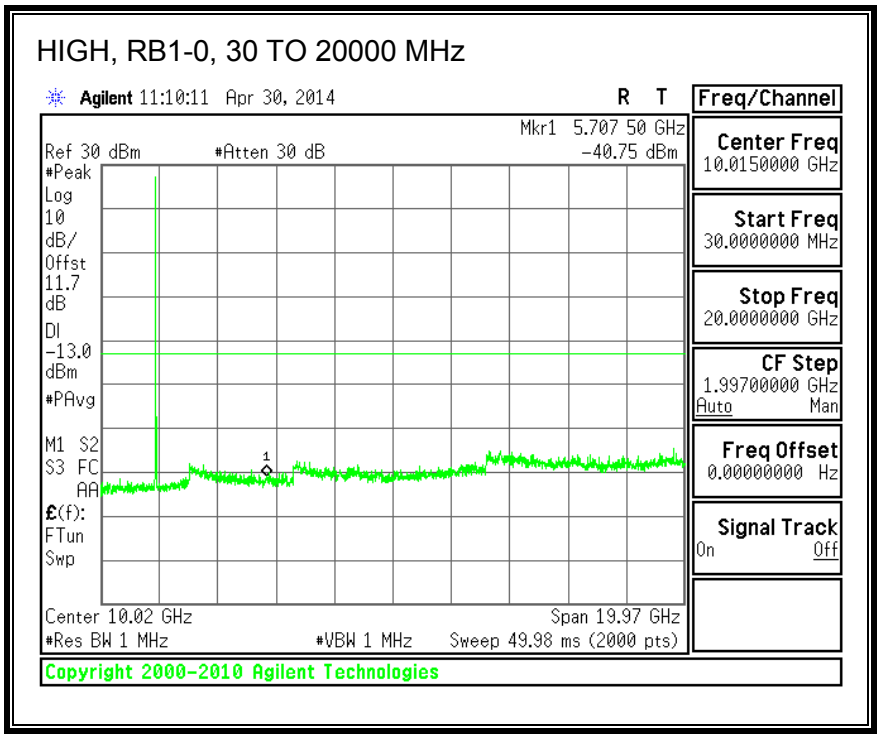
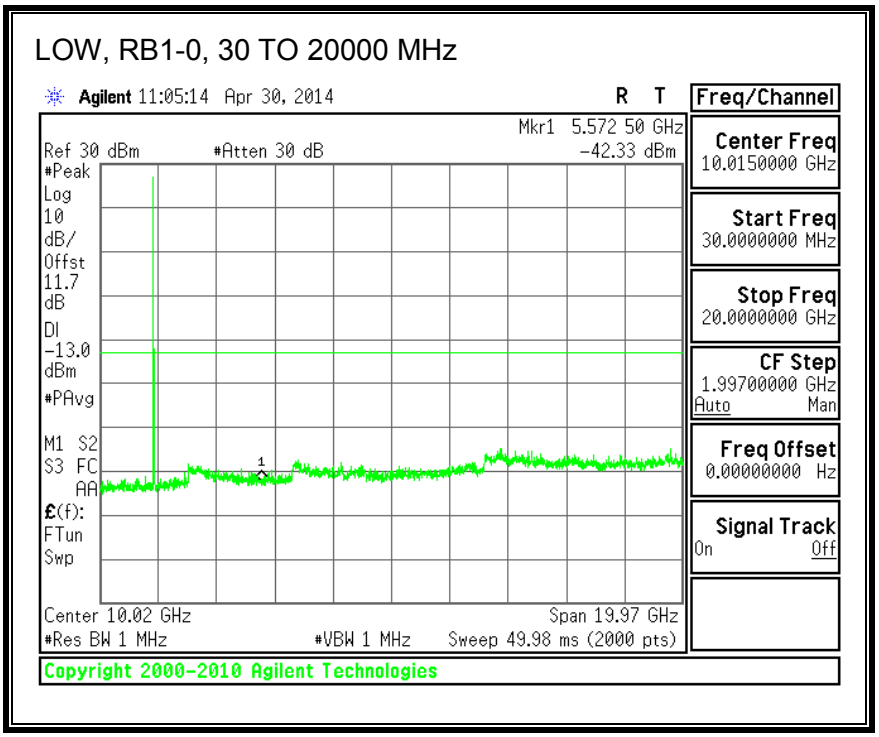
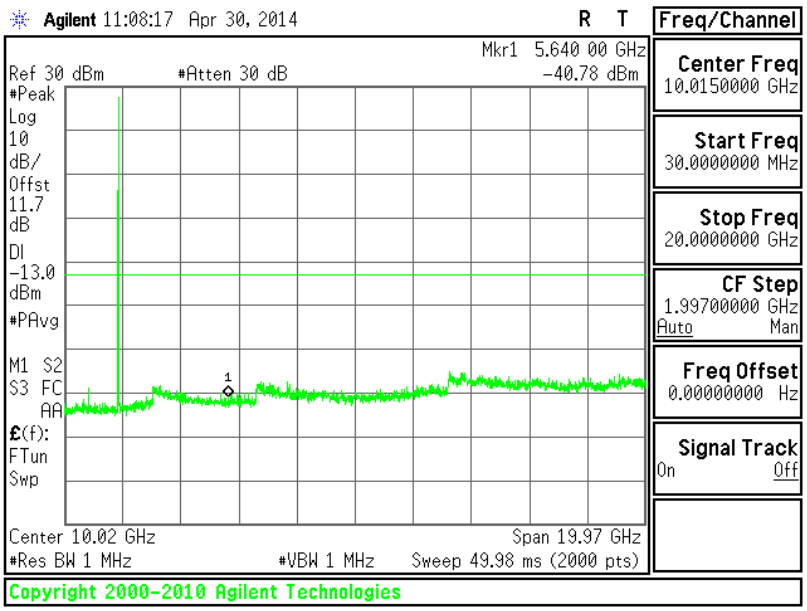


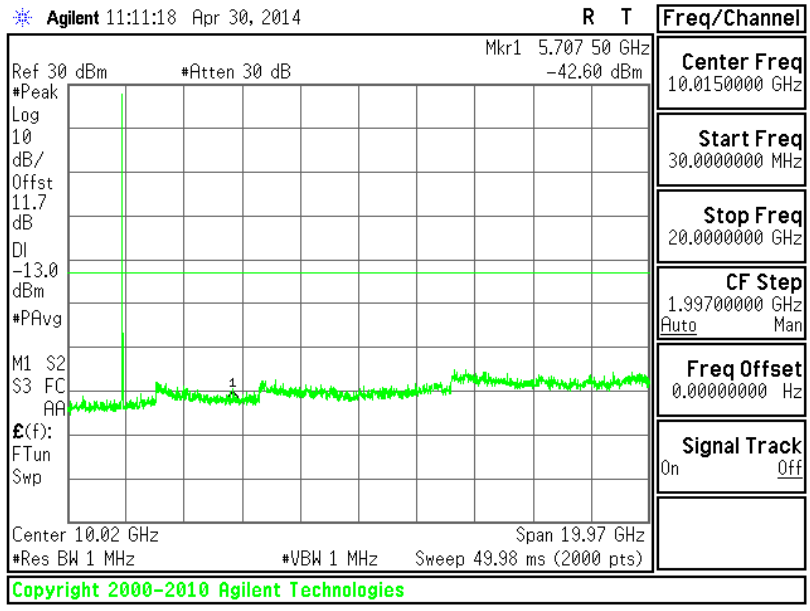
16QAM, (15.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz

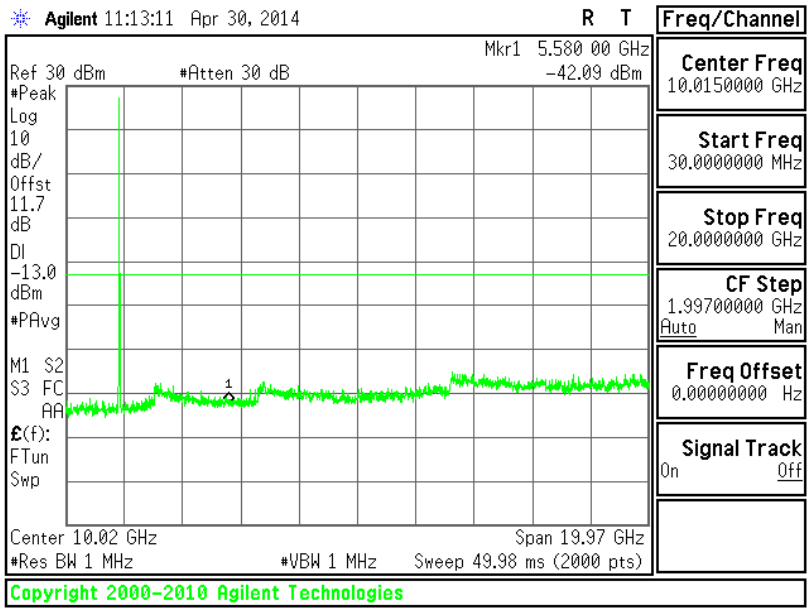


HIGH, RB1-0, 30 TO 20000 MHz

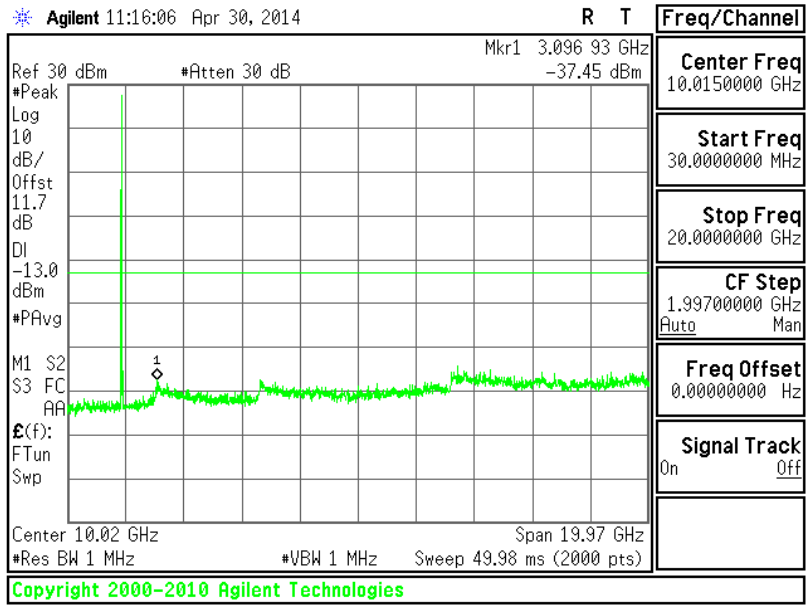


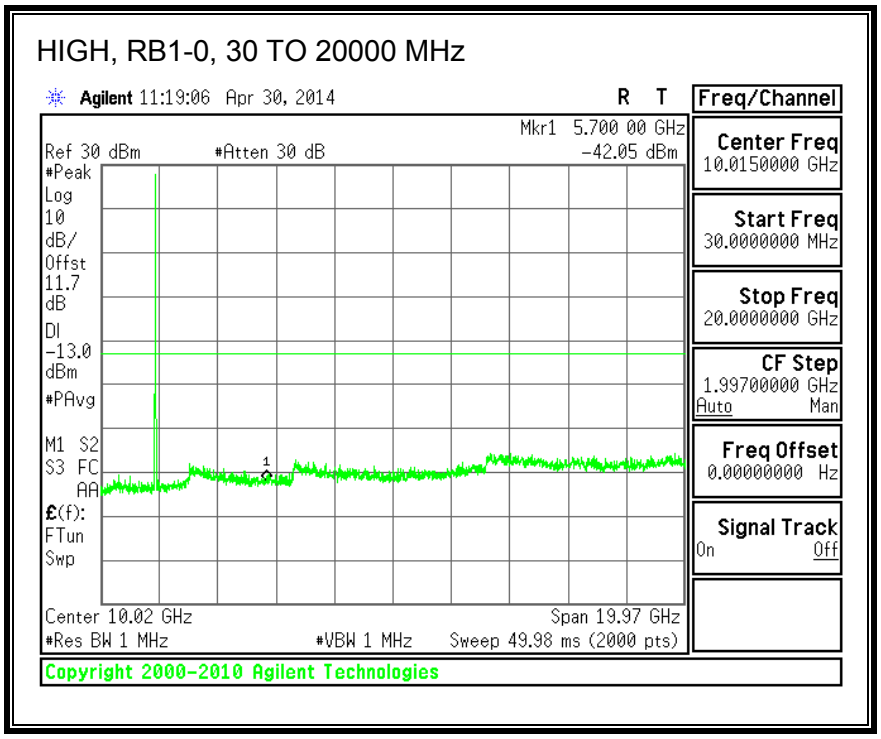
QPSK, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz

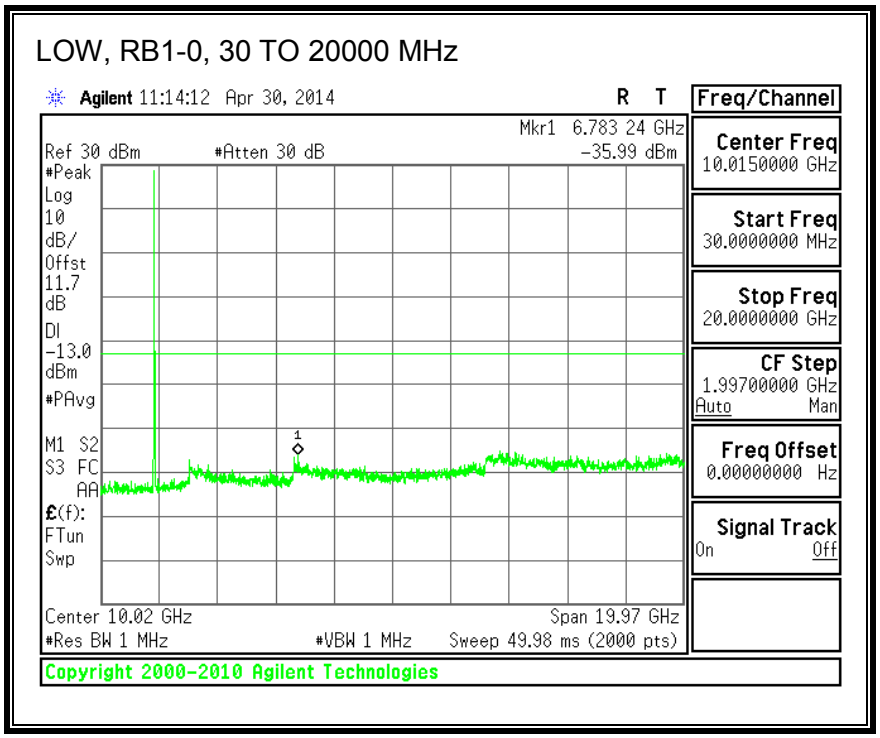


MID, RB1-0, 30 TO 20000 MHz

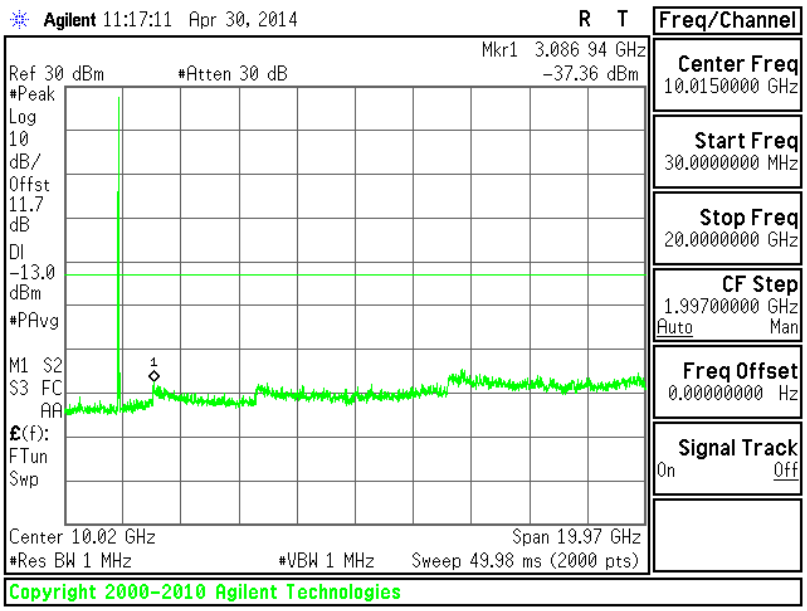




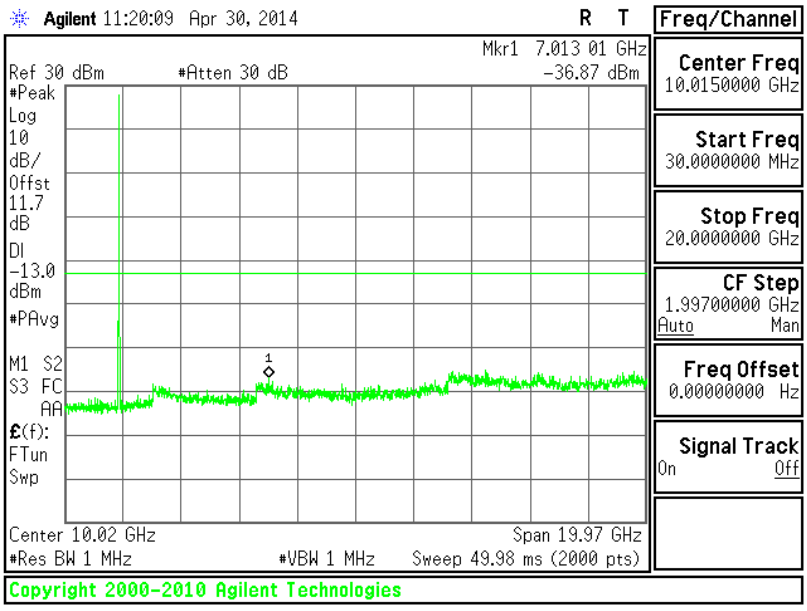
16QAM, (20.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz



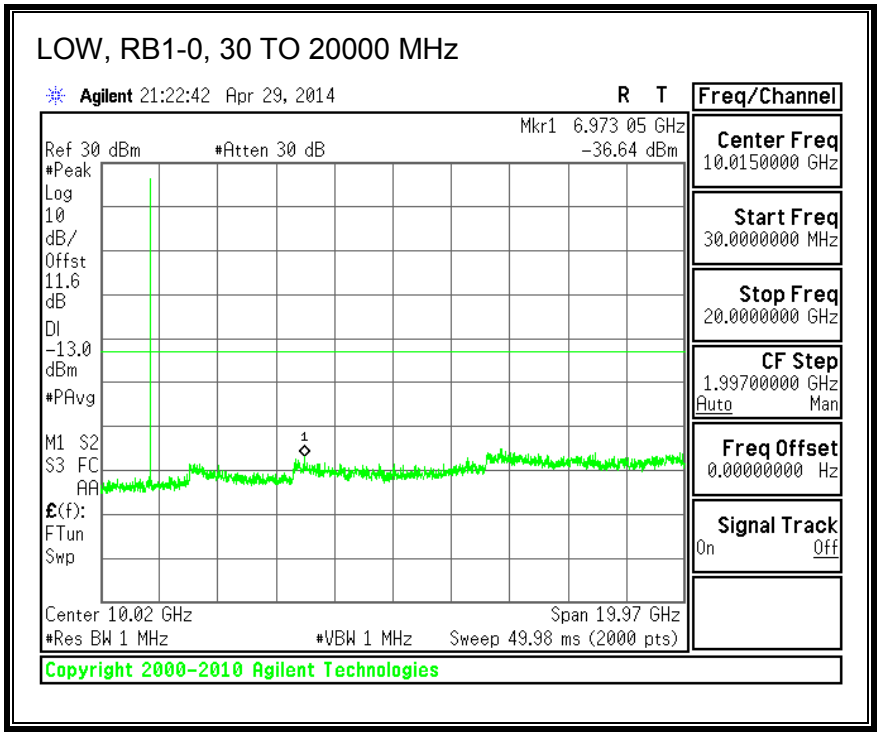
HIGH, RB1-0, 30 TO 20000 MHz



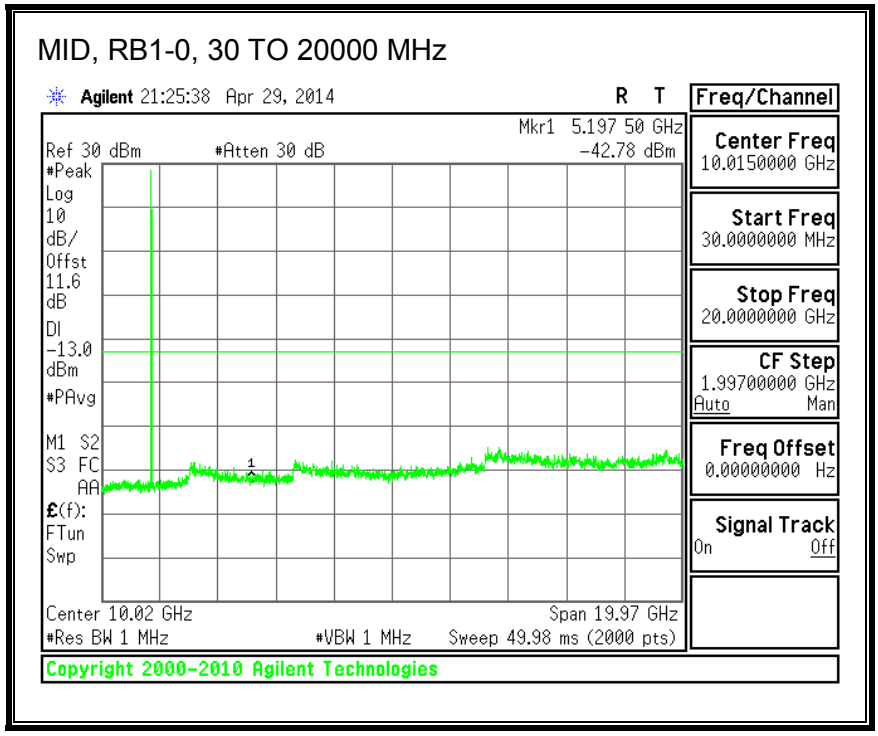
8.3.2. LTE BAND 4

QPSK, (1.4 MHz BAND WIDTH)

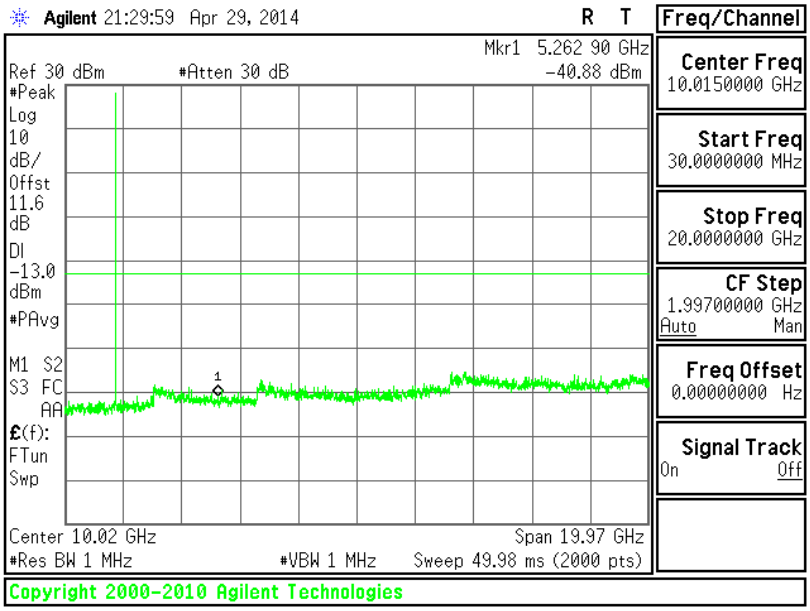
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

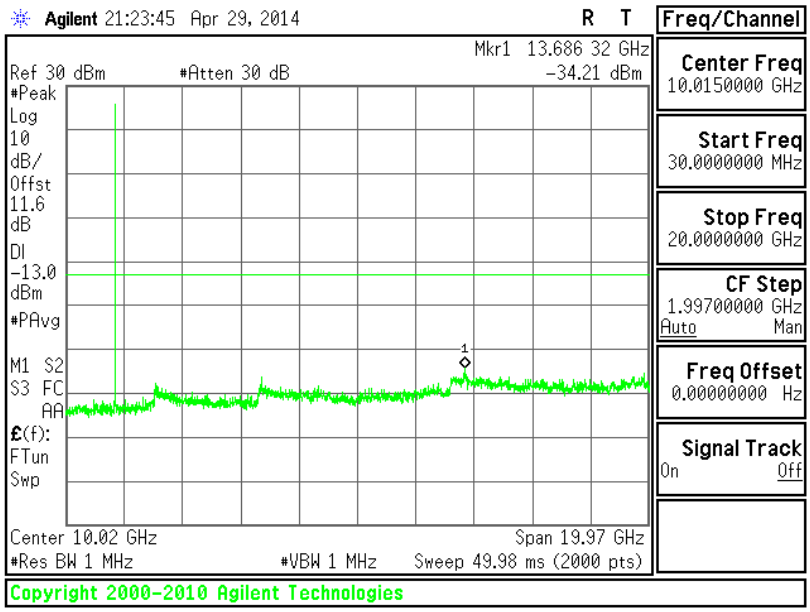


HIGH, RB1-0, 30 TO 20000 MHz

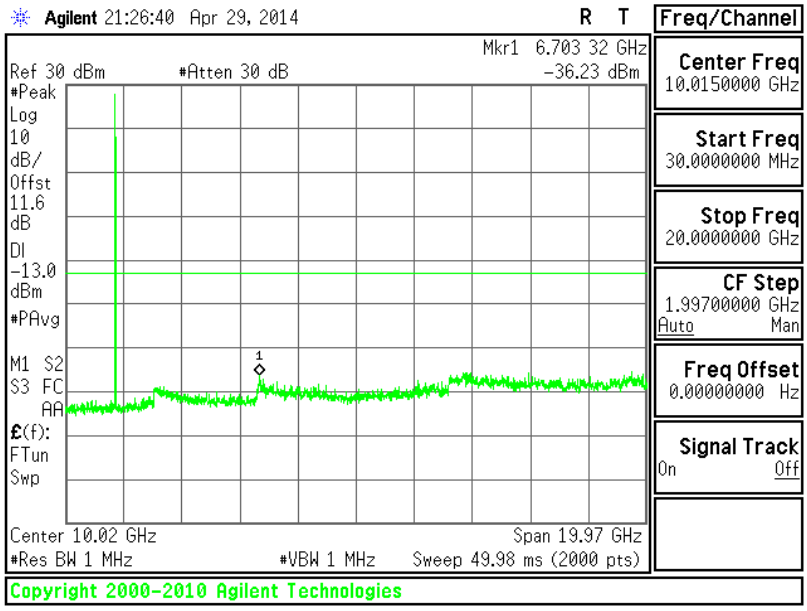


16QAM, (1.4 MHz BAND WIDTH)

