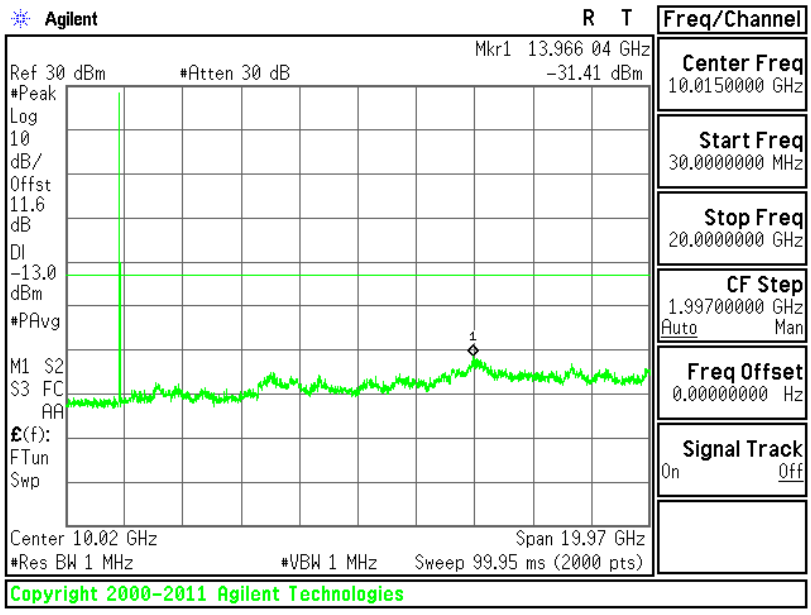


HGIH, RB1-0, 30 TO 20000 MHz

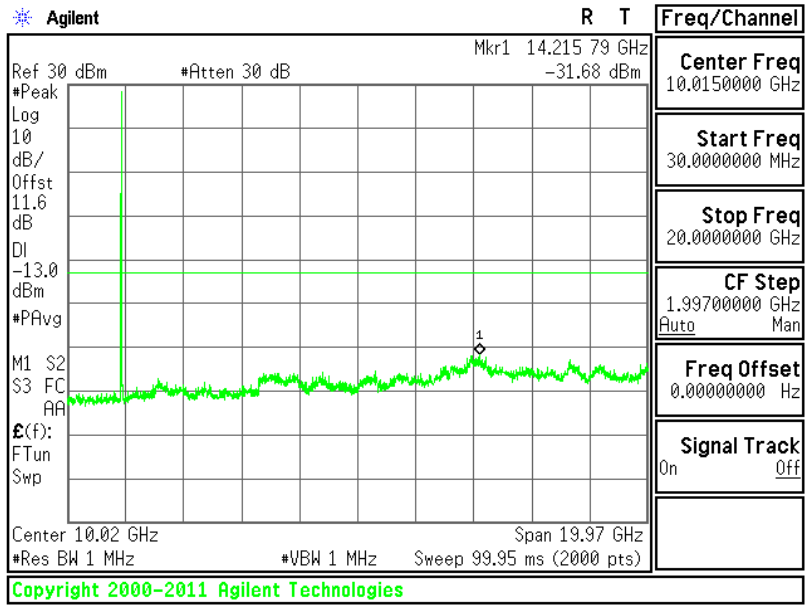


QPSK, (20.0 MHz BAND WIDTH)

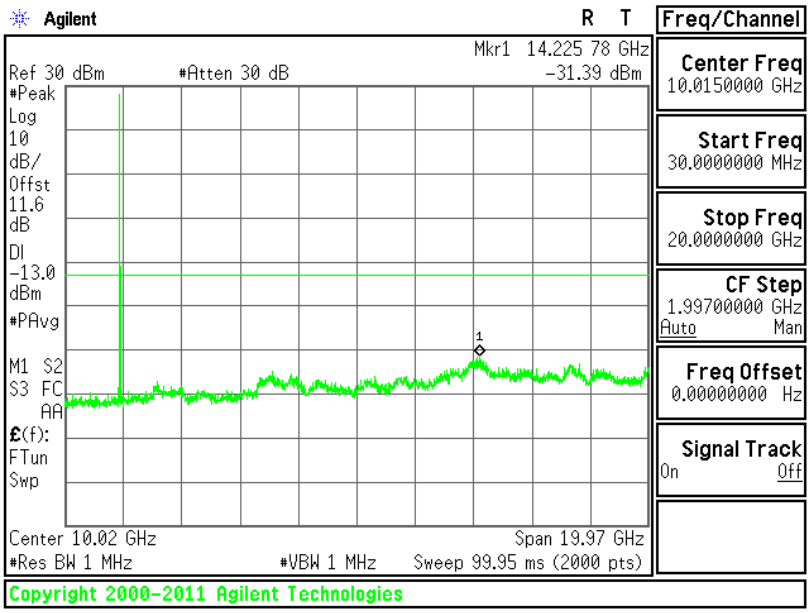
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

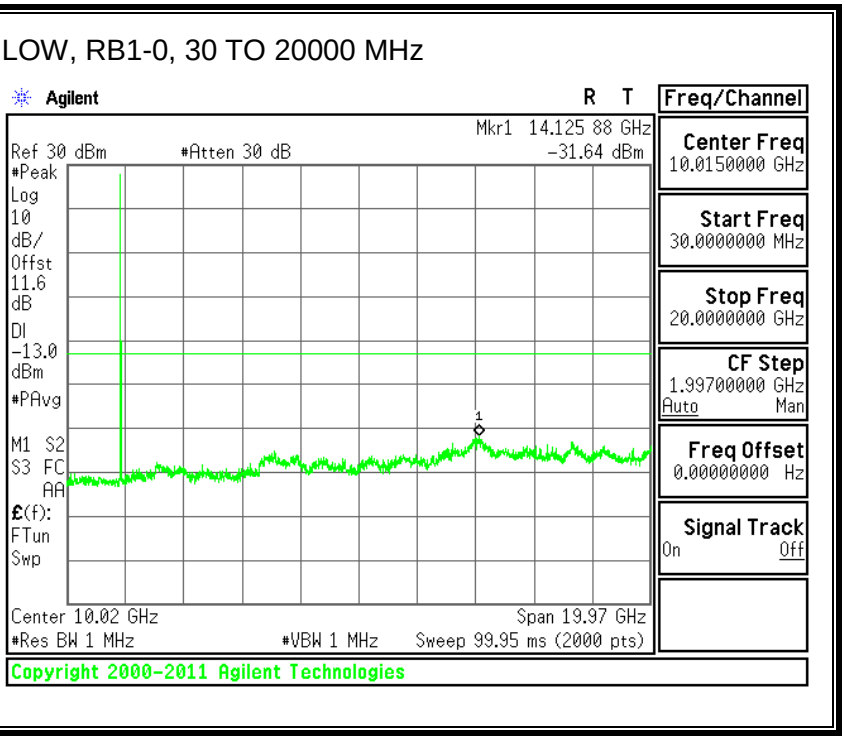


HIGH, RB1-0, 30 TO 20000 MHz

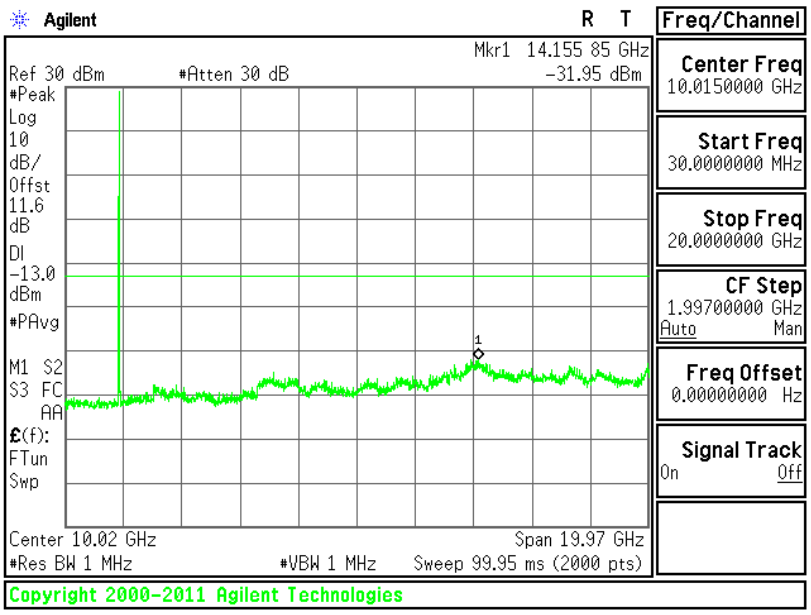


16QAM, (20.0 MHz BAND WIDTH)

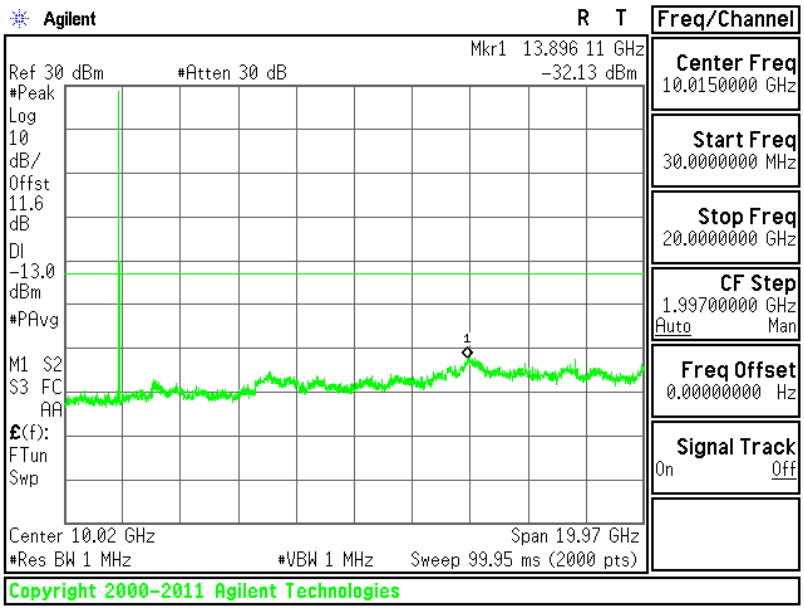
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz



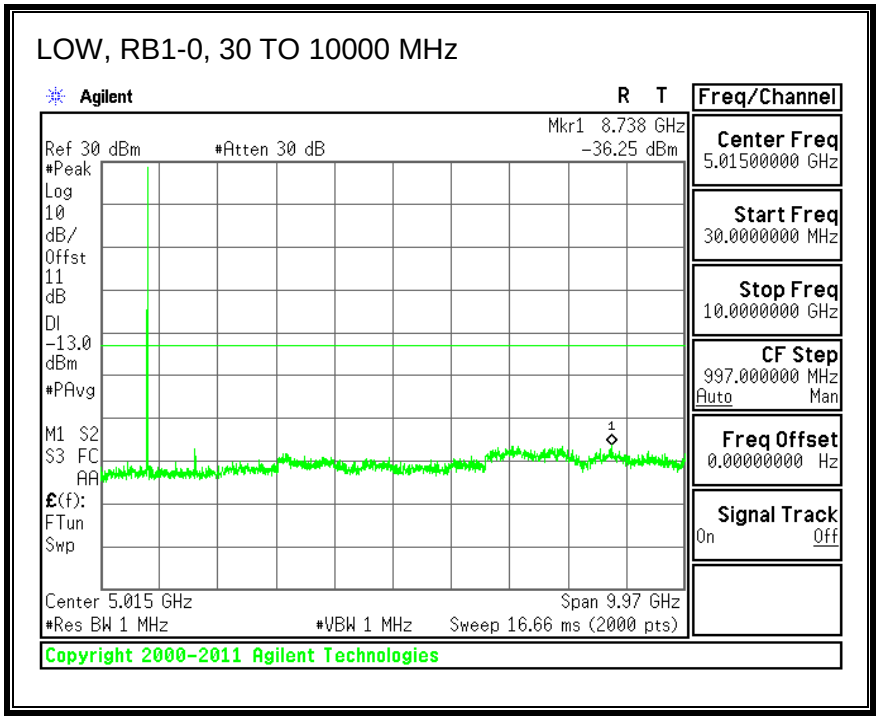
HIGH, RB1-0, 30 TO 20000 MHz



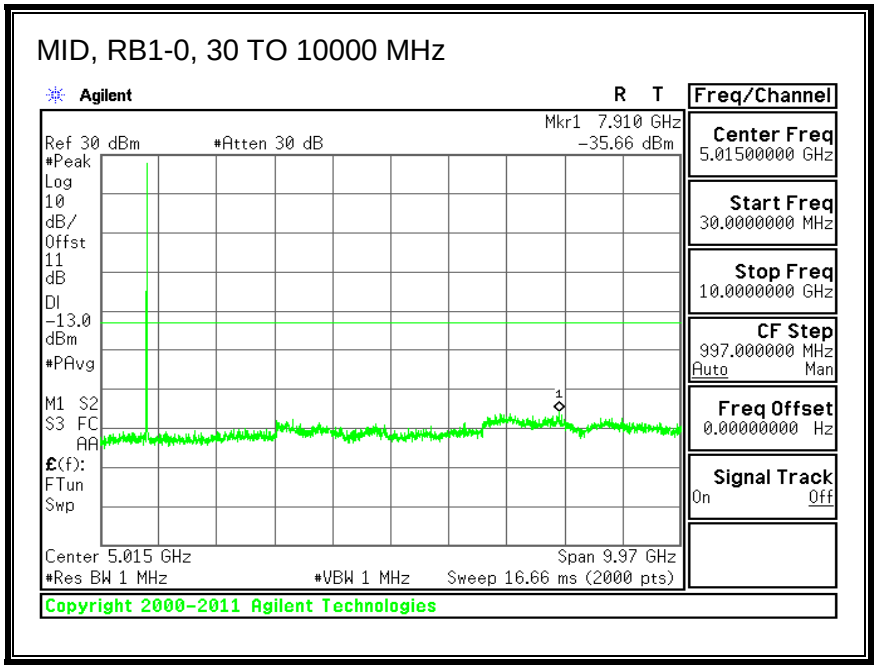
8.3.8. LTE BAND 26

QPSK, (3.0 MHz BAND WIDTH)

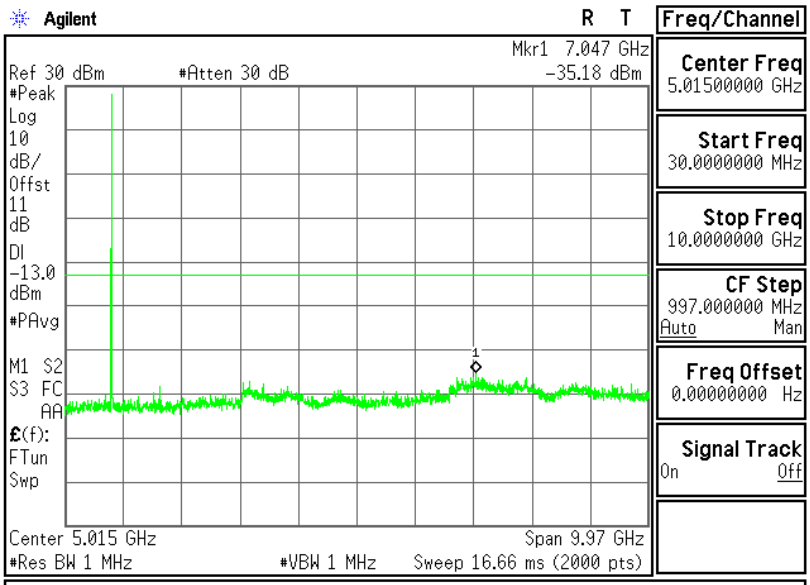
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

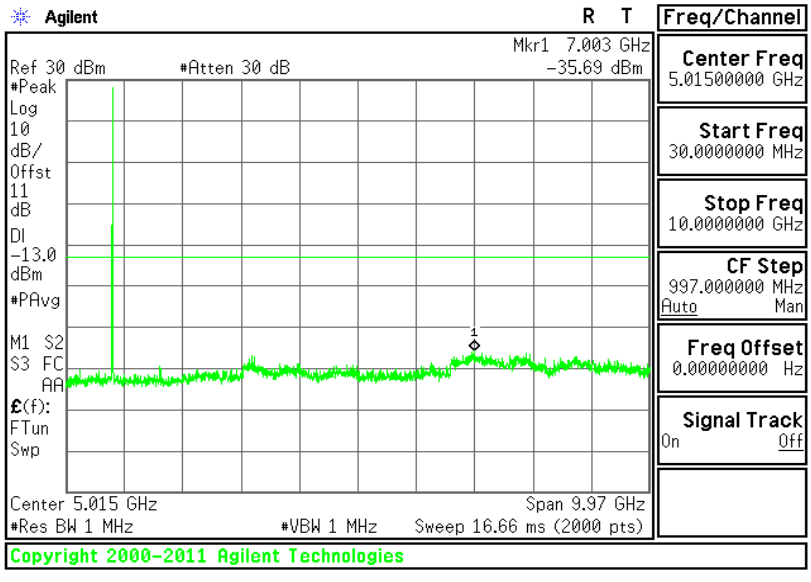


HIGH, RB1-0, 30 TO 10000 MHz

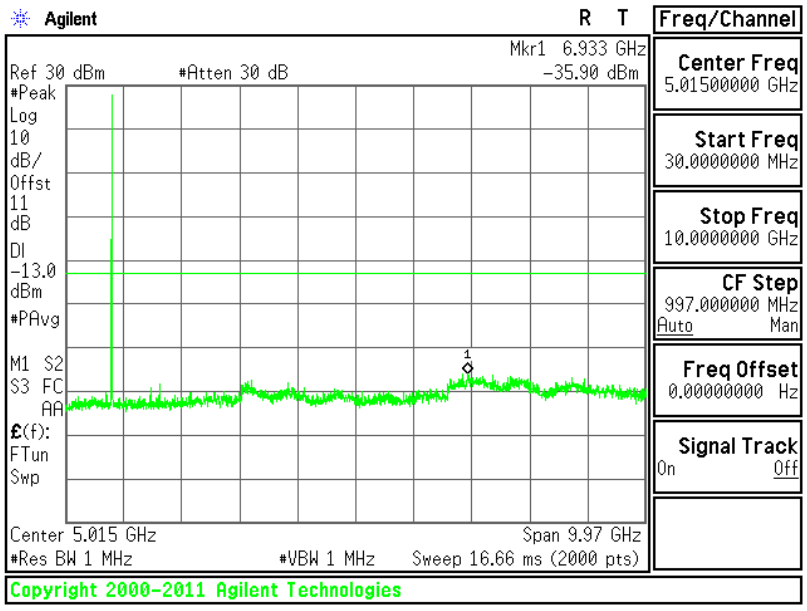


16QAM, (3.0 MHz BAND WIDTH)

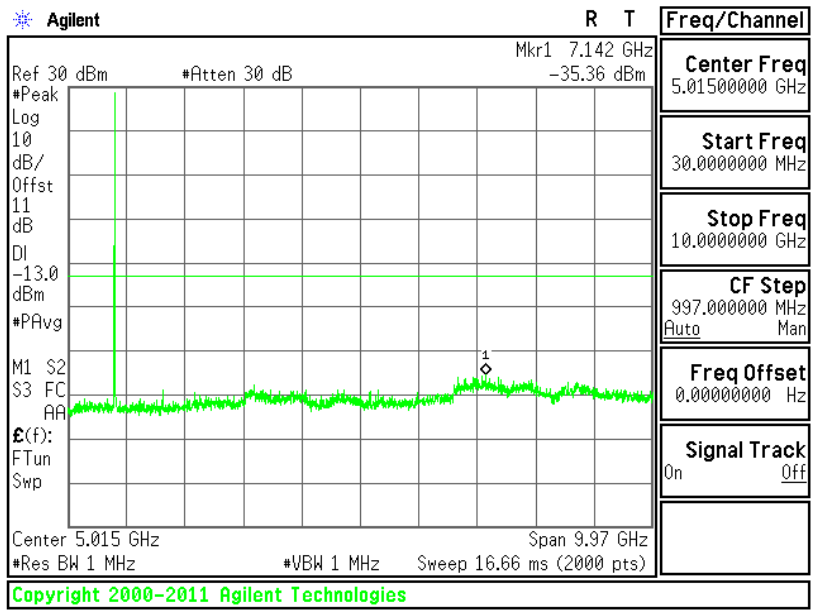
LOW, RB1-0, 30 TO 10000 MHz



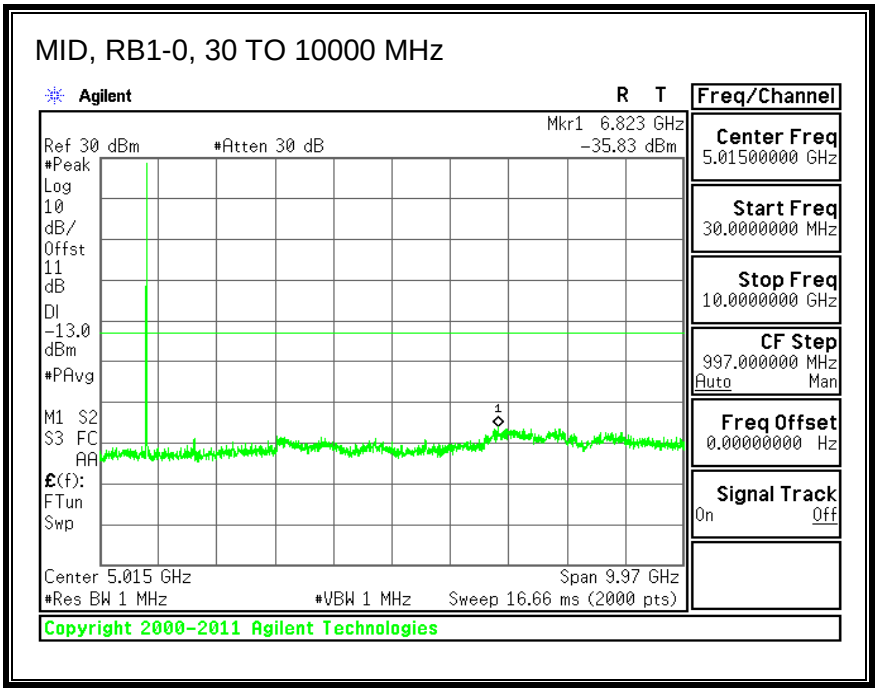
MID, RB1-0, 30 TO 10000 MHz



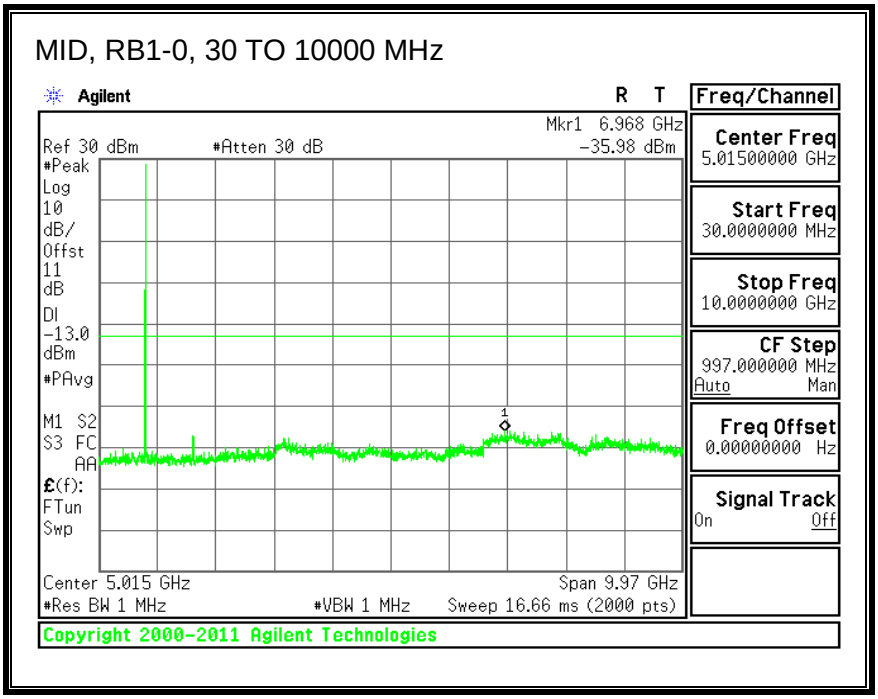
HIGH, RB1-0, 30 TO 10000 MHz



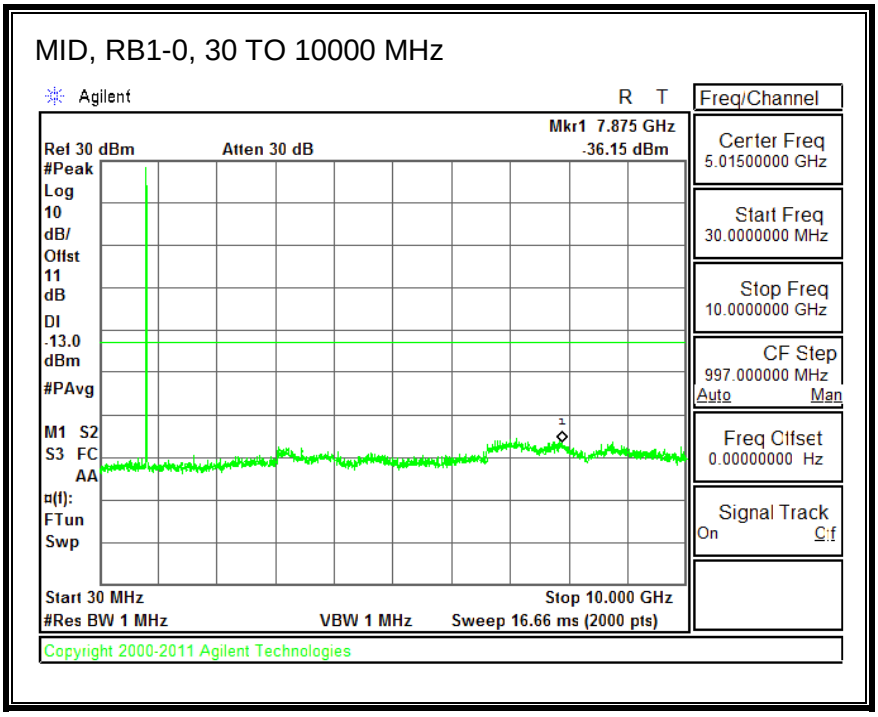
QPSK, (5.0 MHz BAND WIDTH)



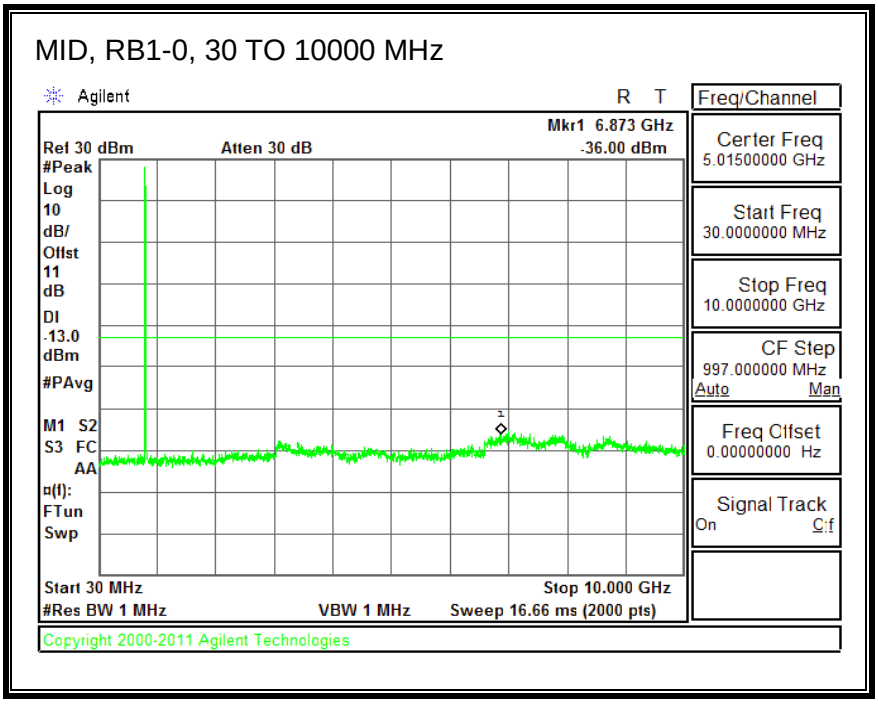
16QAM, (5.0 MHz BAND WIDTH)