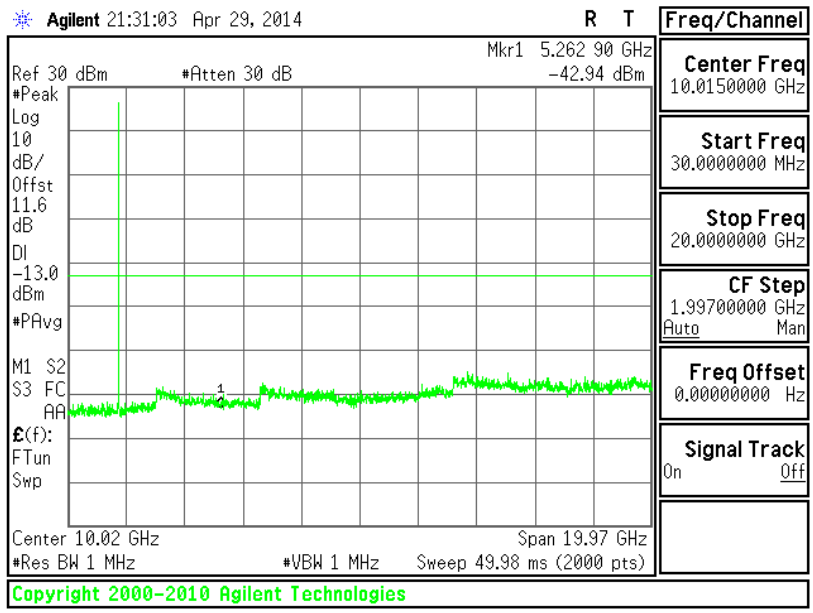
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

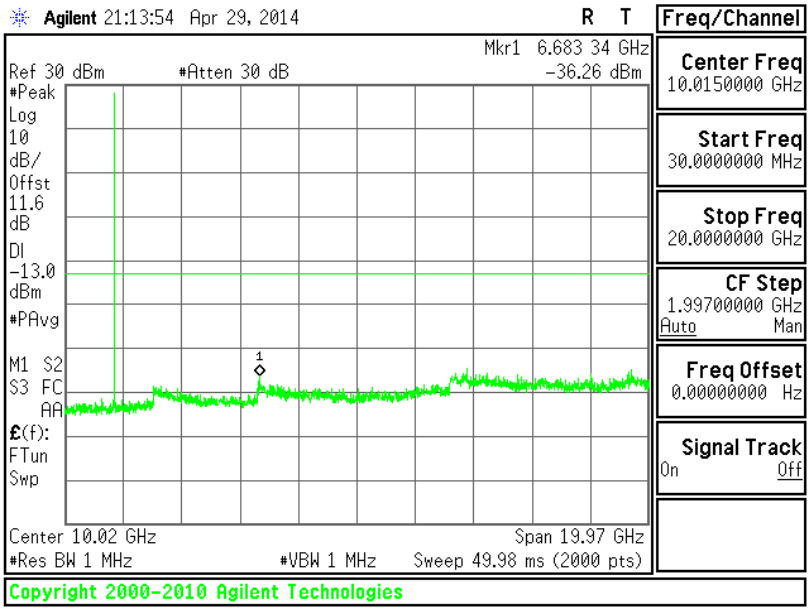


HIGH, RB1-0, 30 TO 20000 MHz

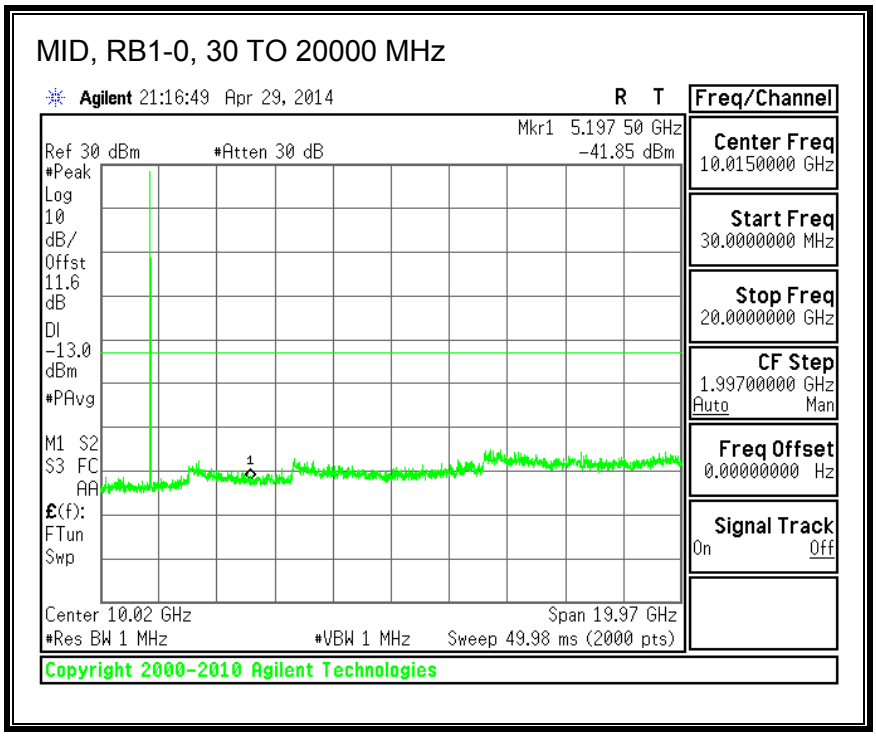


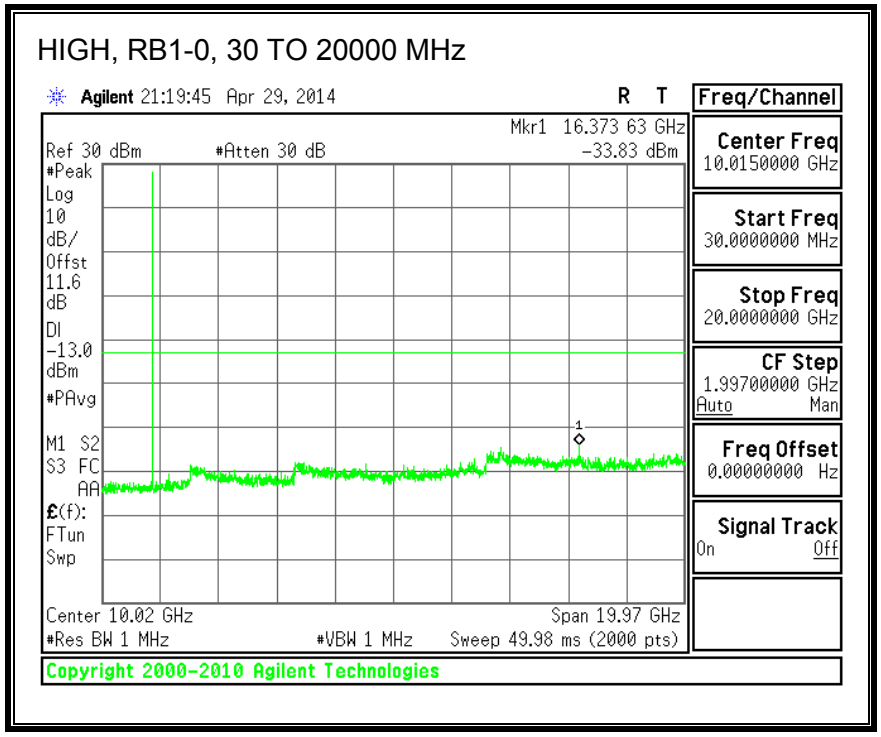
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz

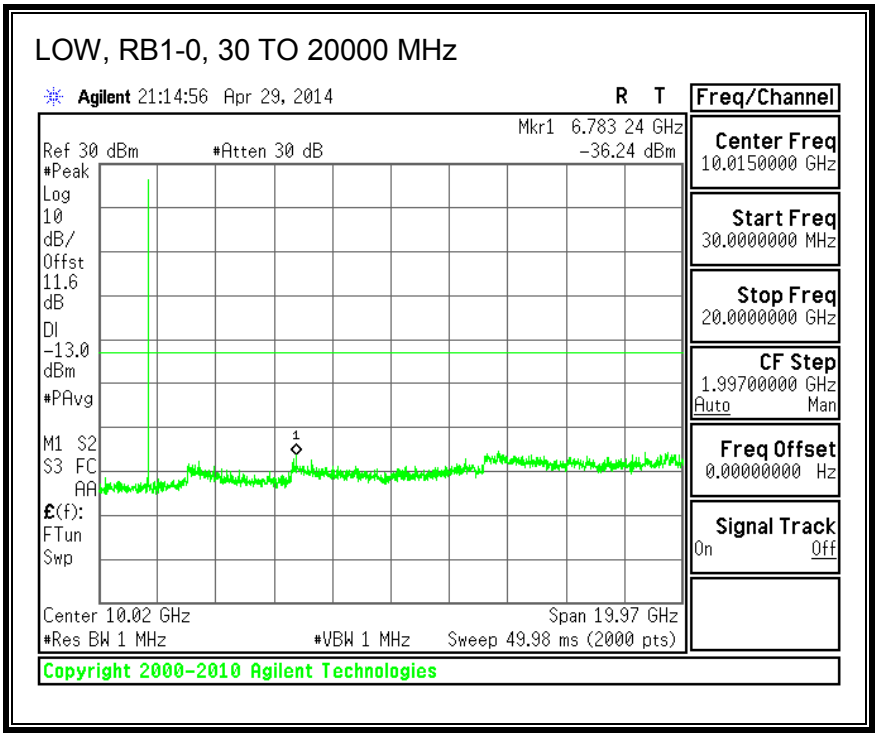


MID, RB1-0, 30 TO 20000 MHz

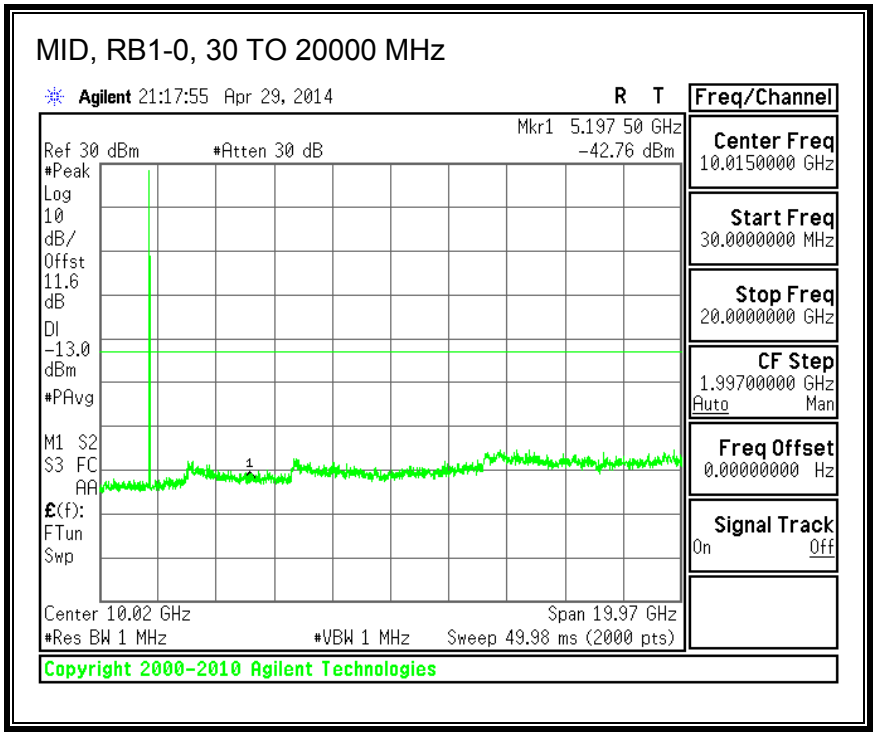




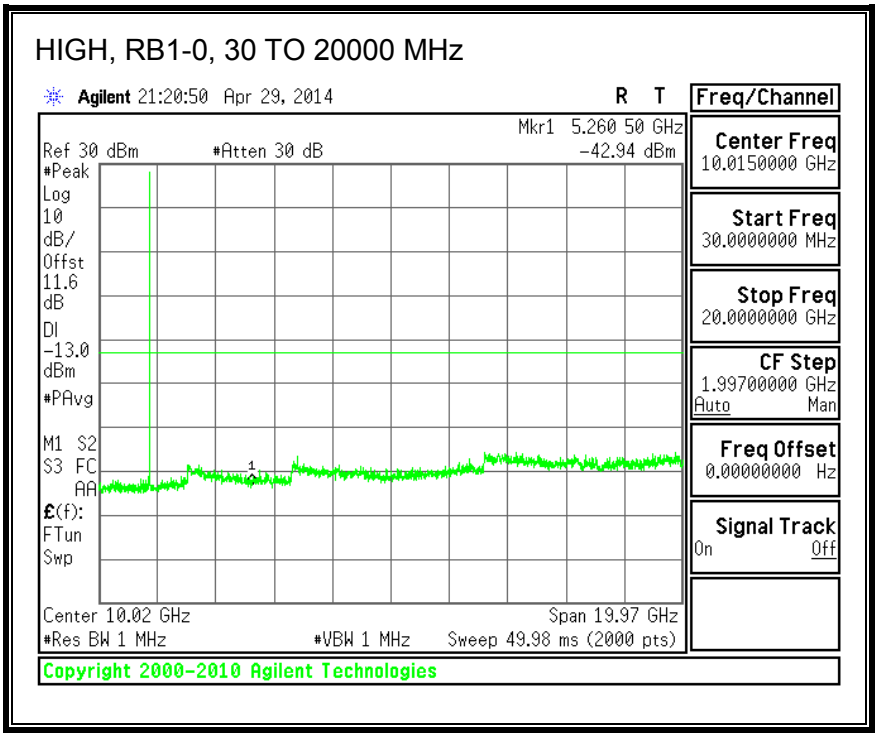
16QAM, (3.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz

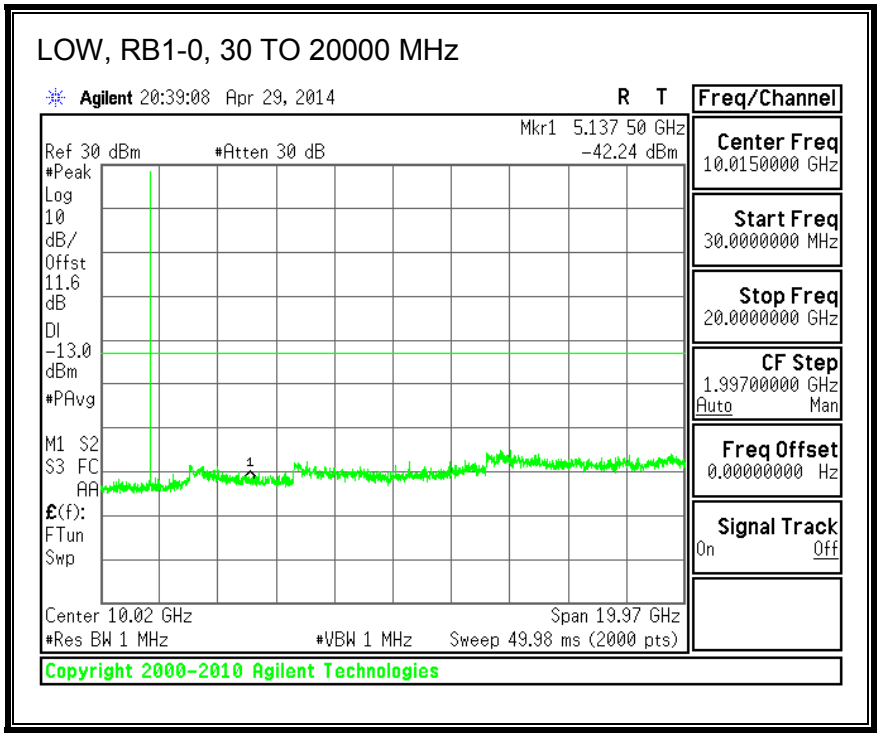


HIGH, RB1-0, 30 TO 20000 MHz

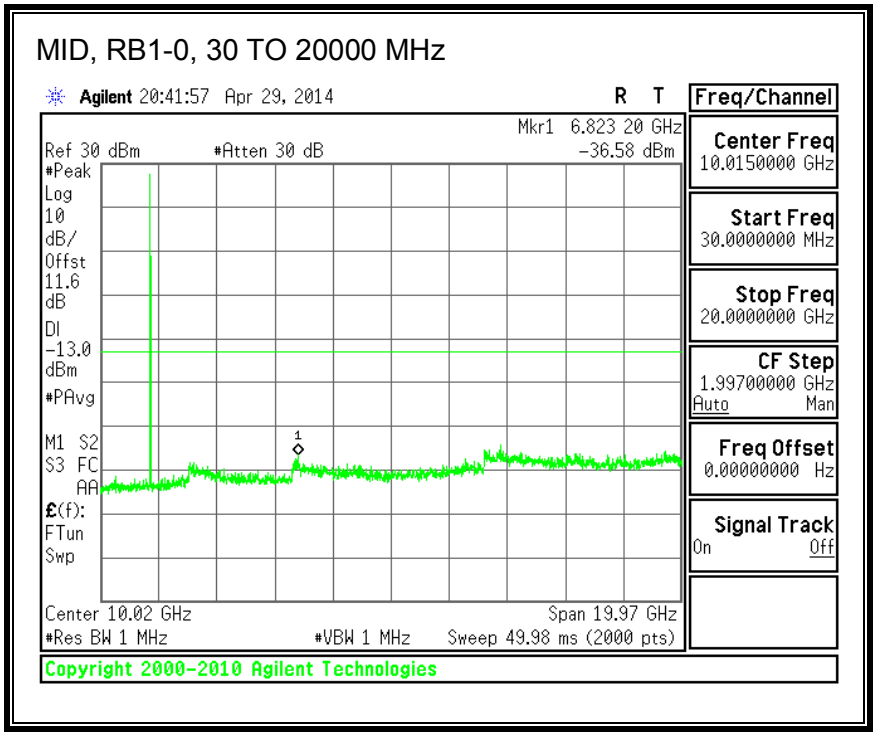


QPSK, (5.0 MHz BAND WIDTH)

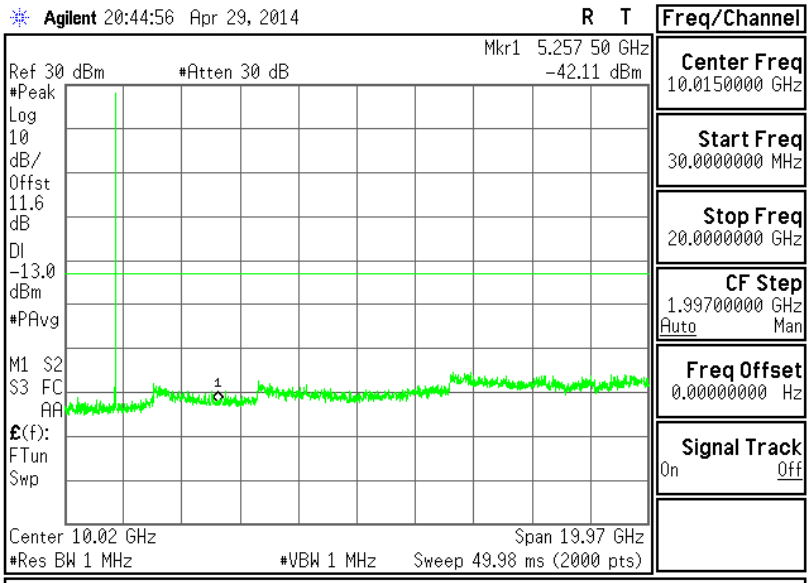
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

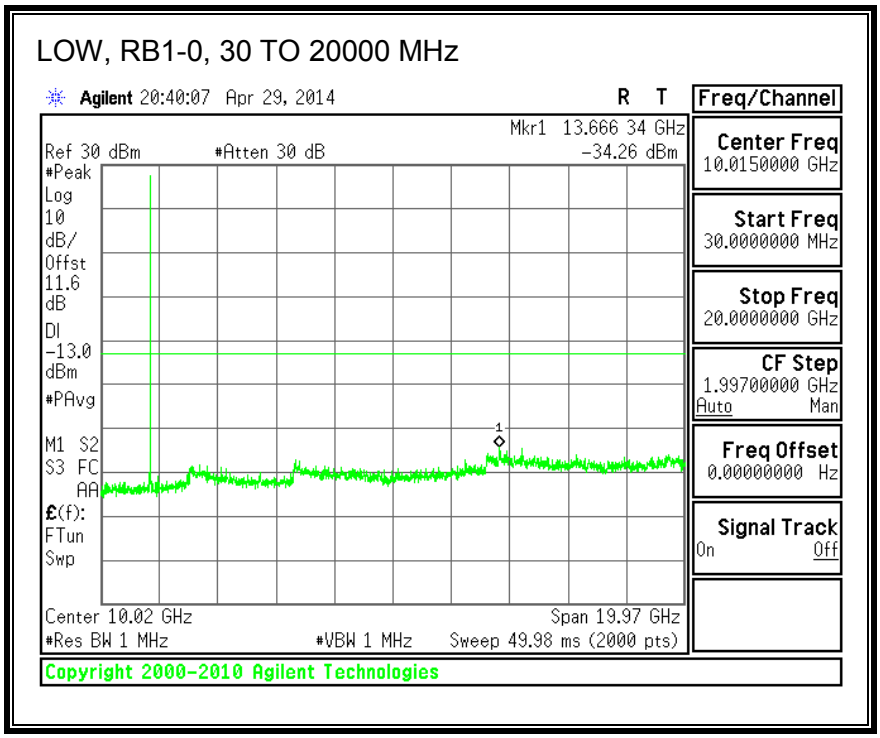


HIGH, RB1-0, 30 TO 20000 MHz

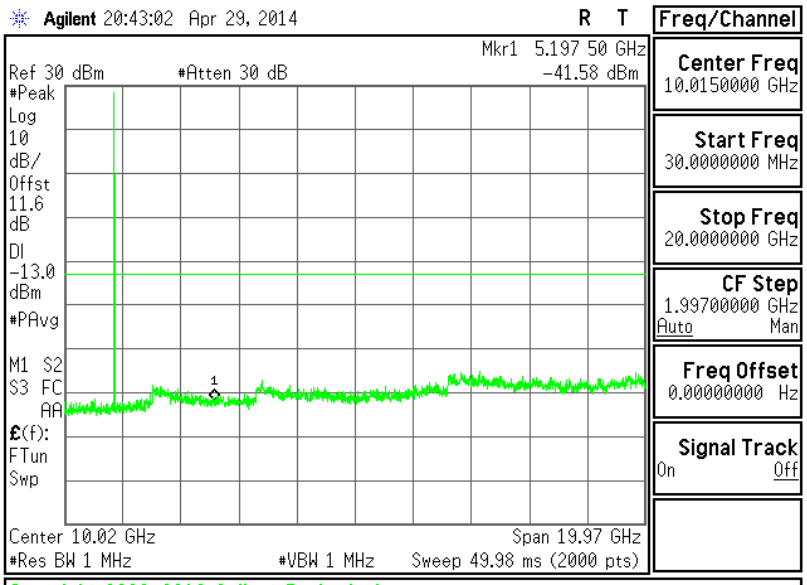


16QAM, (5.0 MHz BAND WIDTH)

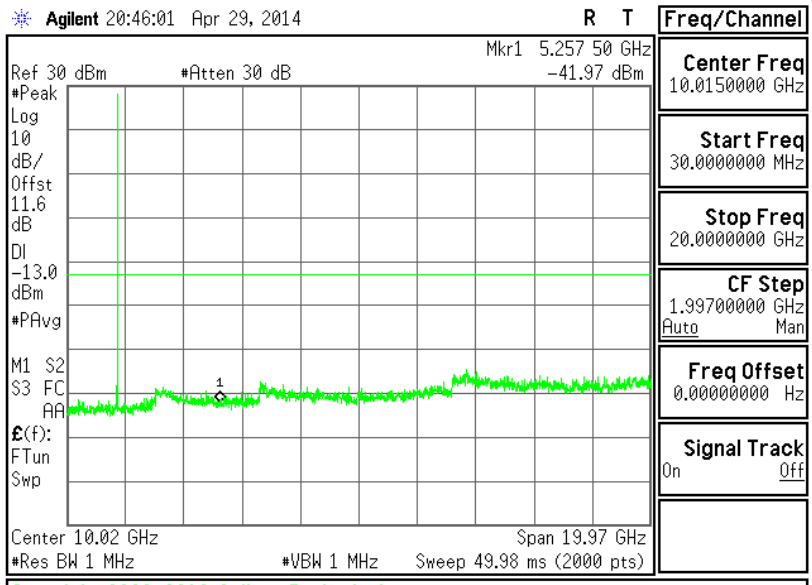
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