QPSK, (10.0 MHz BAND WIDTH)



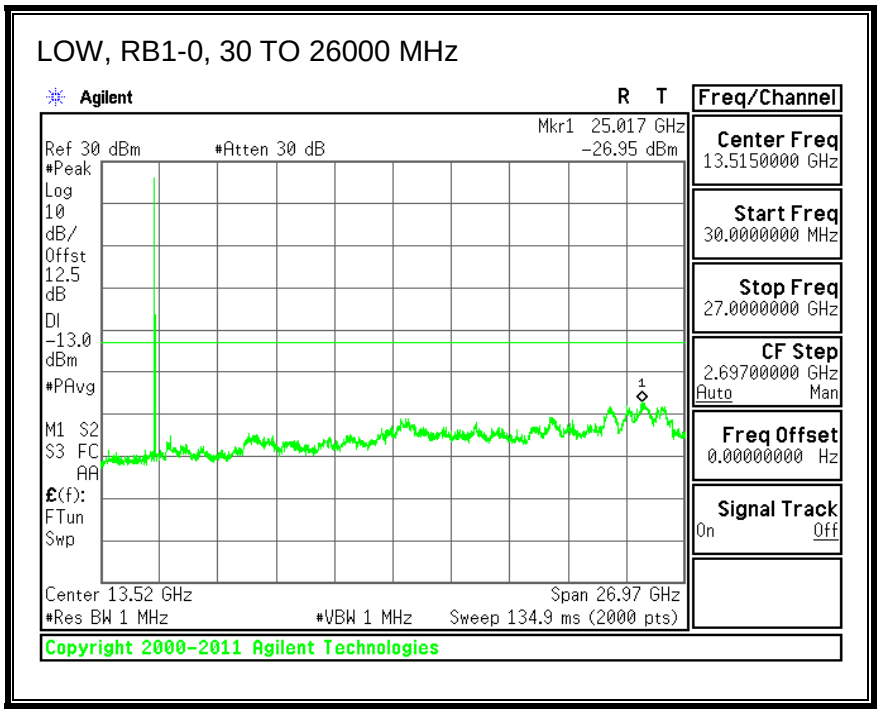
16QAM, (10.0 MHz BAND WIDTH)



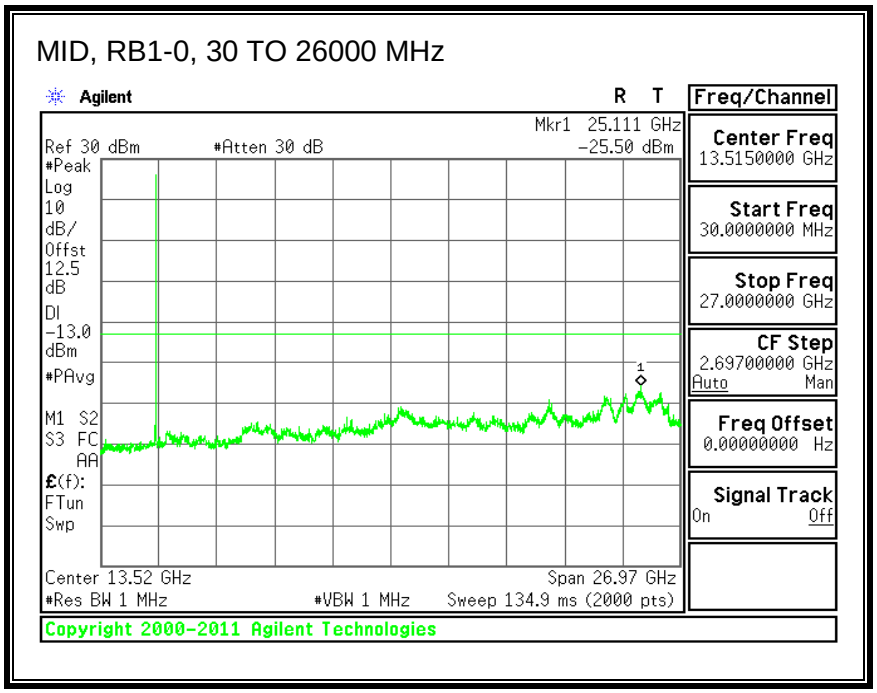
8.3.9. LTE BAND 41

QPSK, (5.0 MHz BAND WIDTH)

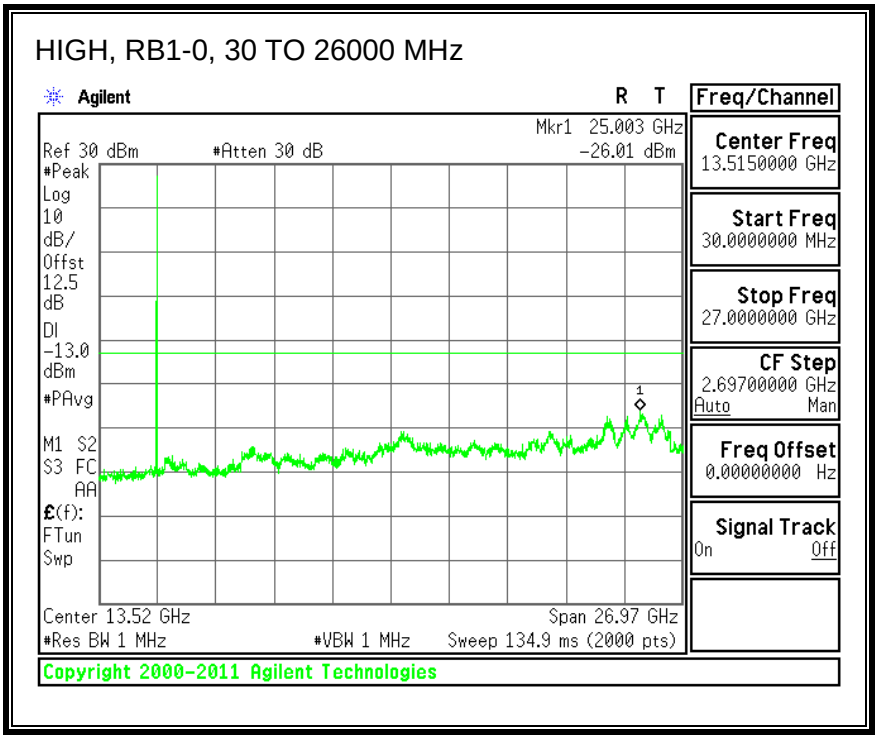
LOW, RB1-0, 30 TO 26000 MHz



MID, RB1-0, 30 TO 26000 MHz

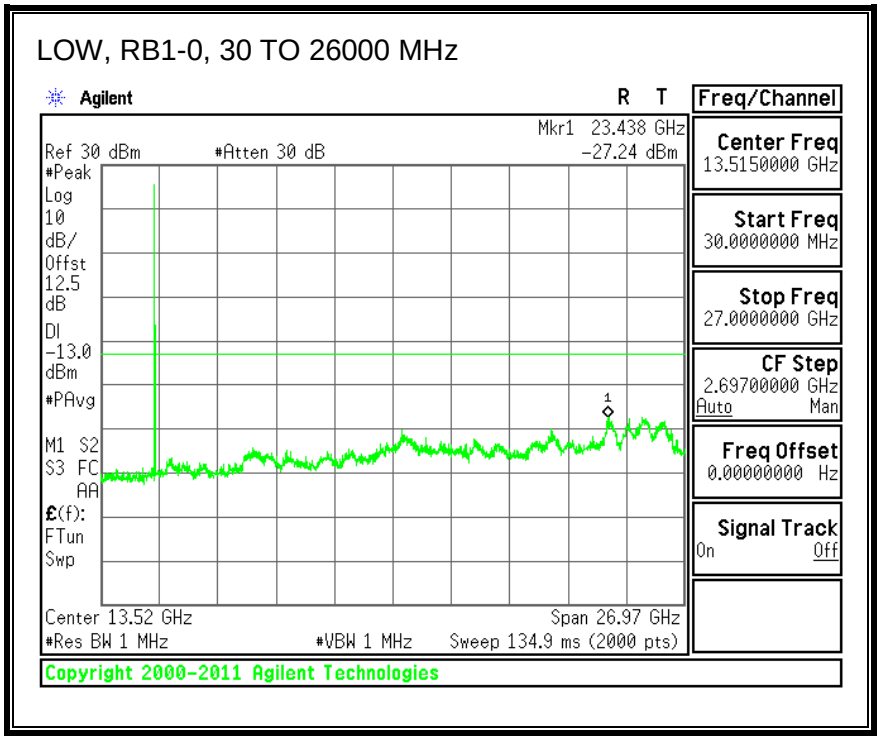


HIGH, RB1-0, 30 TO 26000 MHz

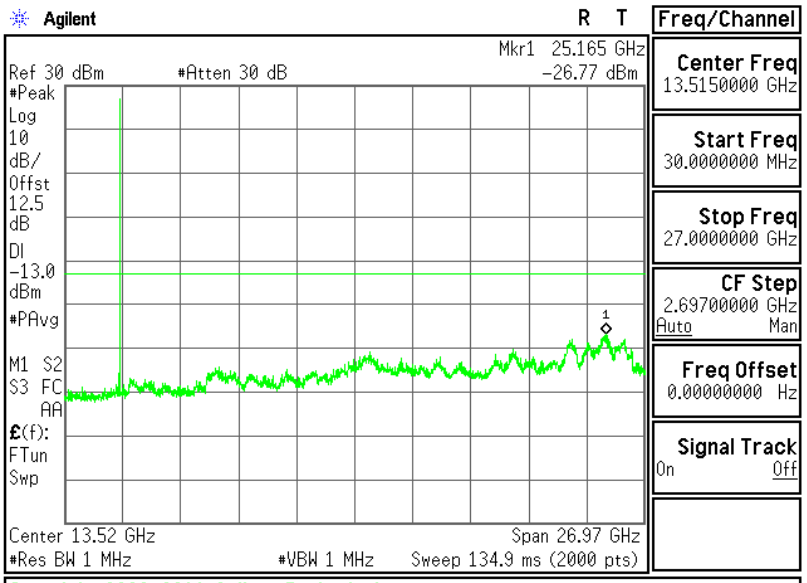


16QAM, (5.0 MHz BAND WIDTH)

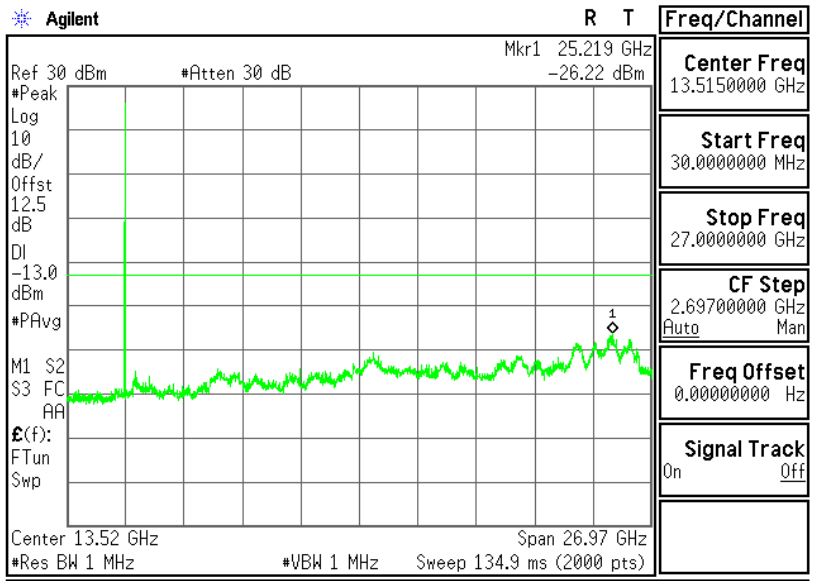
LOW, RB1-0, 30 TO 26000 MHz



MID, RB1-0, 30 TO 26000 MHz

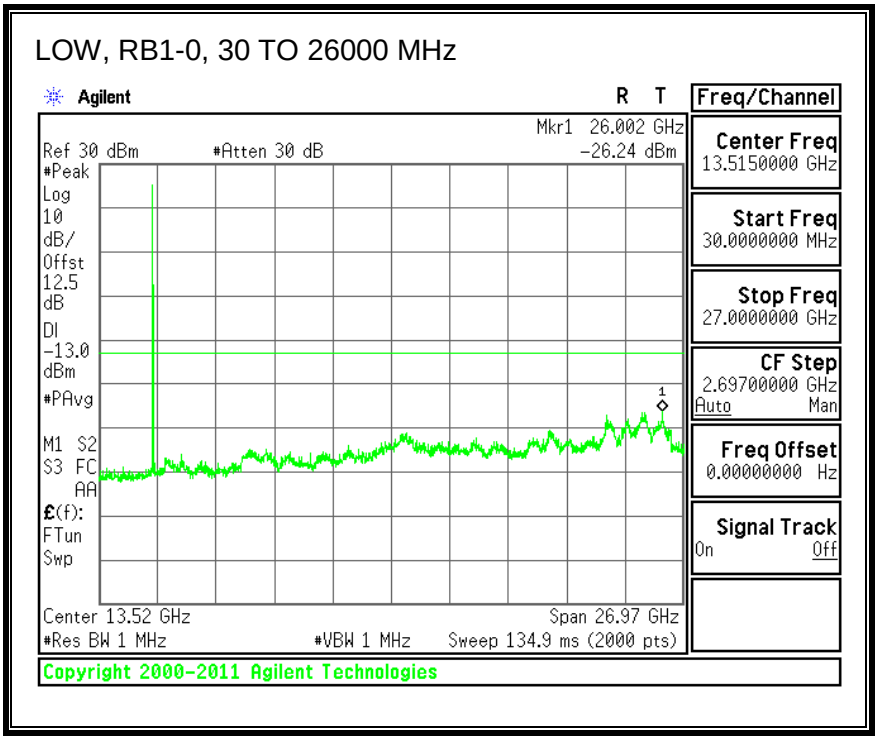


HIGH, RB1-0, 30 TO 26000 MHz

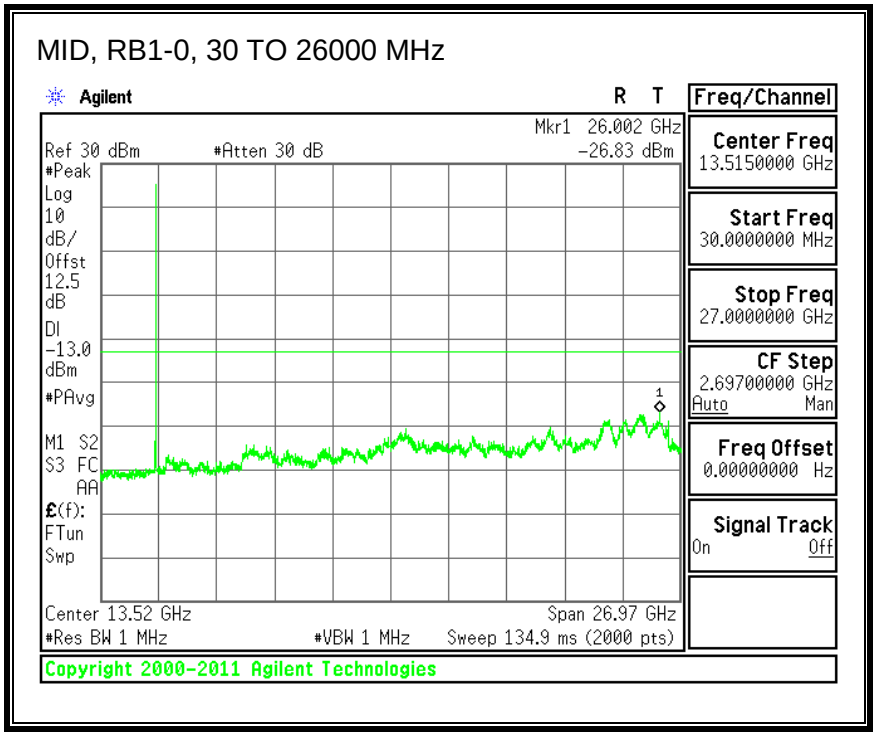


QPSK, (10.0 MHz BAND WIDTH)

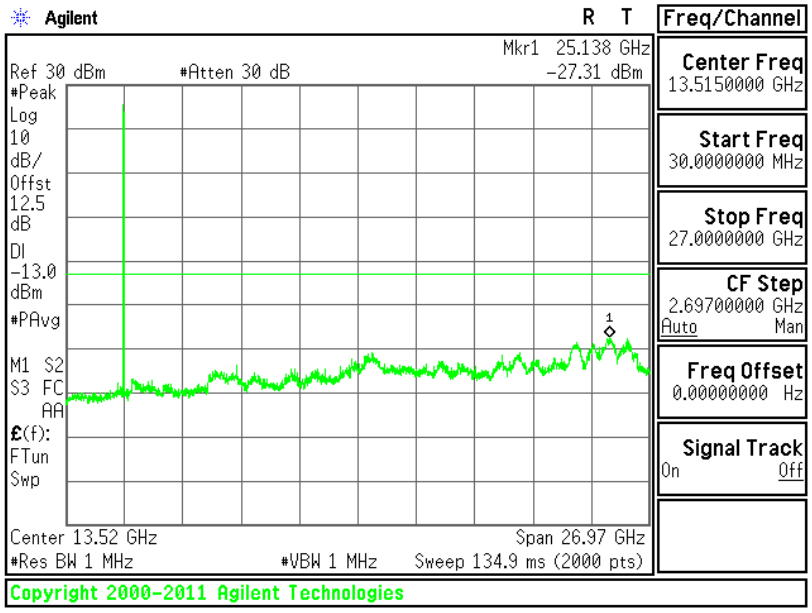
LOW, RB1-0, 30 TO 26000 MHz



MID, RB1-0, 30 TO 26000 MHz

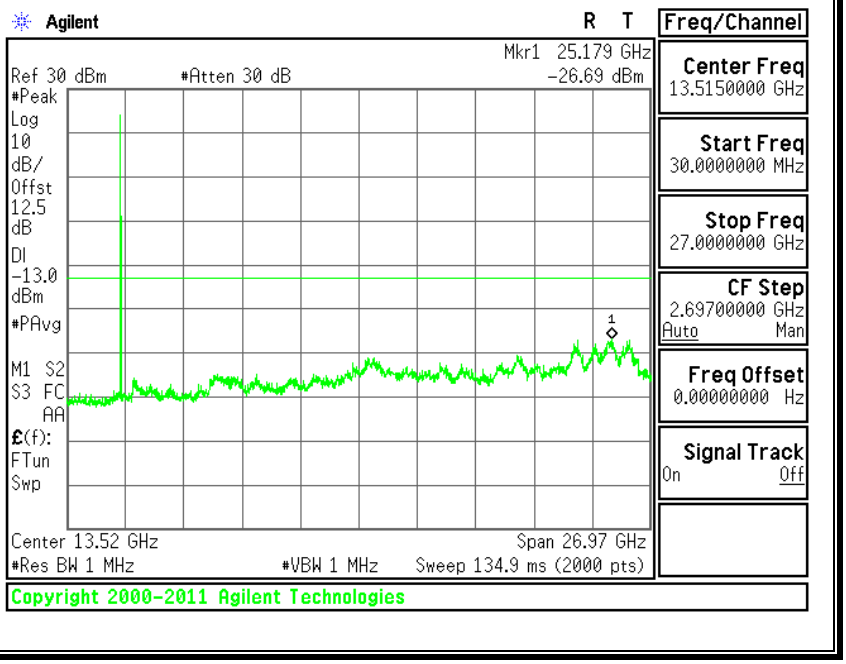


HIGH, RB1-0, 30 TO 26000 MHz

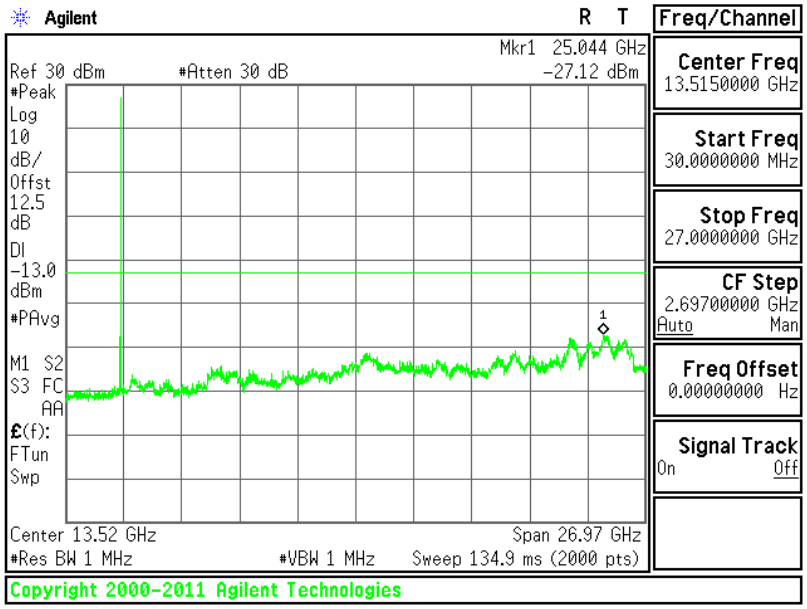


16QAM, (10.0 MHz BAND WIDTH)

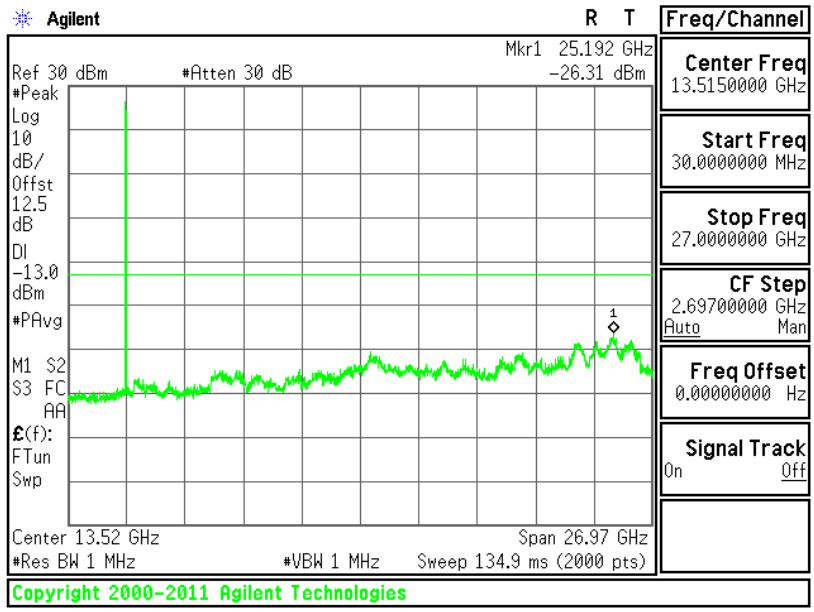
LOW, RB1-0, 30 TO 26000 MHz



MID, RB1-0, 30 TO 26000 MHz

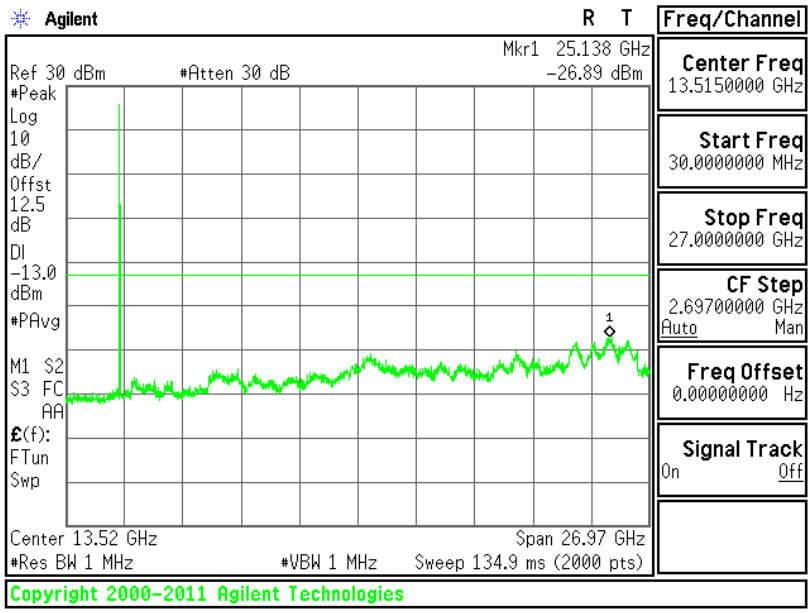


HIGH, RB1-0, 30 TO 26000 MHz

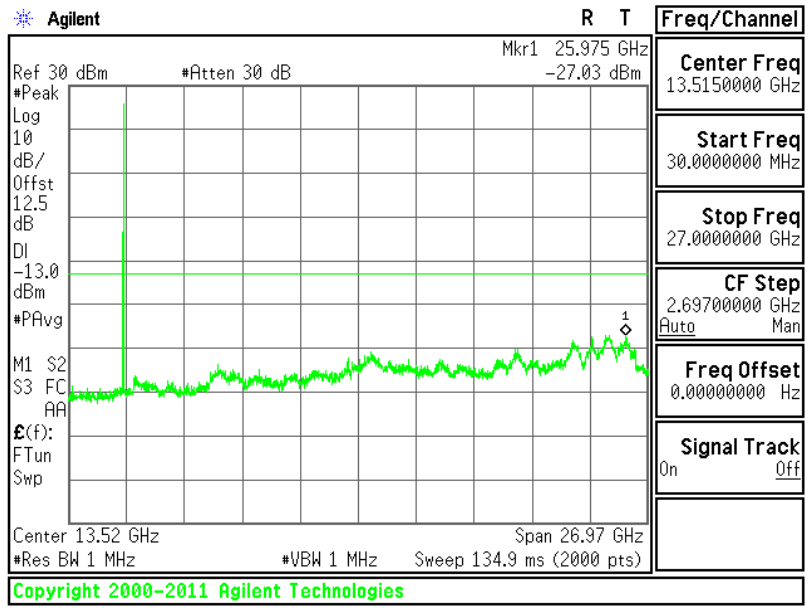


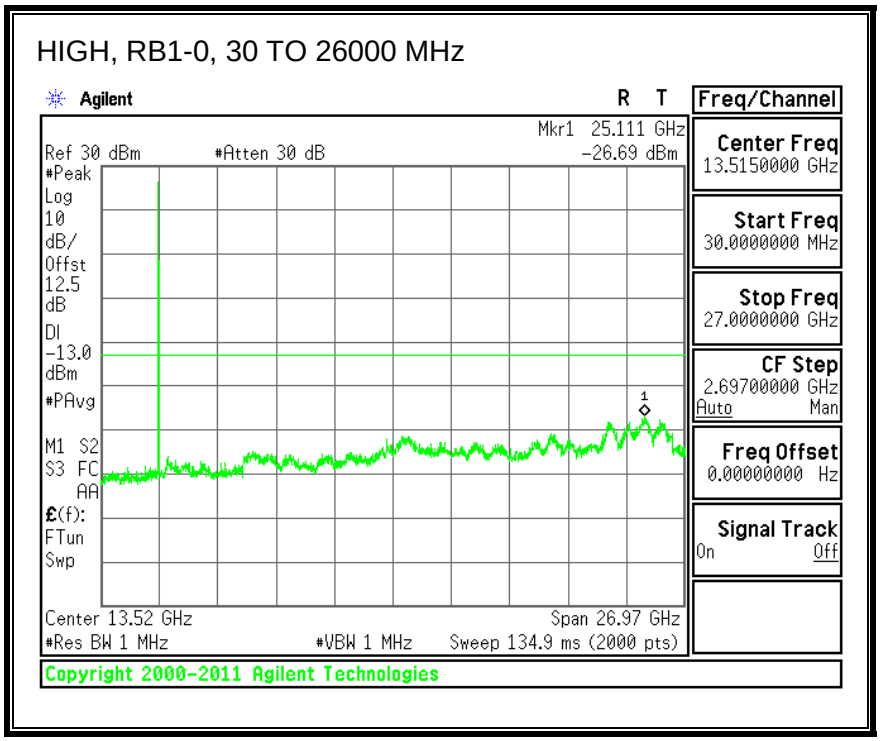
QPSK, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 26000 MHz

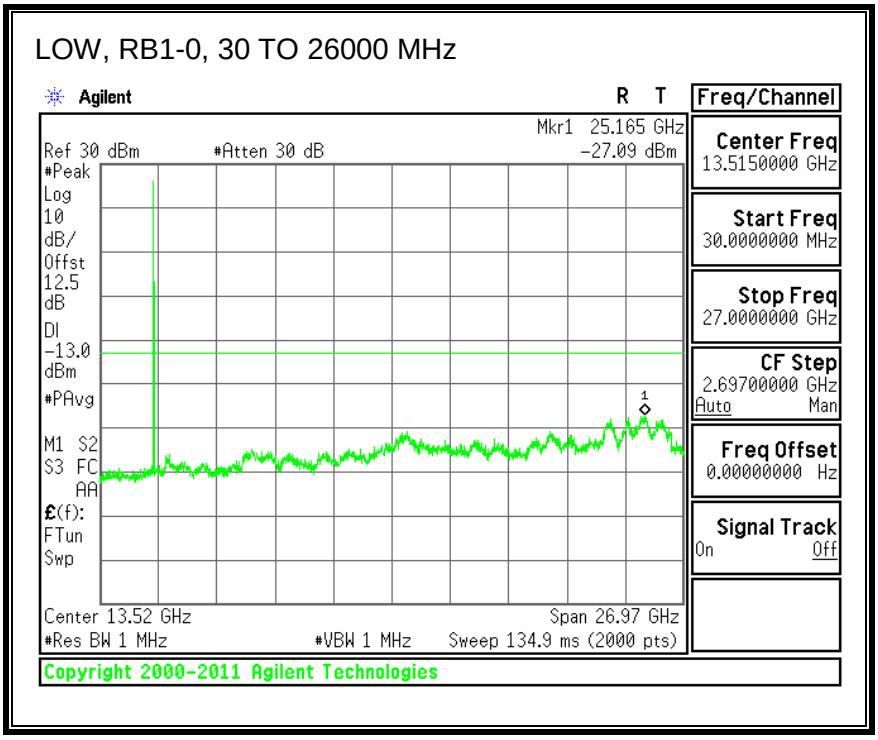


MID, RB1-0, 30 TO 26000 MHz

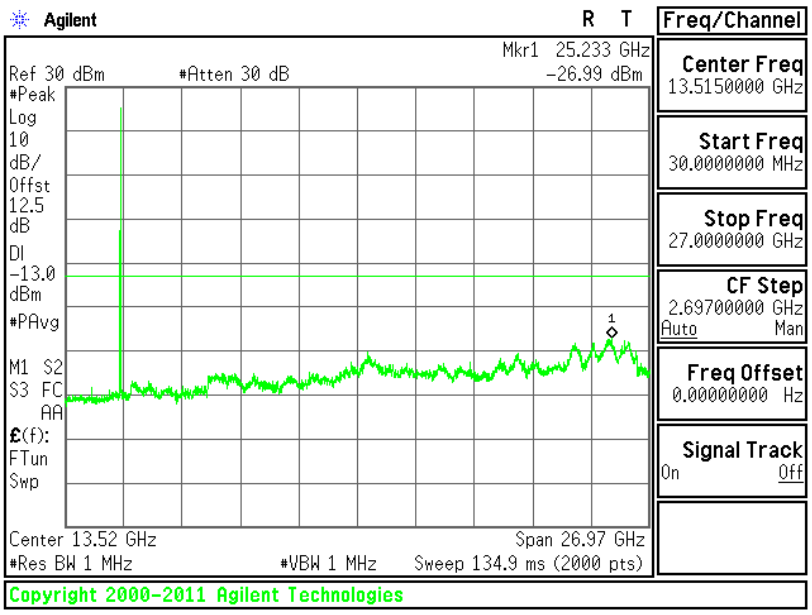




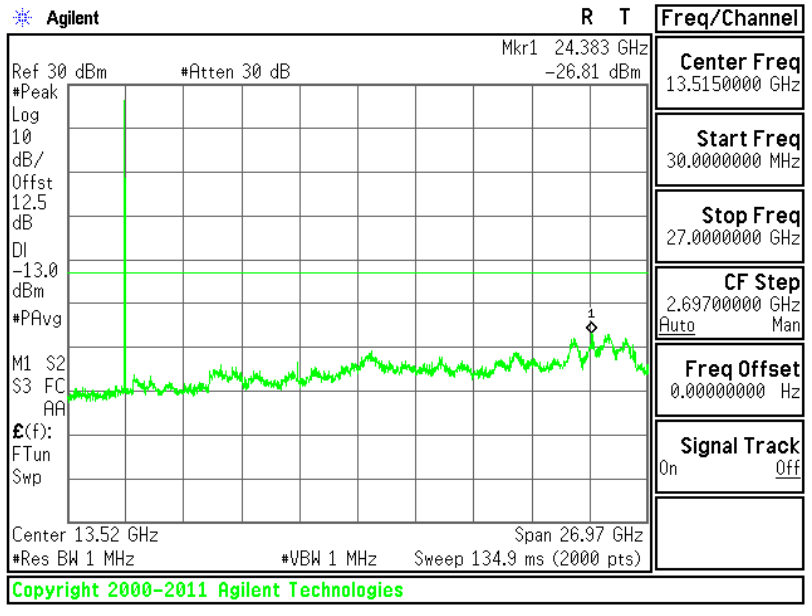
16QAM, (15.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 26000 MHz

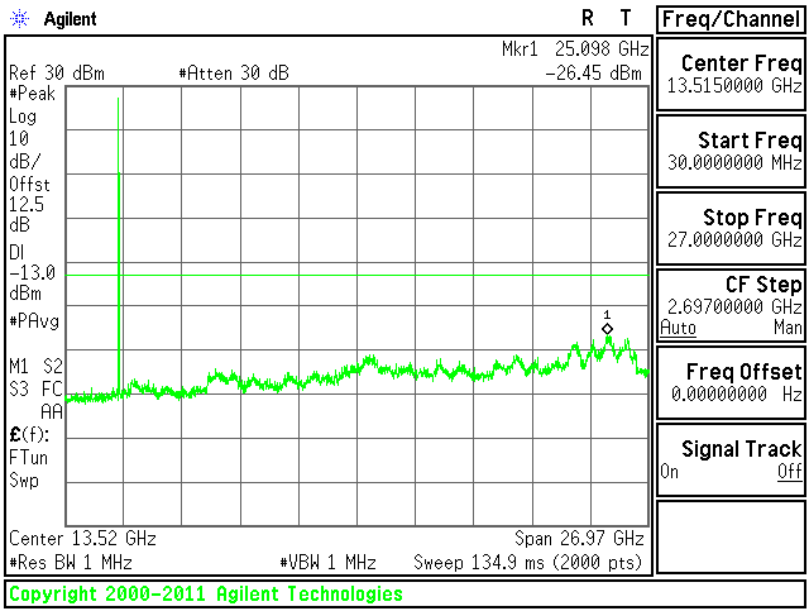


HIGH, RB1-0, 30 TO 26000 MHz

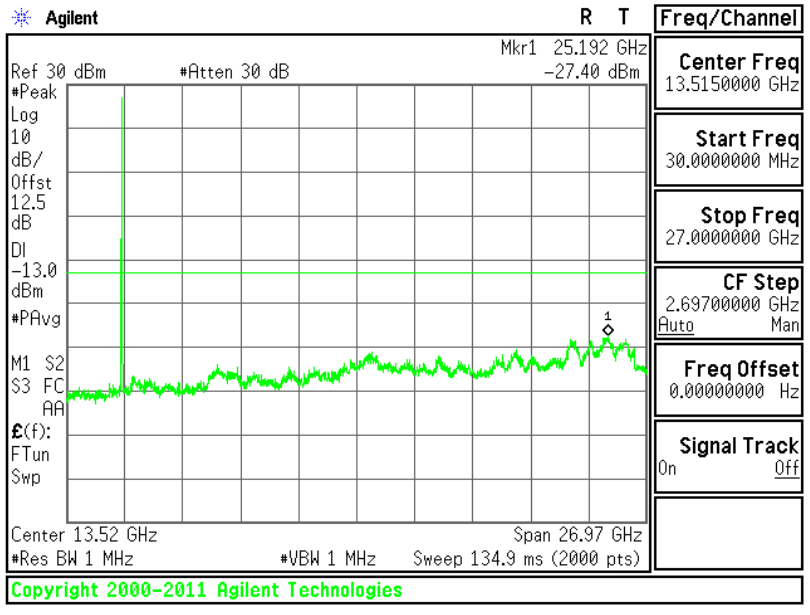


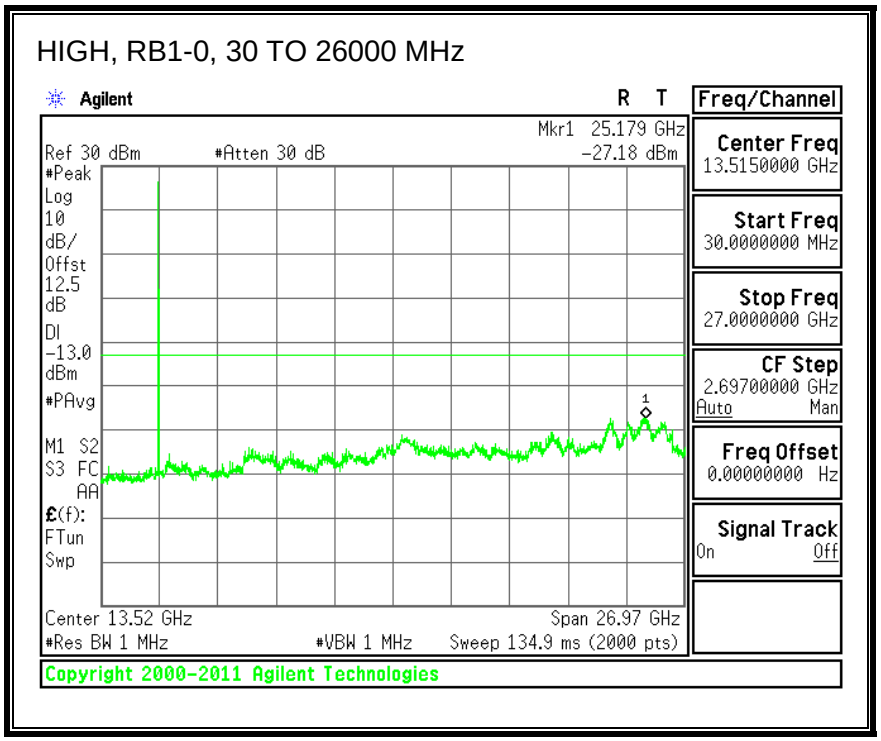
QPSK, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 26000 MHz

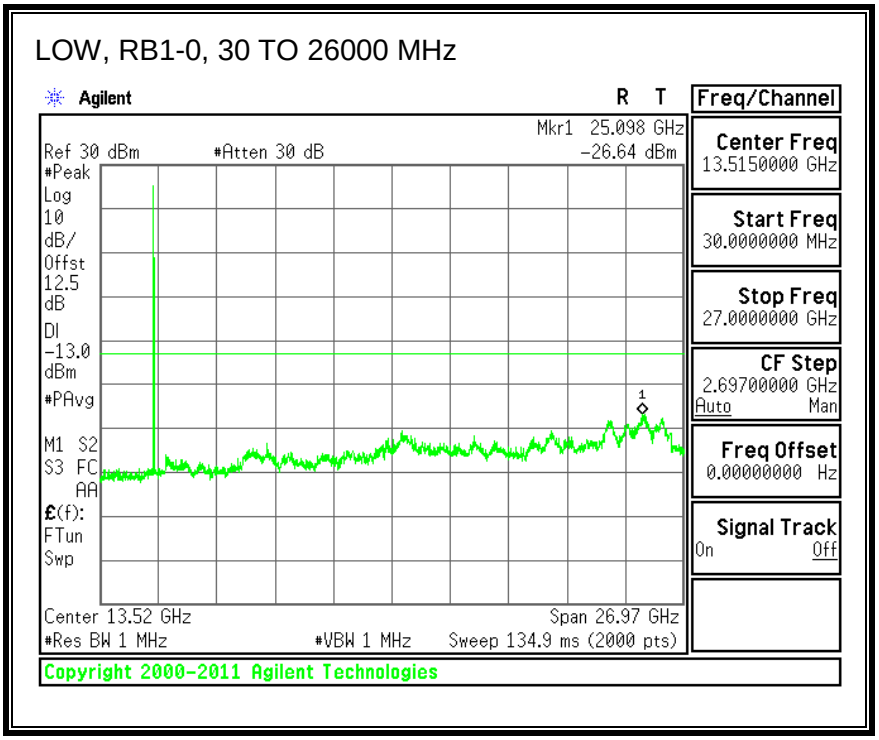


MID, RB1-0, 30 TO 26000 MHz

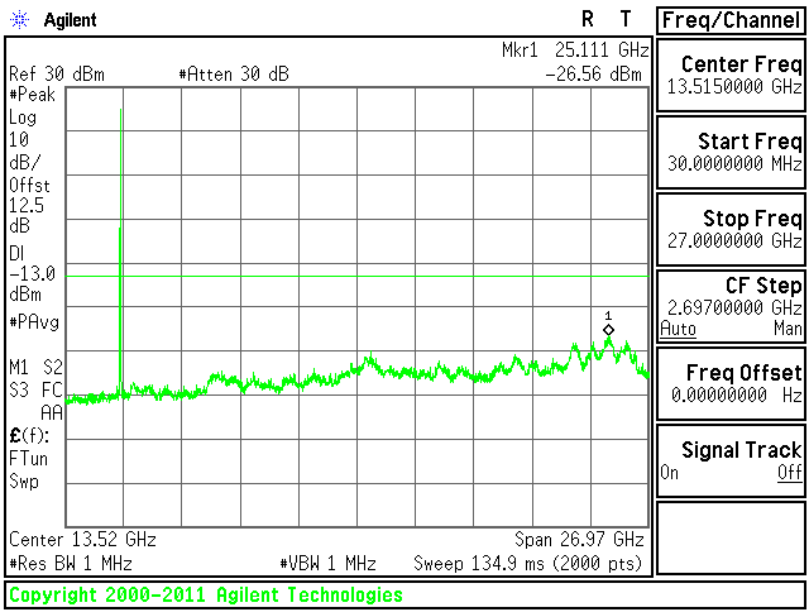




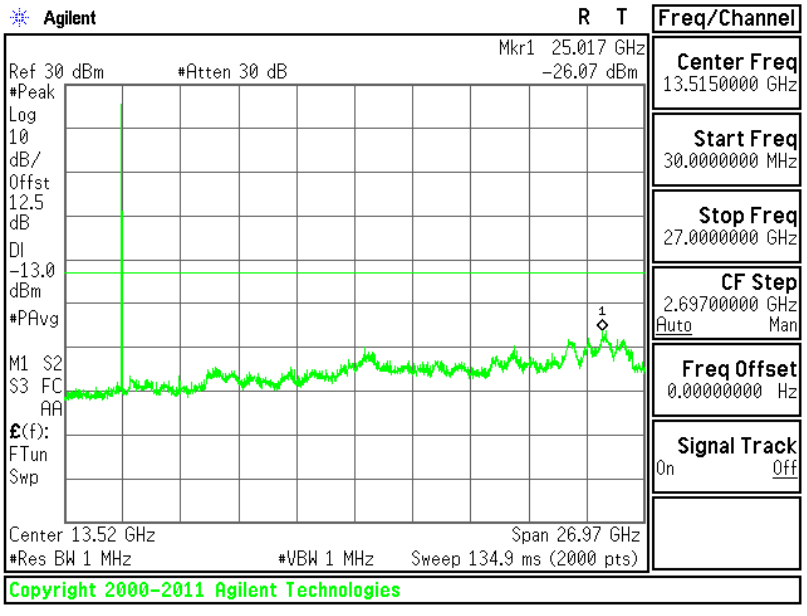
16QAM, (20.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 26000 MHz



HIGH, RB1-0, 30 TO 26000 MHz



8.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54

LIMITS

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = −30° to +50°C
- Voltage =low voltage, 3.4VDC, Normal, 3.8VDC and High voltage, 4.3VDC.

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).

MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 41

RESULTS

See the following pages.

8.4.1. LTE BAND 2

QPSK, (20MHz BANDWIDTH)

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1851.0175	1908.9855		
Extreme (50C)		1851.0175	1908.9855	-12.7	-0.007
Extreme (40C)		1851.0175	1908.9855	11.2	0.006
Extreme (30C)		1851.0175	1908.9855	15.4	0.008
Extreme (10C)		1851.0175	1908.9855	-14.4	-0.008
Extreme (0C)		1851.0175	1908.9855	12.1	0.006
Extreme (-10C)		1851.0175	1908.9855	13.9	0.007
Extreme (-20C)		1851.0175	1908.9855	13.6	0.007
Extreme (-30C)		1851.0175	1908.9855	-13.2	-0.007
25C	10%	1851.0175	1908.9855	14.9	0.008
	-10%	1851.0175	1908.9855	26.1	0.014
	End Point	1851.0175	1908.9855	-15.9	-0.008

16QAM, (20MHz BANDWIDTH)

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1851.0170	1908.9813		
Extreme (50C)		1851.0170	1908.9813	-10.5	-0.006
Extreme (40C)		1851.0170	1908.9813	-12.7	-0.007
Extreme (30C)		1851.0170	1908.9813	-13.0	-0.007
Extreme (10C)		1851.0170	1908.9813	-12.1	-0.006
Extreme (0C)		1851.0170	1908.9813	-10.8	-0.006
Extreme (-10C)		1851.0170	1908.9813	-14.0	-0.007
Extreme (-20C)		1851.0170	1908.9813	-12.3	-0.007
Extreme (-30C)		1851.0170	1908.9813	12.9	0.007
25C	10%	1851.0170	1908.9813	14.6	0.008
	-10%	1851.0170	1908.9813	-11.6	-0.006
	End Point	1851.0170	1908.9813	-12.7	-0.007

8.4.2. LTE BAND 4

QPSK, (20MHz BANDWIDTH

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		1711.0024	1753.9855		
Extreme (50C)		1711.0024	1753.9855	-13.8	-0.008
Extreme (40C)		1711.0024	1753.9855	-11.7	-0.007
Extreme (30C)		1711.0024	1753.9856	15.1	0.009
Extreme (10C)	Normal	1711.0024	1753.9855	-13.2	-0.008
Extreme (0C)		1711.0024	1753.9855	-11.3	-0.007
Extreme (-10C)		1711.0024	1753.9855	-11.4	-0.007
Extreme (-20C)		1711.0024	1753.9855	-10.3	-0.006
Extreme (-30C)		1711.0024	1753.9855	-11.5	-0.007
25C	10%	1711.0024	1753.9855	-10.6	-0.006
	-10%	1711.0024	1753.9855	-11.7	-0.007
	End Point	1711.0024	1753.9855	-12.3	-0.007

16QAM, (20MHz BANDWIDTH)

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		1711.0156	1753.9809		
Extreme (50C)		1711.0155	1753.9809	-15.9	-0.009
Extreme (40C)		1711.0155	1753.9809	-13.4	-0.008
Extreme (30C)		1711.0155	1753.9809	-12.2	-0.007
Extreme (10C)	Normal	1711.0155	1753.9809	-13.2	-0.008
Extreme (0C)		1711.0155	1753.9809	-13.8	-0.008
Extreme (-10C)		1711.0155	1753.9809	-11.3	-0.007
Extreme (-20C)		1711.0155	1753.9809	-13.3	-0.008
Extreme (-30C)		1711.0155	1753.9809	-11.8	-0.007
25C	10%	1711.0155	1753.9809	-11.6	-0.007
	-10%	1711.0155	1753.9809	-12.4	-0.007
	End Point	1711.0155	1753.9809	-13.8	-0.008

8.4.3. 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 (25C)	Normal	824.5020	848.4947		
Extreme (50C)		824.5020	848.4947	-12.4	-0.015
Extreme (40C)		824.5020	848.4947	-5.3	-0.006
Extreme (30C)		824.5020	848.4947	-4.7	-0.006
Extreme (10C)		824.5020	848.4947	-6.1	-0.007
Extreme (0C)		824.5020	848.4947	-4.6	-0.005
Extreme (-10C)		824.5020	848.4947	-5.5	-0.007
Extreme (-20C)		824.5020	848.4947	-4.6	-0.006
Extreme (-30C)		824.5020	848.4947	-4.6	-0.006
25C	10%	824.5020	848.4947	-5.2	-0.006
	-10%	824.5020	848.4947	-7.4	-0.009
	End Point	824.5020	848.4947	5.8	0.007

16QAM, (10MHz BANDWIDTH)

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	824.5024	848.4944		
Extreme (50C)		824.5024	848.4944	-6.8	-0.008
Extreme (40C)		824.5024	848.4944	-7.8	-0.009
Extreme (30C)		824.5024	848.4944	-6.7	-0.008
Extreme (10C)		824.5024	848.4944	-5.6	-0.007
Extreme (0C)		824.5024	848.4944	-5.1	-0.006
Extreme (-10C)		824.5024	848.4944	5.5	0.007
Extreme (-20C)		824.5024	848.4944	-5.1	-0.006
Extreme (-30C)		824.5024	848.4944	-4.5	-0.005
25C	10%	824.5024	848.4944	-6.2	-0.007
	-10%	824.5024	848.4944	-4.3	-0.005
	End Point	824.5024	848.4944	-4.6	-0.005

8.4.4. LTE BAND 13

QPSK, (10MHz BANDWIDTH

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	777.5047	786.4999		
Extreme (50C)		777.5047	786.4999	-5.5	-0.01
Extreme (40C)		777.5047	786.4999	-6.4	-0.01
Extreme (30C)		777.5047	786.4999	-5.4	-0.01
Extreme (10C)		777.5047	786.4999	-6.6	-0.01
Extreme (0C)		777.5047	786.4999	5.7	0.01
Extreme (-10C)		777.5047	786.4999	-6.5	-0.01
Extreme (-20C)		777.5047	786.4999	-5.5	-0.01
Extreme (-30C)		777.5047	786.4999	-5.7	-0.01
25C	10%	777.5047	786.4999	-6.0	-0.01
	-10%	777.5047	786.4999	-5.0	-0.01
	End Point	777.5047	786.4999	-4.7	-0.01

16QAM, (10MHz BANDWIDTH

Limit		777	787	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	777.5004	786.4946		
Extreme (50C)		777.5004	786.4946	-6.8	-0.01
Extreme (40C)		777.5004	786.4946	-6.4	-0.01
Extreme (30C)		777.5004	786.4946	-7.8	-0.01
Extreme (10C)		777.5004	786.4946	-7.2	-0.01
Extreme (0C)		777.5004	786.4946	-7.2	-0.01
Extreme (-10C)		777.5004	786.4946	-7.0	-0.01
Extreme (-20C)		777.5004	786.4946	-6.3	-0.01
Extreme (-30C)		777.5004	786.4946	5.9	0.01
25C	10%	777.5004	786.4946	-6.2	-0.01
	-10%	777.5004	786.4946	-5.9	-0.01
	End Point	777.5004	786.4946	-4.4	-0.01

8.4.5. LTE BAND 17

QPSK, (10MHz BANDWIDTH

Limit		704	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	704.5040	715.4979		
Extreme (50C)		704.5040	715.4979	5.4	0.008
Extreme (40C)		704.5040	715.4979	-3.8	-0.005
Extreme (30C)		704.5040	715.4979	3.8	0.005
Extreme (10C)		704.5040	715.4979	4.7	0.007
Extreme (0C)		704.5040	715.4979	-5.5	-0.008
Extreme (-10C)		704.5040	715.4979	6.0	0.008
Extreme (-20C)		704.5040	715.4979	6.2	0.009
Extreme (-30C)		704.5040	715.4979	4.8	0.007
25C	10%	704.5040	715.4979	-4.3	-0.006
	-10%	704.5040	715.4979	4.6	0.006
	End Point	704.5040	715.4979	3.8	0.005

16QAM, (10MHz BANDWIDTH

Limit		704	716	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	704.5049	715.4958		
Extreme (50C)		704.5049	715.4958	4.0	0.006
Extreme (40C)		704.5049	715.4958	3.0	0.004
Extreme (30C)		704.5049	715.4958	-4.8	-0.007
Extreme (10C)		704.5049	715.4958	4.3	0.006
Extreme (0C)		704.5049	715.4958	4.7	0.007
Extreme (-10C)		704.5049	715.4958	5.6	0.008
Extreme (-20C)		704.5049	715.4958	5.8	0.008
Extreme (-30C)		704.5049	715.4958	4.9	0.007
25C	10%	704.5049	715.4958	-4.4	-0.006
	-10%	704.5049	715.4958	-5.3	-0.007
	End Point	704.5049	715.4958	-4.1	-0.006

8.4.6. LTE BAND 25

QPSK, (20MHz BANDWIDTH

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		1851.0171	1913.9832		
Extreme (50C)		1851.0172	1913.9832	15.0	0.008
Extreme (40C)		1851.0172	1913.9832	17.7	0.009
Extreme (30C)		1851.0172	1913.9832	14.4	0.008
Extreme (10C)	Normal	1851.0172	1913.9832	18.4	0.010
Extreme (0C)		1851.0172	1913.9832	14.7	0.008
Extreme (-10C)		1851.0172	1913.9832	17.5	0.009
Extreme (-20C)		1851.0172	1913.9832	15.8	0.008
Extreme (-30C)		1851.0172	1913.9832	19.0	0.010
25C	10%	1851.0172	1913.9832	16.6	0.009
	-10%	1851.0172	1913.9832	15.8	0.008
	End Point	1851.0172	1913.9832	16.9	0.009

16QAM, (20MHz BANDWIDTH

Limit		1850	1915	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		1851.0217	1913.9806		
Extreme (50C)		1851.0217	1913.9806	14.0	0.007
Extreme (40C)		1851.0217	1913.9806	15.4	0.008
Extreme (30C)		1851.0217	1913.9806	14.6	0.008
Extreme (10C)	Normal	1851.0217	1913.9806	15.4	0.008
Extreme (0C)		1851.0217	1913.9806	14.3	0.008
Extreme (-10C)		1851.0217	1913.9806	16.6	0.009
Extreme (-20C)		1851.0217	1913.9806	14.9	0.008
Extreme (-30C)		1851.0217	1913.9806	16.2	0.009
25C	10%	1851.0217	1913.9806	15.4	0.008
	-10%	1851.0217	1913.9806	14.7	0.008
	End Point	1851.0217	1913.9806	15.9	0.008

8.4.7. LTE BAND 26

QPSK, (10MHz BANDWIDTH

Limit		814	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	818.9355	823.6719		
Extreme (50C)		818.9355	823.6719	5.7	0.007
Extreme (40C)		818.9355	823.6719	5.6	0.007
Extreme (30C)		818.9355	823.6719	5.4	0.006
Extreme (10C)		818.9355	823.6719	5.1	0.006
Extreme (0C)		818.9355	823.6719	6.3	0.008
Extreme (-10C)		818.9355	823.6719	5.7	0.007
Extreme (-20C)		818.9355	823.6719	5.8	0.007
Extreme (-30C)		818.9355	823.6719	7.9	0.010
25C	10%	818.9354	823.6719	-5.5	-0.007
	-10%	818.9355	823.6719	6.0	0.007
	End Point	818.9355	823.6719	5.3	0.006

16QAM, (10MHz BANDWIDTH

Limit		814	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	818.9353	823.6718		
Extreme (50C)		818.9353	823.6719	6.8	0.008
Extreme (40C)		818.9353	823.6719	5.3	0.006
Extreme (30C)		818.9353	823.6719	6.7	0.008
Extreme (10C)		818.9353	823.6719	5.4	0.007
Extreme (0C)		818.9353	823.6719	6.4	0.008
Extreme (-10C)		818.9353	823.6719	5.5	0.007
Extreme (-20C)		818.9353	823.6719	7.8	0.009
Extreme (-30C)		818.9353	823.6719	6.6	0.008
25C	10%	818.9353	823.6719	6.9	0.008
	-10%	818.9353	823.6719	6.3	0.008
	End Point	818.9353	823.6719	5.2	0.006

8.4.8. LTE BAND 41

QPSK, (10MHz BANDWIDTH

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	2496.9413	2689.0668		
Extreme (50C)		2496.9413	2689.0669	24.3	0.009
Extreme (40C)		2496.9413	2689.0669	25.4	0.010
Extreme (30C)		2496.9413	2689.0669	31.4	0.012
Extreme (10C)		2496.9413	2689.0669	26.9	0.010
Extreme (0C)		2496.9413	2689.0669	25.4	0.010
Extreme (-10C)		2496.9413	2689.0669	23.7	0.009
Extreme (-20C)		2496.9413	2689.0669	24.3	0.009
Extreme (-30C)		2496.9413	2689.0669	22.2	0.009
25C	10%	2496.9413	2689.0669	25.3	0.010
	-10%	2496.9413	2689.0669	23.3	0.009
	End Point	2496.9413	2689.0669	22.8	0.009

16QAM, (10MHz BANDWIDTH

Limit		2496	2690	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	2496.9442	2689.0545		
Extreme (50C)		2496.9443	2689.0546	27.2	0.010
Extreme (40C)		2496.9443	2689.0546	30.1	0.012
Extreme (30C)		2496.9443	2689.0546	30.0	0.012
Extreme (10C)		2496.9443	2689.0546	29.3	0.011
Extreme (0C)		2496.9443	2689.0546	26.9	0.010
Extreme (-10C)		2496.9443	2689.0546	26.6	0.010
Extreme (-20C)		2496.9443	2689.0546	26.6	0.010
Extreme (-30C)		2496.9443	2689.0546	22.0	0.008
25C	10%	2496.9443	2689.0546	22.2	0.009
	-10%	2496.9443	2689.0546	26.4	0.010
	End Point	2496.9443	2689.0546	26.3	0.010

9. RADIATED TEST RESULTS

9.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232 and §27.50

LIMITS:

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

27.50 (c) (10) the following power and antenna height requirements apply to stations transmitting in the 698–746 MHz band, the portable stations (hand-held devices) are limited to 3 watts ERP.