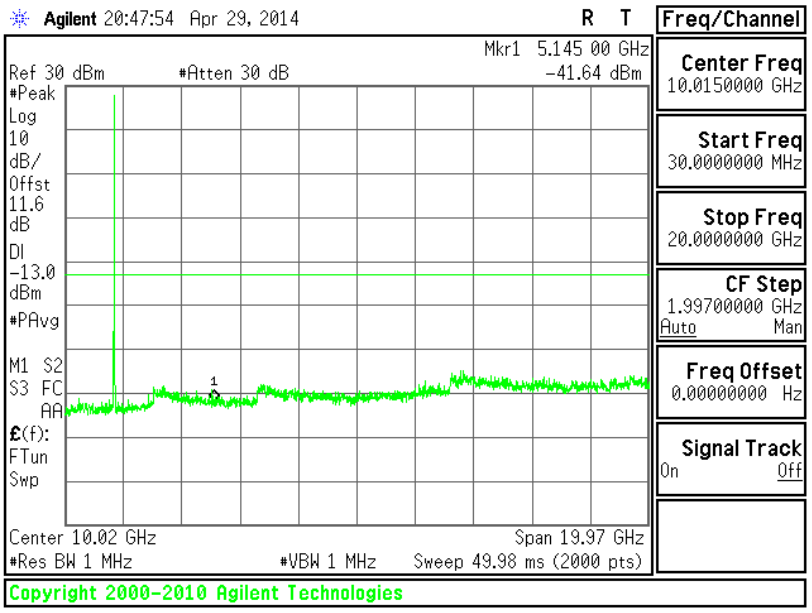


HIGH, RB1-0, 30 TO 20000 MHz

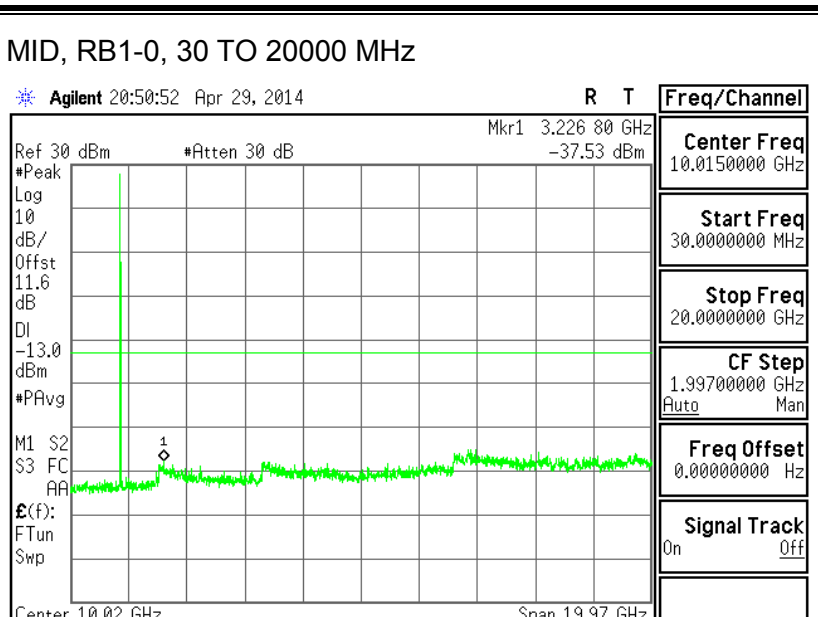


QPSK, (10.0 MHz BAND WIDTH)

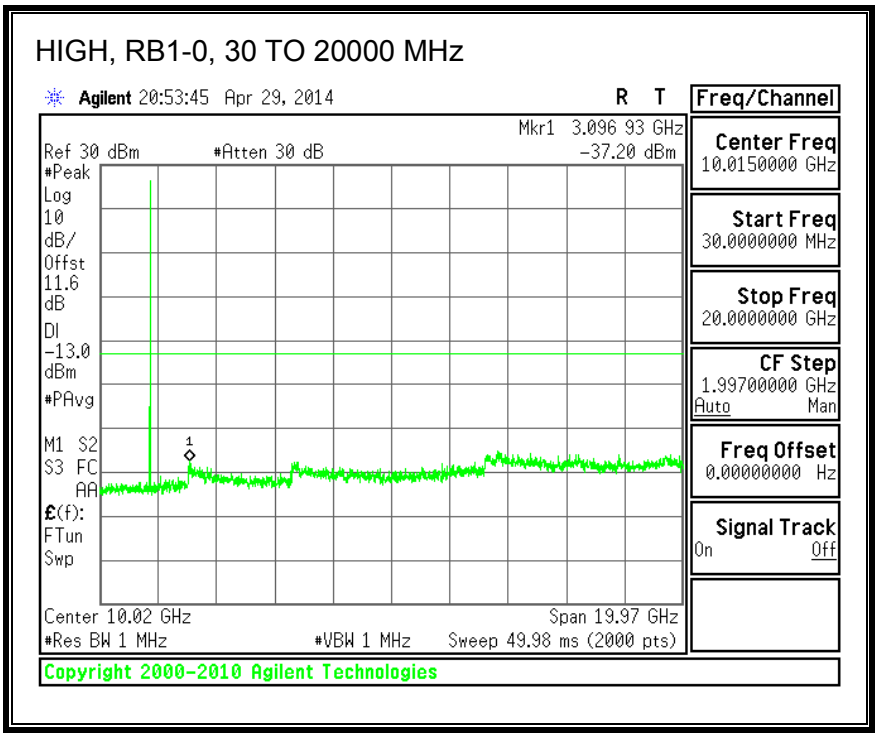
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

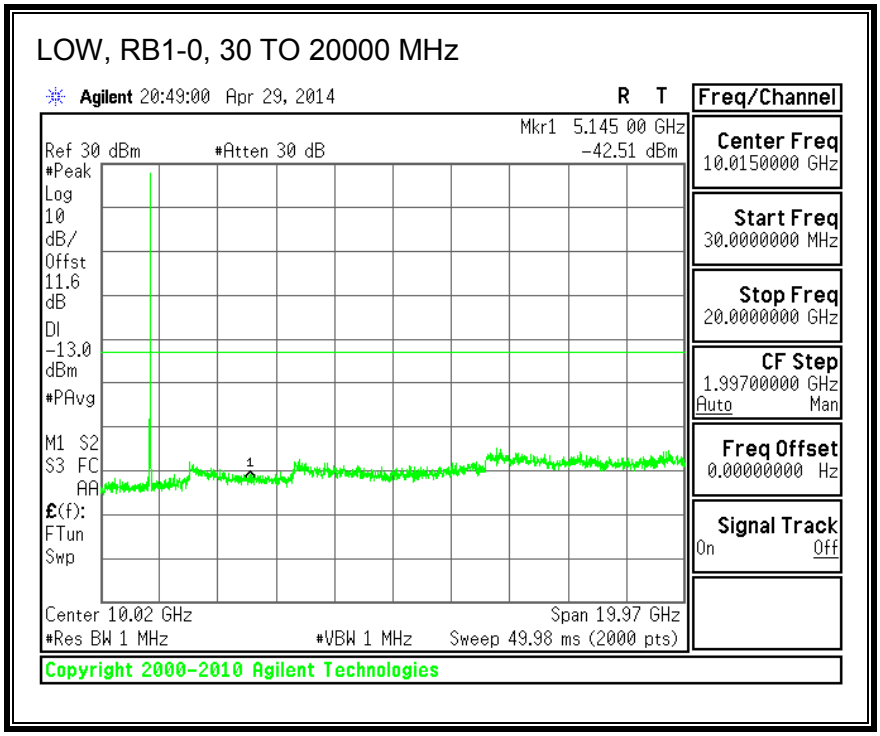


HIGH, RB1-0, 30 TO 20000 MHz

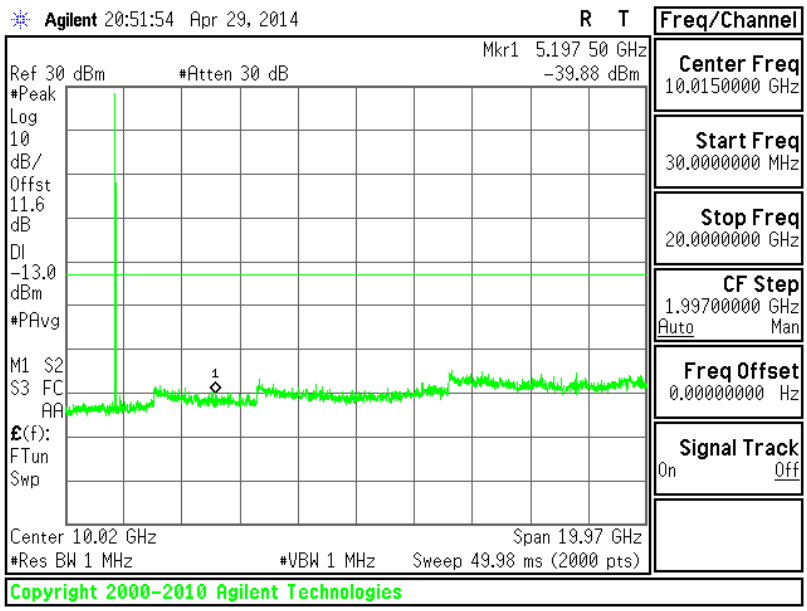


16QAM, (10.0 MHz BAND WIDTH)

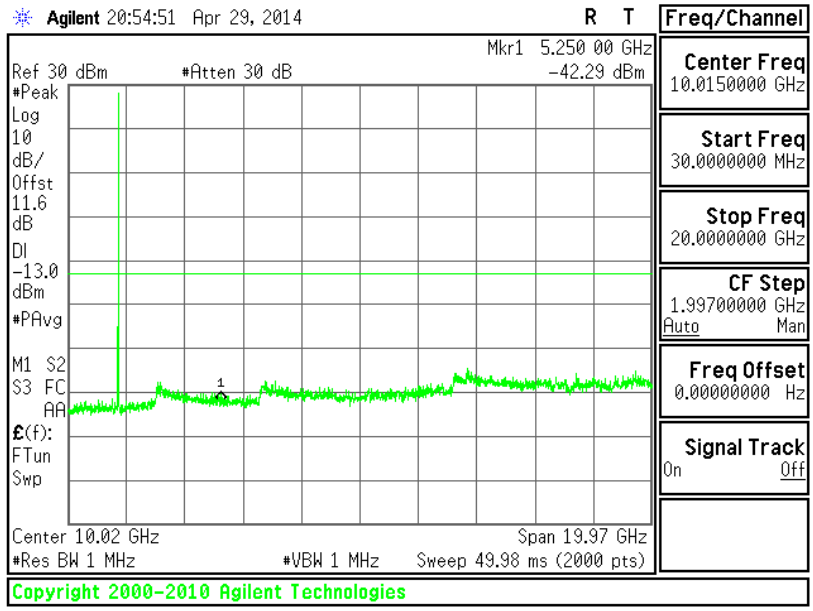
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

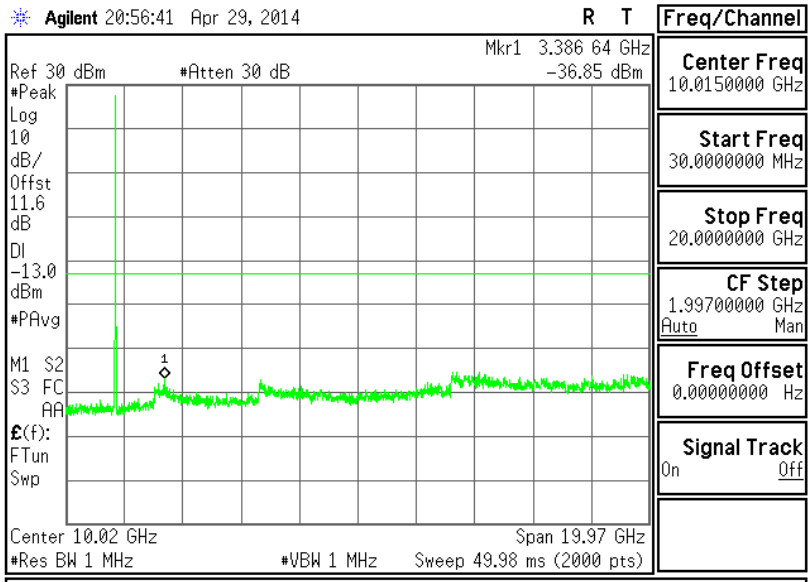


HIGH, RB1-0, 30 TO 20000 MHz

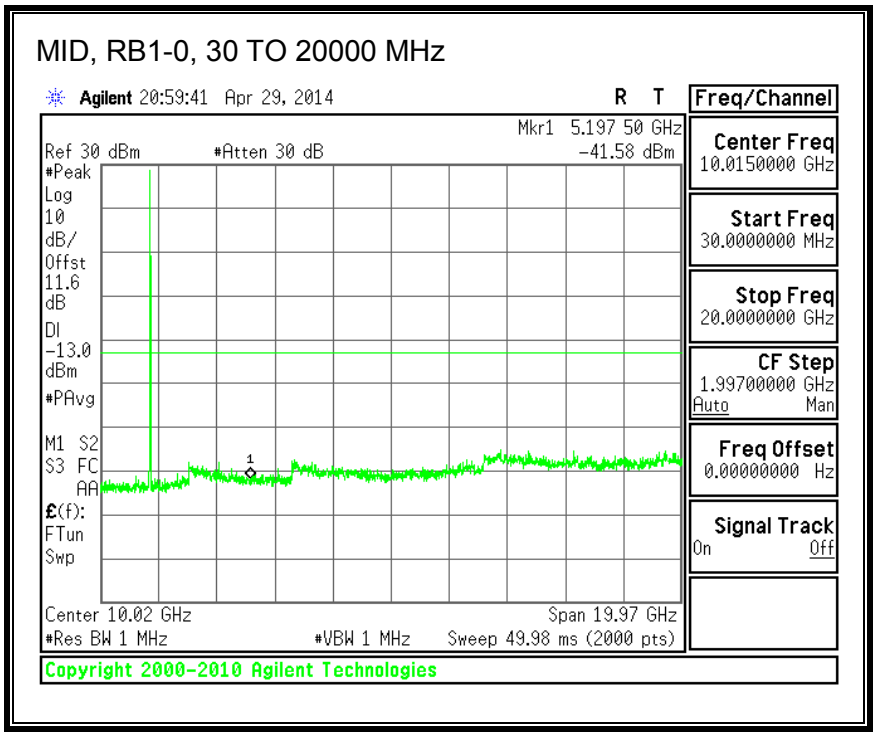


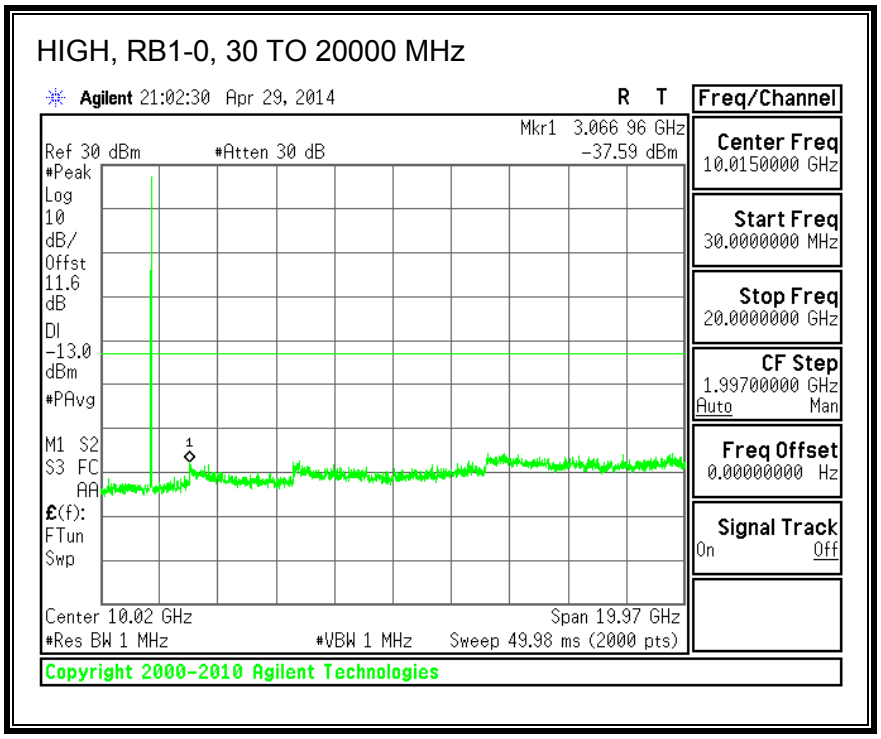
QPSK, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz

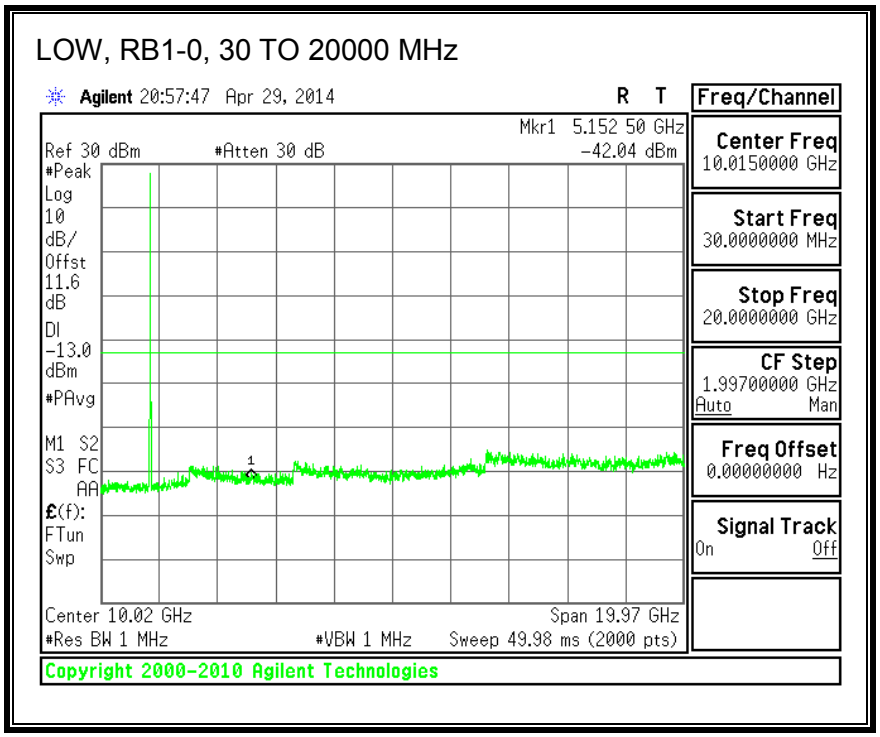


MID, RB1-0, 30 TO 20000 MHz

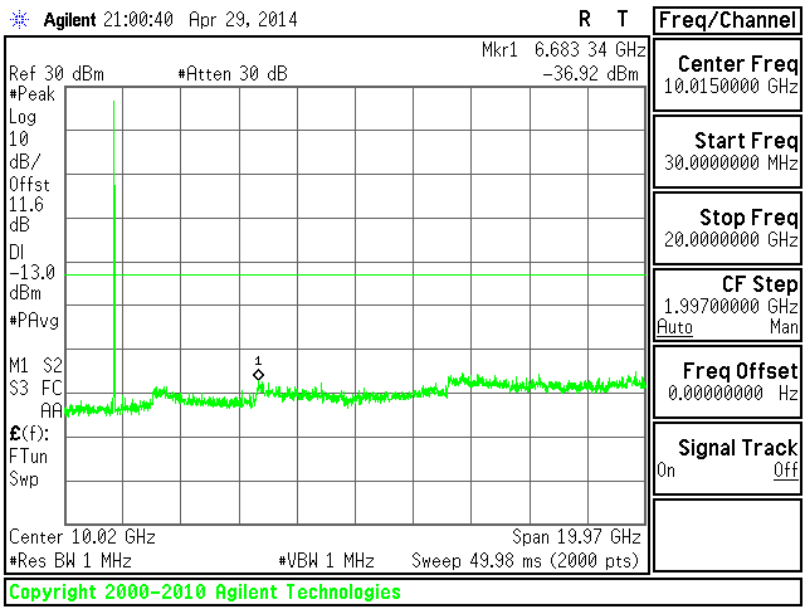




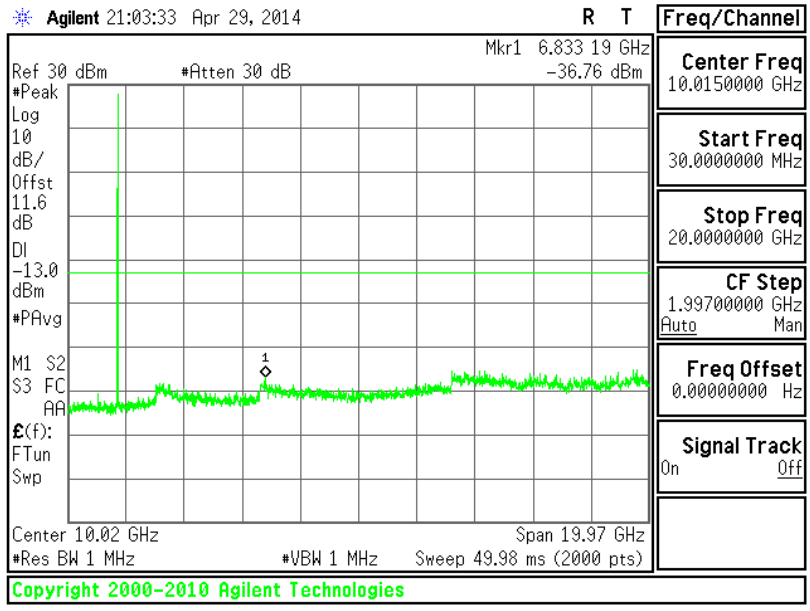
16QAM, (15.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz

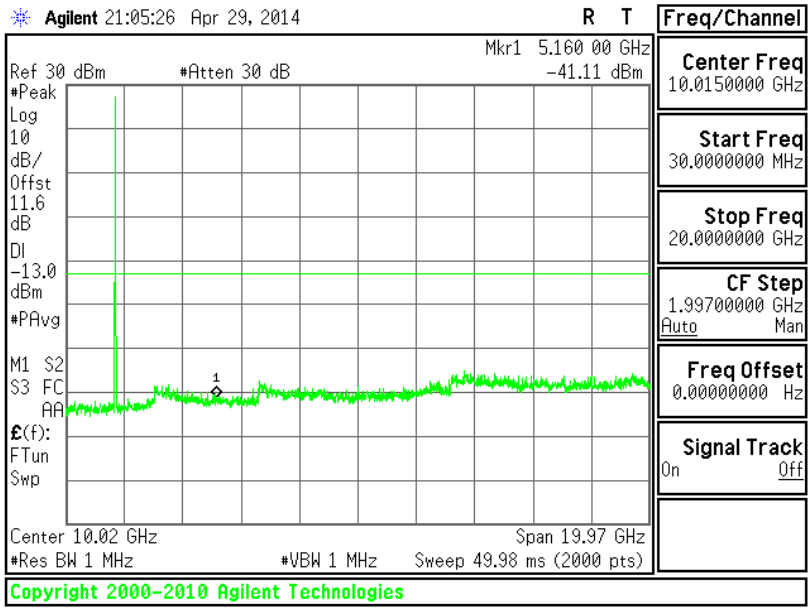


HIGH, RB1-0, 30 TO 20000 MHz

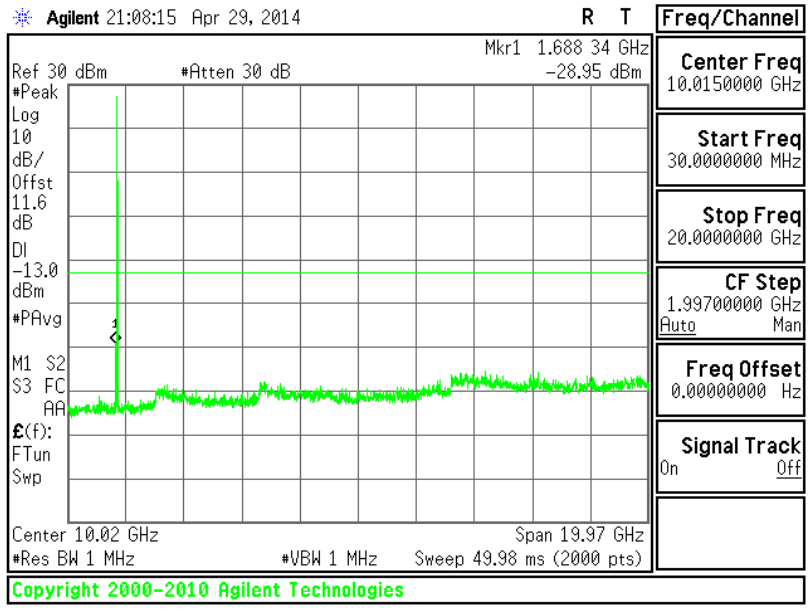


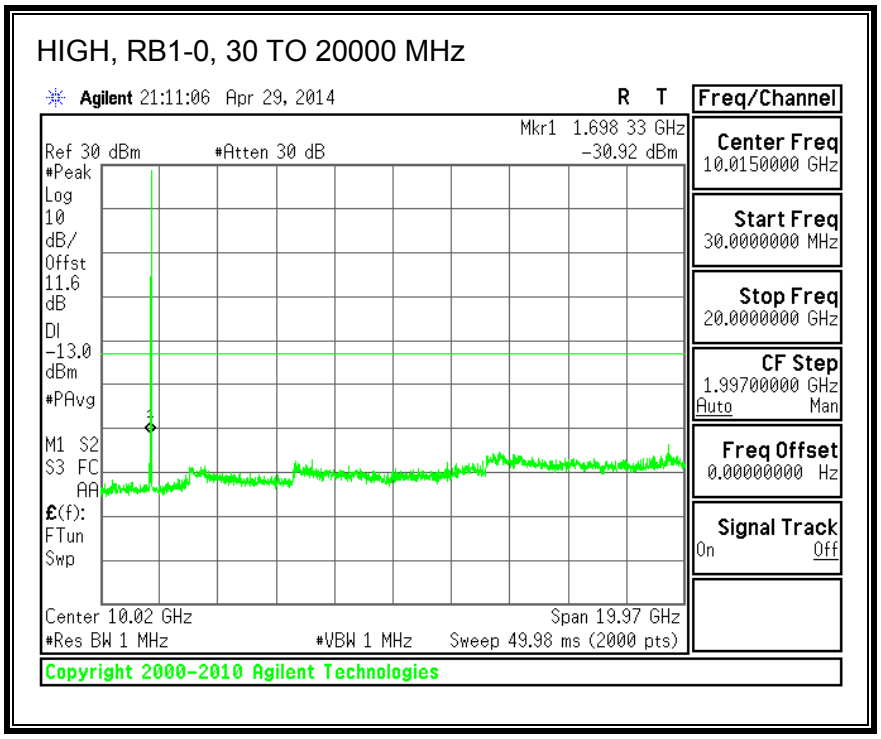
QPSK, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz

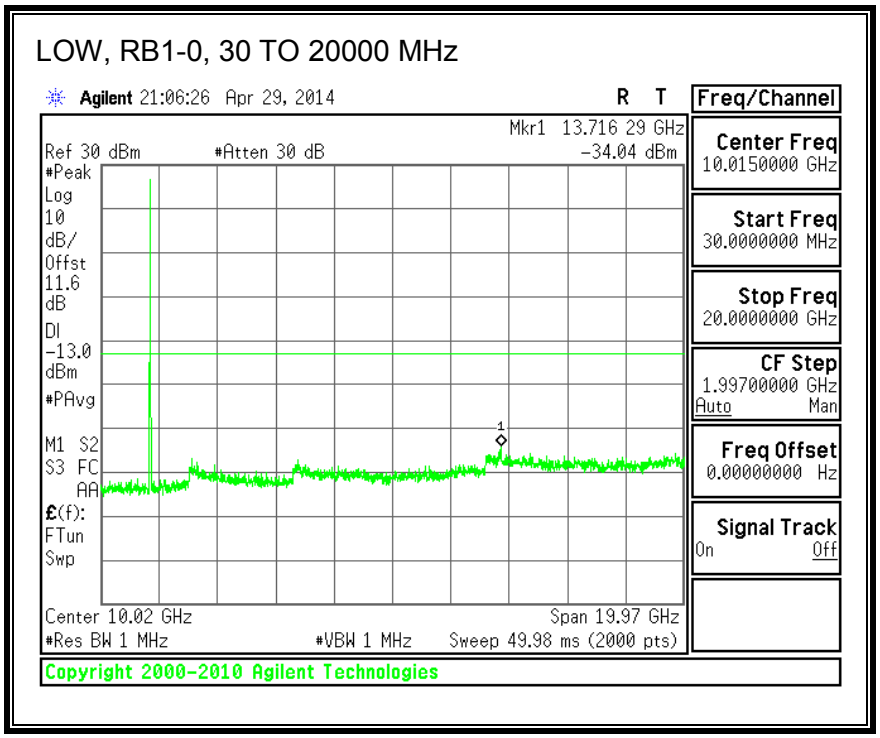


MID, RB1-0, 30 TO 20000 MHz

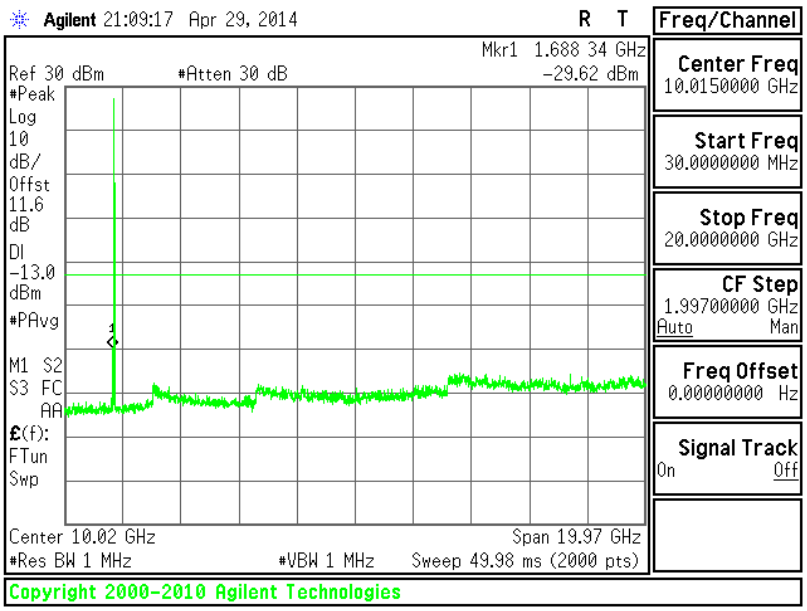




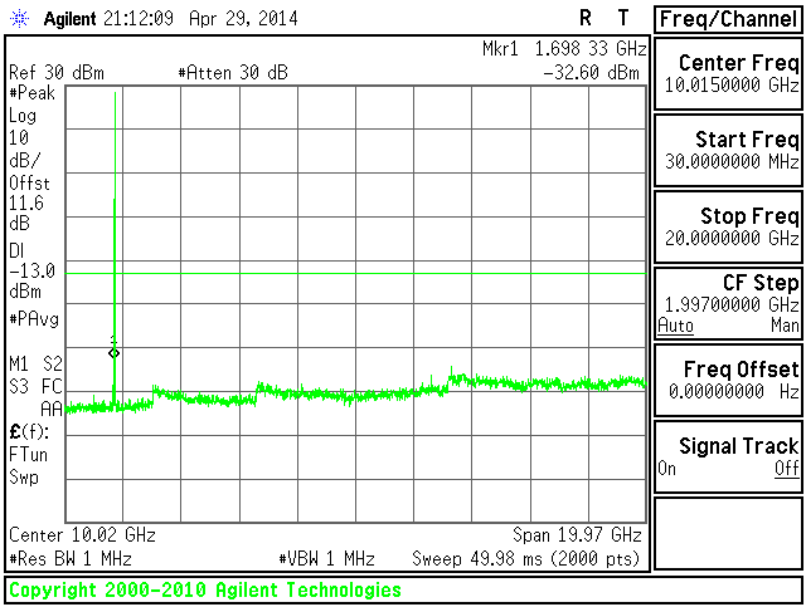
16QAM, (20.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz



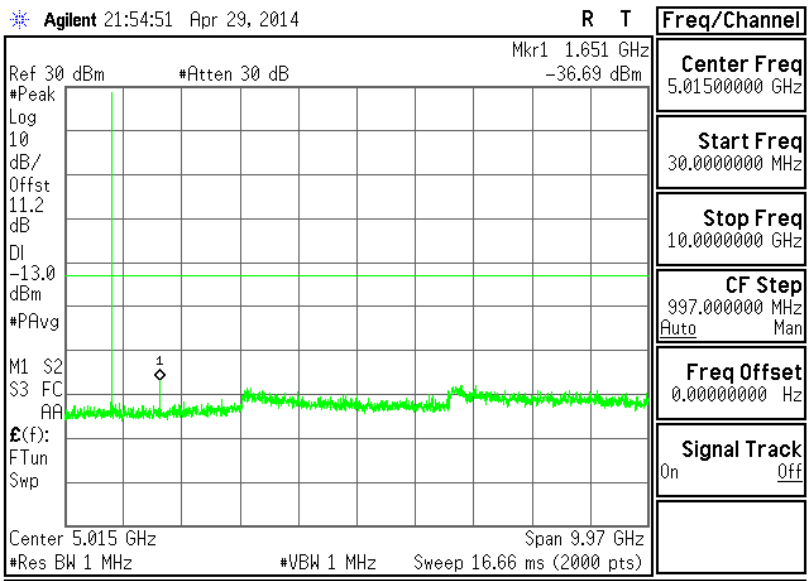
HIGH, RB1-0, 30 TO 20000 MHz



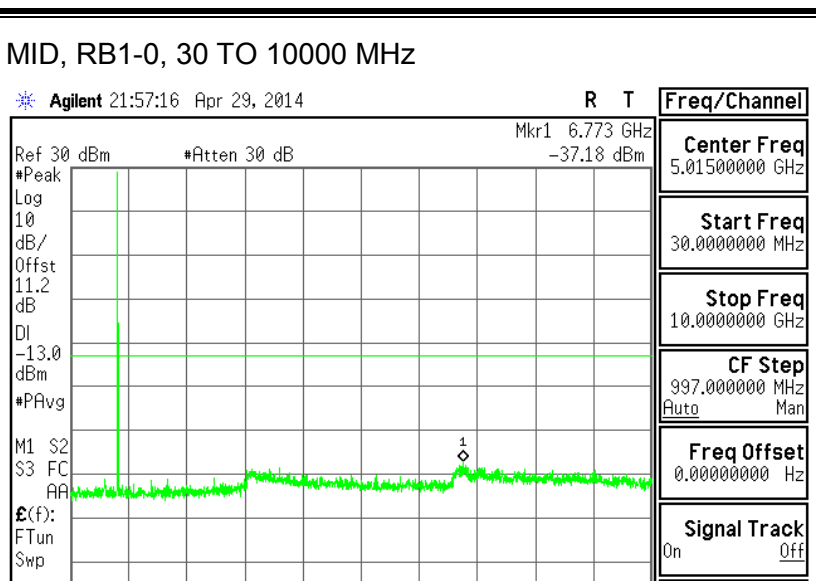
8.3.3. LTE BAND 5

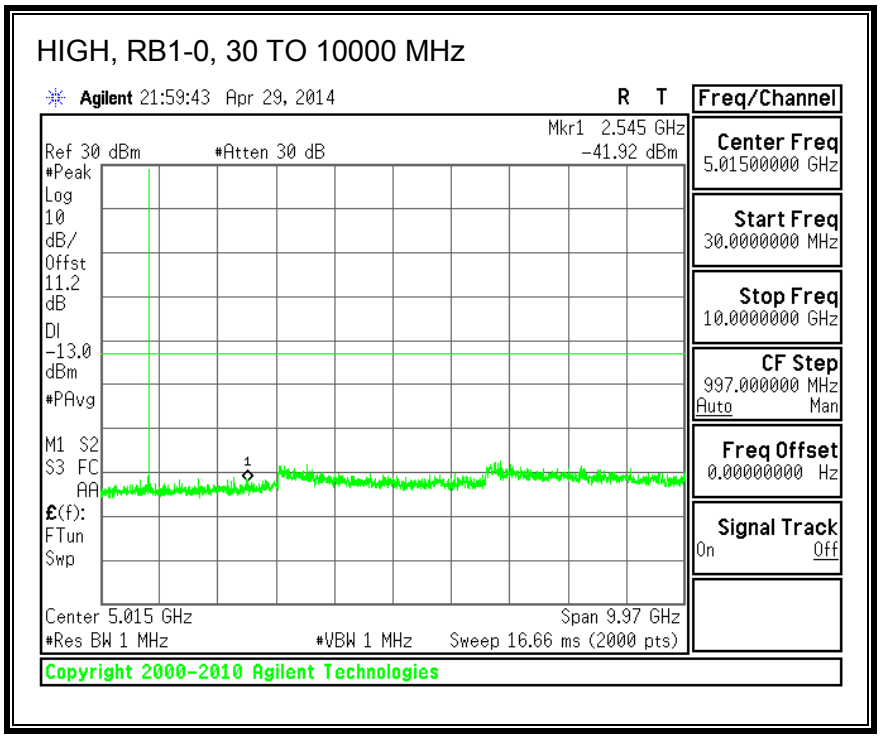
QPSK, (1.4 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz

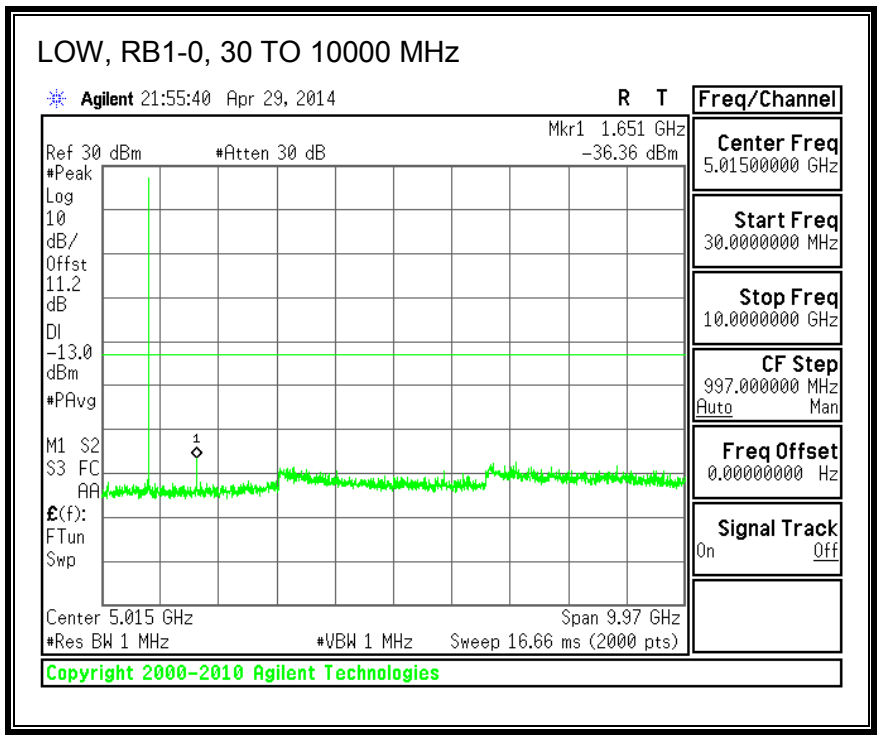


MID, RB1-0, 30 TO 10000 MHz

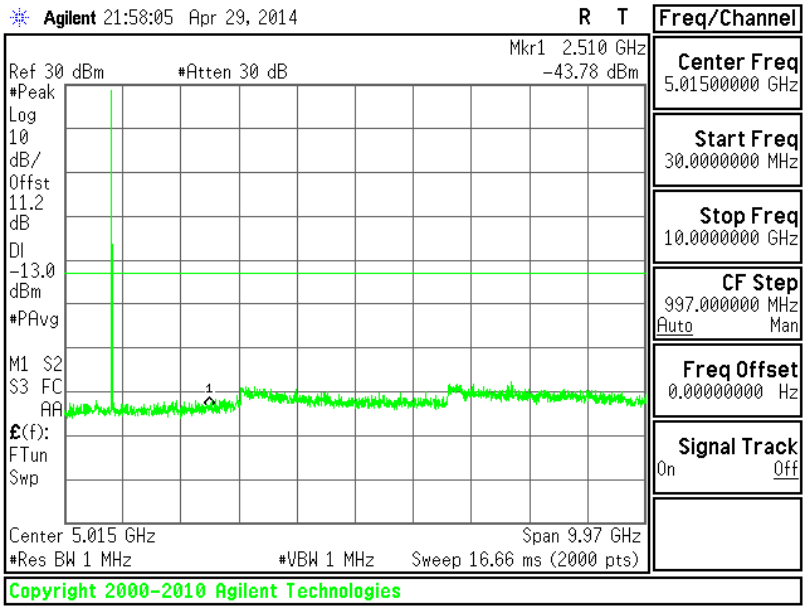




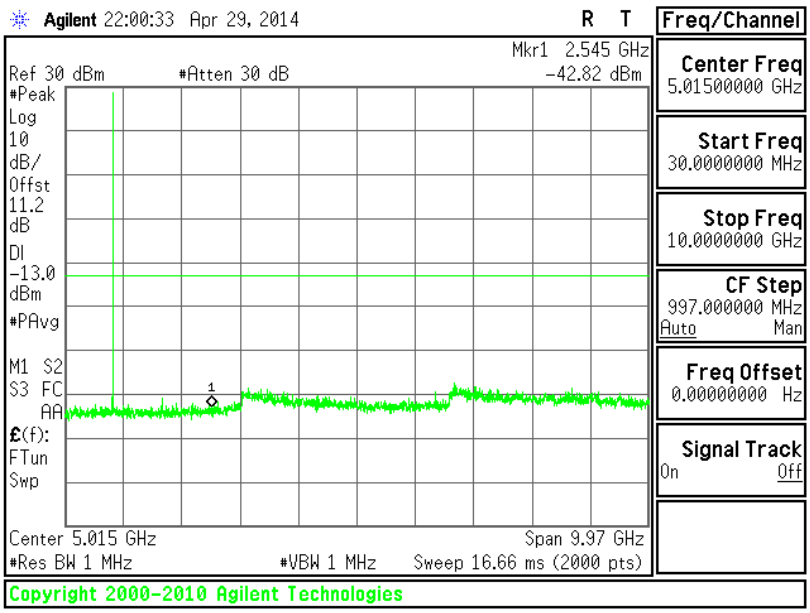
16QAM, (1.4 MHz BAND WIDTH)



MID, RB1-0, 30 TO 10000 MHz

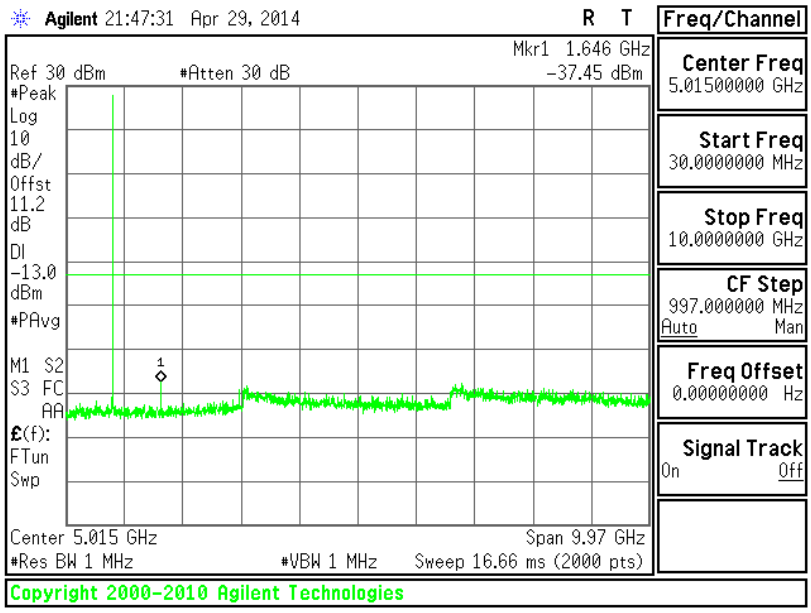


HIGH, RB1-0, 30 TO 10000 MHz

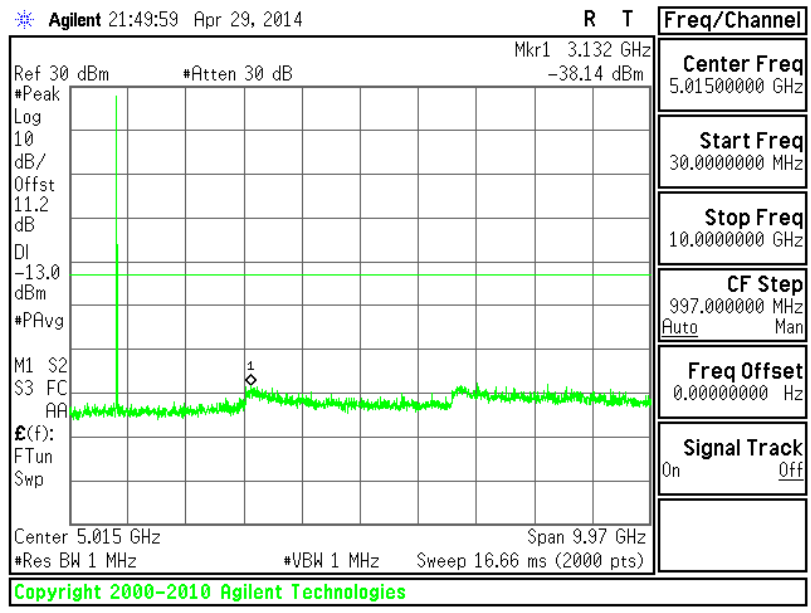


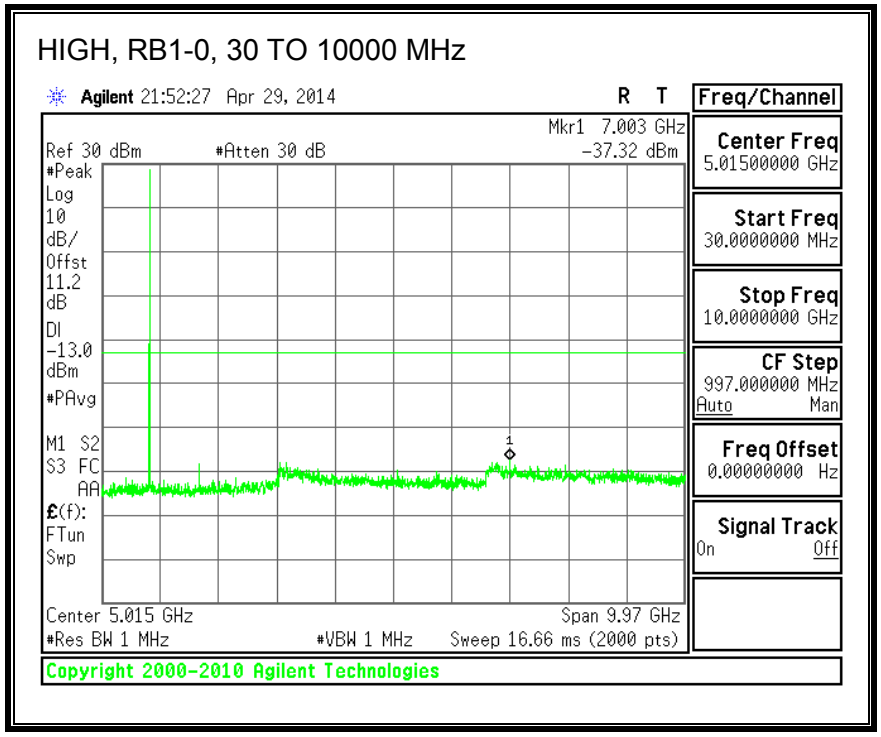
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz

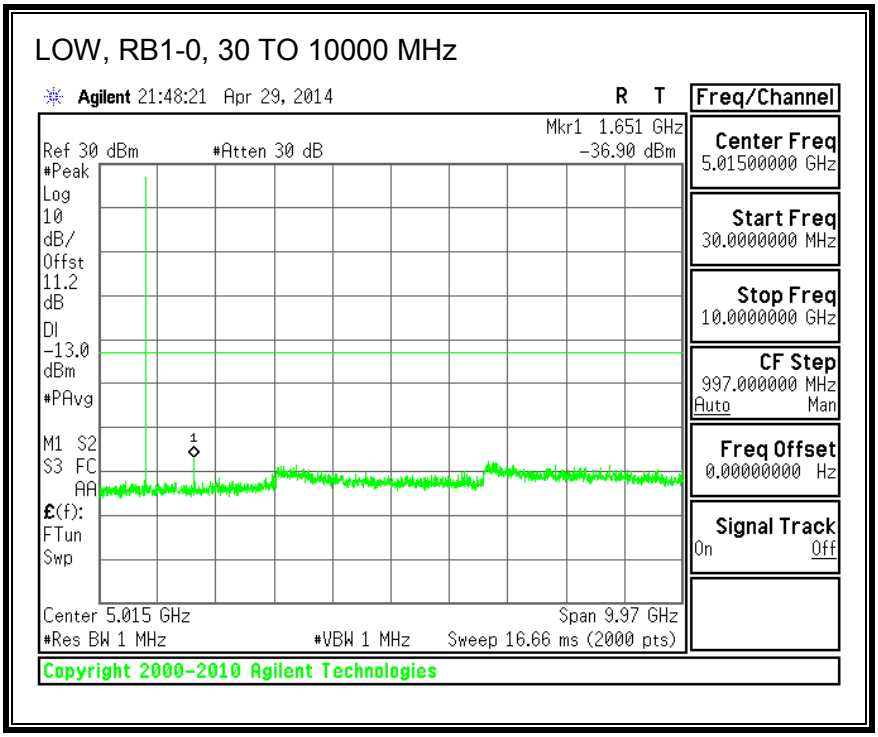


MID, RB1-0, 30 TO 10000 MHz

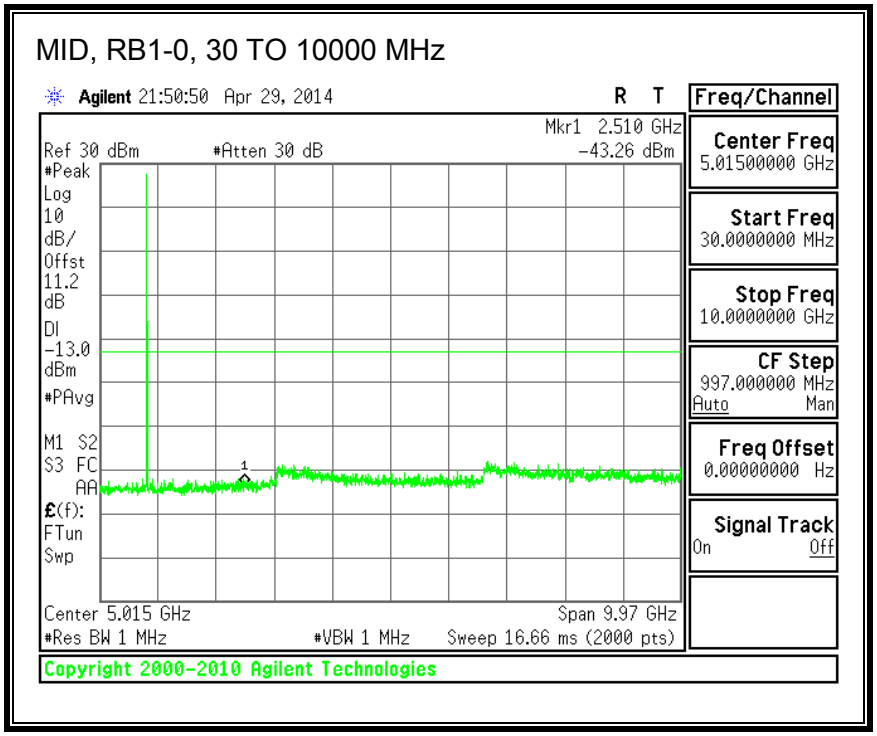




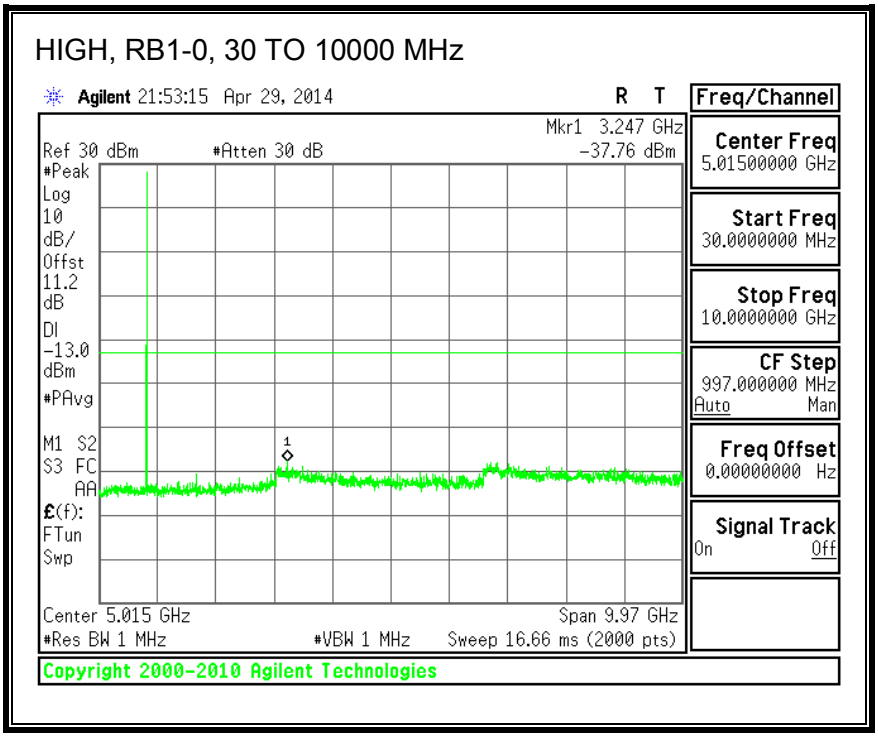
16QAM, (3.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 10000 MHz