27.50 (b)(10) Portable stations (hand-held devices) transmitting in the 746–757 MHz, 758–763 MHz, 776–793 MHz, and 805–806 MHz bands are limited to 3 watts ERP.

27.50 (d)(4) The following power and antenna height requirements apply to stations transmitting in the 1710–1755 MHz and 2110–2155 MHz bands: Fixed, mobile, and portable (hand-held) stations operating in the 1710–1755 MHz band are limited to 1 watt EIRP.

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17
KDB 971168 v02r01 RF power output using broadband peak and average power meter method.
KDB 971168 D01 Power Meas License Digital Systems v02r01, “Measurement Guidance for Certification of Licensed Digital Transmitters”

MODES TESTED

- LTE Band 2
- LTE Band 4
- LTE Band 5
- LTE Band 13
- LTE Band 17
- LTE Band 25
- LTE Band 26
- LTE Band 41

RESULTS

EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
1.4MHz Band QPSK	6/0	1850.7	24.32	270.40
		1880.0	**24.70**	295.12
		1909.3	24.43	277.33
1.4MHz Band 16QAM	6/0	1850.7	**23.71**	234.96
		1880.0	23.68	233.35
		1909.3	23.14	206.06

EIRP POWER FOR LTE BAND 2 (3.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
3.0MHz Band QPSK	15/0	1851.5	**24.84**	304.79
		1880.0	23.23	210.38
		1908.5	23.86	243.22
3.0MHz Band 16QAM	15/0	1851.5	**23.61**	229.61
		1880.0	22.10	162.18
		1908.5	22.74	187.93

EIRP POWER FOR LTE BAND 2 (5.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
5.0MHz Band QPSK	25/0	1852.5	24.25	266.07
		1880.0	**24.72**	296.48
		1907.5	24.33	271.02
5.0MHz Band 16QAM	25/0	1852.5	23.37	217.27
		1880.0	**23.90**	245.47
		1907.5	23.24	210.86

EIRP POWER FOR LTE BAND 2 (10.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
10.0MHz Band QPSK	50/0	1855.0	24.67	293.09
		1880.0	24.80	302.00
		1905.0	**24.93**	311.17
10.0MHz Band 16QAM	50/0	1855.0	23.77	238.23
		1880.0	23.99	250.61
		1905.0	**24.29**	268.53

EIRP POWER FOR LTE BAND 2 (15.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
15MHz Band QPSK	75/0	1857.5	24.25	266.07
		1880.0	24.63	290.40
		1902.5	**24.81**	302.69
15MHz Band 16QAM	75/0	1857.5	23.08	203.24
		1880.0	23.40	218.78
		1902.5	**23.93**	247.17

EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
20.0MHz Band QPSK	100/0	1860.0	**24.61**	289.07
		1880.0	24.30	269.15
		1900.0	24.47	279.90
20MHz Band 16QAM	100/0	1860.0	23.27	212.32
		1880.0	**23.40**	218.78
		1900.0	23.34	215.77

EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
1.4 MHZ BAND QPSK	6/0	1710.7	24.36	272.90
		1732.5	**24.53**	283.79
		1754.3	24.23	264.85
1.4 MHZ BAND 16QAM	6/0	1710.7	23.38	217.77
		1732.5	**23.58**	228.03
		1754.3	23.33	215.28

EIRP POWER FOR LTE BAND 4 (3.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
3.0 MHZ BAND QPSK	15/0	1711.5	24.28	267.92
		1732.5	24.38	274.16
		1753.5	**24.53**	283.79
3.0 MHZ BAND 16QAM	15/0	1711.5	23.36	216.77
		1732.5	**23.46**	221.82
		1753.5	23.13	205.59

EIRP POWER FOR LTE BAND 4 (5.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	1712.5	24.46	279.25
		1732.5	24.22	264.24
		1752.5	**24.73**	297.17
5.0 MHZ BAND 16QAM	25/0	1712.5	23.42	219.79
		1732.5	23.38	217.77
		1752.5	**23.74**	236.59

EIRP POWER FOR LTE BAND 4 (10.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	1715.0	**24.82**	303.39
		1732.5	24.25	266.07
		1750.0	24.00	251.19
10.0 MHZ BAND 16QAM	50/0	1715.0	**23.80**	239.88
		1732.5	23.26	211.84
		1750.0	23.07	202.77

EIRP POWER FOR LTE BAND 4 (15.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
15.0 MHZ BAND QPSK	75/0	1717.5	24.26	266.69
		1732.5	24.15	260.02
		1747.5	**24.64**	291.07
15.0 MHZ BAND 16QAM	75/0	1717.5	23.40	218.78
		1732.5	23.05	201.84
		1747.5	**23.52**	224.91

EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
20.0 MHZ BAND QPSK	100/0	1720.0	24.29	268.53
		1732.5	24.48	280.54
		1745.0	**24.75**	298.54
20.0 MHZ BAND 16QAM	100/0	1720.0	23.25	211.35
		1732.5	23.19	208.45
		1745.0	**23.86**	243.22

EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
1.4MHz Band QPSK	1/0	824.7	**22.52**	178.65
		836.5	21.93	155.96
		848.3	21.80	151.36
1.4MHz Band 16QAM	1/0	824.7	**21.72**	148.59
		836.5	20.91	123.31
		848.3	20.80	120.23

EIRP POWER FOR LTE BAND 5 (3.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	825.5	**22.22**	166.72
		836.5	21.58	143.88
		847.5	21.72	148.59
3.0 MHZ BAND 16QAM	1/0	825.5	**21.32**	135.52
		836.5	20.63	115.61
		847.5	20.82	120.78

EIRP POWER FOR LTE BAND 5 (5.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	826.5	**22.49**	177.42
		836.5	22.43	174.98
		846.5	22.32	170.61
5MHz Band 16QAM	1/0	826.5	**21.79**	151.01
		836.5	21.53	142.23
		846.5	21.42	138.68

EIRP POWER FOR LTE BAND 5 (10.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	829.0	22.32	170.61
		836.5	22.03	159.59
		844.0	**22.62**	182.81
10.0 MHZ BAND 16QAM	1/0	829.0	21.59	144.21
		836.5	21.23	132.74
		844.0	**21.84**	152.76

EIRP POWER FOR LTE BAND 13 (5.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	779.5	21.46	139.96
		782.0	21.54	142.56
		784.5	**21.88**	154.17
5.0 MHZ BAND 16QAM	1/0	779.5	20.55	113.50
		782.0	20.63	115.61
		784.5	**20.97**	125.03

EIRP POWER FOR LTE BAND 13 (10.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10 MHZ BAND QPSK	1/0	782.0	**21.94**	156.31
10 MHz BAND 16QAM	1/0		**21.04**	127.06

EIRP POWER FOR LTE BAND 17 (5.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	706.5	**21.63**	145.55
		710.0	21.56	143.22
		713.5	21.15	130.32
5MHz Band 16QAM	1/0	706.5	20.53	112.98
		710.0	**20.64**	115.88
		713.5	20.24	105.68

EIRP POWER FOR LTE BAND 17 (10.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	709.0	**21.48**	140.60
		710.0	21.36	136.77
		711.0	21.27	133.97
10.0 MHZ BAND 16QAM	1/0	709.0	**20.48**	111.69
		710.0	20.46	111.17
		711.0	20.33	107.89

EIRP POWER FOR LTE BAND 25 (1.4MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
1.4 MHZ BAND QPSK	6/0	1850.7	23.77	238.23
		1880.0	23.70	234.42
		1914.3	**24.84**	304.79
1.4 MHZ BAND 16QAM	6/0	1850.7	22.97	198.15
		1880.0	23.00	199.53
		1914.3	**24.04**	253.51

EIRP POWER FOR LTE BAND 25 (3.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
3.0 MHZ BAND QPSK	15/0	1851.5	23.50	223.87
		1880.0	23.44	220.80
		1913.5	**24.71**	295.80
3.0 MHZ BAND 16QAM	15/0	1851.5	22.40	173.78
		1880.0	22.38	172.98
		1913.5	**23.66**	232.27

EIRP POWER FOR LTE BAND 25 (5.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	1852.5	23.68	233.35
		1880.0	23.52	224.91
		1912.5	**24.89**	308.32
5.0 MHZ BAND 16QAM	25/0	1852.5	22.56	180.30
		1880.0	22.28	169.04
		1912.5	**23.87**	243.78

EIRP POWER FOR LTE BAND 25 (10.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	1855.0	24.23	264.85
		1880.0	23.67	232.81
		1910.0	**24.57**	286.42
10.0 MHZ BAND 16QAM	50/0	1855.0	23.22	209.89
		1880.0	22.63	183.23
		1910.0	**23.50**	223.87

EIRP POWER FOR LTE BAND 25 (15.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
15.0 MHZ BAND QPSK	75/0	1857.5	**24.57**	286.42
		1880.0	23.20	208.93
		1907.5	23.04	201.37
15.0 MHZ BAND 16QAM	75/0	1857.5	**23.67**	232.81
		1880.0	22.30	169.82
		1907.5	22.24	167.49

EIRP POWER FOR LTE BAND 25 (20.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
20.0 MHZ BAND QPSK	100/0	1860.0	**24.47**	279.90
		1880.0	24.00	251.19
		1905.0	24.24	265.46
20.0 MHZ BAND 16QAM	100/0	1860.0	**23.67**	232.81
		1880.0	23.20	208.93
		1905.0	23.34	215.77

EIRP POWER FOR LTE BAND 26 (3.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP(Average)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	820.3	**21.32**	135.52
		821.3	20.91	123.31
		822.3	21.21	132.13
3.0 MHZ BAND 16QAM	1/0	820.3	**20.39**	109.40
		821.3	20.03	100.69
		822.3	20.26	106.17

EIRP POWER FOR LTE BAND 26 (5.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP(Average)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	821.3	**21.47**	140.28
5.0 MHZ BAND 16QAM	1/0	821.3	**20.55**	113.50

EIRP POWER FOR LTE BAND 26 (10.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP(Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	819.0	**21.59**	144.21
10.0 MHZ BAND 16QAM	1/0	819.0	**20.45**	110.92

EIRP POWER FOR LTE BAND 41 (5.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	2498.5	28.62	727.78
		2593.0	28.97	788.86
		2687.5	**29.32**	855.07
5.0 MHZ BAND 16QAM	25/0	24.98.5	27.95	623.73
		2593.0	28.76	751.62
		2687.5	**29.00**	794.33

EIRP POWER FOR LTE BAND 41 (10.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	2501.0	29.17	826.04
		2593.0	**29.41**	872.97
		2685.0	29.28	847.23
10.0 MHZ BAND 16QAM	50/0	2501.0	**28.62**	727.78
		2593.0	28.49	706.32
		2685.0	28.56	717.79

EIRP POWER FOR LTE BAND 41(15.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
15.0 MHZ BAND QPSK	75/0	2503.5	**29.95**	988.55
		2593.0	29.22	835.60
		2682.5	29.86	968.28
15.0 MHZ BAND 16QAM	75/0	2503.5	29.28	847.23
		2593.0	29.01	796.16
		2682.5	**29.54**	899.50

EIRP POWER FOR LTE BAND 41 (20.0MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
20.0 MHZ BAND QPSK	100/0	2506.0	29.88	972.75
		2593.0	29.75	944.06
		2680.0	**30.06**	1013.91
20.0 MHZ BAND 16QAM	100/0	2506.0	29.48	887.16
		2593.0	28.98	790.68
		2680.0	**29.56**	903.65

9.1.1. LTE BAND 2

QPSK EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)

High Frequency Fundamental Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 2 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.851	16.7	V	0.98	8.61	24.32	33.0	-8.7	
1.851	8.4	H	0.98	8.81	16.20	33.0	-16.8	
Mid Ch								
1.880	17.2	V	0.98	8.53	24.70	33.0	-8.3	
1.880	7.6	H	0.98	8.68	15.29	33.0	-17.7	
High Ch								
1.909	17.0	V	0.98	8.45	24.43	33.0	-8.6	
1.909	9.5	H	0.98	8.55	17.03	33.0	-16.0	

Rev. 10.24.13

16QAM EIRP POWER FOR LTE BAND 2 (1.4MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 2 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.851	16.1	V	0.98	8.61	23.71	33.0	-9.3	
1.851	7.4	H	0.98	8.81	15.27	33.0	-17.7	
Mid Ch								
1.880	16.1	V	0.98	8.53	23.68	33.0	-9.3	
1.880	6.6	H	0.98	8.68	14.26	33.0	-18.7	
High Ch								
1.909	15.7	V	0.98	8.45	23.14	33.0	-9.9	
1.909	8.8	H	0.98	8.55	16.35	33.0	-16.6	

Rev. 10.24.13

QPSK EIRP POWER FOR LTE BAND 2 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 2 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.852	17.2	V	0.98	8.61	24.84	33.0	-8.2	
1.852	11.3	H	0.98	8.81	19.12	33.0	-13.9	
Mid Ch								
1.880	15.7	V	0.98	8.53	23.23	33.0	-9.8	
1.880	11.9	H	0.98	8.68	19.63	33.0	-13.4	
High Ch								
1.909	16.4	V	0.98	8.45	23.86	33.0	-9.1	
1.909	12.6	H	0.98	8.55	20.16	33.0	-12.8	

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16QAM EIRP POWER FOR LTE BAND 2 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 2 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.852	16.0	V	0.98	8.61	23.61	33.0	-9.4	
1.852	10.5	H	0.98	8.81	18.35	33.0	-14.6	
Mid Ch								
1.880	14.6	V	0.98	8.53	22.10	33.0	-10.9	
1.880	11.4	H	0.98	8.68	19.10	33.0	-13.9	
High Ch								
1.909	15.3	V	0.98	8.45	22.74	33.0	-10.3	
1.909	11.2	H	0.98	8.55	18.81	33.0	-14.2	

Rev. 10.24.13

QPSK EIRP POWER FOR LTE BAND 2 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O.Su
Configuration: EUT only
Mode: LTE Band 2 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.853	16.6	V	0.98	8.61	24.25	33.0	-8.8	
1.853	10.4	H	0.98	8.81	18.23	33.0	-14.8	
Mid Ch								
1.880	17.2	V	0.98	8.53	24.72	33.0	-8.3	
1.880	11.1	H	0.98	8.68	18.83	33.0	-14.2	
High Ch								
1.908	16.9	V	0.98	8.45	24.33	33.0	-8.7	
1.908	11.6	H	0.98	8.55	19.13	33.0	-13.9	

Rev. 10.24.13

16QAM EIRP POWER FOR LTE BAND 2 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 2 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.853	15.7	V	0.98	8.61	23.37	33.0	-9.6	
1.853	9.5	H	0.98	8.81	17.33	33.0	-15.7	
Mid Ch								
1.880	16.4	V	0.98	8.53	23.90	33.0	-9.1	
1.880	10.2	H	0.98	8.68	17.93	33.0	-15.1	
High Ch								
1.908	15.8	V	0.98	8.45	23.24	33.0	-9.8	
1.908	10.7	H	0.98	8.55	18.23	33.0	-14.8	

Rev. 10.24.13

QPSK EIRP POWER FOR LTE BAND 2 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O.Su
Configuration: EUT only
Mode: LTE Band 2 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.855	17.0	V	0.98	8.61	24.67	33.0	-8.3	
1.855	10.7	H	0.98	8.81	18.52	33.0	-14.5	
Mid Ch								
1.880	17.3	V	0.98	8.53	24.80	33.0	-8.2	
1.880	12.1	H	0.98	8.68	19.82	33.0	-13.2	
High Ch								
1.905	17.5	V	0.98	8.45	24.93	33.0	-8.1	
1.905	11.0	H	0.98	8.55	18.56	33.0	-14.4	

Rev. 10.24.13

16QAM EIRP POWER FOR LTE BAND 2 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 2 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.855	16.1	V	0.98	8.61	23.77	33.0	-9.2	
1.855	9.5	H	0.98	8.81	17.36	33.0	-15.6	
Mid Ch								
1.880	16.4	V	0.98	8.53	23.99	33.0	-9.0	
1.880	11.0	H	0.98	8.68	18.71	33.0	-14.3	
High Ch								
1.905	16.8	V	0.98	8.45	24.29	33.0	-8.7	
1.905	9.8	H	0.98	8.55	17.41	33.0	-15.6	

Rev. 10.24.13

QPSK EIRP POWER FOR LTE BAND 2 (15.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 2 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.858	16.6	V	0.98	8.61	24.25	33.0	-8.8	
1.858	7.4	H	0.98	8.81	15.27	33.0	-17.7	
Mid Ch								
1.880	17.1	V	0.98	8.53	24.63	33.0	-8.4	
1.880	10.1	H	0.98	8.68	17.77	33.0	-15.2	
High Ch								
1.903	17.3	V	0.98	8.45	24.81	33.0	-8.2	
1.903	12.5	H	0.98	8.55	20.11	33.0	-12.9	

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16QAM EIRP POWER FOR LTE BAND 2 (15.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 2 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.858	15.4	V	0.98	8.61	23.08	33.0	-9.9	
1.858	6.3	H	0.98	8.81	14.16	33.0	-18.8	
Mid Ch								
1.880	15.9	V	0.98	8.53	23.40	33.0	-9.6	
1.880	9.0	H	0.98	8.68	16.75	33.0	-16.3	
High Ch								
1.903	16.5	V	0.98	8.45	23.93	33.0	-9.1	
1.903	11.7	H	0.98	8.55	19.23	33.0	-13.8	

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QPSK EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 2 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.860	17.0	V	0.98	8.61	24.61	33.0	-8.4	
1.860	7.7	H	0.98	8.81	15.53	33.0	-17.5	
Mid Ch								
1.880	16.8	V	0.98	8.53	24.30	33.0	-8.7	
1.880	8.5	H	0.98	8.68	16.23	33.0	-16.8	
High Ch								
1.900	17.0	V	0.98	8.45	24.47	33.0	-8.5	
1.900	7.5	H	0.98	8.55	15.03	33.0	-18.0	

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16QAM EIRP POWER FOR LTE BAND 2 (20.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/29/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 2 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.860	15.6	V	0.98	8.61	23.27	33.0	-9.7	
1.860	6.9	H	0.98	8.81	14.73	33.0	-18.3	
Mid Ch								
1.880	15.9	V	0.98	8.53	23.40	33.0	-9.6	
1.880	7.6	H	0.98	8.68	15.33	33.0	-17.7	
High Ch								
1.900	15.9	V	0.98	8.45	23.34	33.0	-9.7	
1.900	6.8	H	0.98	8.55	14.33	33.0	-18.7	

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9.1.2. LTE BAND 4

QPSK EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #:	14U18207
Date:	7/30/2014
Test Engineer:	T Wang
Configuration:	EUT only
Mode:	LTE Band 4 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.711	16.9	V	0.95	8.42	24.36	30.0	-5.6	
1.711	12.1	H	0.95	8.60	19.79	30.0	-10.2	
Mid Ch								
1.733	17.0	V	0.95	8.50	24.53	30.0	-5.5	
1.733	11.9	H	0.95	8.70	19.64	30.0	-10.4	
High Ch								
1.754	16.6	V	0.95	8.57	24.23	30.0	-5.8	
1.754	12.2	H	0.95	8.80	20.08	30.0	-9.9	

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16QAM EIRP POWER FOR LTE BAND 4 (1.4MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.711	15.9	V	0.95	8.42	23.38	30.0	-6.6	
1.711	11.2	H	0.95	8.60	18.89	30.0	-11.1	
Mid Ch								
1.733	16.0	V	0.95	8.50	23.58	30.0	-6.4	
1.733	10.9	H	0.95	8.70	18.64	30.0	-11.4	
High Ch								
1.754	15.7	V	0.95	8.57	23.33	30.0	-6.7	
1.754	11.2	H	0.95	8.80	19.08	30.0	-10.9	

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QPSK EIRP POWER FOR LTE BAND 4 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.712	16.8	V	0.95	8.42	24.28	30.0	-5.7	
1.712	11.9	H	0.95	8.60	19.59	30.0	-10.4	
Mid Ch								
1.733	16.8	V	0.95	8.50	24.38	30.0	-5.6	
1.733	11.5	H	0.95	8.70	19.24	30.0	-10.8	
High Ch								
1.754	16.9	V	0.95	8.57	24.53	30.0	-5.5	
1.754	12.2	H	0.95	8.80	20.06	30.0	-9.9	

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16QAM EIRP POWER FOR LTE BAND 4 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.712	15.9	V	0.95	8.42	23.36	30.0	-6.6	
1.712	11.0	H	0.95	8.60	18.69	30.0	-11.3	
Mid Ch								
1.733	15.9	V	0.95	8.50	23.46	30.0	-6.5	
1.733	10.6	H	0.95	8.70	18.34	30.0	-11.7	
High Ch								
1.754	15.5	V	0.95	8.57	23.13	30.0	-6.9	
1.754	11.2	H	0.95	8.80	19.08	30.0	-10.9	

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QPSK EIRP POWER FOR LTE BAND 4 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.713	17.0	V	0.95	8.42	24.46	30.0	-5.5	
1.713	12.0	H	0.95	8.60	19.69	30.0	-10.3	
Mid Ch								
1.733	16.7	V	0.95	8.50	24.22	30.0	-5.8	
1.733	11.1	H	0.95	8.70	18.84	30.0	-11.2	
High Ch								
1.753	17.1	V	0.95	8.57	24.73	30.0	-5.3	
1.753	12.4	H	0.95	8.80	20.28	30.0	-9.7	

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16QAM EIRP POWER FOR LTE BAND 4 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.713	15.9	V	0.95	8.42	23.42	30.0	-6.6	
1.713	10.9	H	0.95	8.60	18.59	30.0	-11.4	
Mid Ch								
1.733	15.8	V	0.95	8.50	23.38	30.0	-6.6	
1.733	10.1	H	0.95	8.70	17.82	30.0	-12.2	
High Ch								
1.753	16.1	V	0.95	8.57	23.74	30.0	-6.3	
1.753	11.4	H	0.95	8.80	19.28	30.0	-10.7	

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QPSK EIRP POWER FOR LTE BAND 4 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. SU
Configuration: EUT only
Mode: LTE Band 4 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.715	17.3	V	0.95	8.42	24.82	30.0	-5.2	
1.715	12.2	H	0.95	8.60	19.87	30.0	-10.1	
Mid Ch								
1.733	16.7	V	0.95	8.50	24.25	30.0	-5.7	
1.733	11.0	H	0.95	8.70	18.75	30.0	-11.3	
High Ch								
1.750	16.4	V	0.95	8.57	24.00	30.0	-6.0	
1.750	11.4	H	0.95	8.80	19.25	30.0	-10.8	

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16QAM EIRP POWER FOR LTE BAND 4 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. SU
Configuration: EUT only
Mode: LTE Band 4 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.715	16.3	V	0.95	8.42	23.80	30.0	-6.2	
1.715	11.0	H	0.95	8.60	18.66	30.0	-11.3	
Mid Ch								
1.733	15.7	V	0.95	8.50	23.26	30.0	-6.7	
1.733	9.9	H	0.95	8.70	17.61	30.0	-12.4	
High Ch								
1.750	15.5	V	0.95	8.57	23.07	30.0	-6.9	
1.750	10.3	H	0.95	8.80	18.14	30.0	-11.9	

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QPSK EIRP POWER FOR LTE BAND 4 (15.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.718	16.8	V	0.95	8.42	24.26	30.0	-5.7	
1.718	12.0	H	0.95	8.60	19.69	30.0	-10.3	
Mid Ch								
1.733	16.6	V	0.95	8.50	24.15	30.0	-5.8	
1.733	11.6	H	0.95	8.70	19.34	30.0	-10.7	
High Ch								
1.748	17.0	V	0.95	8.57	24.64	30.0	-5.4	
1.748	11.8	H	0.95	8.80	19.68	30.0	-10.3	

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16QAM EIRP POWER FOR LTE BAND 4 (15.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.718	15.9	V	0.95	8.42	23.40	30.0	-6.6	
1.718	11.0	H	0.95	8.60	18.69	30.0	-11.3	
Mid Ch								
1.733	15.5	V	0.95	8.50	23.05	30.0	-6.9	
1.733	10.5	H	0.95	8.70	18.24	30.0	-11.8	
High Ch								
1.748	15.9	V	0.95	8.57	23.52	30.0	-6.5	
1.748	10.9	H	0.95	8.80	18.78	30.0	-11.2	

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QPSK EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.720	16.8	V	0.95	8.42	24.29	30.0	-5.7	
1.720	12.3	H	0.95	8.60	19.99	30.0	-10.0	
Mid Ch								
1.733	16.9	V	0.95	8.50	24.48	30.0	-5.5	
1.733	11.9	H	0.95	8.70	19.63	30.0	-10.4	
High Ch								
1.745	17.1	V	0.95	8.57	24.75	30.0	-5.2	
1.745	12.0	H	0.95	8.80	19.89	30.0	-10.1	