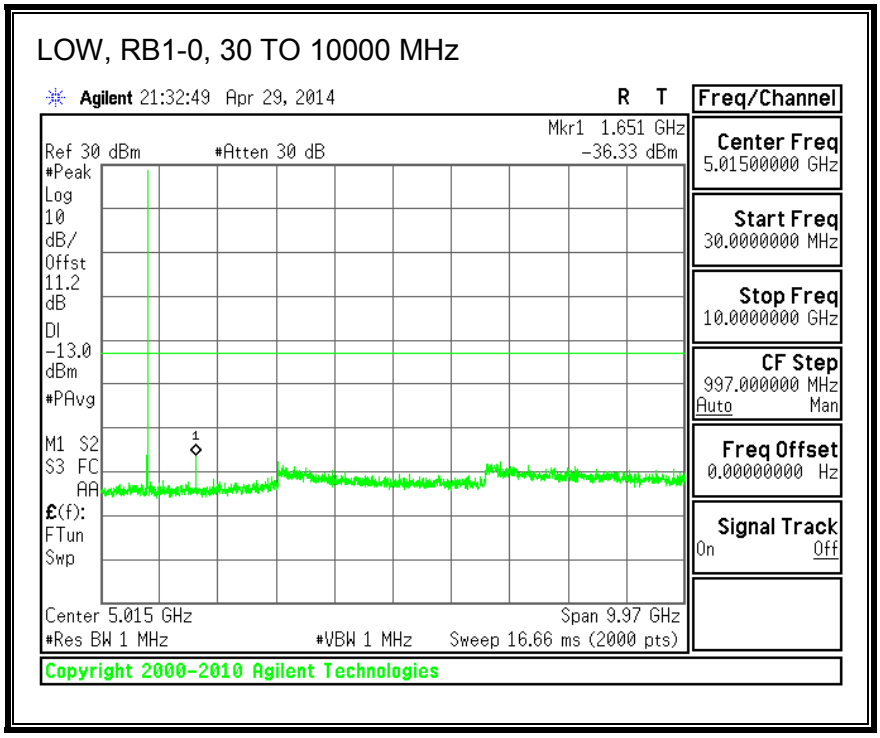


HIGH, RB1-0, 30 TO 10000 MHz

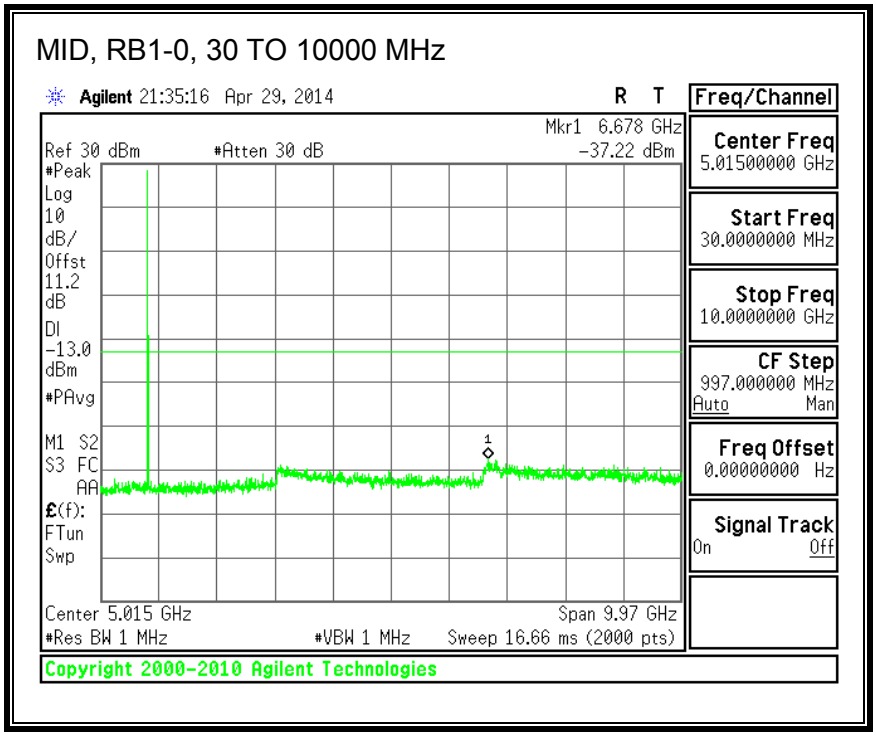


QPSK, (5.0 MHz BAND WIDTH)

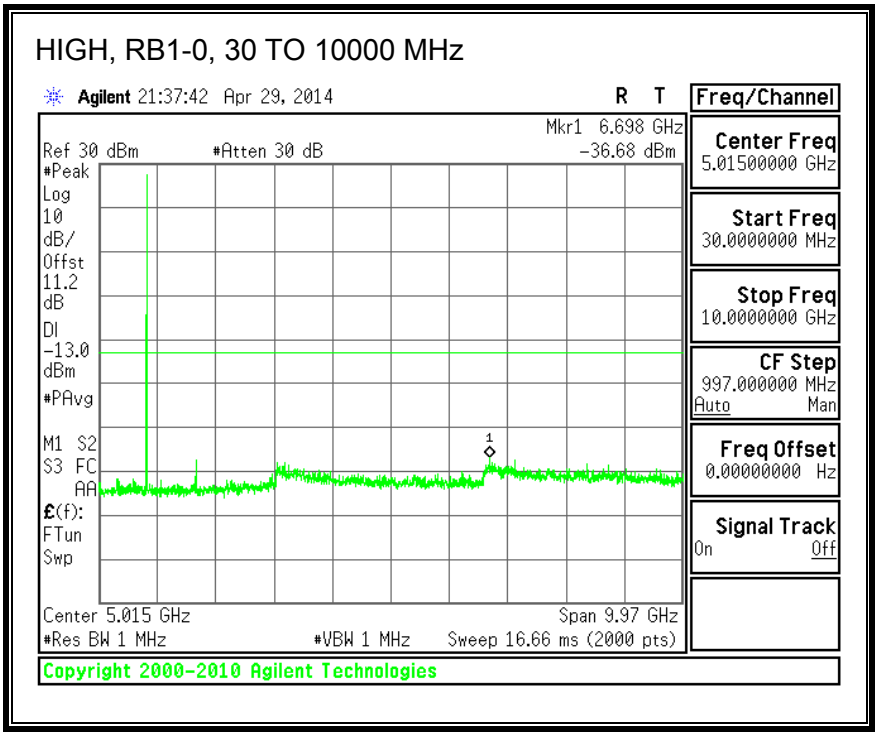
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

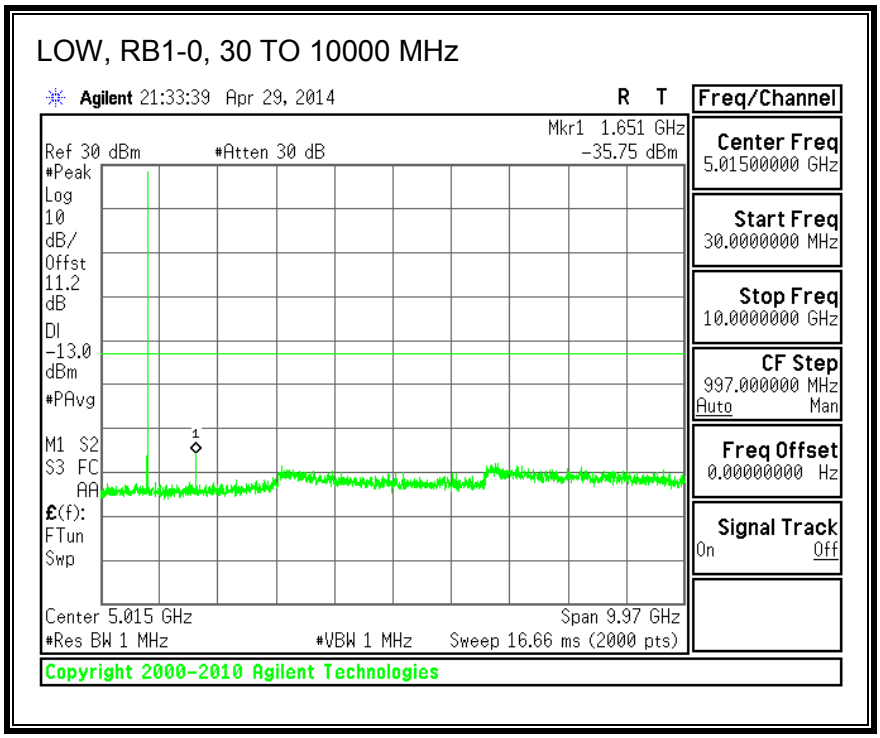


HIGH, RB1-0, 30 TO 10000 MHz

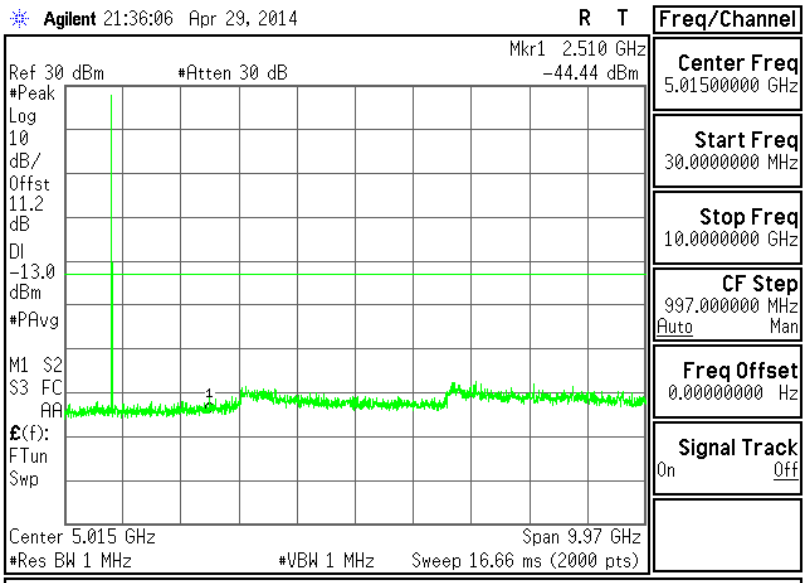


16QAM, (5.0 MHz BAND WIDTH)

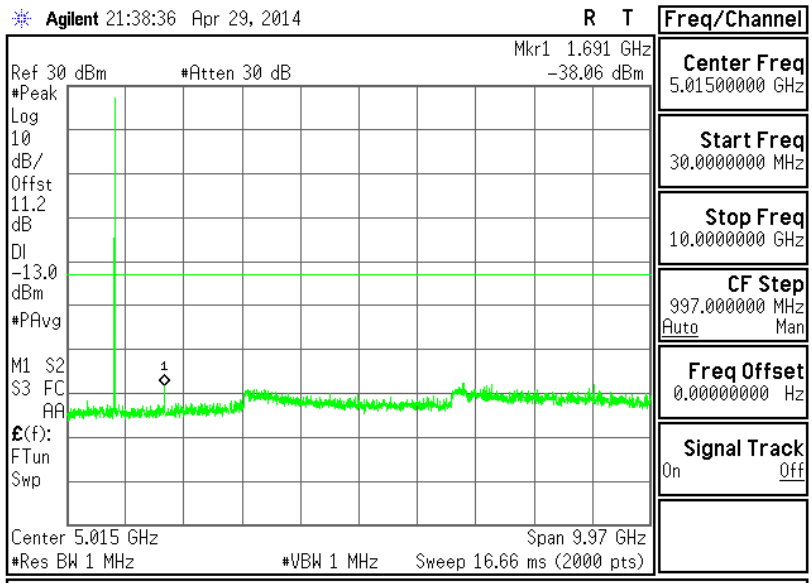
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

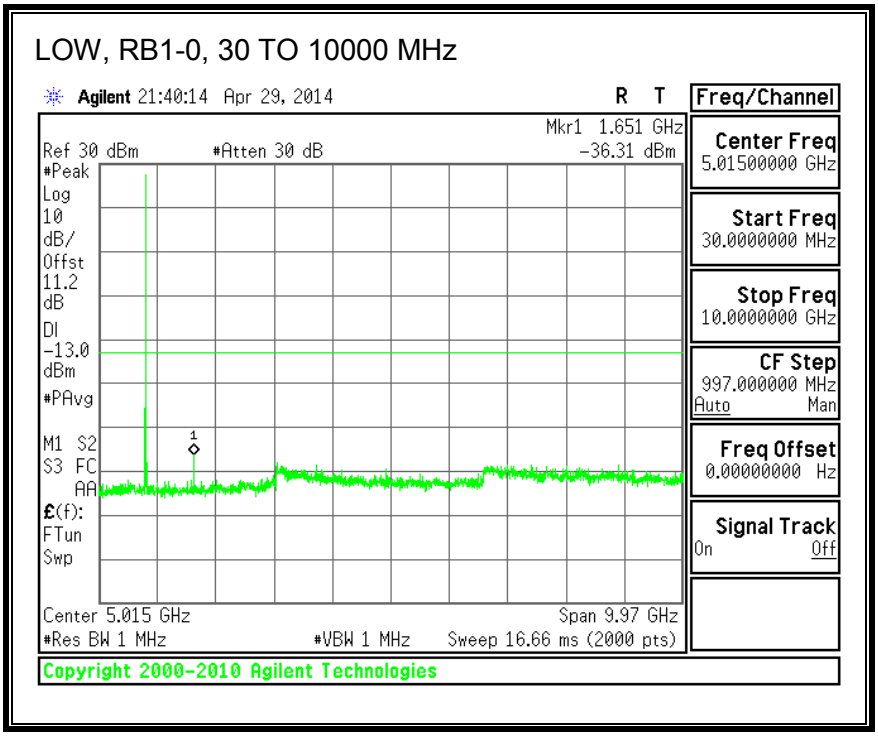


HIGH, RB1-0, 30 TO 10000 MHz

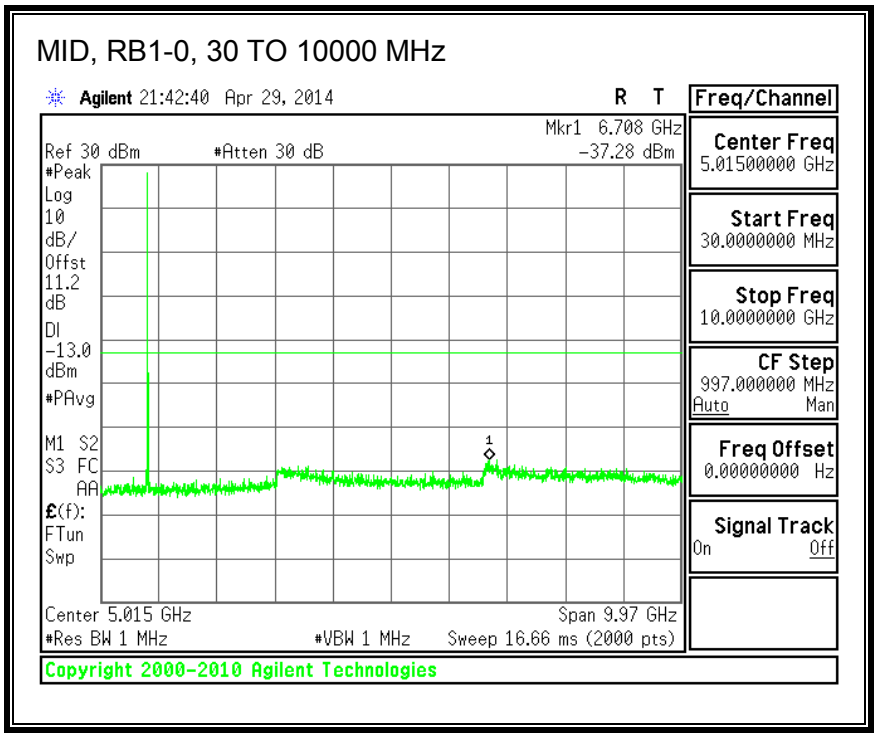


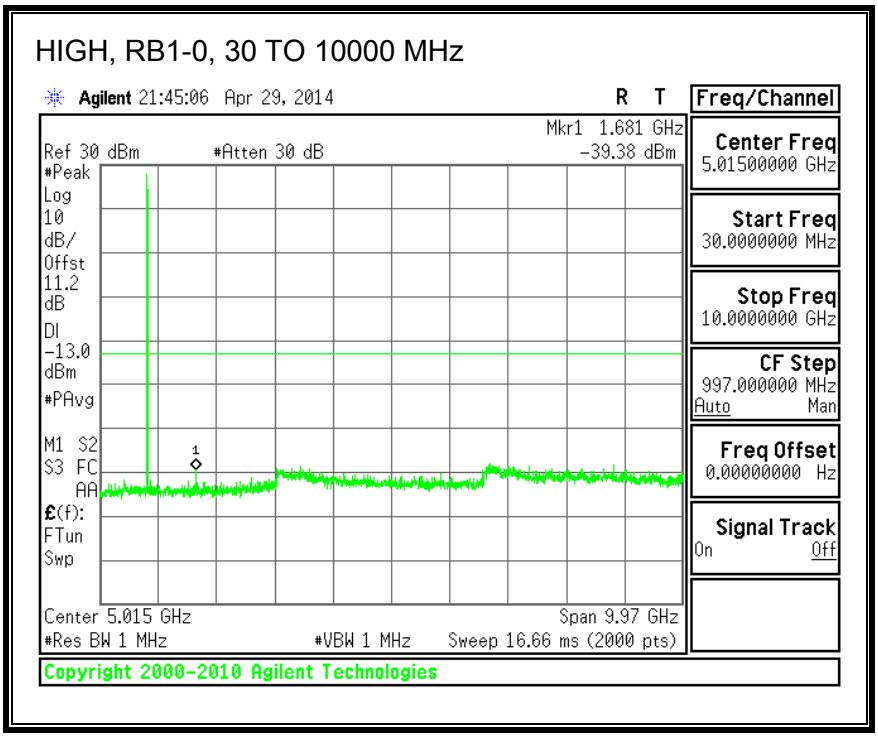
QPSK, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz

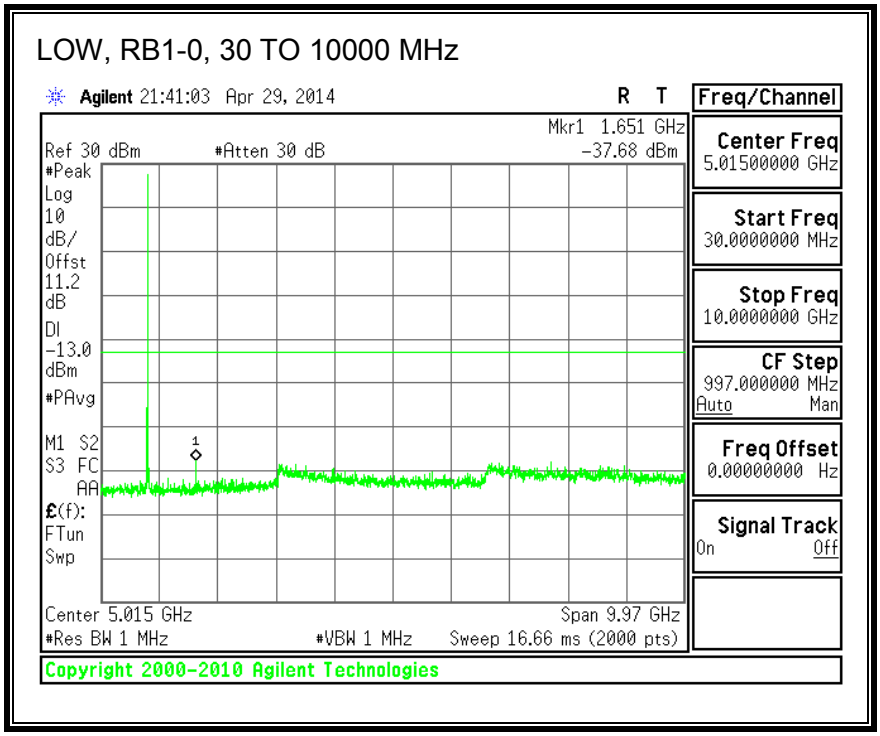


MID, RB1-0, 30 TO 10000 MHz

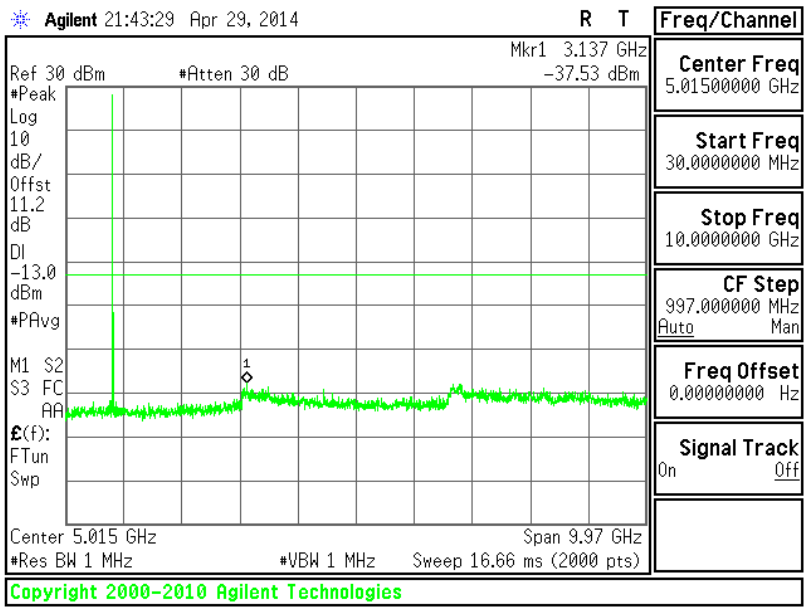




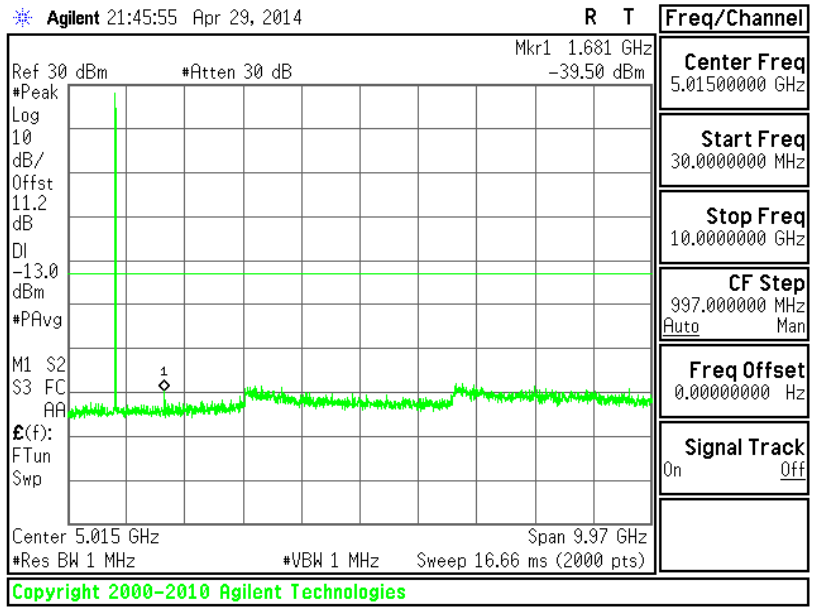
16QAM, (10.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 10000 MHz



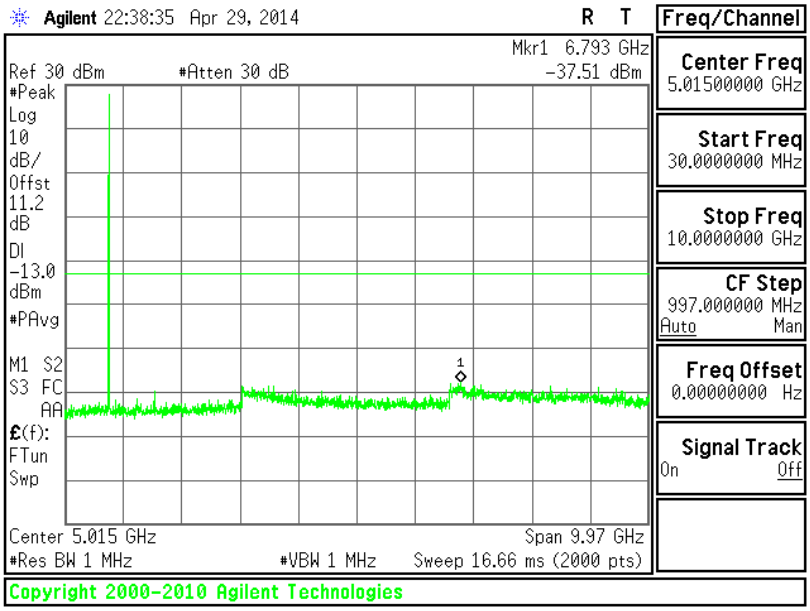
HIGH, RB1-0, 30 TO 10000 MHz



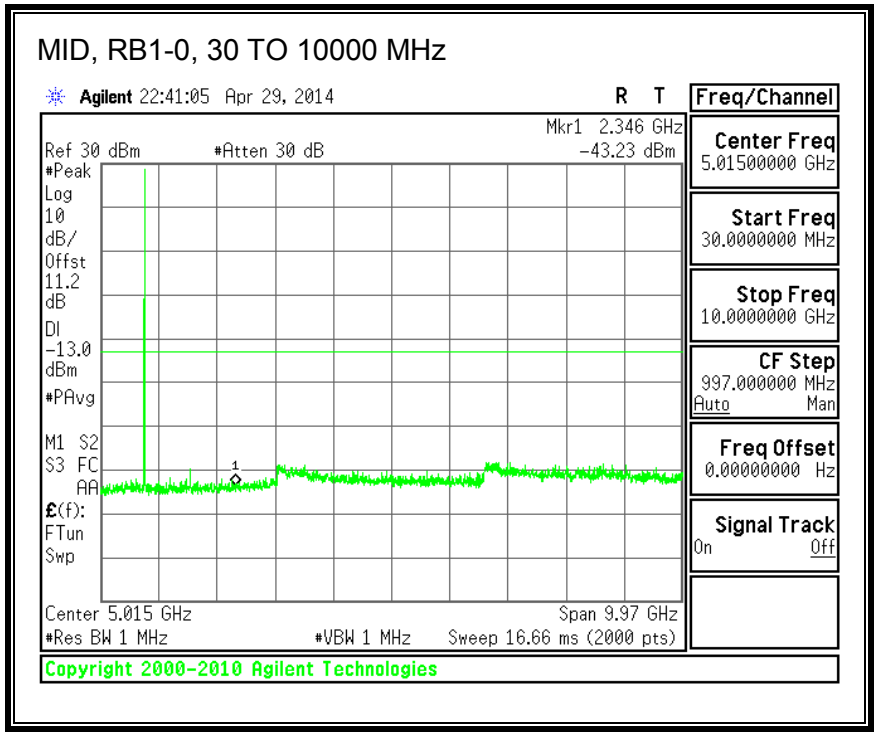
8.3.4. LTE BAND 13

QPSK, (5.0 MHz BAND WIDTH)