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16QAM EIRP POWER FOR LTE BAND 4 (20.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 4 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.720	15.8	V	0.95	8.42	23.25	30.0	-6.8	
1.720	10.9	H	0.95	8.60	18.57	30.0	-11.4	
Mid Ch								
1.733	15.6	V	0.95	8.50	23.19	30.0	-6.8	
1.733	10.8	H	0.95	8.70	18.52	30.0	-11.5	
High Ch								
1.745	16.2	V	0.95	8.57	23.86	30.0	-6.1	
1.745	10.8	H	0.95	8.80	18.65	30.0	-11.4	

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9.1.3. LTE BAND 5

QPSK EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/25/2014
Test Engineer: O Su
Configuration: EUT only
Mode: LTE Band 5 QPSK 1.4MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	23.14	V	0.6	0.0	22.52	24.67	38.45	40.60	-15.9	
824.70	14.91	H	0.6	0.0	14.29	16.44	38.45	40.60	-24.2	
Mid Ch										
836.50	22.55	V	0.6	0.0	21.93	24.08	38.45	40.60	-16.5	
836.50	16.85	H	0.6	0.0	16.23	18.38	38.45	40.60	-22.2	
High Ch										
848.30	22.42	V	0.6	0.0	21.80	23.95	38.45	40.60	-16.7	
848.30	16.57	H	0.6	0.0	15.95	18.10	38.45	40.60	-22.5	

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16QAM EIRP POWER FOR LTE BAND 5 (1.4MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #:	14U18207
Date:	7/25/2014
Test Engineer:	Ali P
Configuration:	EUT only
Mode:	LTE Band 5 16QAM 1.4MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	22.34	V	0.6	0.0	21.72	23.87	38.45	40.60	-16.7	
824.70	14.01	H	0.6	0.0	13.39	15.54	38.45	40.60	-25.1	
Mid Ch										
836.50	21.53	V	0.6	0.0	20.91	23.06	38.45	40.60	-17.5	
836.50	15.69	H	0.6	0.0	15.07	17.22	38.45	40.60	-23.4	
High Ch										
848.30	21.42	V	0.6	0.0	20.80	22.95	38.45	40.60	-17.7	
848.30	15.75	H	0.6	0.0	15.13	17.28	38.45	40.60	-23.3	

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QPSK EIRP POWER FOR LTE BAND 5 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/14/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 5 QPSK 3MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
825.50	22.84	V	0.6	0.0	22.22	24.37	38.45	40.60	-16.2	
825.50	15.91	H	0.6	0.0	15.29	17.44	38.45	40.60	-23.2	
Mid Ch										
836.50	22.20	V	0.6	0.0	21.58	23.73	38.45	40.60	-16.9	
836.50	15.25	H	0.6	0.0	14.63	16.78	38.45	40.60	-23.8	
High Ch										
847.50	22.34	V	0.6	0.0	21.72	23.87	38.45	40.60	-16.7	
847.50	15.90	H	0.6	0.0	15.28	17.43	38.45	40.60	-23.2	

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16QAM EIRP POWER FOR LTE BAND 5 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/17/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 5 16QAM 3MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
825.50	21.94	V	0.6	0.0	21.32	23.47	38.45	40.60	-17.1	
825.50	14.91	H	0.6	0.0	14.29	16.44	38.45	40.60	-24.2	
Mid Ch										
836.50	21.25	V	0.6	0.0	20.63	22.78	38.45	40.60	-17.8	
836.50	14.59	H	0.6	0.0	13.97	16.12	38.45	40.60	-24.5	
High Ch										
847.50	21.44	V	0.6	0.0	20.82	22.97	38.45	40.60	-17.6	
847.50	14.97	H	0.6	0.0	14.35	16.50	38.45	40.60	-24.1	

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QPSK EIRP POWER FOR LTE BAND 5 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/24/2014
Test Engineer: O Su
Configuration: EUT only
Mode: LTE Band 5 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.50	23.11	V	0.6	0.0	22.49	24.64	38.45	40.60	-16.0	
826.50	15.31	H	0.6	0.0	14.69	16.84	38.45	40.60	-23.8	
Mid Ch										
836.50	23.05	V	0.6	0.0	22.43	24.58	38.45	40.60	-16.0	
836.50	15.35	H	0.6	0.0	14.73	16.88	38.45	40.60	-23.7	
High Ch										
846.50	22.94	V	0.6	0.0	22.32	24.47	38.45	40.60	-16.1	
846.50	15.37	H	0.6	0.0	14.75	16.90	38.45	40.60	-23.7	

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16QAM EIRP POWER FOR LTE BAND 5 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/14/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 5 16QAM 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.50	22.41	V	0.6	0.0	21.79	23.94	38.45	40.60	-16.7	
826.50	14.21	H	0.6	0.0	13.59	15.74	38.45	40.60	-24.9	
Mid Ch										
836.50	22.15	V	0.6	0.0	21.53	23.68	38.45	40.60	-16.9	
836.50	14.42	H	0.6	0.0	13.80	15.95	38.45	40.60	-24.7	
High Ch										
846.50	22.04	V	0.6	0.0	21.42	23.57	38.45	40.60	-17.0	
846.50	14.44	H	0.6	0.0	13.82	15.97	38.45	40.60	-24.6	

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QPSK EIRP POWER FOR LTE BAND 5 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/24/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 5 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
829.00	22.94	V	0.6	0.0	22.32	24.47	38.45	40.60	-16.1	
829.00	17.91	H	0.6	0.0	17.29	19.44	38.45	40.60	-21.2	
Mid Ch										
836.50	22.65	V	0.6	0.0	22.03	24.18	38.45	40.60	-16.4	
836.50	17.35	H	0.6	0.0	16.73	18.88	38.45	40.60	-21.7	
High Ch										
844.00	23.24	V	0.6	0.0	22.62	24.77	38.45	40.60	-15.8	
844.00	17.17	H	0.6	0.0	16.55	18.70	38.45	40.60	-21.9	

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16QAM EIRP POWER FOR LTE BAND 5 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/14/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 5 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
829.00	22.21	V	0.6	0.0	21.59	23.74	38.45	40.60	-16.9	
829.00	17.11	H	0.6	0.0	16.49	18.64	38.45	40.60	-22.0	
Mid Ch										
836.50	21.85	V	0.6	0.0	21.23	23.38	38.45	40.60	-17.2	
836.50	16.65	H	0.6	0.0	16.03	18.18	38.45	40.60	-22.4	
High Ch										
844.00	22.46	V	0.6	0.0	21.84	23.99	38.45	40.60	-16.6	
844.00	16.27	H	0.6	0.0	15.65	17.80	38.45	40.60	-22.8	

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9.1.4. LTE BAND 13

QPSK EIRP POWER FOR LTE BAND 13 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/23/2014
Test Engineer: O SU
Configuration: EUT only
Mode: LTE Band 13 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
779.50	22.01	V	0.55	0.0	21.46	23.61	34.77	36.99	-13.4	
779.50	18.66	H	0.55	0.0	18.11	20.26	34.77	36.99	-16.7	
Mid Ch										
782.00	22.09	V	0.55	0.0	21.54	23.69	34.77	36.99	-13.3	
782.00	19.18	H	0.55	0.0	18.63	20.78	34.77	36.99	-16.2	
High Ch										
784.50	22.43	V	0.55	0.0	21.88	24.03	34.77	36.99	-13.0	
784.50	19.74	H	0.55	0.0	19.19	21.34	34.77	36.99	-15.7	

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16QAM EIRP POWER FOR LTE BAND 13 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/23/2014
Test Engineer: O Su
Configuration: EUT only
Mode: LTE Band 13 16QAM5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
779.50	21.10	V	0.55	0.0	20.55	22.70	34.77	36.99	-14.3	
779.50	17.75	H	0.55	0.0	17.20	19.35	34.77	36.99	-17.6	
Mid Ch										
782.00	21.18	V	0.55	0.0	20.63	22.78	34.77	36.99	-14.2	
782.00	18.27	H	0.55	0.0	17.72	19.87	34.77	36.99	-17.1	
High Ch										
784.50	21.52	V	0.55	0.0	20.97	23.12	34.77	36.99	-13.9	
784.50	18.83	H	0.55	0.0	18.28	20.43	34.77	36.99	-16.6	

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QPSK EIRP POWER FOR LTE BAND 13 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #:	14U18207
Date:	7/23/2014
Test Engineer:	O Su
Configuration:	EUT only
Mode:	LTE Band 13 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
782.00	22.49	V	0.55	0.0	21.94	24.09	34.77	36.99	-12.9	
782.00	18.73	H	0.55	0.0	18.18	20.33	34.77	36.99	-16.7	

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16QAM EIRP POWER FOR LTE BAND 13 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #:	14U18207
Date:	7/23/2014
Test Engineer:	O Su
Configuration:	EUT only
Mode:	LTE Band 13 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
782.00	21.59	V	0.55	0.0	21.04	23.19	34.77	36.99	-13.8	
782.00	17.83	H	0.55	0.0	17.28	19.43	34.77	36.99	-17.6	

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9.1.5. LTE BAND 17

QPSK EIRP POWER FOR LTE BAND 17 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #:	14U18207
Date:	7/23/2014
Test Engineer:	T Wang
Configuration:	EUT only
Mode:	LTE Band 17 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
706.50	22.18	V	0.55	0.0	21.63	23.78	34.77	36.99	-13.2	
706.50	15.89	H	0.55	0.0	15.34	17.49	34.77	36.99	-19.5	
Mid Ch										
710.00	22.11	V	0.55	0.0	21.56	23.71	34.77	36.99	-13.3	
710.00	15.53	H	0.55	0.0	14.98	17.13	34.77	36.99	-19.9	
High Ch										
713.50	21.70	V	0.55	0.0	21.15	23.30	34.77	36.99	-13.7	
713.50	15.09	H	0.55	0.0	14.54	16.69	34.77	36.99	-20.3	

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16QAM EIRP POWER FOR LTE BAND 17 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #:	14U18207
Date:	7/23/2014
Test Engineer:	T Wang
Configuration:	EUT only
Mode:	LTE Band 17 16QAM 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
706.50	21.08	V	0.55	0.0	20.53	22.68	34.77	36.99	-14.3	
706.50	14.99	H	0.55	0.0	14.44	16.59	34.77	36.99	-20.4	
Mid Ch										
710.00	21.19	V	0.55	0.0	20.64	22.79	34.77	36.99	-14.2	
710.00	14.70	H	0.55	0.0	14.15	16.30	34.77	36.99	-20.7	
High Ch										
713.50	20.79	V	0.55	0.0	20.24	22.39	34.77	36.99	-14.6	
713.50	14.45	H	0.55	0.0	13.90	16.05	34.77	36.99	-20.9	

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QPSK EIRP POWER FOR LTE BAND 17 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/23/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 17 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
709.00	22.03	V	0.55	0.0	21.48	23.63	34.77	36.99	-13.4	
709.00	15.78	H	0.55	0.0	15.23	17.38	34.77	36.99	-19.6	
Mid Ch										
710.00	21.91	V	0.55	0.0	21.36	23.51	34.77	36.99	-13.5	
710.00	16.11	H	0.55	0.0	15.56	17.71	34.77	36.99	-19.3	
High Ch										
711.00	21.82	V	0.55	0.0	21.27	23.42	34.77	36.99	-13.6	
711.00	15.13	H	0.55	0.0	14.58	16.73	34.77	36.99	-20.3	

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16QAM EIRP POWER FOR LTE BAND 17 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/23/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 17 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
709.00	21.03	V	0.55	0.0	20.48	22.63	34.77	36.99	-14.4	
709.00	14.86	H	0.55	0.0	14.31	16.46	34.77	36.99	-20.5	
Mid Ch										
710.00	21.01	V	0.55	0.0	20.46	22.61	34.77	36.99	-14.4	
710.00	14.98	H	0.55	0.0	14.43	16.58	34.77	36.99	-20.4	
High Ch										
711.00	20.88	V	0.55	0.0	20.33	22.48	34.77	36.99	-14.5	
711.00	14.27	H	0.55	0.0	13.72	15.87	34.77	36.99	-21.1	

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9.1.6. LTE BAND 25

QPSK EIRP POWER FOR LTE BAND 25 (1.4MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #:	14U18207
Date:	7/30/2014
Test Engineer:	O. Su
Configuration:	EUT only
Mode:	LTE Band 25 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.851	16.1	V	0.98	8.61	23.77	33.0	-9.2	
1.851	5.9	H	0.98	8.81	13.73	33.0	-19.3	
Mid Ch								
1.883	16.2	V	0.98	8.53	23.70	33.0	-9.3	
1.883	6.6	H	0.98	8.68	14.33	33.0	-18.7	
High Ch								
1.914	17.4	V	0.98	8.45	24.84	33.0	-8.2	
1.914	5.9	H	0.98	8.55	13.46	33.0	-19.5	

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16QAM EIRP POWER FOR LTE BAND 25 (1.4MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 25 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.851	15.3	V	0.98	8.61	22.97	33.0	-10.0	
1.851	5.0	H	0.98	8.81	12.83	33.0	-20.2	
Mid Ch								
1.883	15.5	V	0.98	8.53	23.00	33.0	-10.0	
1.883	5.7	H	0.98	8.68	13.37	33.0	-19.6	
High Ch								
1.914	16.6	V	0.98	8.45	24.04	33.0	-9.0	
1.914	4.8	H	0.98	8.55	12.39	33.0	-20.6	

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QPSK EIRP POWER FOR LTE BAND 25 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 25 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.852	15.9	V	0.98	8.61	23.50	33.0	-9.5	
1.852	5.9	H	0.98	8.81	13.75	33.0	-19.2	
Mid Ch								
1.883	15.9	V	0.98	8.53	23.44	33.0	-9.6	
1.883	6.9	H	0.98	8.68	14.58	33.0	-18.4	
High Ch								
1.914	17.2	V	0.98	8.45	24.71	33.0	-8.3	
1.914	7.3	H	0.98	8.55	14.83	33.0	-18.2	

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16QAM EIRP POWER FOR LTE BAND 25 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 25 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.852	14.8	V	0.98	8.61	22.40	33.0	-10.6	
1.852	4.9	H	0.98	8.81	12.75	33.0	-20.2	
Mid Ch								
1.883	14.8	V	0.98	8.53	22.38	33.0	-10.6	
1.883	5.8	H	0.98	8.68	13.53	33.0	-19.5	
High Ch								
1.914	16.2	V	0.98	8.45	23.66	33.0	-9.3	
1.914	6.8	H	0.98	8.55	14.36	33.0	-18.6	

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QPSK EIRP POWER FOR LTE BAND 25 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 25 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.853	16.0	V	0.98	8.61	23.68	33.0	-9.3	
1.853	9.0	H	0.98	8.81	16.80	33.0	-16.2	
Mid Ch								
1.883	16.0	V	0.98	8.53	23.52	33.0	-9.5	
1.883	9.2	H	0.98	8.68	16.94	33.0	-16.1	
High Ch								
1.913	17.4	V	0.98	8.45	24.89	33.0	-8.1	
1.913	9.2	H	0.98	8.55	16.75	33.0	-16.2	

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16QAM EIRP POWER FOR LTE BAND 25 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 25 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.853	14.9	V	0.98	8.61	22.56	33.0	-10.4	
1.853	7.9	H	0.98	8.81	15.69	33.0	-17.3	
Mid Ch								
1.883	14.7	V	0.98	8.53	22.28	33.0	-10.7	
1.883	8.6	H	0.98	8.68	16.31	33.0	-16.7	
High Ch								
1.913	16.4	V	0.98	8.45	23.87	33.0	-9.1	
1.913	8.0	H	0.98	8.55	15.53	33.0	-17.5	

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QPSK EIRP POWER FOR LTE BAND 25 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 25 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.855	16.6	V	0.98	8.61	24.23	33.0	-8.8	
1.855	10.5	H	0.98	8.81	18.33	33.0	-14.7	
Mid Ch								
1.883	16.1	V	0.98	8.53	23.67	33.0	-9.3	
1.883	9.7	H	0.98	8.68	17.43	33.0	-15.6	
High Ch								
1.910	17.1	V	0.98	8.45	24.57	33.0	-8.4	
1.910	10.7	H	0.98	8.55	18.26	33.0	-14.7	

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16QAM EIRP POWER FOR LTE BAND 25 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/30/2014
Test Engineer: O. Su
Configuration: EUT only
Mode: LTE Band 25 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.855	15.6	V	0.98	8.61	23.22	33.0	-9.8	
1.855	10.0	H	0.98	8.81	17.78	33.0	-15.2	
Mid Ch								
1.883	15.1	V	0.98	8.53	22.63	33.0	-10.4	
1.883	9.3	H	0.98	8.68	16.97	33.0	-16.0	
High Ch								
1.910	16.0	V	0.98	8.45	23.50	33.0	-9.5	
1.910	10.1	H	0.98	8.55	17.62	33.0	-15.4	

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QPSK EIRP POWER FOR LTE BAND 25 (15.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 14U18207
Date: 7/30/2014
Test Engineer: O Su
Configuration: EUT only
Mode: LTE Band 25 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.858	16.9	V	0.98	8.61	24.57	33.0	-8.4	
1.858	6.2	H	0.98	8.81	14.03	33.0	-19.0	
Mid Ch								
1.883	15.7	V	0.98	8.53	23.20	33.0	-9.8	
1.883	7.6	H	0.98	8.68	15.33	33.0	-17.7	
High Ch								
1.908	15.6	V	0.98	8.45	23.04	33.0	-10.0	
1.908	9.0	H	0.98	8.55	16.53	33.0	-16.5	

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16QAM EIRP POWER FOR LTE BAND 25 (15.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 14U18207
Date: 7/30/2014
Test Engineer: O Su
Configuration: EUT only
Mode: LTE Band 25 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.858	16.0	V	0.98	8.61	23.67	33.0	-9.3	
1.858	5.3	H	0.98	8.81	13.13	33.0	-19.9	
Mid Ch								
1.883	14.8	V	0.98	8.53	22.30	33.0	-10.7	
1.883	6.8	H	0.98	8.68	14.53	33.0	-18.5	
High Ch								
1.908	14.8	V	0.98	8.45	22.24	33.0	-10.8	
1.908	7.9	H	0.98	8.55	15.43	33.0	-17.6	

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QPSK EIRP POWER FOR LTE BAND 25 (20.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 25 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.860	16.8	V	0.98	8.61	24.47	33.0	-8.5	
1.860	10.4	H	0.98	8.81	18.23	33.0	-14.8	
Mid Ch								
1.883	16.5	V	0.98	8.53	24.00	33.0	-9.0	
1.883	12.0	H	0.98	8.68	19.73	33.0	-13.3	
High Ch								
1.905	16.8	V	0.98	8.45	24.24	33.0	-8.8	
1.905	11.6	H	0.98	8.55	19.13	33.0	-13.9	

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16QAM EIRP POWER FOR LTE BAND 25 (20.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 14U18207
Date: 7/30/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 25 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
1.860	16.0	V	0.98	8.61	23.67	33.0	-9.3	
1.860	9.6	H	0.98	8.81	17.43	33.0	-15.6	
Mid Ch								
1.883	15.7	V	0.98	8.53	23.20	33.0	-9.8	
1.883	11.0	H	0.98	8.68	18.73	33.0	-14.3	
High Ch								
1.905	15.9	V	0.98	8.45	23.34	33.0	-9.7	
1.905	10.7	H	0.98	8.55	18.23	33.0	-14.8	

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9.1.7. LTE BAND 26

QPSK EIRP POWER FOR LTE BAND 26 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/24/2014
Test Engineer: O Su
Configuration: EUT only
Mode: LTE Band 26 QPSK 3MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
820.30	21.94	V	0.62	0.0	21.32	23.47	38.45	40.60	-17.1	
820.30	15.22	H	0.62	0.0	14.60	16.75	38.45	40.60	-23.8	
Mid Ch										
821.30	21.53	V	0.62	0.0	20.91	23.06	38.45	40.60	-17.5	
821.30	14.65	H	0.62	0.0	14.03	16.18	38.45	40.60	-24.4	
High Ch										
822.30	21.83	V	0.62	0.0	21.21	23.36	38.45	40.60	-17.2	
822.30	14.87	H	0.62	0.0	14.25	16.40	38.45	40.60	-24.2	

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16QAM EIRP POWER FOR LTE BAND 26 (3.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/24/2014
Test Engineer: O SU
Configuration: EUT only
Mode: LTE Band 26 16QAM 3MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
820.30	21.01	V	0.62	0.0	20.39	22.54	38.45	40.60	-18.1	
820.30	14.24	H	0.62	0.0	13.62	15.77	38.45	40.60	-24.8	
Mid Ch										
821.30	20.65	V	0.62	0.0	20.03	22.18	38.45	40.60	-18.4	
821.30	13.72	H	0.62	0.0	13.10	15.25	38.45	40.60	-25.4	
High Ch										
822.30	20.88	V	0.62	0.0	20.26	22.41	38.45	40.60	-18.2	
822.30	13.95	H	0.62	0.0	13.33	15.48	38.45	40.60	-25.1	

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QPSK EIRP POWER FOR LTE BAND 26 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/24/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 26 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Mid Ch										
821.30	22.09	V	0.62	0.0	21.47	23.62	38.45	40.60	-17.0	
821.30	14.70	H	0.62	0.0	14.08	16.23	38.45	40.60	-24.4	

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16QAM EIRP POWER FOR LTE BAND 26 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/24/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 26 16QAM 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Mid Ch										
821.30	21.17	V	0.62	0.0	20.55	22.70	38.45	40.60	-17.9	
821.30	13.72	H	0.62	0.0	13.10	15.25	38.45	40.60	-25.4	

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QPSK EIRP POWER FOR LTE BAND 26 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #:	14U18207
Date:	7/24/2014
Test Engineer:	T Wang
Configuration:	EUT only
Mode:	LTE Band 26 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f	SG reading	Ant. Pol.	Cable Loss	Antenna Gain	ERP	EIRP	ERP Limit	EIRP Limit	Margin EIRP	Notes
GHz	(dBm)	(H/V)	(dB)	(dBi)	(dBm)	(dBm)	(dBm)	(dBm)	(dB)	
Mid Ch										
819.00	22.21	V	0.62	0.0	21.59	23.74	38.45	40.60	-16.9	
819.00	14.92	H	0.62	0.0	14.30	16.45	38.45	40.60	-24.2	

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16QAM EIRP POWER FOR LTE BAND 26 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 7/24/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 26 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Mid Ch										
819.00	21.07	V	0.62	0.0	20.45	22.60	38.45	40.60	-18.0	
819.00	13.93	H	0.62	0.0	13.31	15.46	38.45	40.60	-25.1	

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9.1.8. LTE BAND 41

QPSK EIRP POWER FOR LTE BAND 41 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 8/1/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 41 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
2.499	18.5	V	1.15	9.42	26.75	33.0	-6.3	
2.499	20.2	H	1.15	9.55	28.62	33.0	-4.4	
Mid Ch								
2.593	19.9	V	1.16	9.63	28.35	33.0	-4.6	
2.593	20.4	H	1.16	9.69	28.97	33.0	-4.0	
High Ch								
2.688	19.4	V	1.17	9.76	28.00	33.0	-5.0	
2.688	20.7	H	1.17	9.77	29.32	33.0	-3.7	

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16QAM EIRP POWER FOR LTE BAND 41 (5.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 8/1/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 41 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
2.499	17.8	V	1.15	9.42	26.05	33.0	-7.0	
2.499	19.5	H	1.15	9.55	27.95	33.0	-5.1	
Mid Ch								
2.593	18.9	V	1.16	9.63	27.34	33.0	-5.7	
2.593	20.2	H	1.16	9.69	28.76	33.0	-4.2	
High Ch								
2.688	18.6	V	1.17	9.76	27.24	33.0	-5.8	
2.688	20.4	H	1.17	9.77	29.00	33.0	-4.0	

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QPSK EIRP POWER FOR LTE BAND 41 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 8/1/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 41 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
2.501	18.7	V	1.15	9.42	27.00	33.0	-6.0	
2.501	20.9	H	1.15	9.55	29.27	33.0	-3.7	
Mid Ch								
2.593	18.4	V	1.16	9.63	26.89	33.0	-6.1	
2.593	20.9	H	1.16	9.69	29.41	33.0	-3.6	
High Ch								
2.685	19.4	V	1.17	9.76	28.00	33.0	-5.0	
2.685	20.7	H	1.17	9.77	29.28	33.0	-3.7	

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16QAM EIRP POWER FOR LTE BAND 41 (10.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 8/1/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 41 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
2.501	18.0	V	1.15	9.42	26.28	33.0	-6.7	
2.501	20.2	H	1.15	9.55	28.62	33.0	-4.4	
Mid Ch								
2.593	17.8	V	1.16	9.63	26.31	33.0	-6.7	
2.593	20.0	H	1.16	9.69	28.49	33.0	-4.5	
High Ch								
2.685	18.8	V	1.17	9.76	27.44	33.0	-5.6	
2.685	20.0	H	1.17	9.77	28.56	33.0	-4.4	

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QPSK EIRP POWER FOR LTE BAND 41 (15.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 8/1/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 41 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
2.504	19.0	V	1.15	9.42	27.26	33.0	-5.7	
2.504	21.6	H	1.15	9.55	29.95	33.0	-3.0	
Mid Ch								
2.593	20.0	V	1.16	9.63	28.49	33.0	-4.5	
2.593	20.7	H	1.16	9.69	29.22	33.0	-3.8	
High Ch								
2.683	19.1	V	1.17	9.76	27.70	33.0	-5.3	
2.683	21.3	H	1.17	9.77	29.86	33.0	-3.1	

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16QAM EIRP POWER FOR LTE BAND 41 (15.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 8/1/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 41 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
2.504	18.0	V	1.15	9.42	26.31	33.0	-6.7	
2.504	20.9	H	1.15	9.55	29.28	33.0	-3.7	
Mid Ch								
2.593	19.2	V	1.16	9.63	27.66	33.0	-5.3	
2.593	20.5	H	1.16	9.69	29.01	33.0	-4.0	
High Ch								
2.683	18.4	V	1.17	9.76	27.00	33.0	-6.0	
2.683	20.9	H	1.17	9.77	29.54	33.0	-3.5	

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QPSK EIRP POWER FOR LTE BAND 41 (20.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 8/1/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 41 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
2.506	18.5	V	1.15	9.42	26.75	33.0	-6.3	
2.506	21.5	H	1.15	9.55	29.88	33.0	-3.1	
Mid Ch								
2.593	20.0	V	1.16	9.63	28.51	33.0	-4.5	
2.593	21.2	H	1.16	9.69	29.75	33.0	-3.3	
High Ch								
2.680	19.5	V	1.17	9.76	28.10	33.0	-4.9	
2.680	21.5	H	1.17	9.77	30.06	33.0	-2.9	

Rev. 10.24.13

16QAM EIRP POWER FOR LTE BAND 41 (20.0MHZ BANDWIDTH)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Project #: 14U18207
Date: 8/1/2014
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 41 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T346, and Chamber E SMA Cables
Substitution: Horn T59 Substitution, 4ft SMA Cable (s/n 245182-003; SUCOFLEX 104PEA)

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin EIRP (dB)	Notes
Low Ch								
2.506	17.7	V	1.15	9.42	25.95	33.0	-7.1	
2.506	21.1	H	1.15	9.55	29.48	33.0	-3.5	
Mid Ch								
2.593	19.2	V	1.16	9.63	27.65	33.0	-5.3	
2.593	20.5	H	1.16	9.69	28.98	33.0	-4.0	
High Ch								
2.680	18.8	V	1.17	9.76	27.41	33.0	-5.6	
2.680	21.0	H	1.17	9.77	29.56	33.0	-3.4	

Rev. 10.24.13

9.2. PEAK-TO-AVERAGE RATIO

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

Note: 0.0001% data on all mode were used for PAR as the worst case condition

9.2.1. LTE BAND 2

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 2 RB1-0	1.4	1880.0	QPSK	28.39	23.41	4.98
			16QAM	28.61	22.54	6.07
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 2 RB1-0	3.0	1880.0	QPSK	28.70	23.50	5.20
			16QAM	28.33	22.50	5.83
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 2 RB1-0	5.0	1880.0	QPSK	28.48	23.48	5.00
			16QAM	28.29	22.41	5.88
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 2 RB1-0	10.0	1880.0	QPSK	28.47	23.53	4.94
			16QAM	28.3	22.55	5.75
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 2 RB1-0	15.0	1880.0	QPSK	28.37	23.45	4.92
			16QAM	28.19	22.48	5.71
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 2 RB1-0	20.0	1880.0	QPSK	28.36	23.3	5.06
			16QAM	28.17	22.36	5.81
*Peak Reading = Average Reading + Peak-to-Average Ratio						

9.2.2. LTE BAND 4

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 4 RB1-0	1.4	1732.5	QPSK	28.71	23.51	5.20
			16QAM	28.72	22.58	6.14
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 4 RB1-0	3.0	1732.5	QPSK	28.72	23.51	5.21
			16QAM	26.92	22.48	4.44
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 4 RB1-0	5.0	1732.5	QPSK	28.48	23.39	5.09
			16QAM	26.84	22.29	4.55
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 4 RB1-0	10.0	1732.5	QPSK	28.29	23.51	4.78
			16QAM	28.33	22.50	5.83
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 4 RB1-0	15.0	1732.5	QPSK	28.13	23.45	4.68
			16QAM	28.07	22.48	5.59
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 4 RB1-0	20.0	1732.5	QPSK	28.12	23.47	4.65
			16QAM	28.05	22.46	5.59
*Peak Reading = Average Reading + Peak-to-Average Ratio						

9.2.3. LTE BAND 5

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 5 RB1-0	1.4	836.5	QPSK	28.98	23.84	5.14
			16QAM	29.18	22.99	6.19
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 5 RB1-0	3.0	836.5	QPSK	29.26	23.97	5.29
			16QAM	29.07	23.01	6.06
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 5 RB1-0	5.0	836.5	QPSK	29.1	23.88	5.22
			16QAM	28.97	22.83	6.14
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 5 RB1-0	10.0	836.5	QPSK	28.92	24.00	4.92
			16QAM	28.75	23.02	5.73
*Peak Reading = Average Reading + Peak-to-Average Ratio						

9.2.4. LTE BAND 13

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 13 RB1-0	5.0	782.0	QPSK	29.14	24.09	5.05
			16QAM	29.01	23.07	5.94
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 13 RB1-0	10.0	782.0	QPSK	28.86	23.99	4.87
			16QAM	28.77	23.03	5.74
*Peak Reading = Average Reading + Peak-to-Average Ratio						

9.2.5. LTE BAND 17

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 17 RB1-0	5.0	710.0	QPSK	28.57	23.94	4.63
			16QAM	28.55	22.92	5.63
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 17 RB1-0	10.0	710.0	QPSK	28.88	24.08	4.80
			16QAM	28.76	23.11	5.65
*Peak Reading = Average Reading + Peak-to-Average Ratio						

9.2.6. LTE BAND 25

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 25 RB1-0	1.4	1880.0	QPSK	28.45	23.47	4.98
			16QAM	28.69	22.59	6.10
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 25 RB1-0	3.0	1880.0	QPSK	28.46	23.39	5.07
			16QAM	28.20	22.41	5.79
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 25 RB1-0	5.0	1880.0	QPSK	28.36	23.30	5.06
			16QAM	28.13	22.18	5.95
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 25 RB1-0	10.0	1880.0	QPSK	28.41	23.45	4.96
			16QAM	28.24	22.52	5.72
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 25 RB1-0	15.0	1880.0	QPSK	28.27	23.41	4.86
			16QAM	28.21	22.46	5.75
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 25 RB1-0	20.0	1880.0	QPSK	28.20	23.16	5.04
			16QAM	27.99	22.19	5.80
*Peak Reading = Average Reading + Peak-to-Average Ratio						

9.2.7. LTE BAND 26

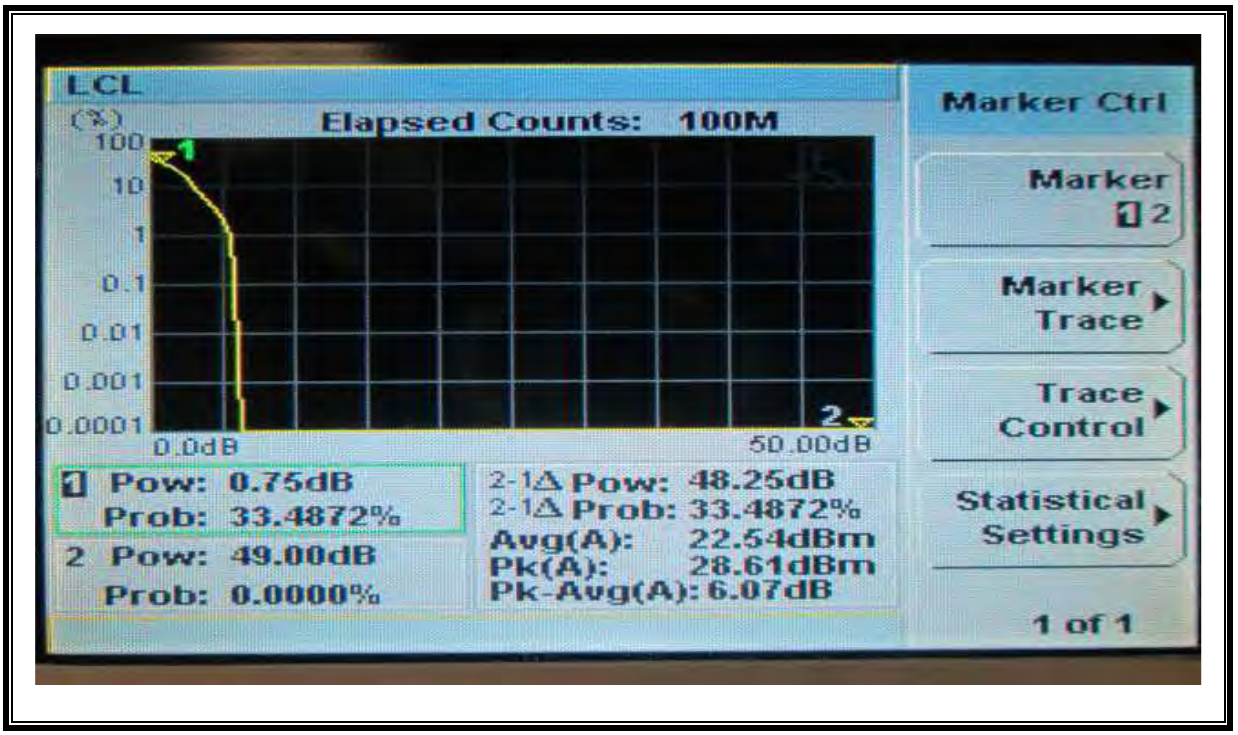
Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 26 RB1-0	3.0	821.3	QPSK	28.52	23.51	5.01
			16QAM	28.37	22.52	5.85
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 26 RB1-0	5.0	821.3	QPSK	28.34	23.42	4.92
			16QAM	28.24	22.29	5.95
*Peak Reading = Average Reading + Peak-to-Average Ratio						

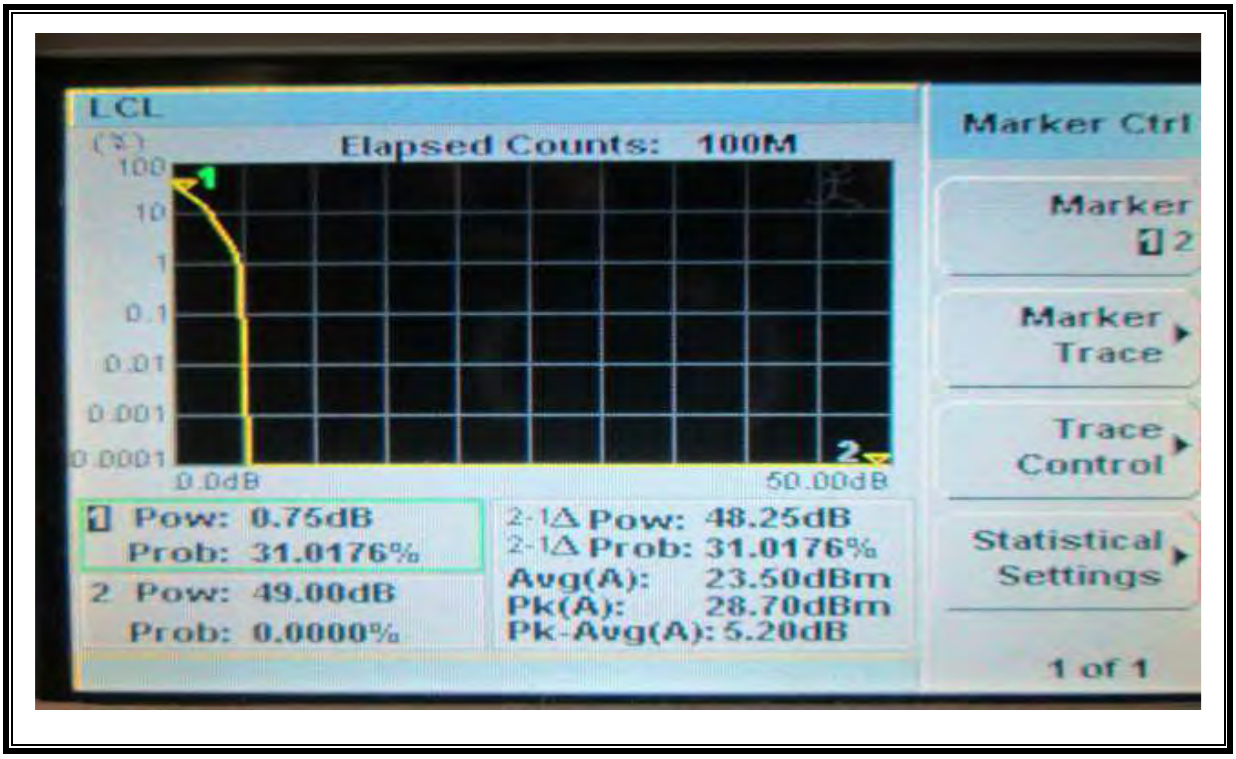
Mode	Channel Band-width (MHZ)	f (MHz)	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
LTE Band 26 RB1-0	10.0	819.0	QPSK	28.20	23.49	4.71
			16QAM	28.16	22.52	5.64
*Peak Reading = Average Reading + Peak-to-Average Ratio						

QPSK Band 2 (1.4 MHz BAND WIDTH)

16QAM Band 2 (1.4 MHz BAND WIDTH)

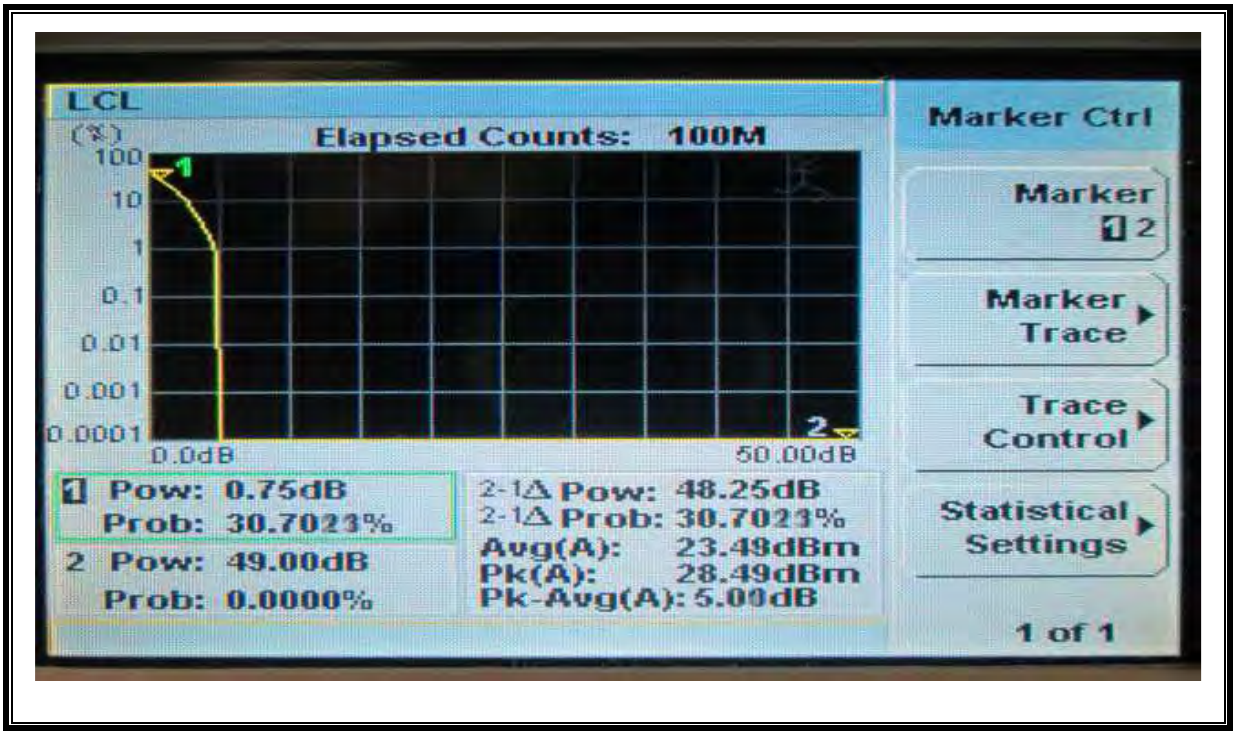


LTE QPSK Band 2 (3 MHz BAND WIDTH)

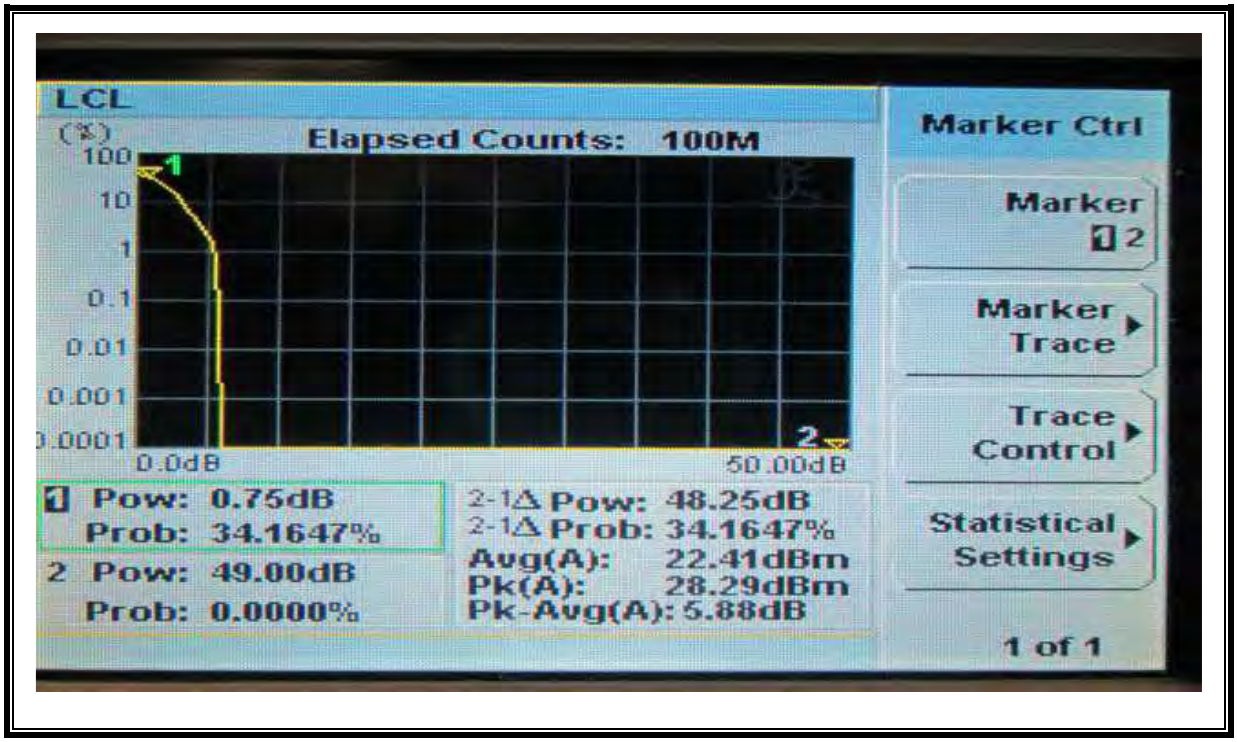


LTE 16QAM Band 2 (3 MHz BAND WIDTH)

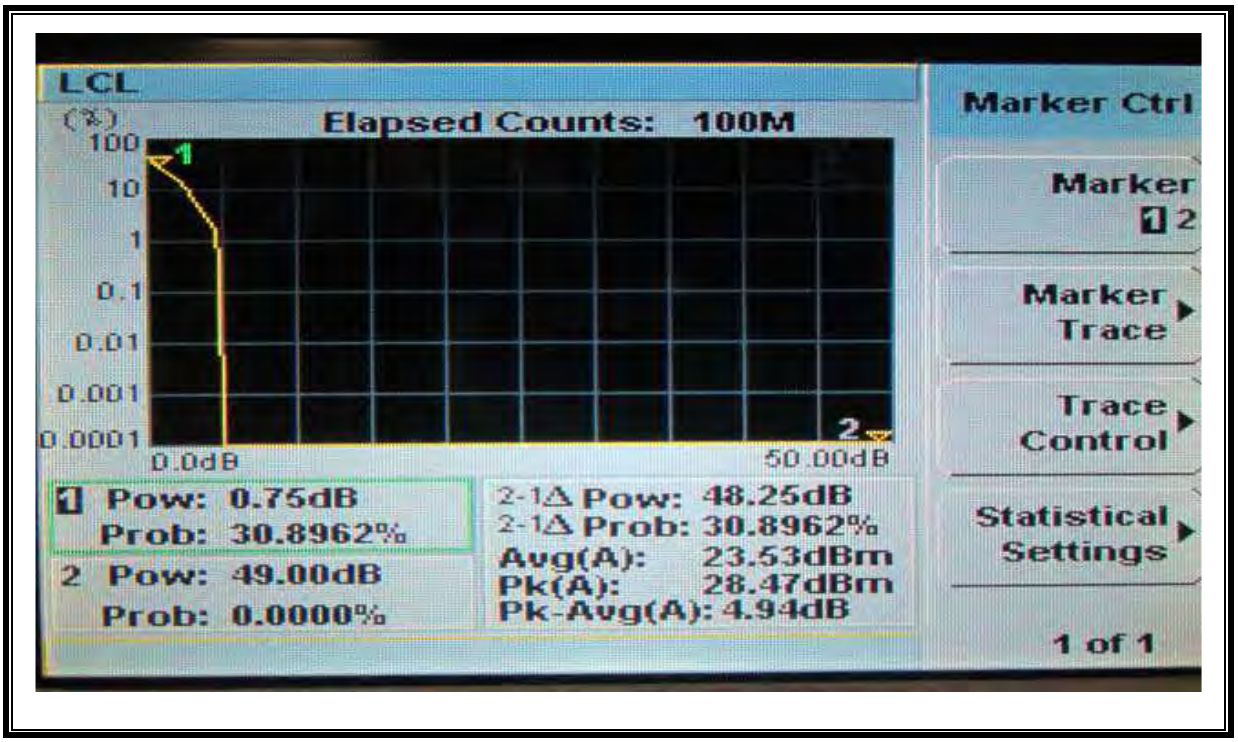
LTE QPSK Band 2 (5 MHz BAND WIDTH)



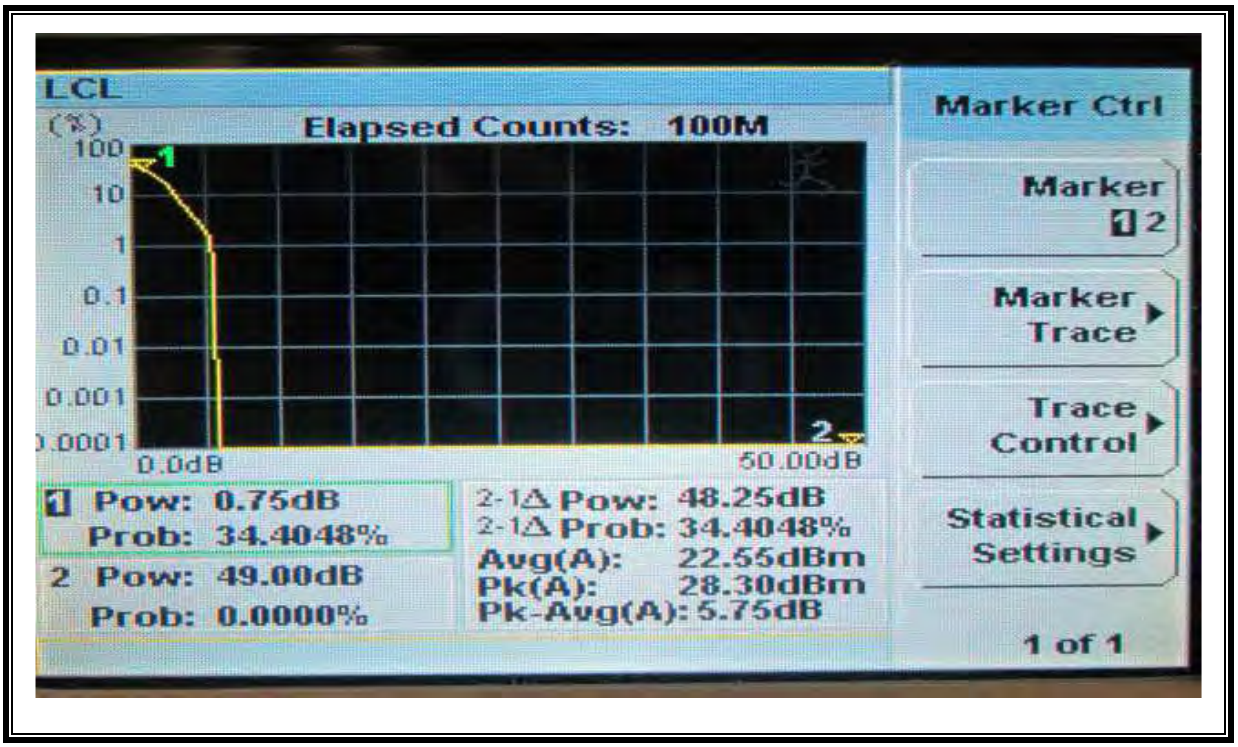
LTE 16QAM Band 2 (5 MHz BAND WIDTH)



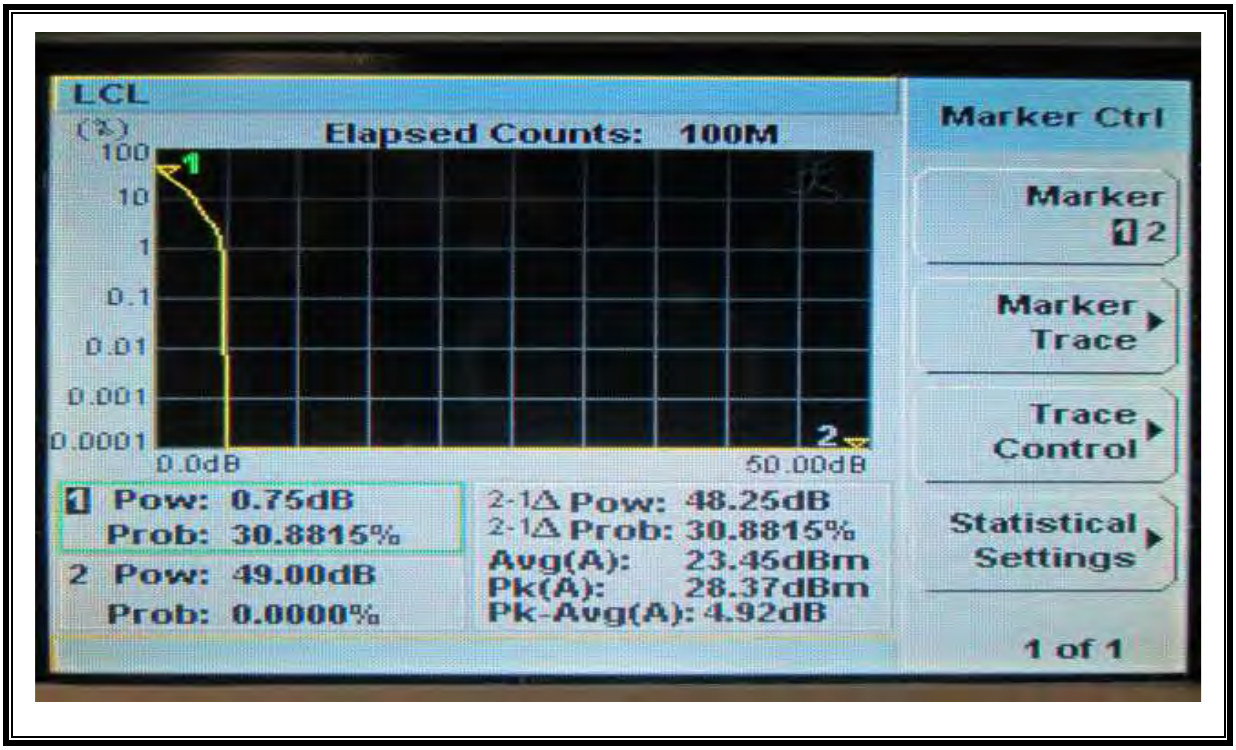
LTE QPSK Band 2 (10 MHz BAND WIDTH)



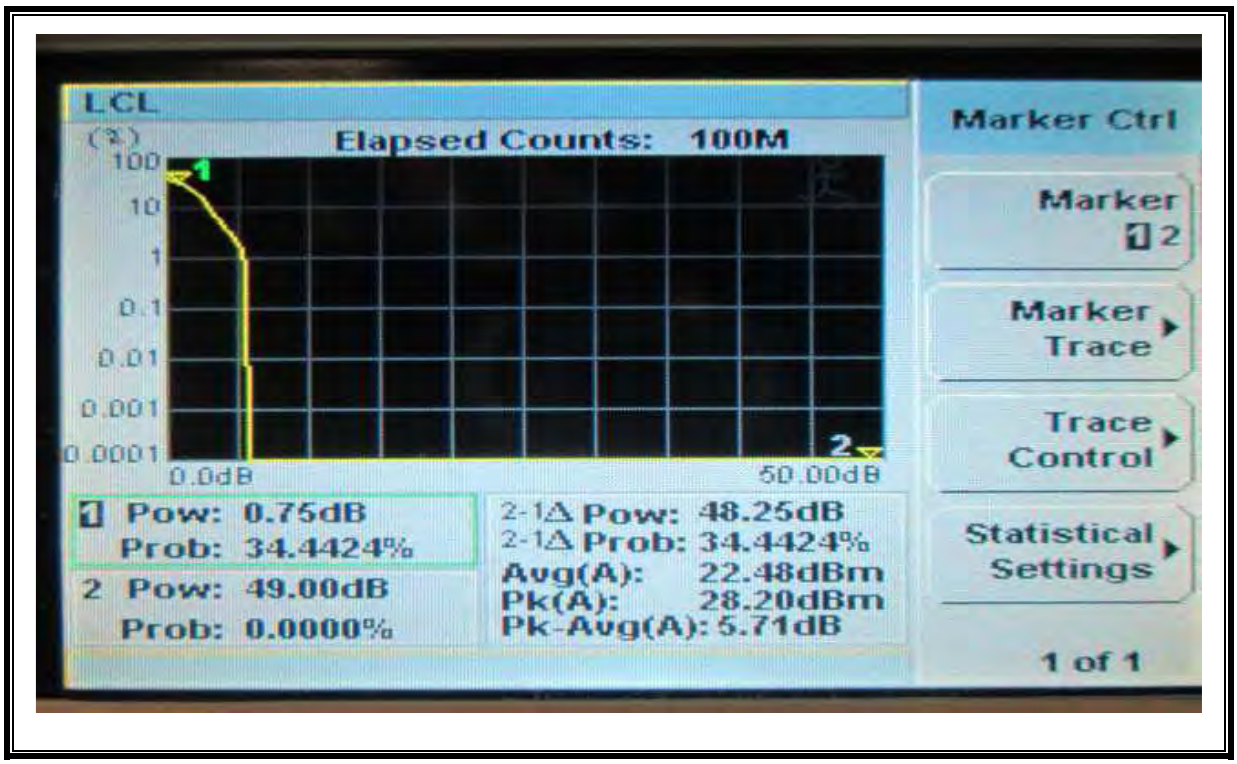
LTE 16QAM Band 2 (10 MHz BAND WIDTH)



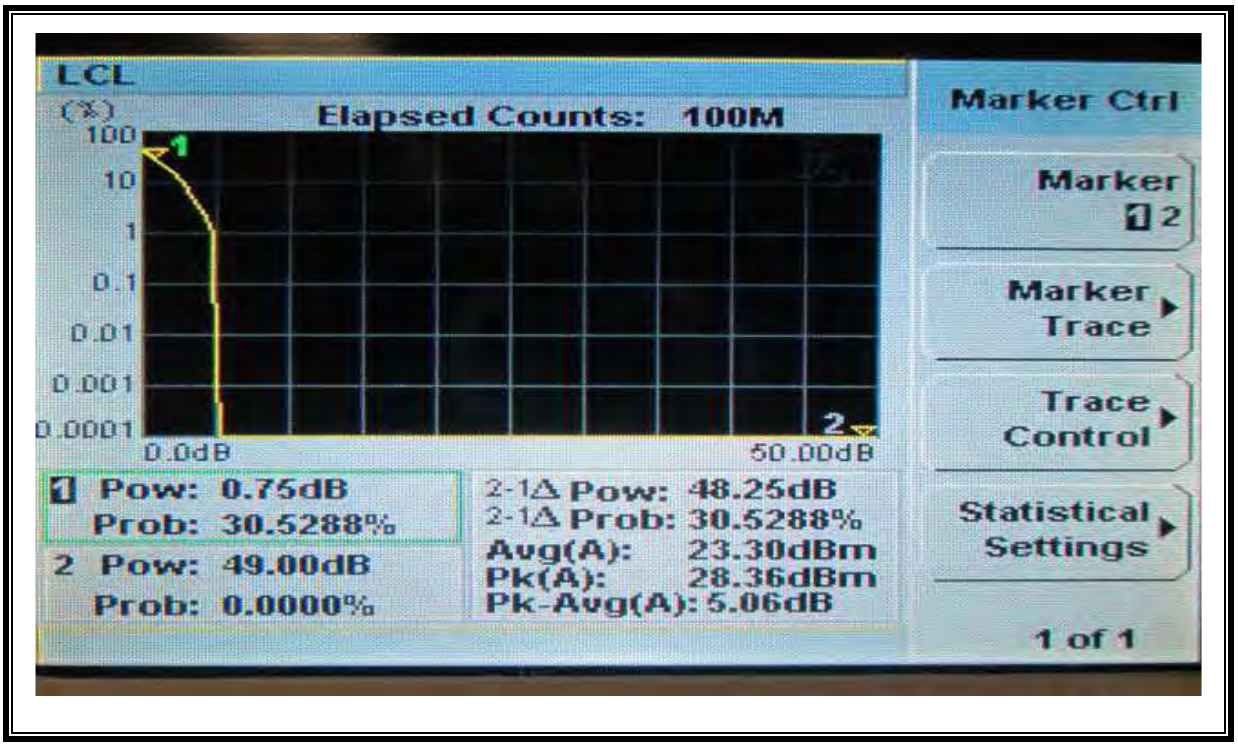
LTE QPSK Band 2 (15 MHz BAND WIDTH)



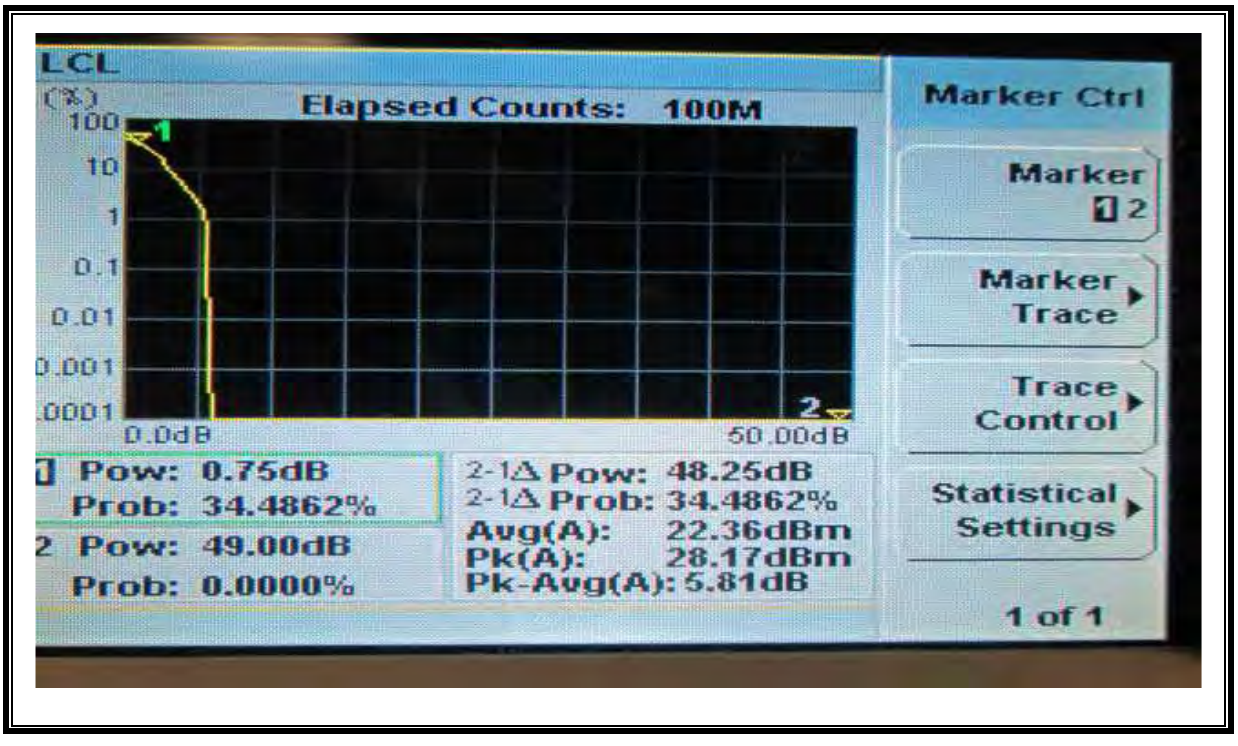
LTE 16QAM Band 2 (15 MHz BAND WIDTH)



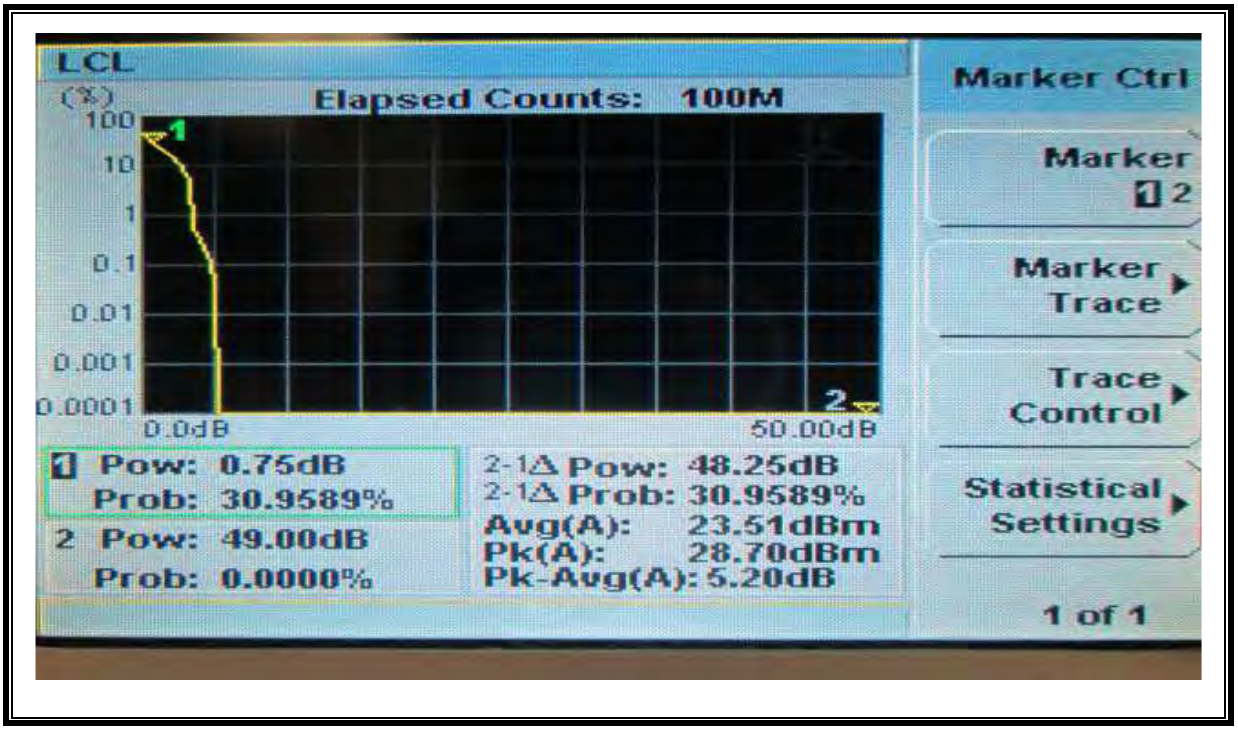
LTE QPSK Band 2 (20 MHz BAND WIDTH)



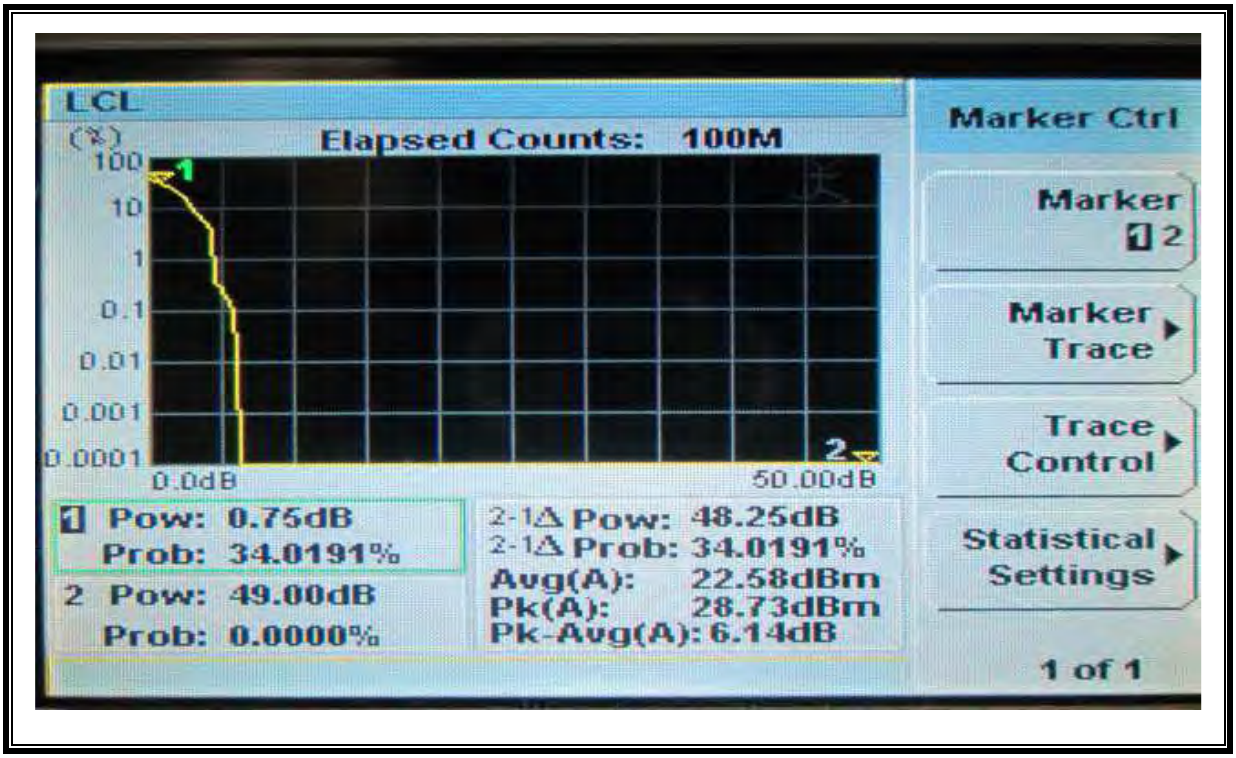
LTE 16QAM Band 2 (20 MHz BAND WIDTH)



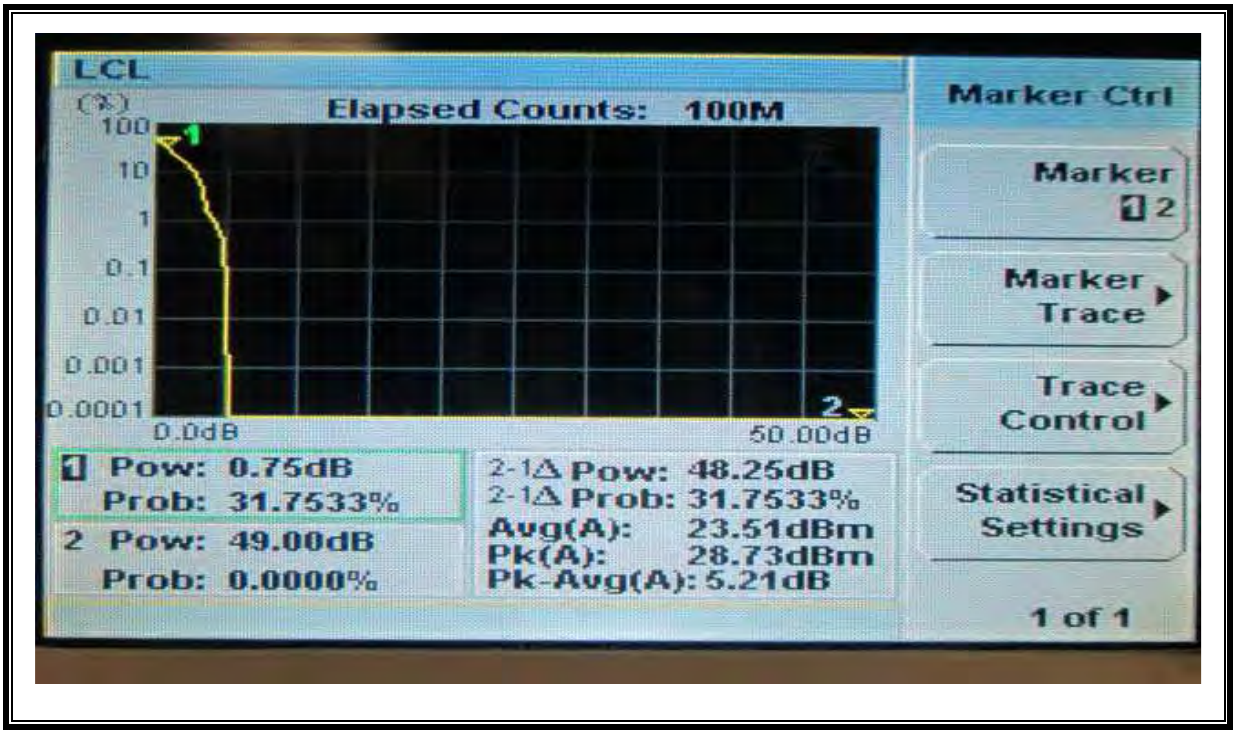
QPSK Band 4 (1.4 MHz BAND WIDTH)



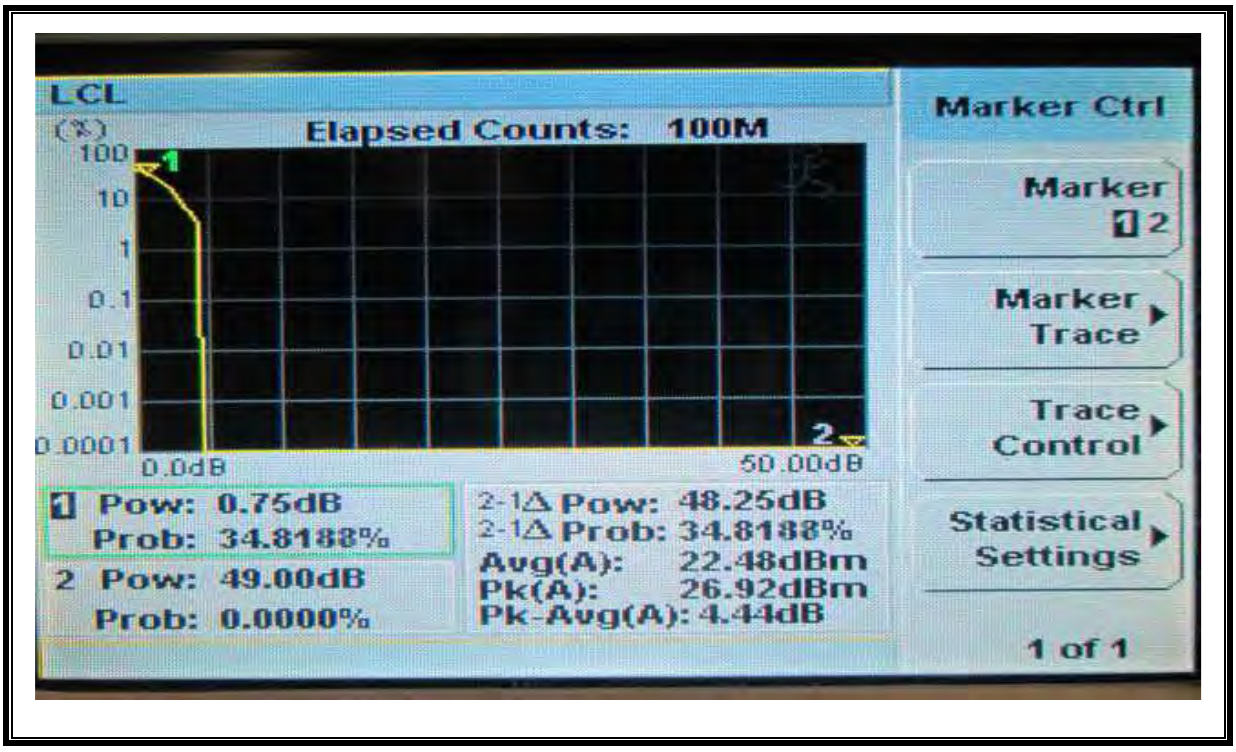
16QAM Band 4 (1.4 MHz BAND WIDTH)



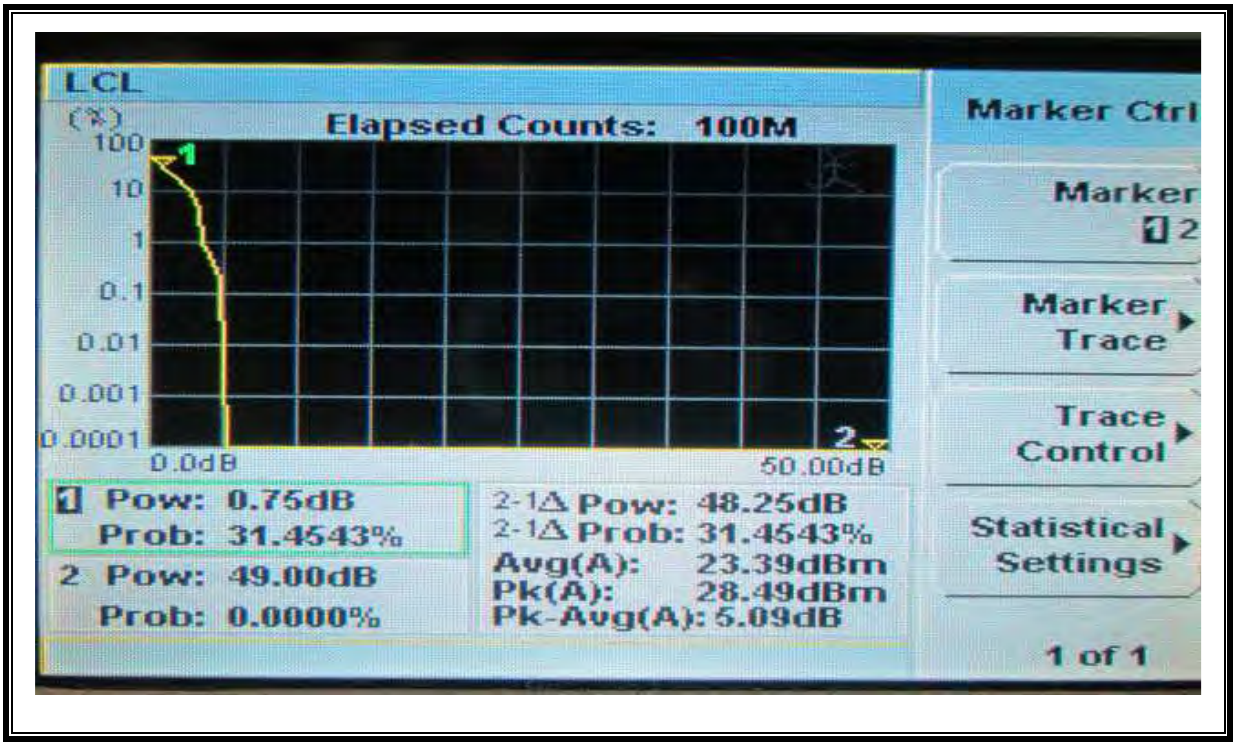
LTE QPSK Band 4 (3 MHz BAND WIDTH)



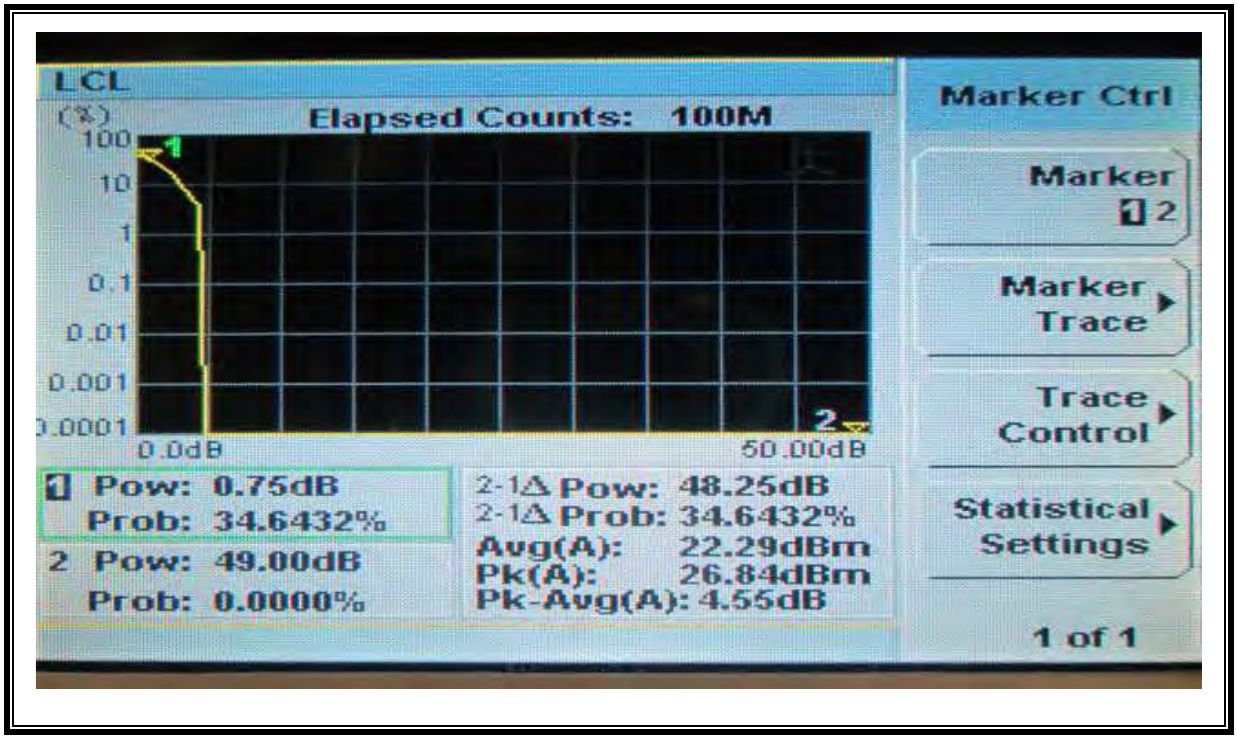
LTE 16QAM Band 4 (3 MHz BAND WIDTH)



LTE QPSK Band 4 (5 MHz BAND WIDTH)

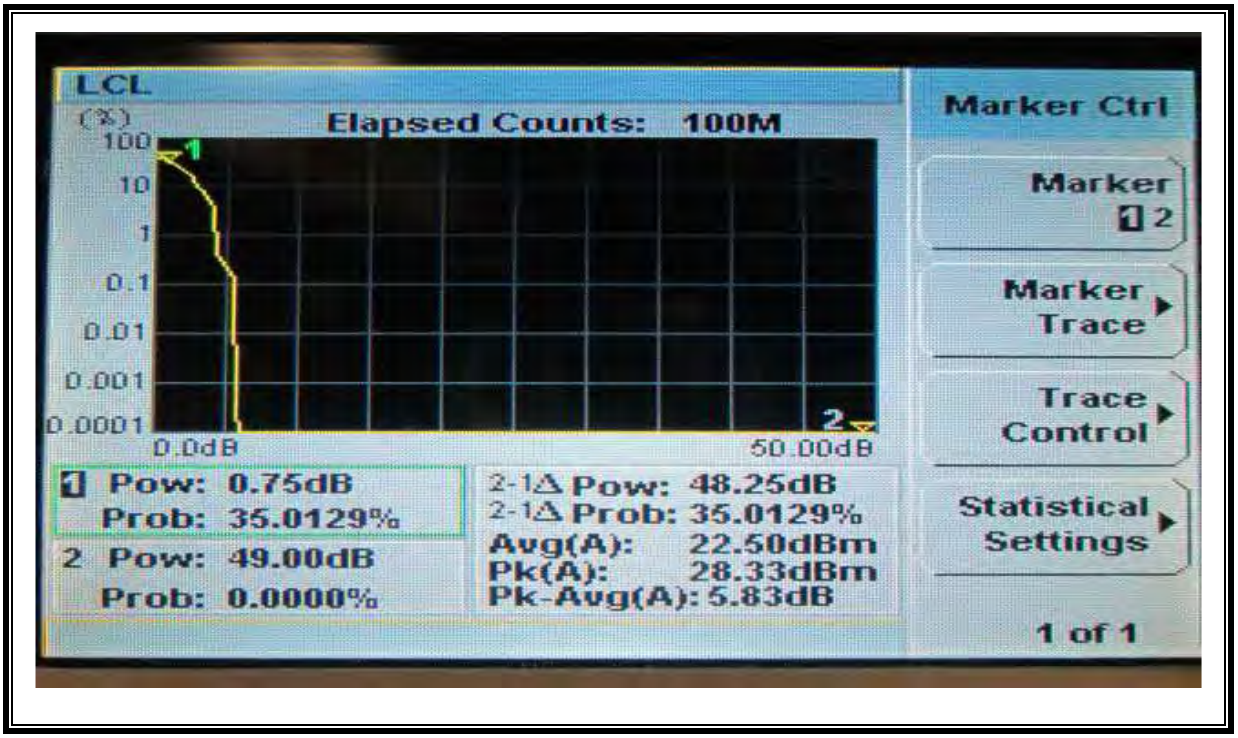


LTE 16QAM Band 4 (5 MHz BAND WIDTH)

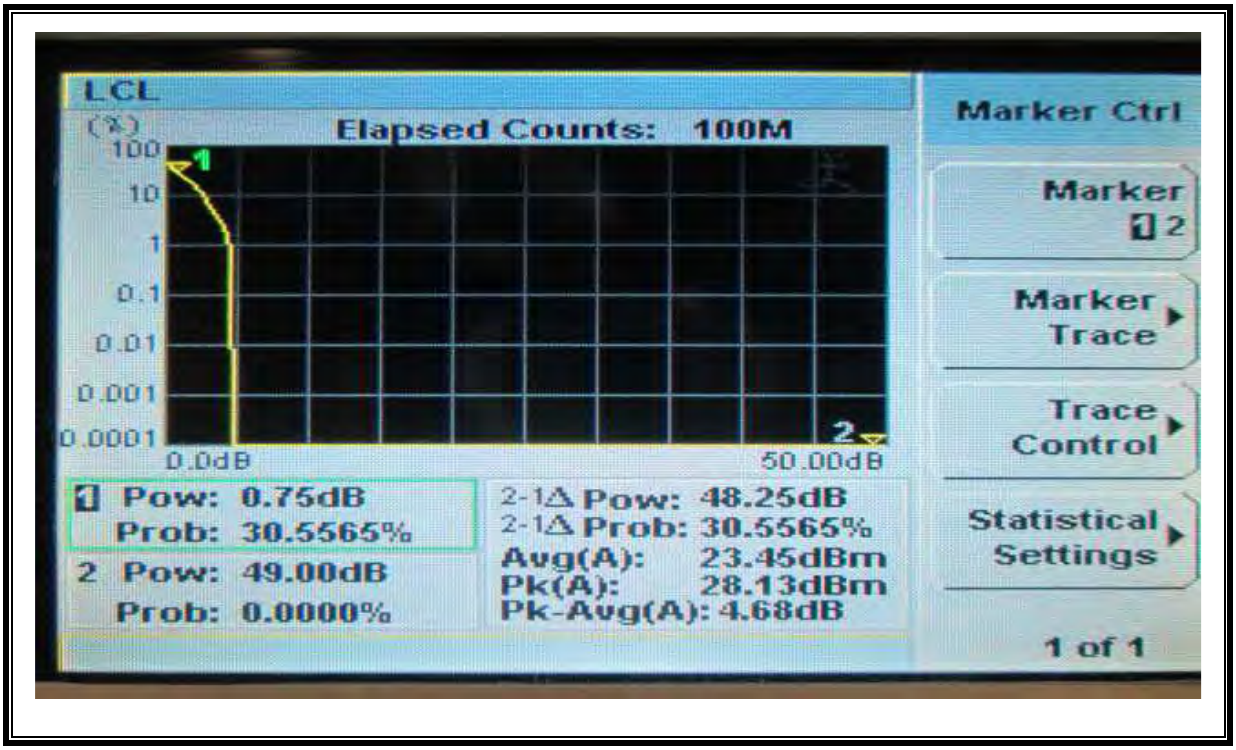


LTE QPSK Band 4 (10 MHz BAND WIDTH)

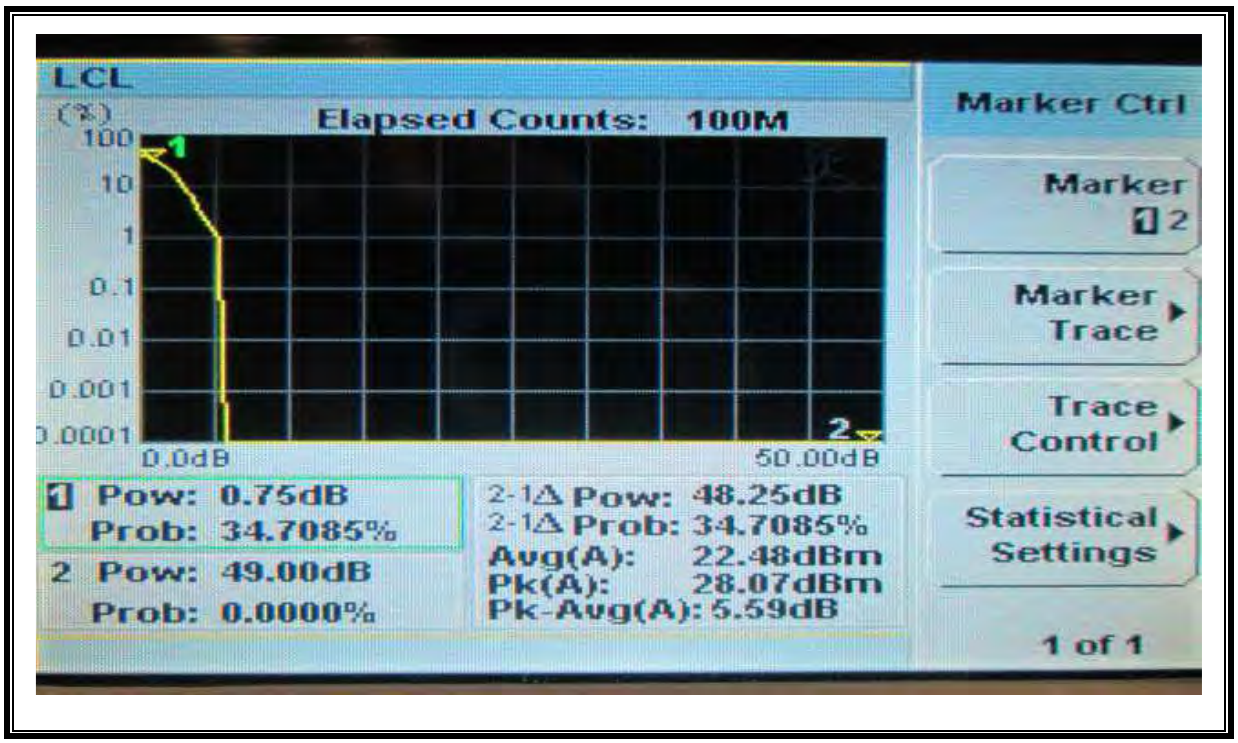
LTE 16QAM Band 4 (10 MHz BAND WIDTH)



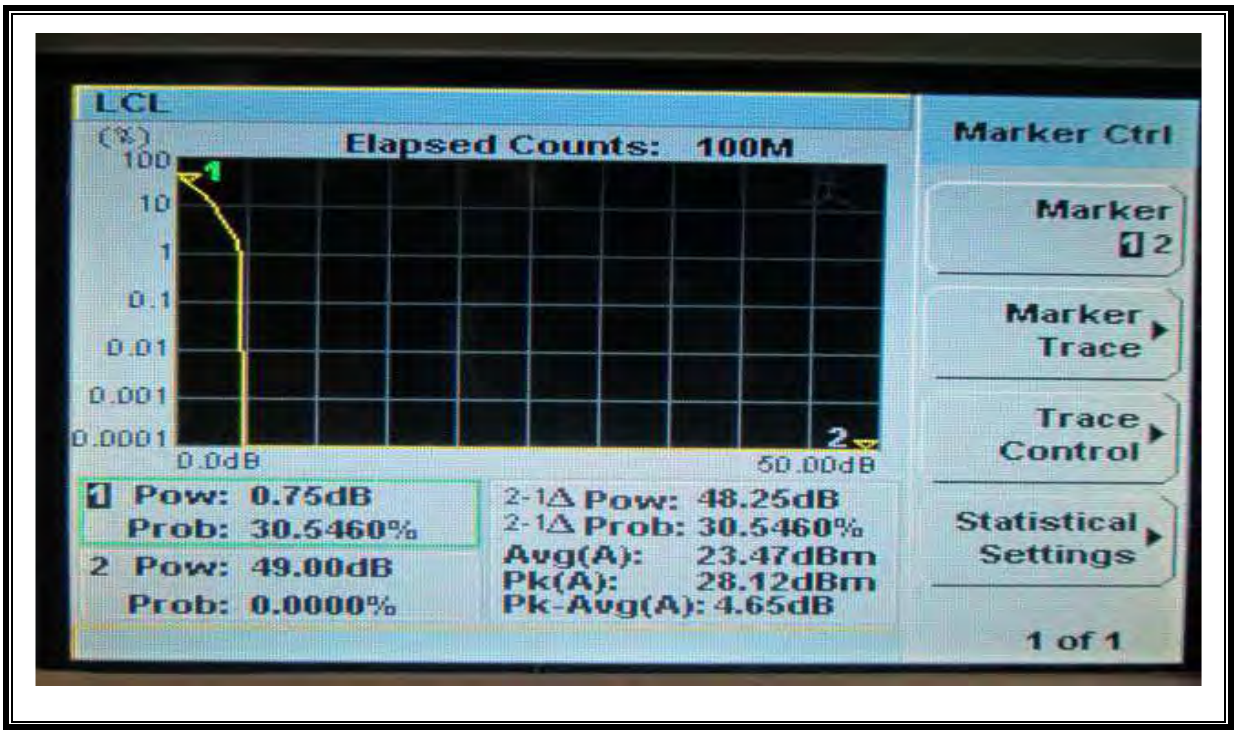
LTE QPSK Band 4 (15 MHz BAND WIDTH)



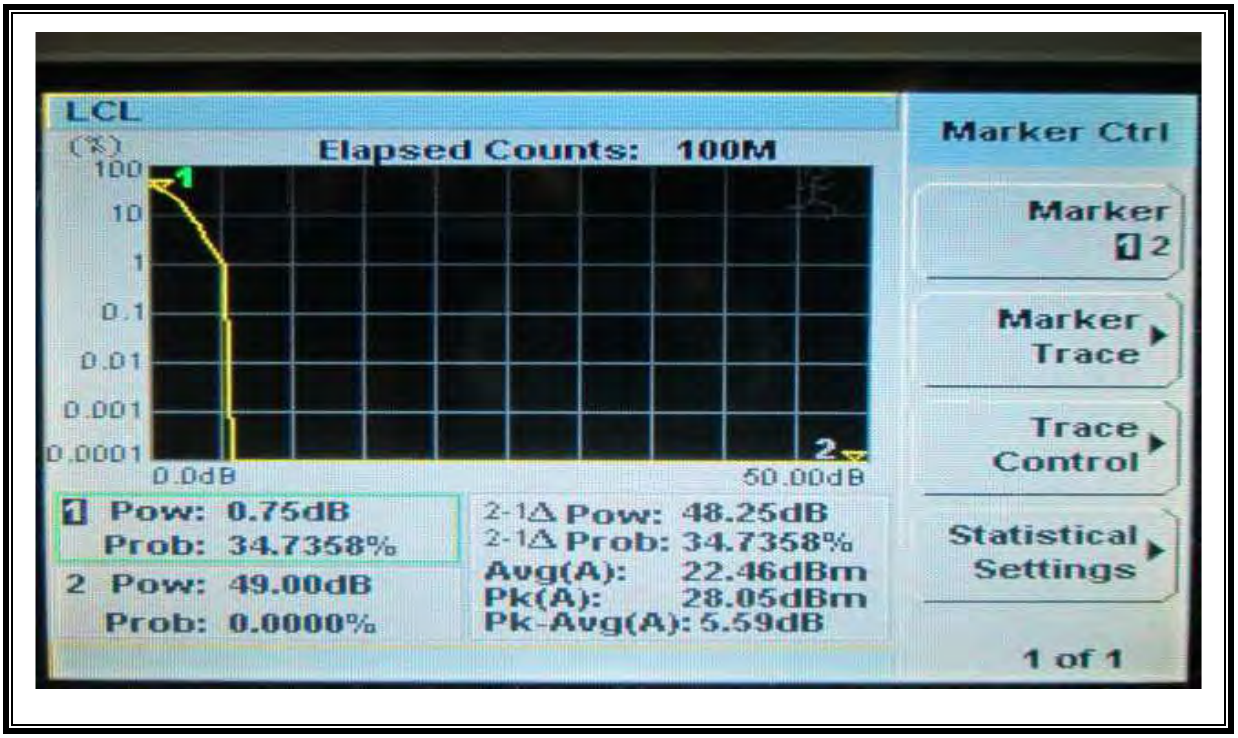
LTE 16QAM Band 4 (15 MHz BAND WIDTH)



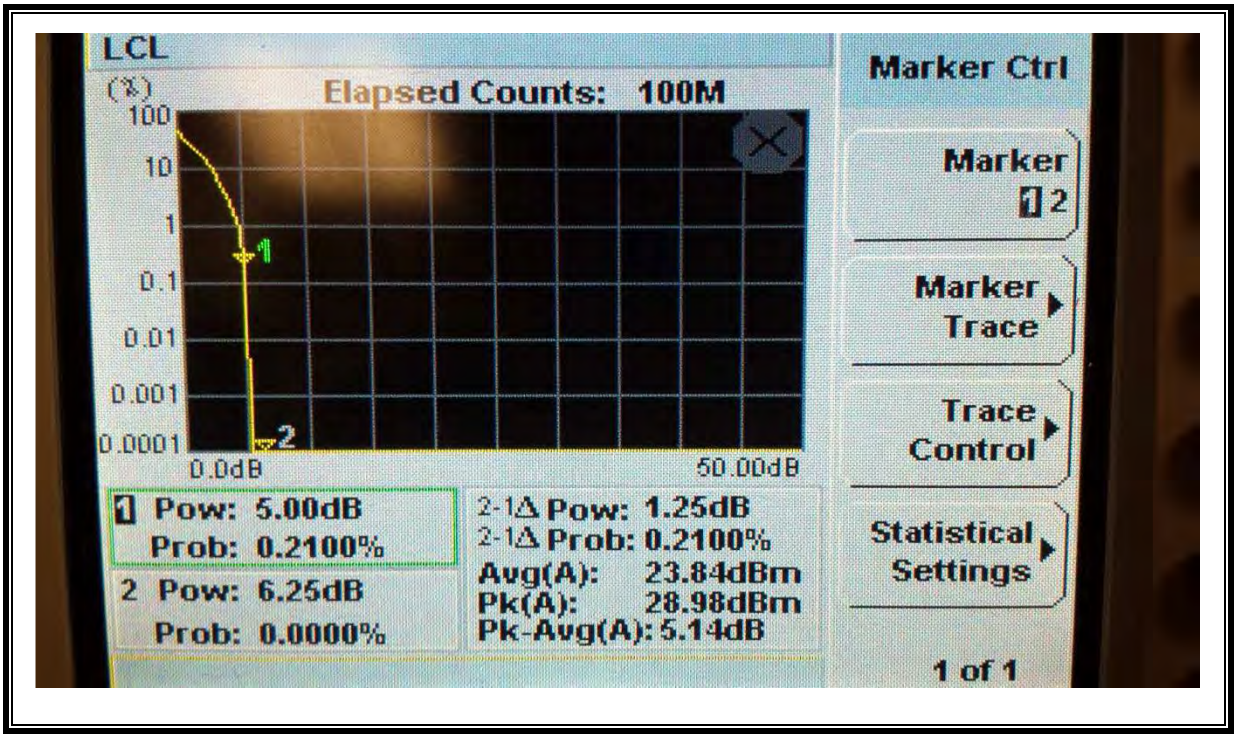
LTE QPSK Band 4 (20 MHz BAND WIDTH)



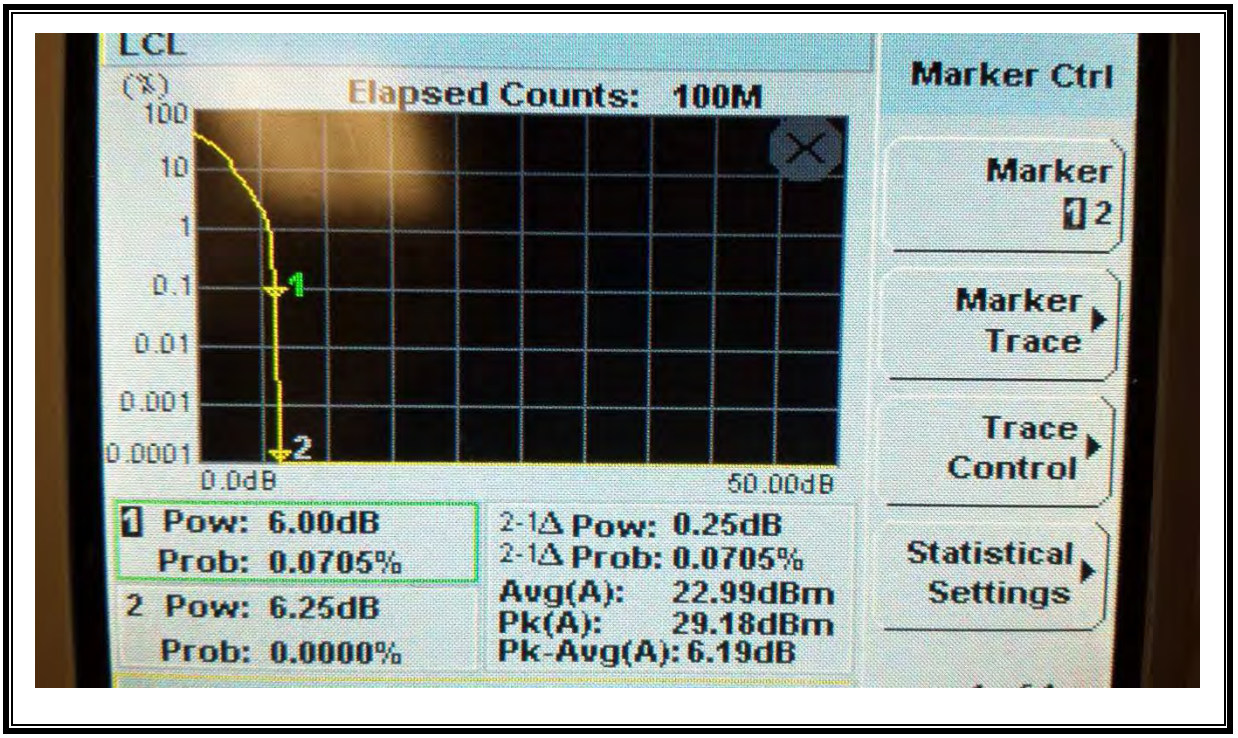
LTE 16QAM Band 4 (20 MHz BAND WIDTH)



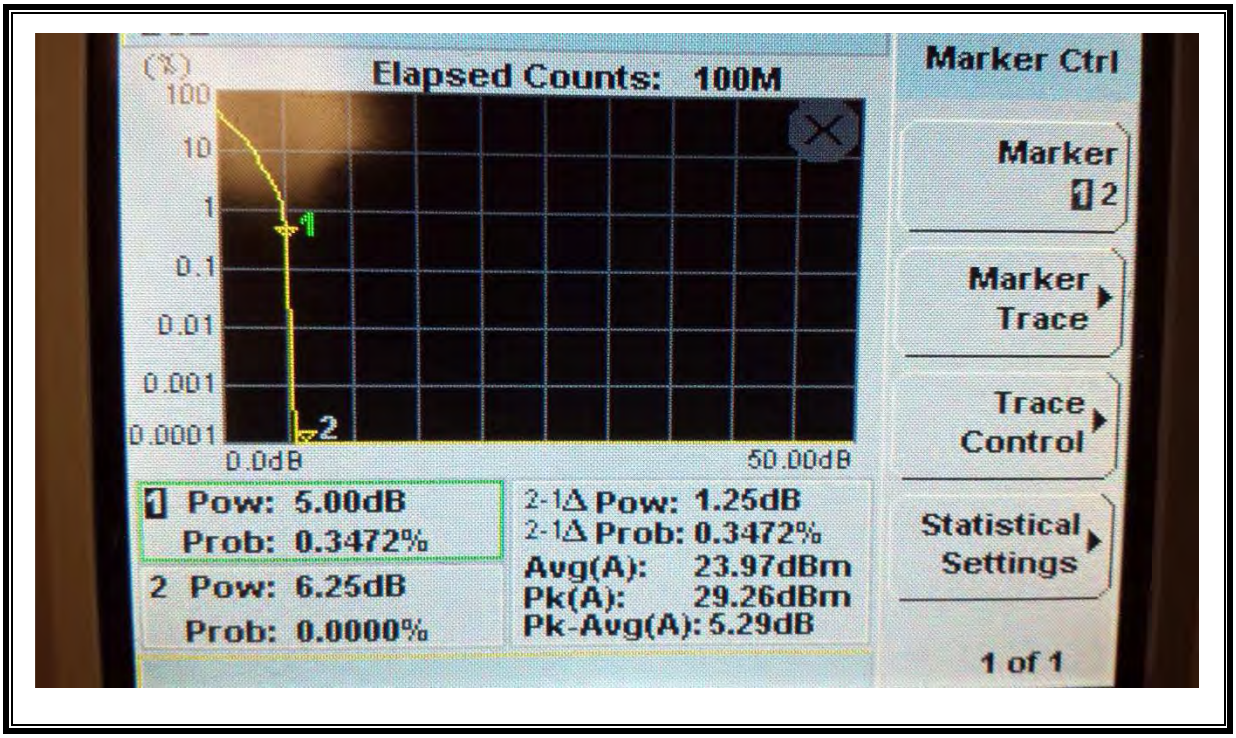
QPSK Band 5 (1.4 MHz BAND WIDTH)



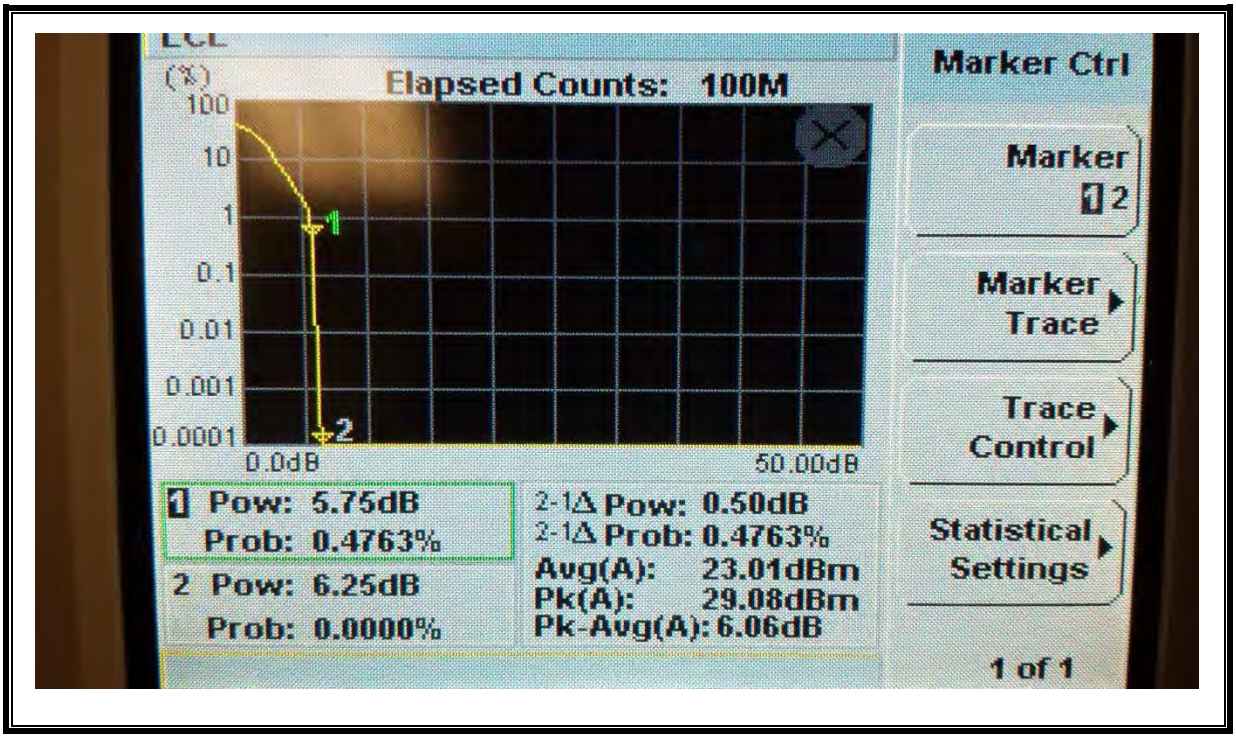
16QAM Band 5 (1.4 MHz BAND WIDTH)



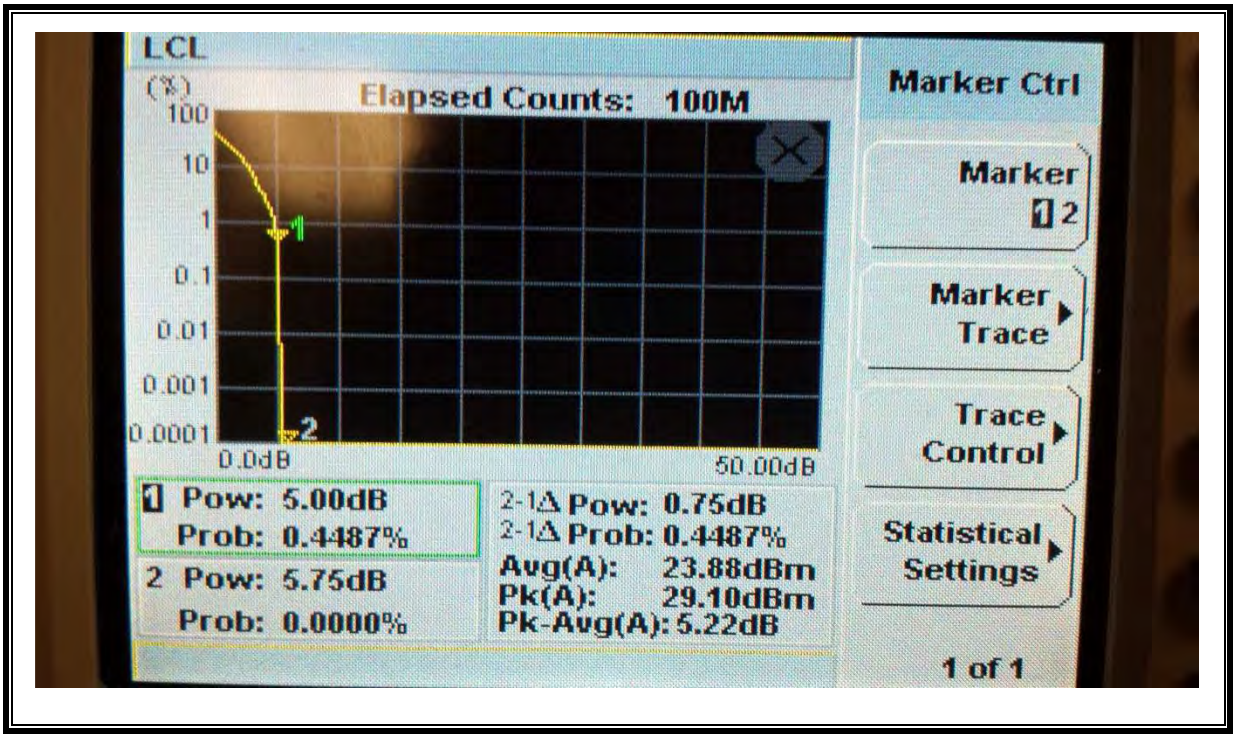
LTE QPSK Band 5 (3 MHz BAND WIDTH)



LTE 16QAM Band 5 (3 MHz BAND WIDTH)



LTE QPSK Band 5 (5 MHz BAND WIDTH)



LTE 16QAM Band 5 (5 MHz BAND WIDTH)