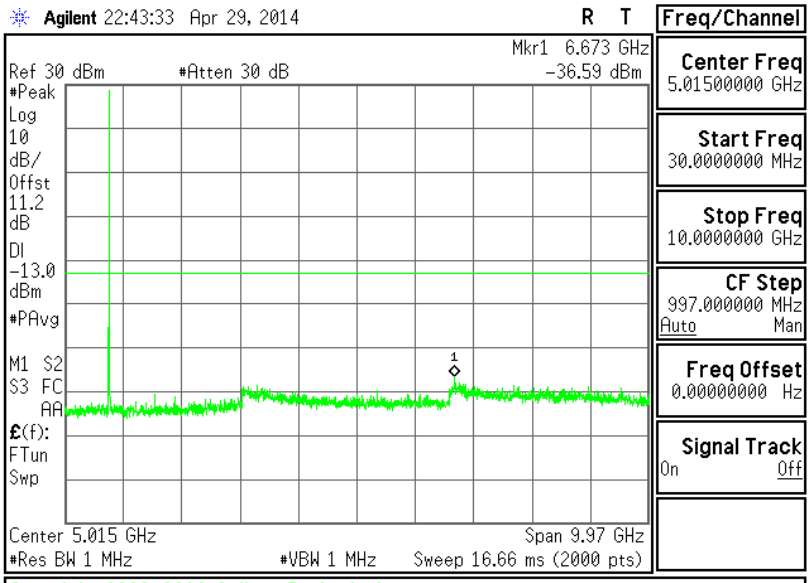
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

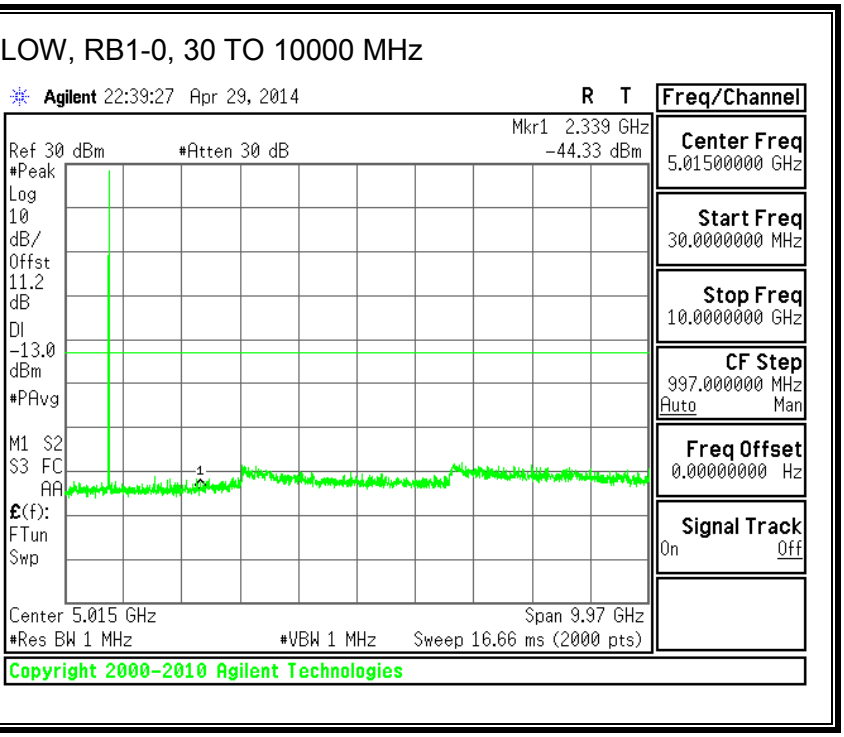


HIGH, RB1-0, 30 TO 10000 MHz

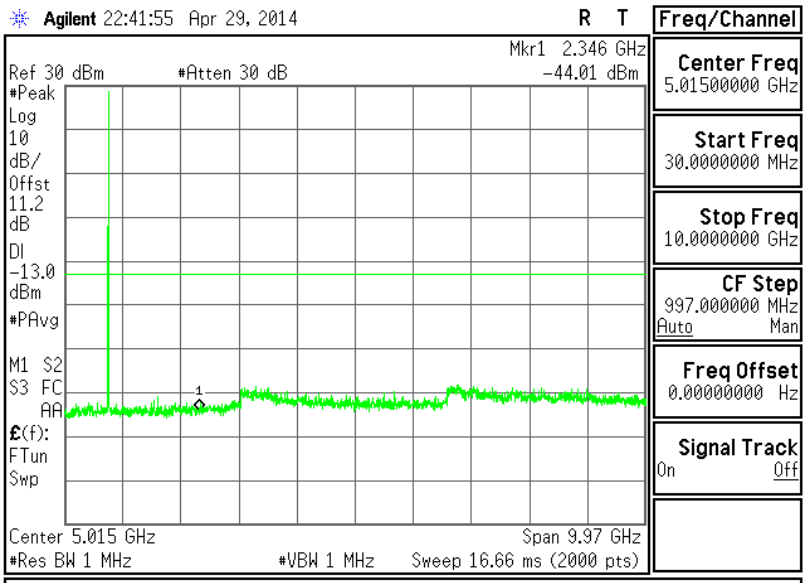


16QAM, (5.0 MHz BAND WIDTH)

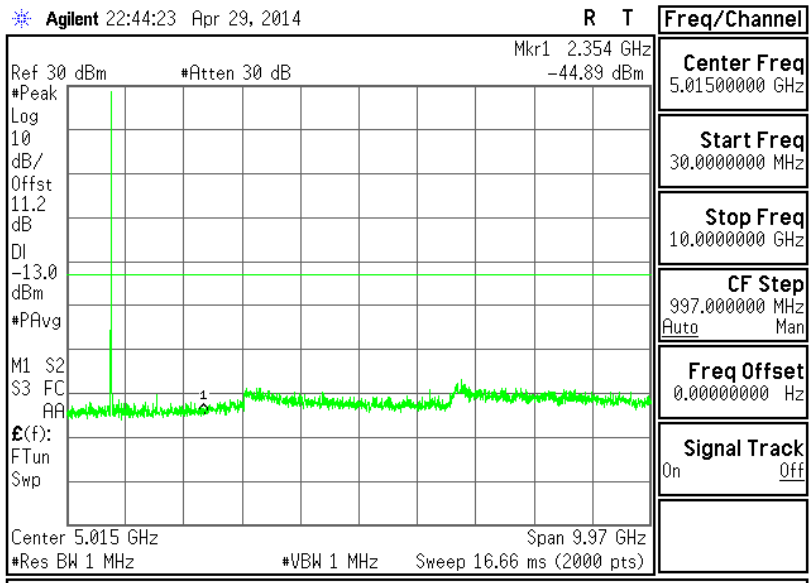
LOW, RB1-0, 30 TO 10000 MHz



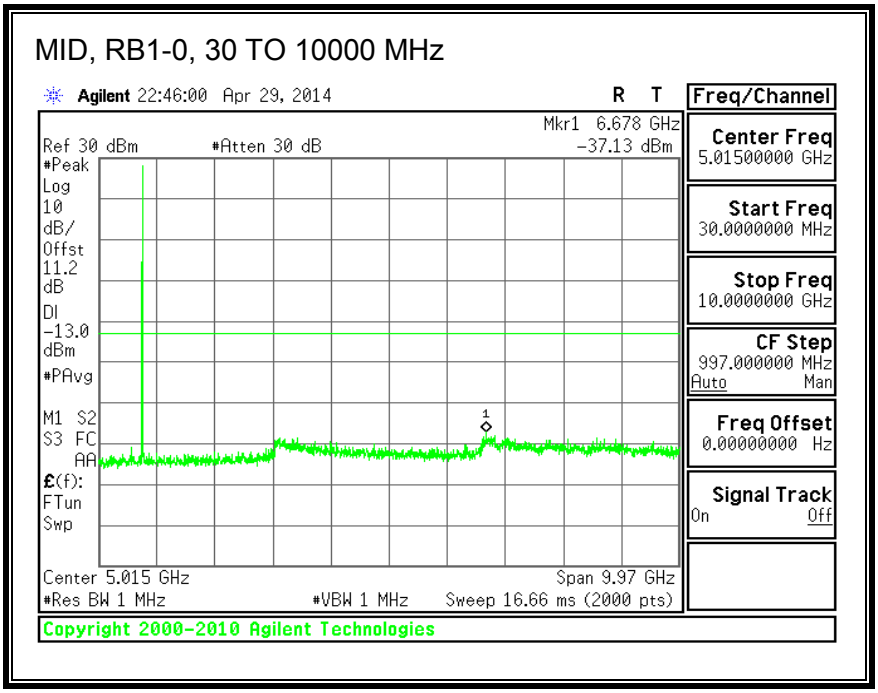
MID, RB1-0, 30 TO 10000 MHz



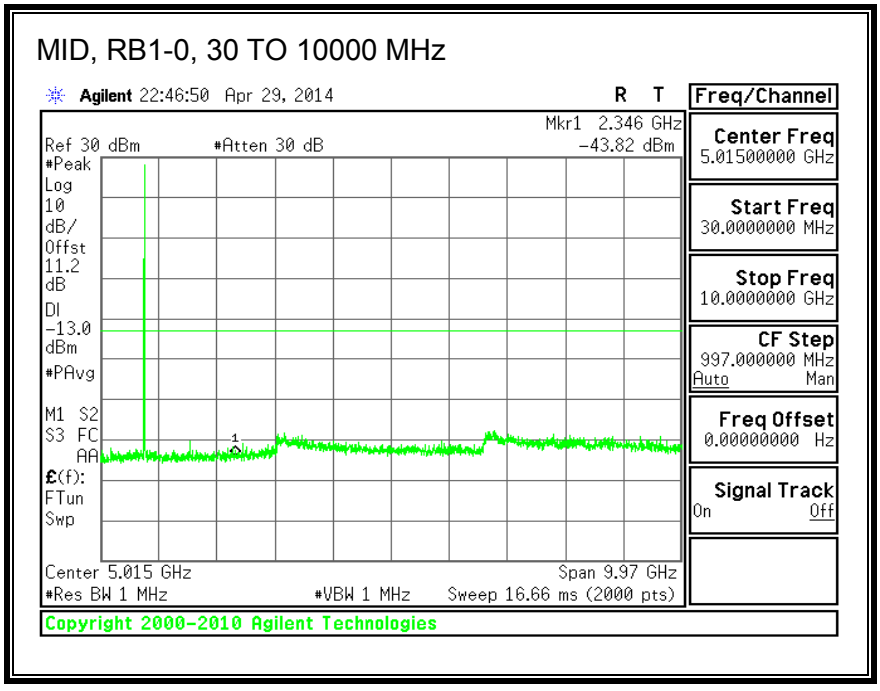
HIGH, RB1-0, 30 TO 10000 MHz



QPSK, (10.0 MHz BAND WIDTH)



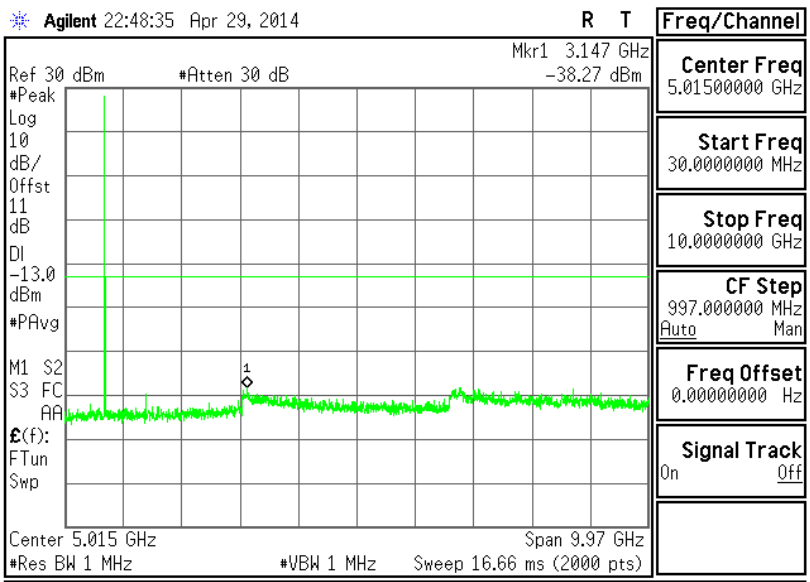
16QAM, (10.0 MHz BAND WIDTH)



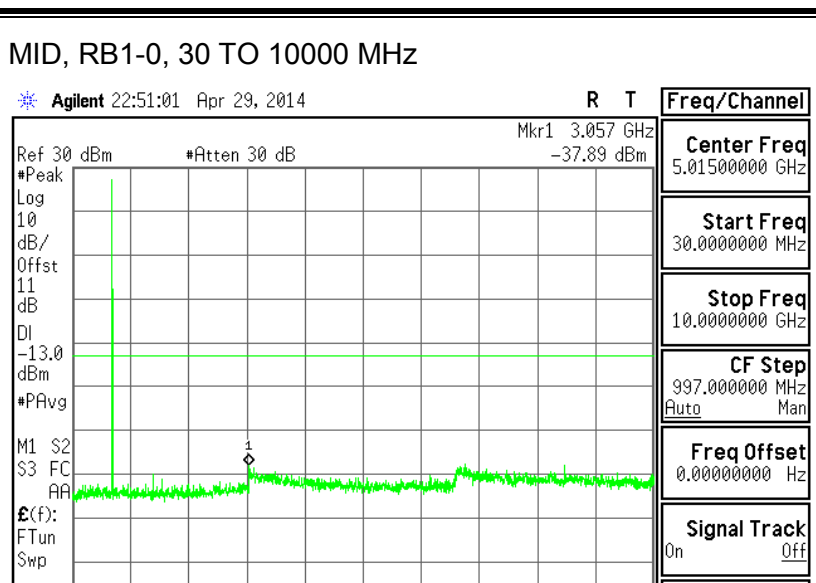
8.3.5. LTE BAND 17

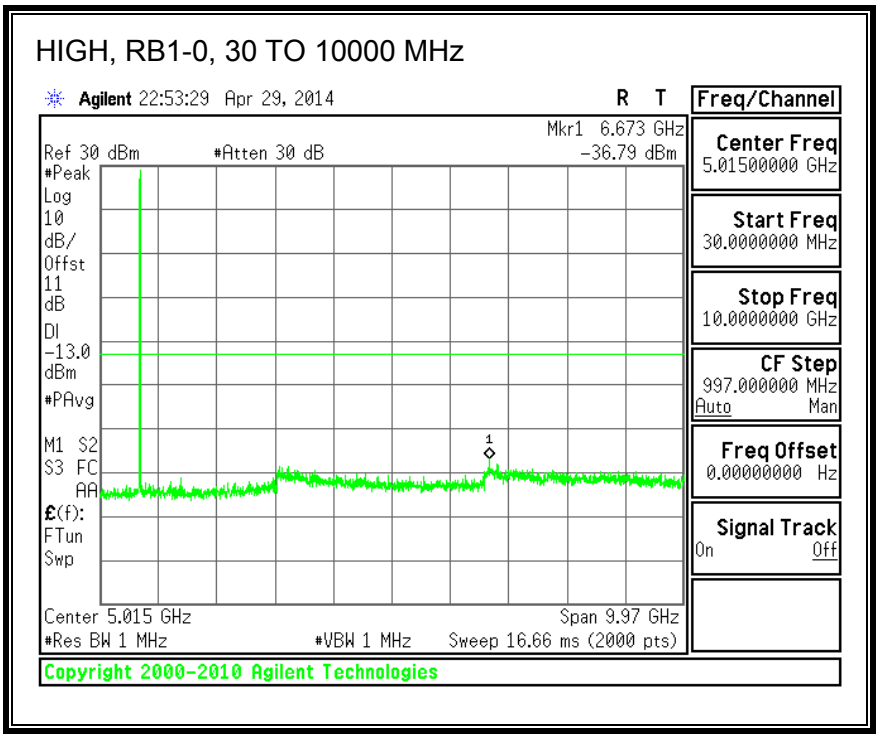
QPSK, (5.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz

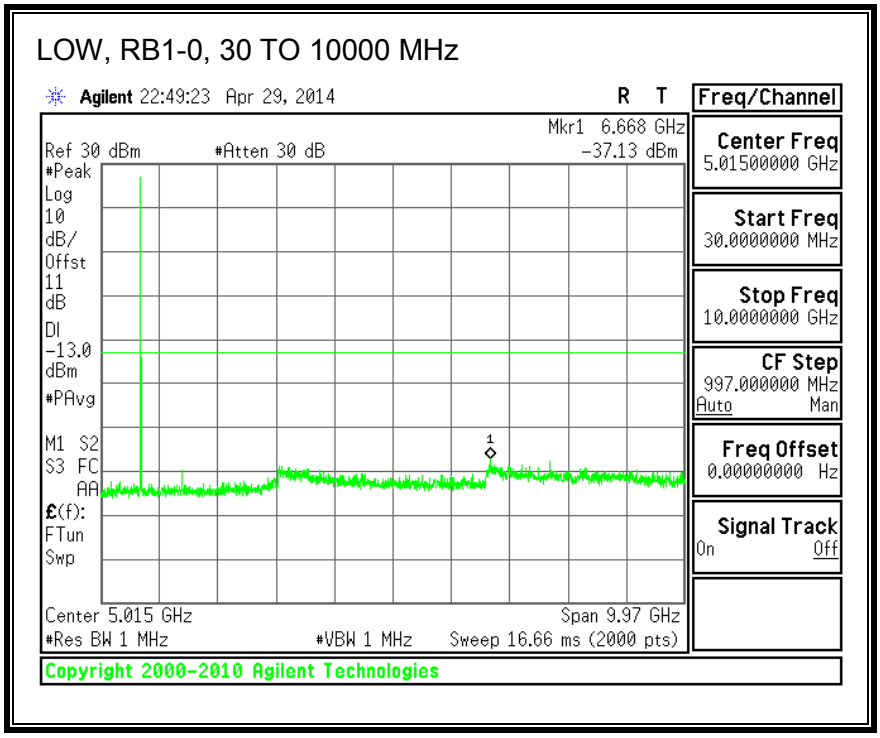


MID, RB1-0, 30 TO 10000 MHz

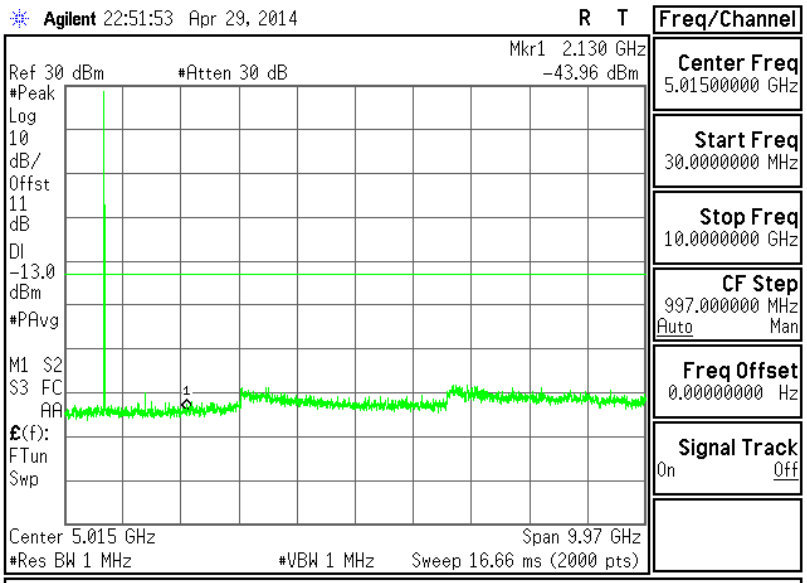




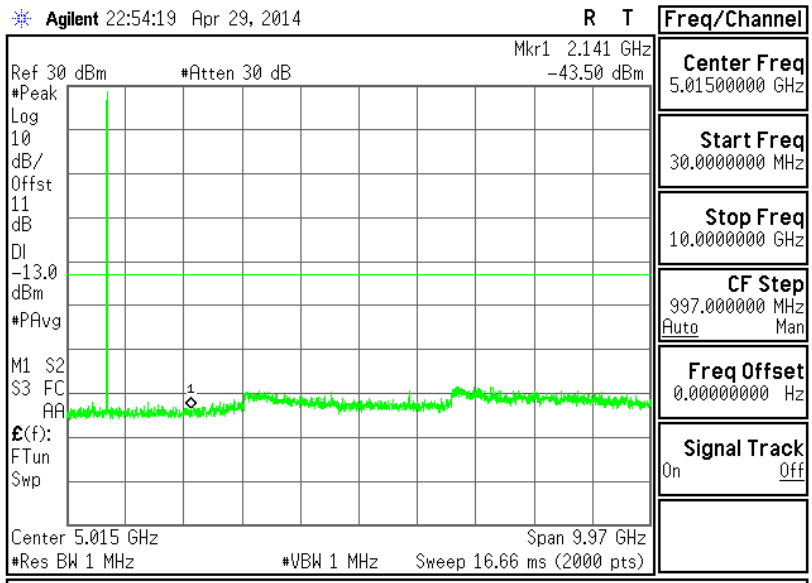
16QAM, (5.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 10000 MHz

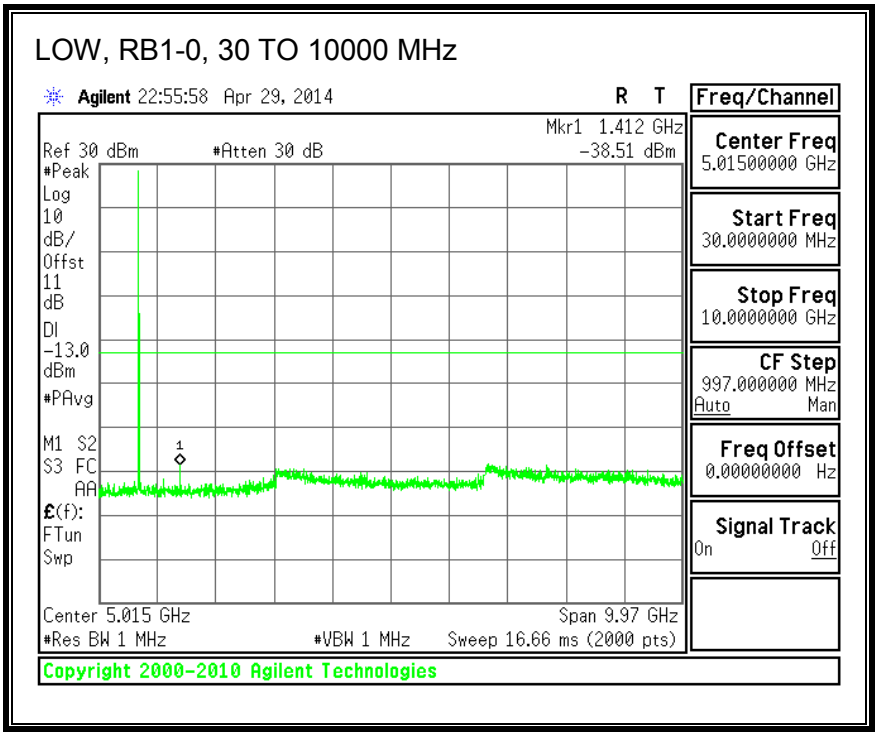


HIGH, RB1-0, 30 TO 10000 MHz

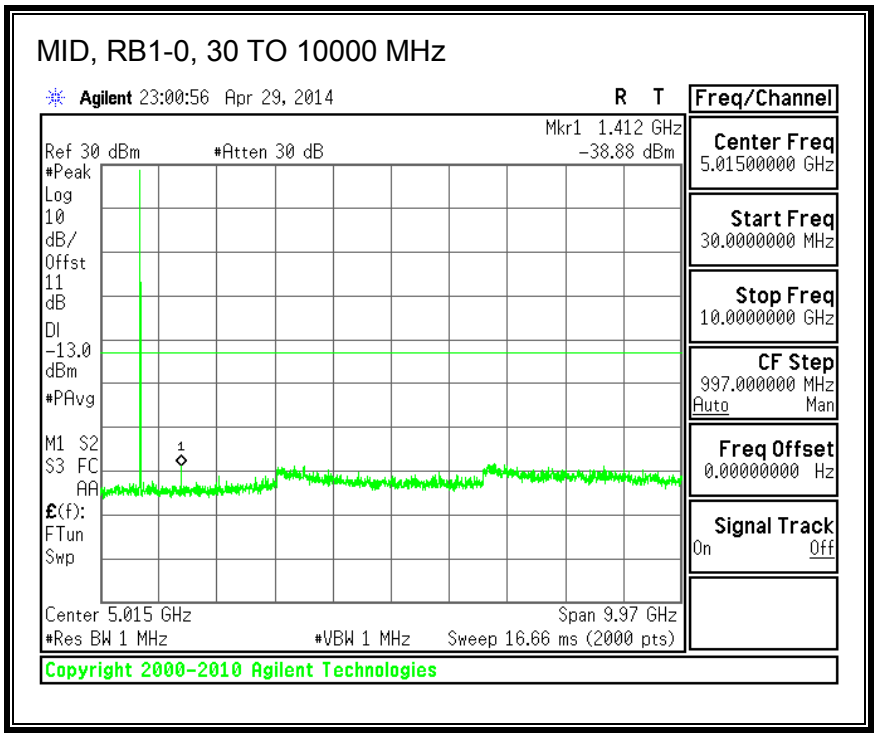


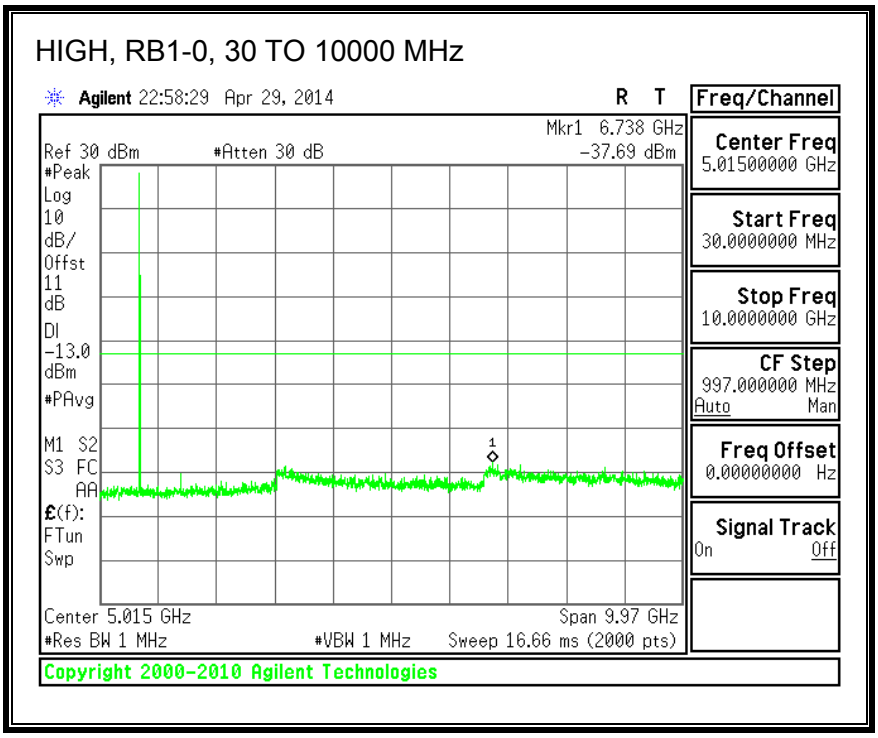
QPSK, (10.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz

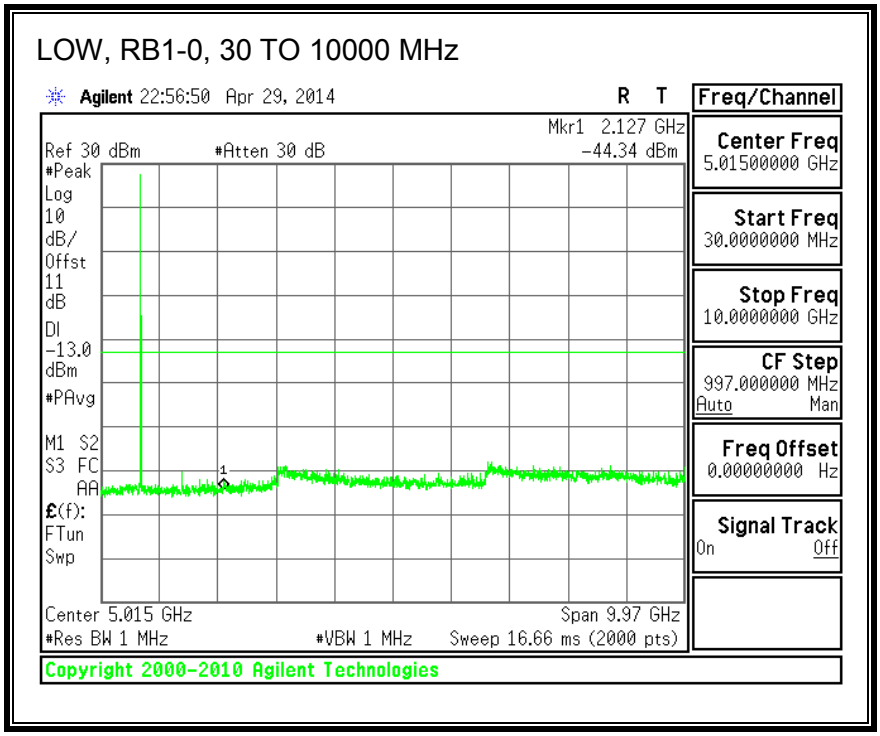


MID, RB1-0, 30 TO 10000 MHz

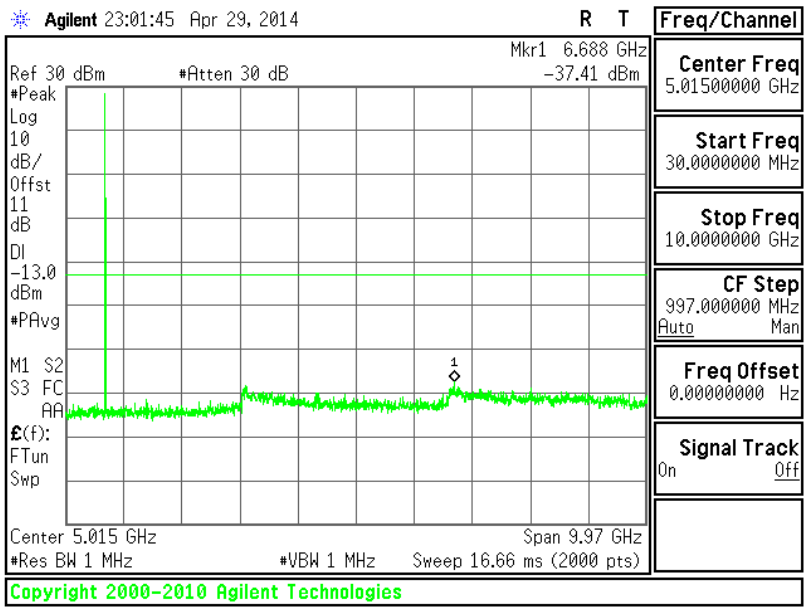




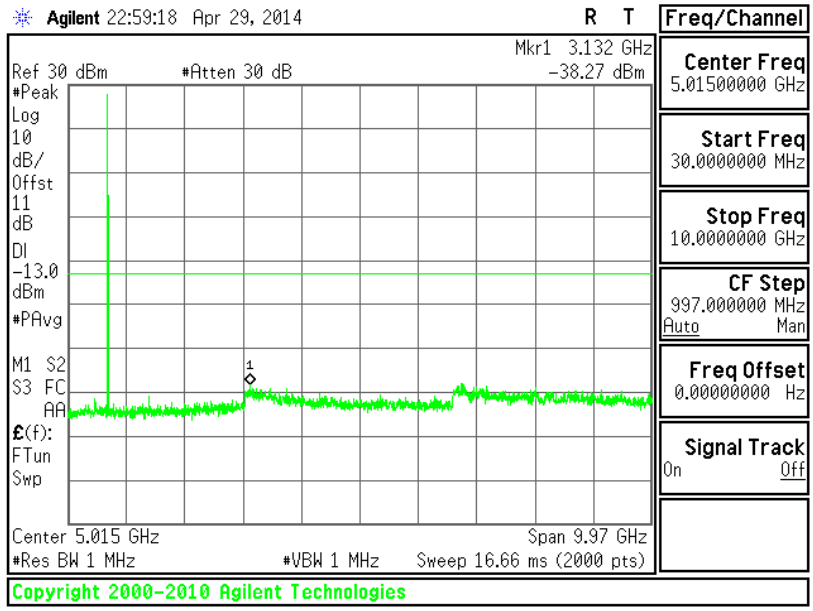
16QAM, (10.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 10000 MHz



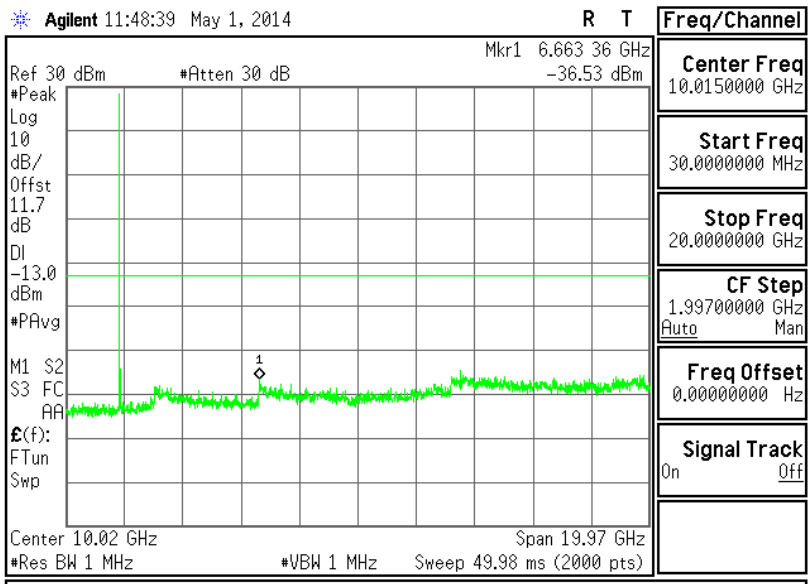
HIGH, RB1-0, 30 TO 10000 MHz



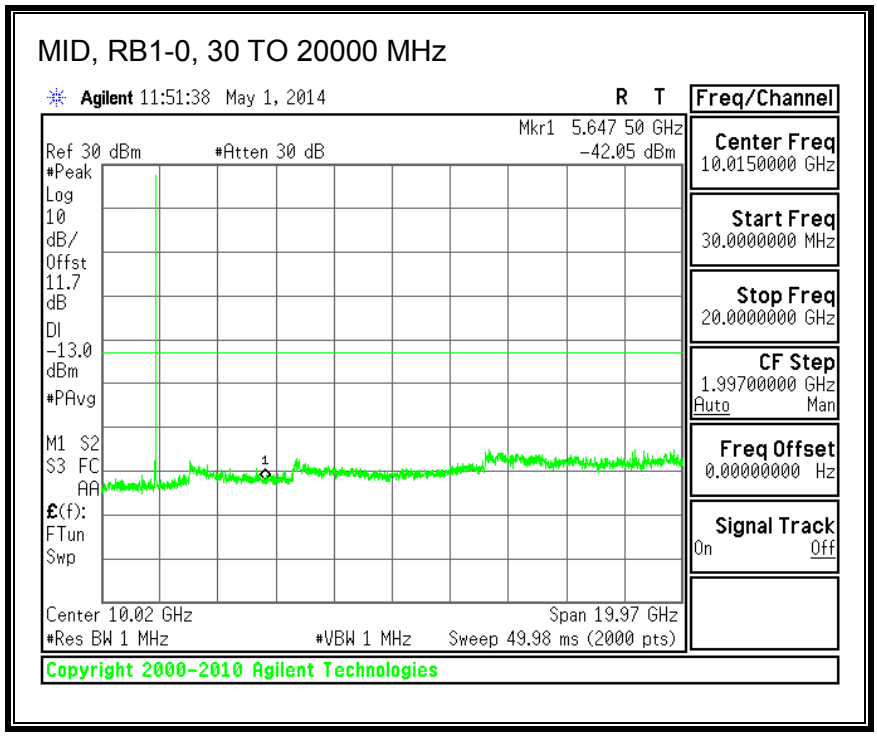
8.3.6. LTE BAND 25

QPSK, (1.4 MHz BAND WIDTH)

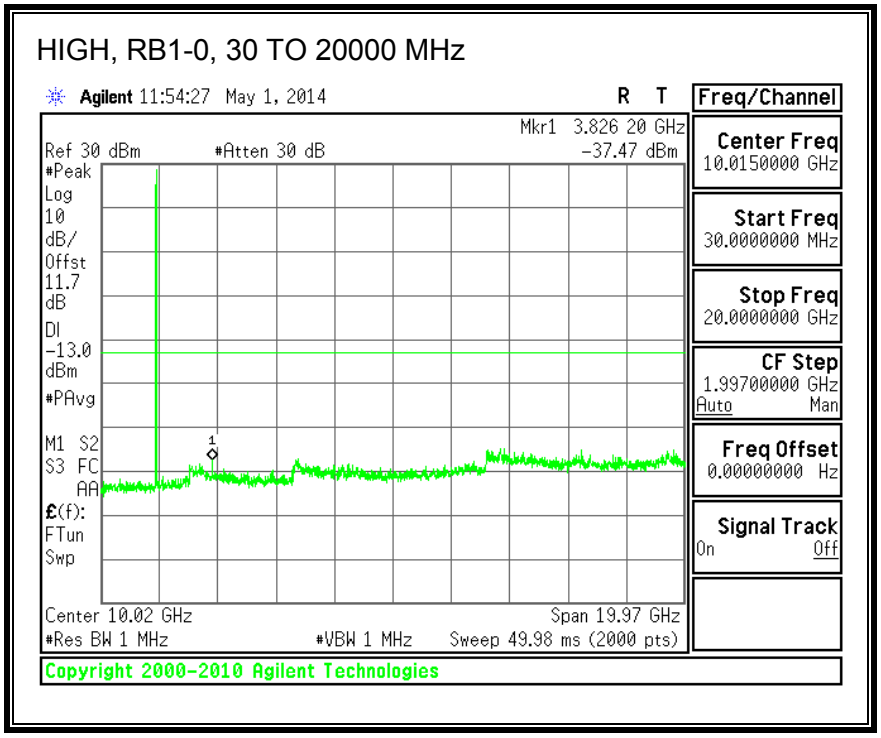
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

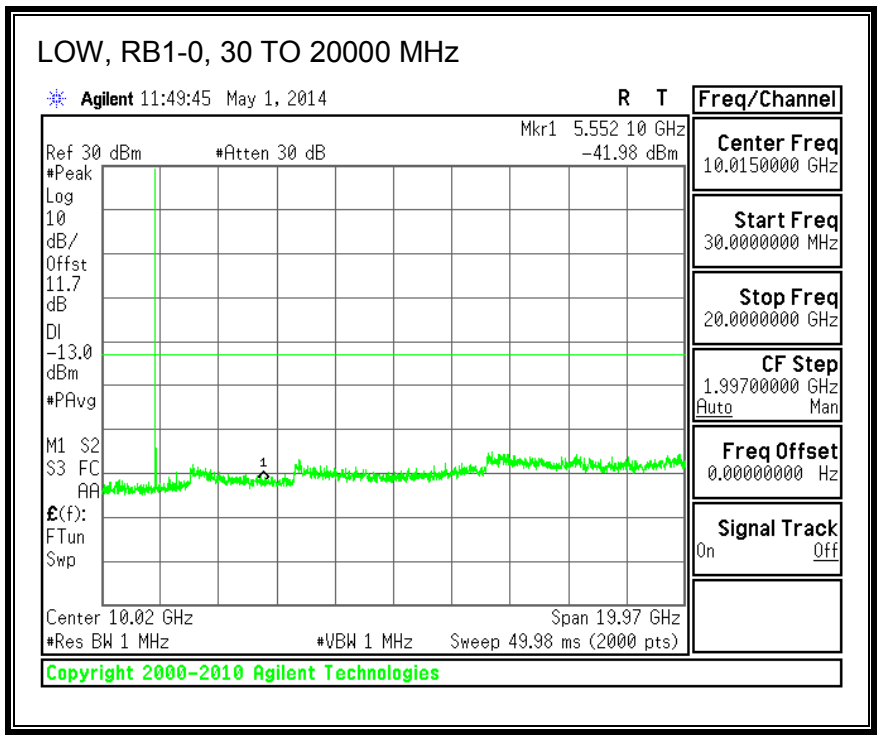


HIGH, RB1-0, 30 TO 20000 MHz

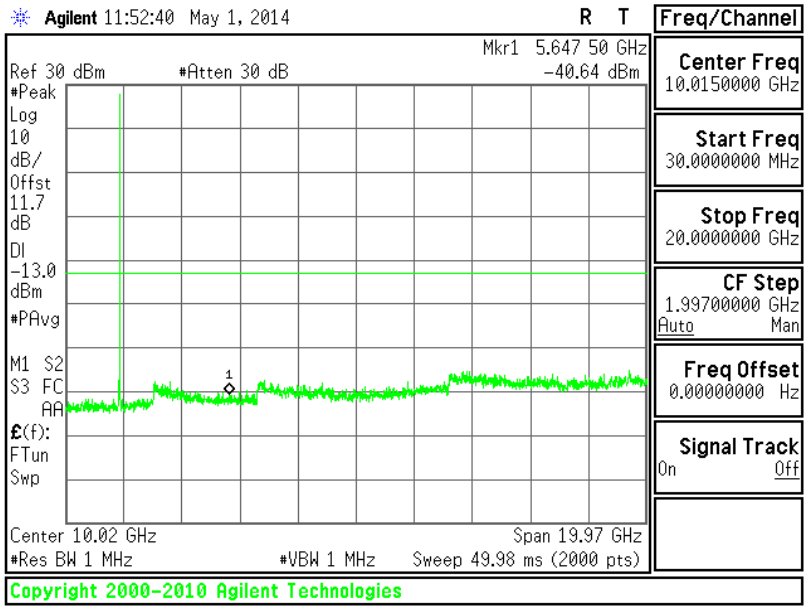


16QAM, (1.4 MHz BAND WIDTH)

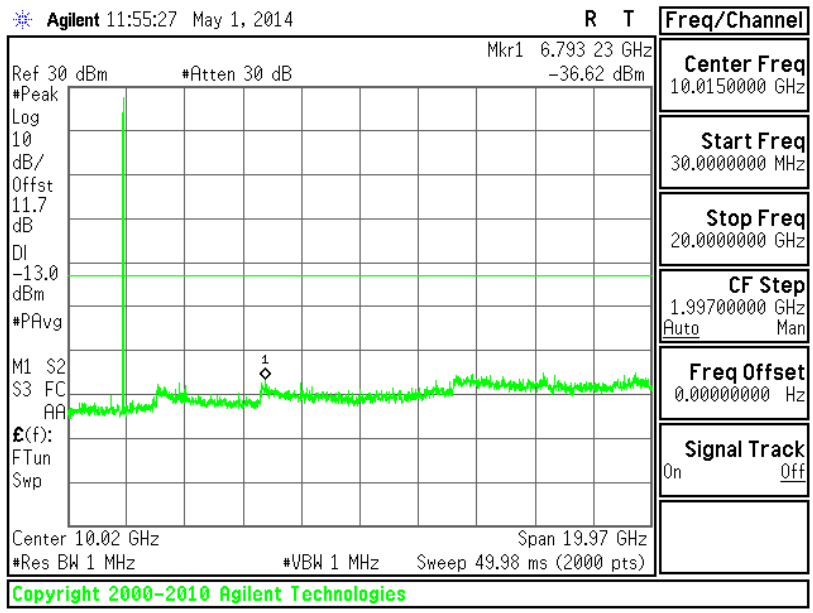
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

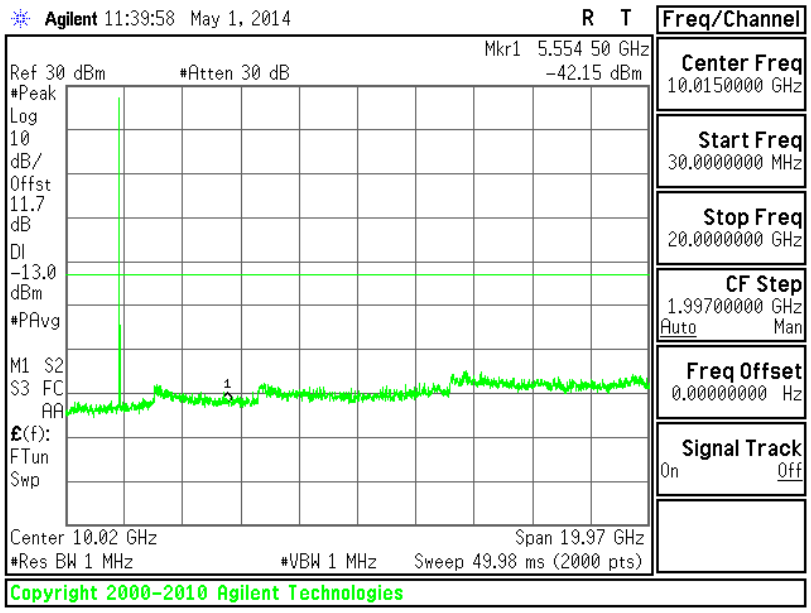


HIGH, RB1-0, 30 TO 20000 MHz

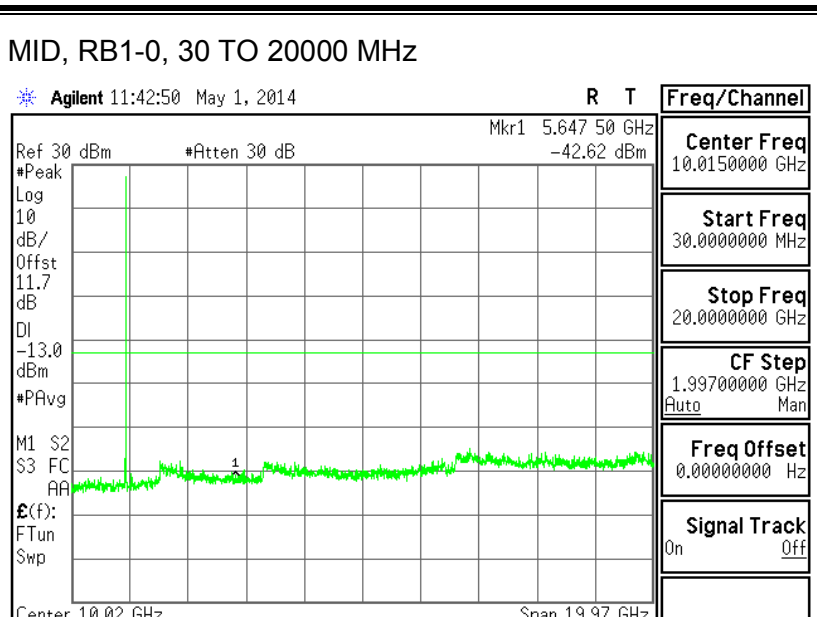


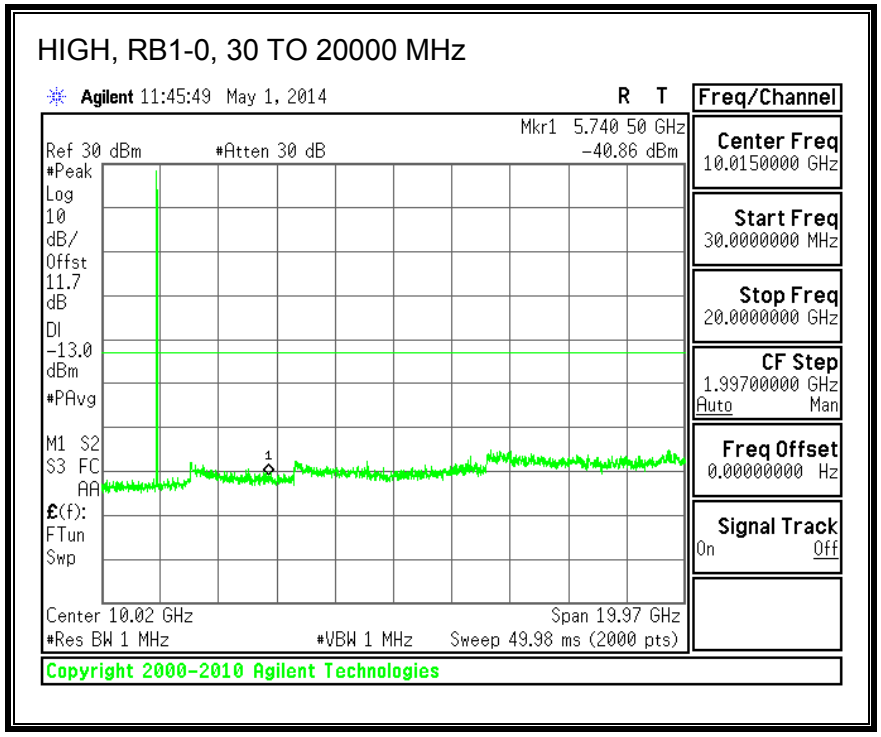
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz

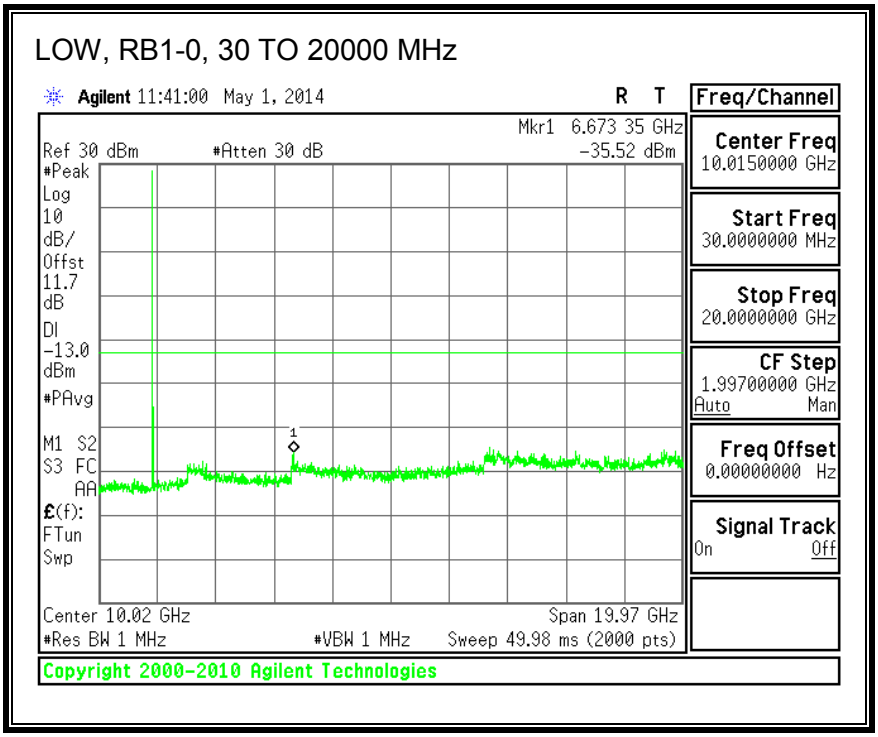


MID, RB1-0, 30 TO 20000 MHz

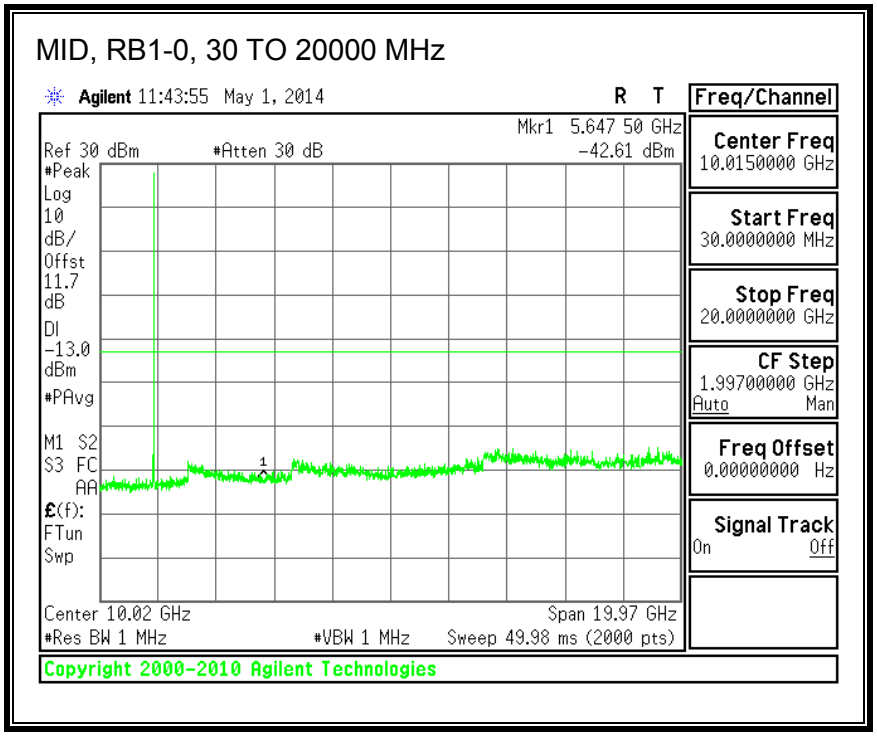




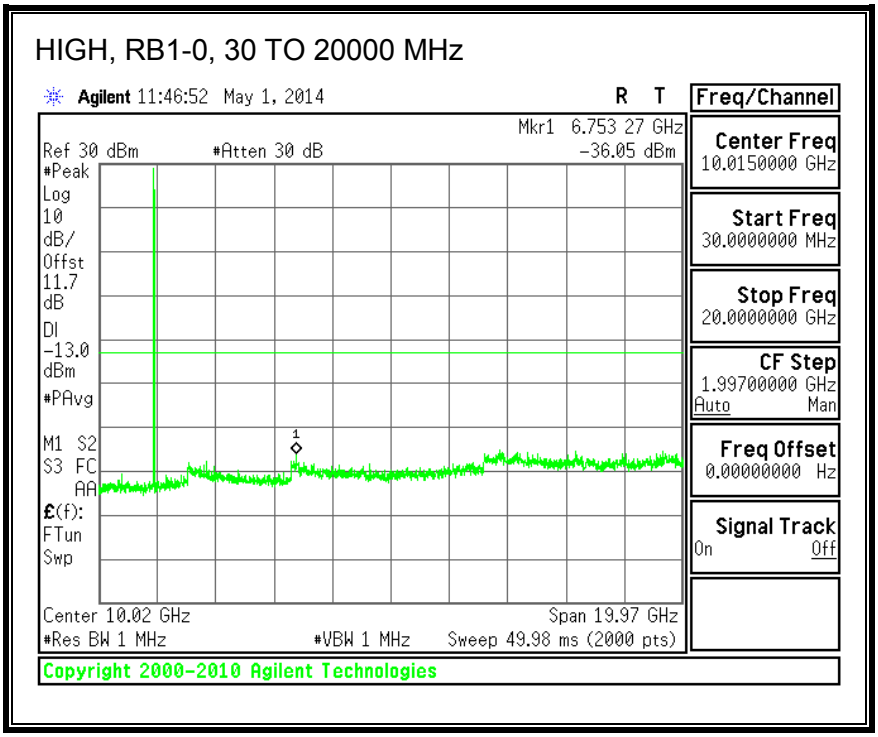
16QAM, (3.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz

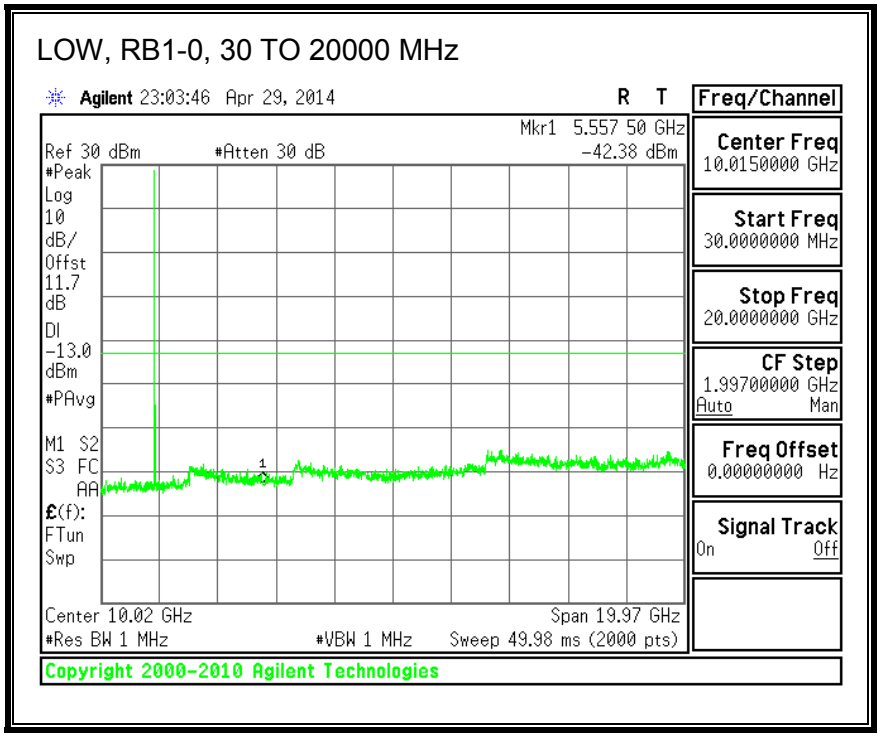


HIGH, RB1-0, 30 TO 20000 MHz

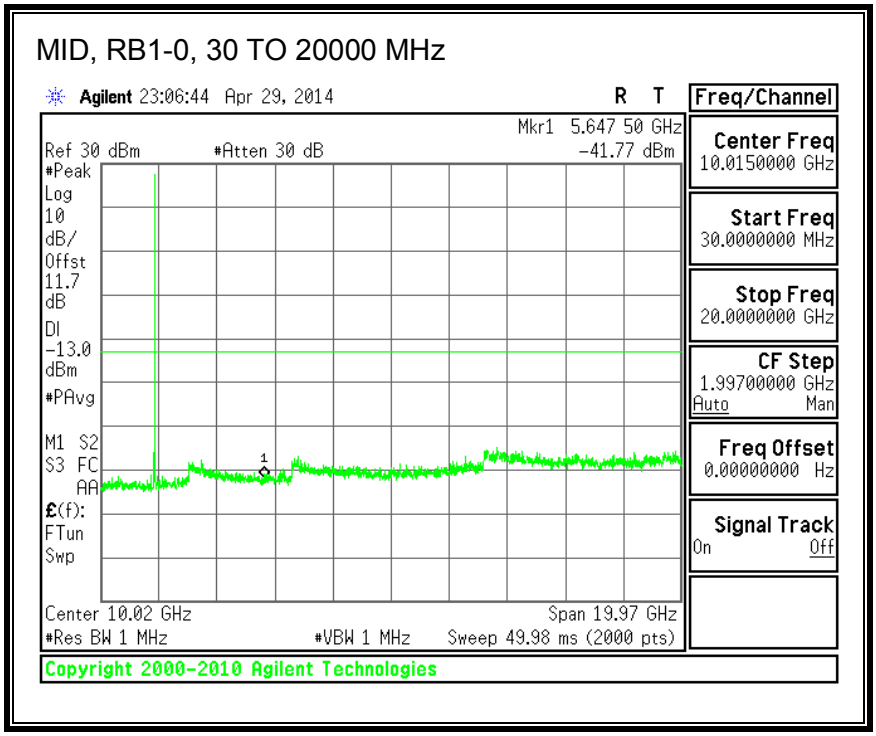


QPSK, (5.0 MHz BAND WIDTH)

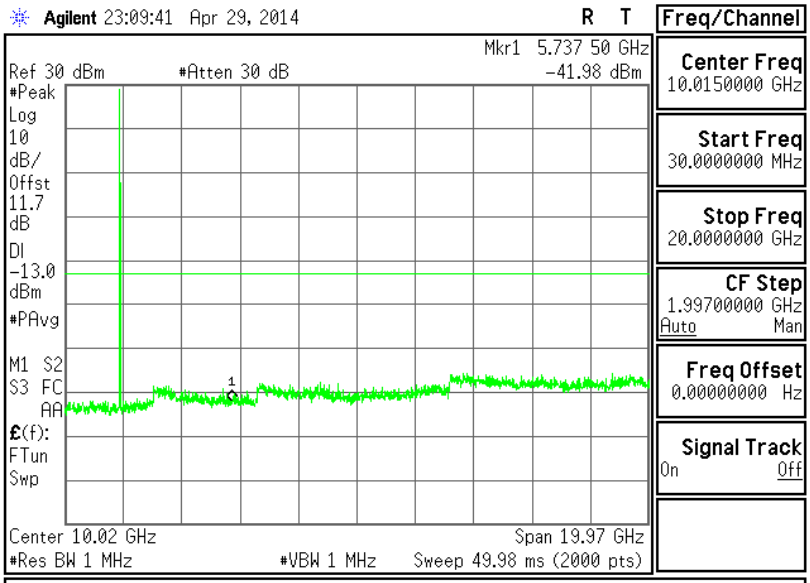
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

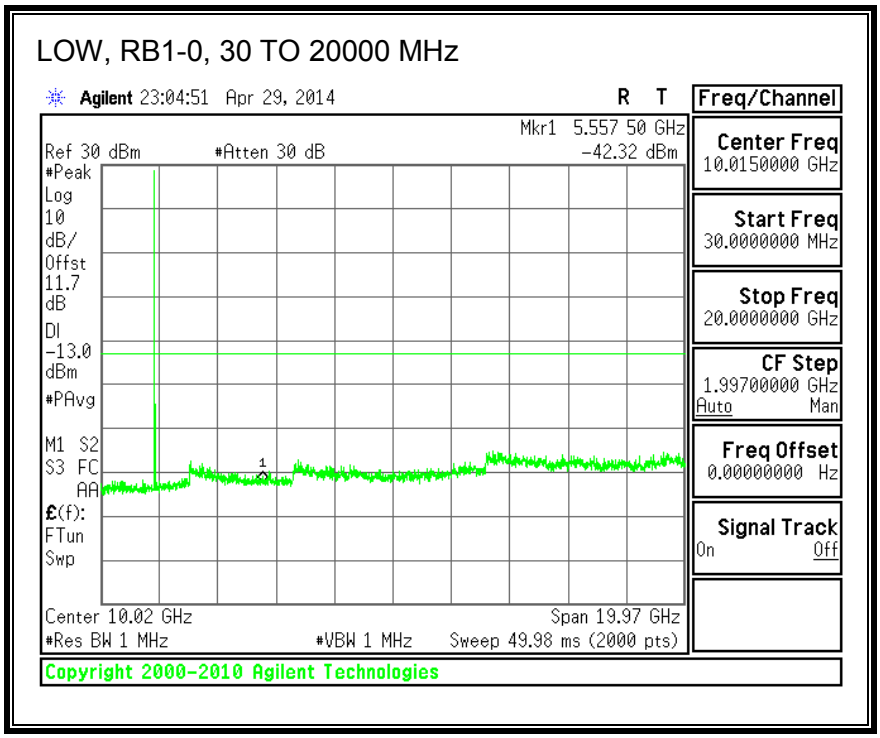


HIGH, RB1-0, 30 TO 20000 MHz

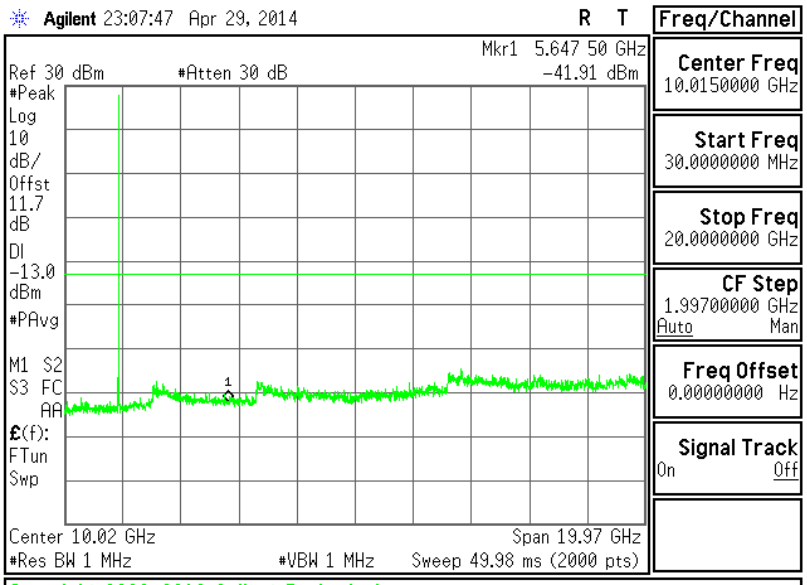


16QAM, (5.0 MHz BAND WIDTH)

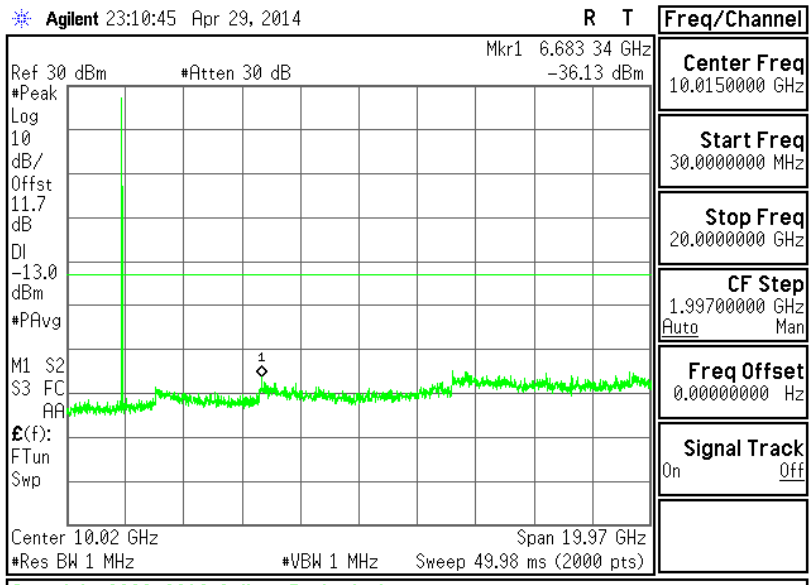
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

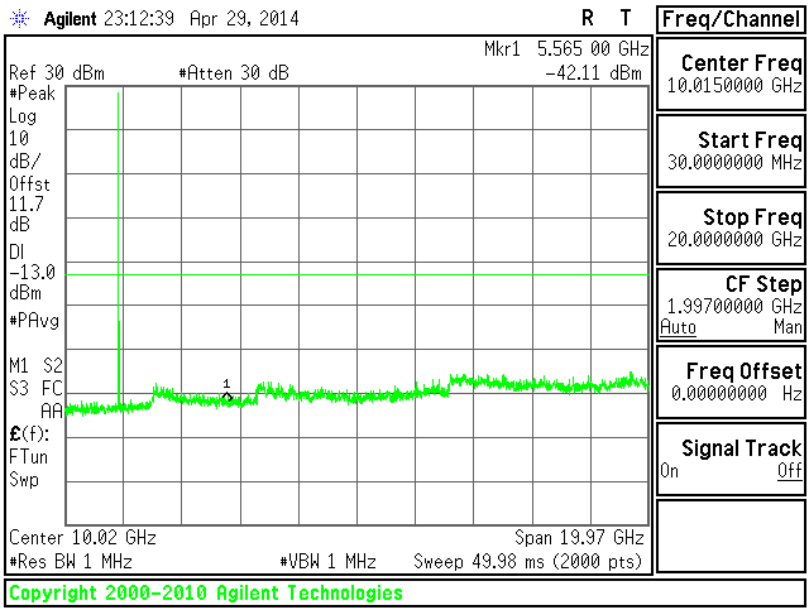


HIGH, RB1-0, 30 TO 20000 MHz

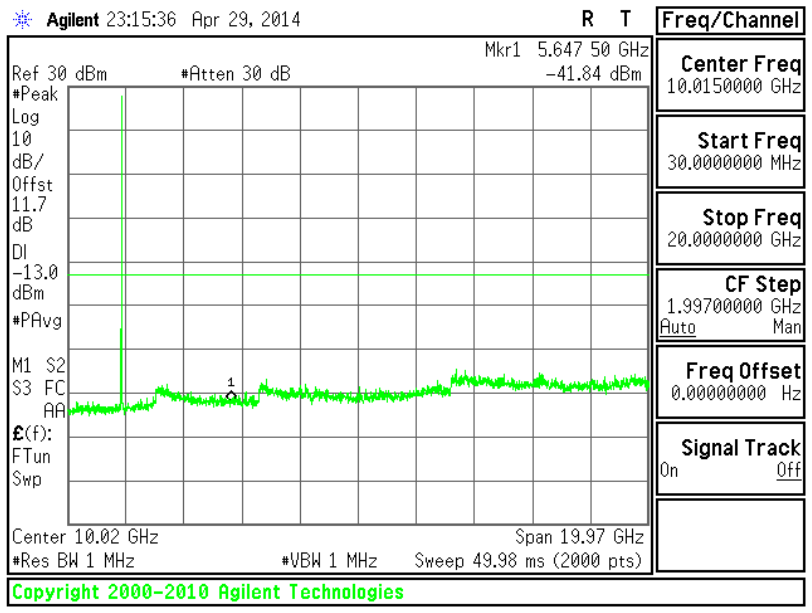


QPSK, (10.0 MHz BAND WIDTH)

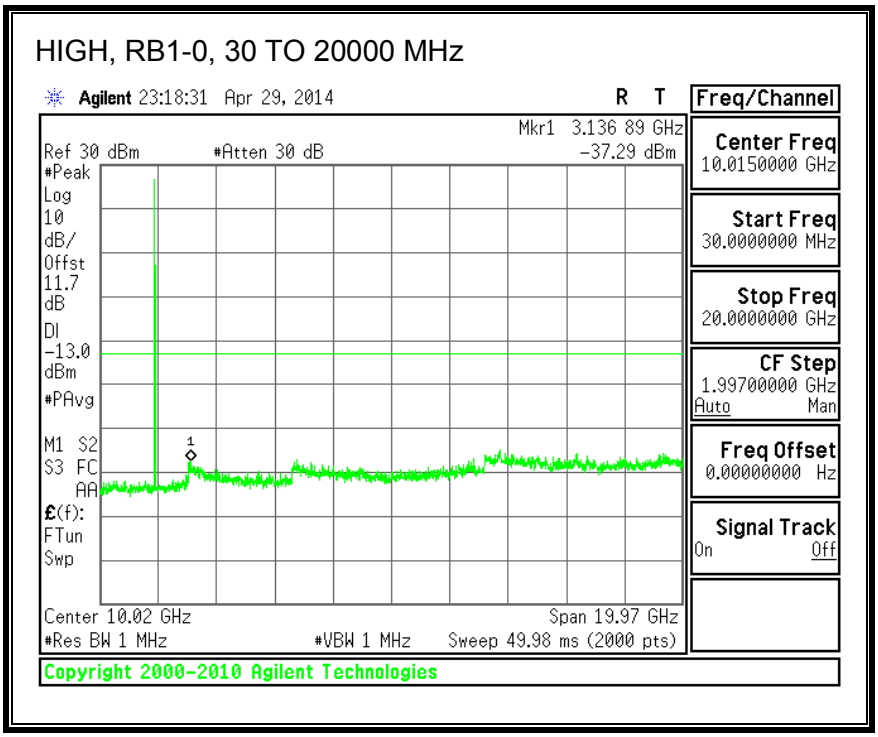
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

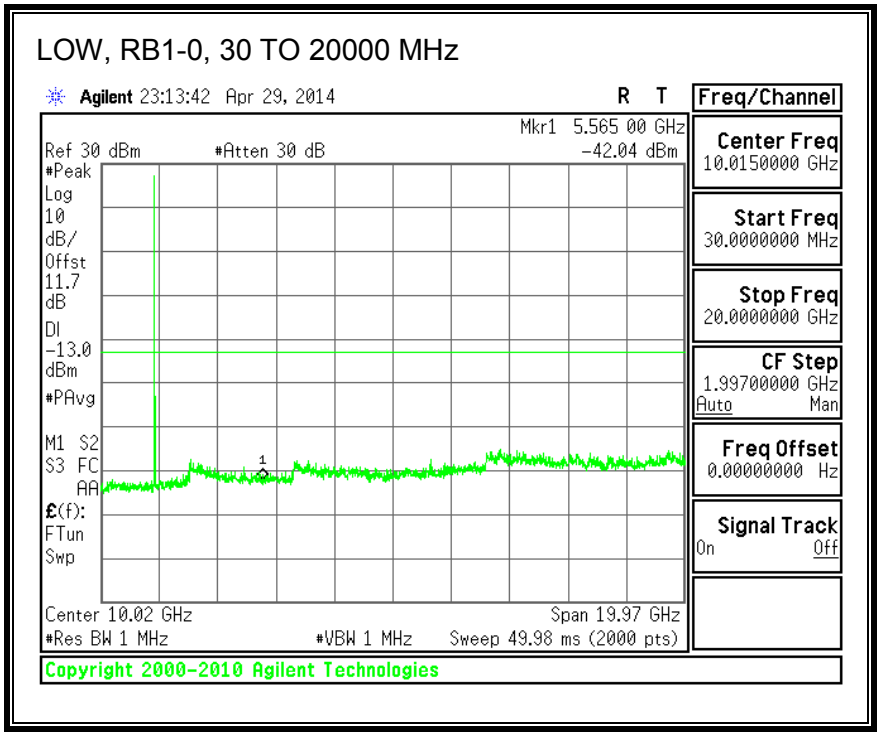


HIGH, RB1-0, 30 TO 20000 MHz

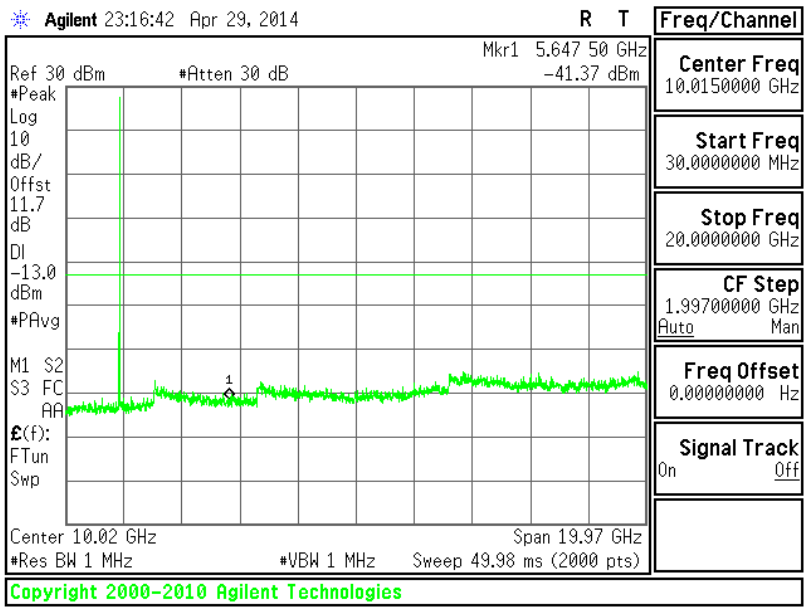


16QAM, (10.0 MHz BAND WIDTH)

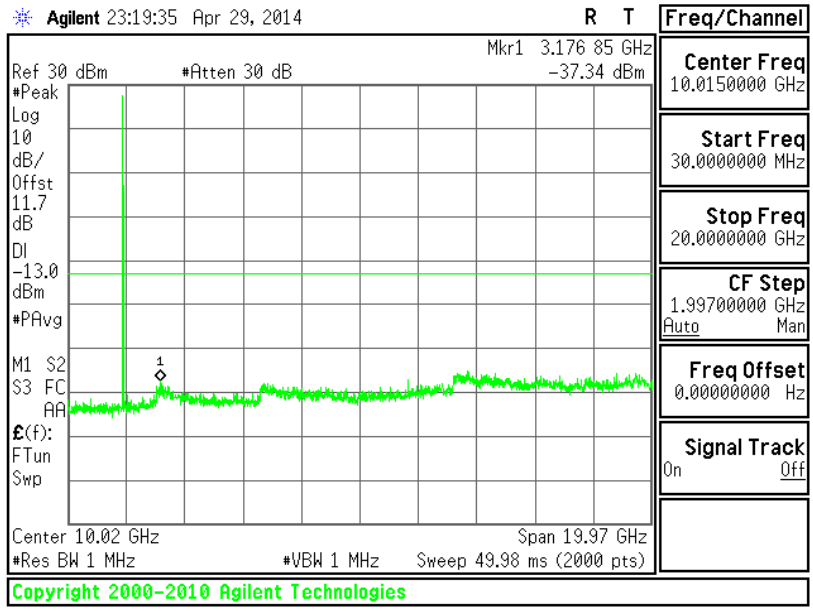
LOW, RB1-0, 30 TO 20000 MHz



MID, RB1-0, 30 TO 20000 MHz

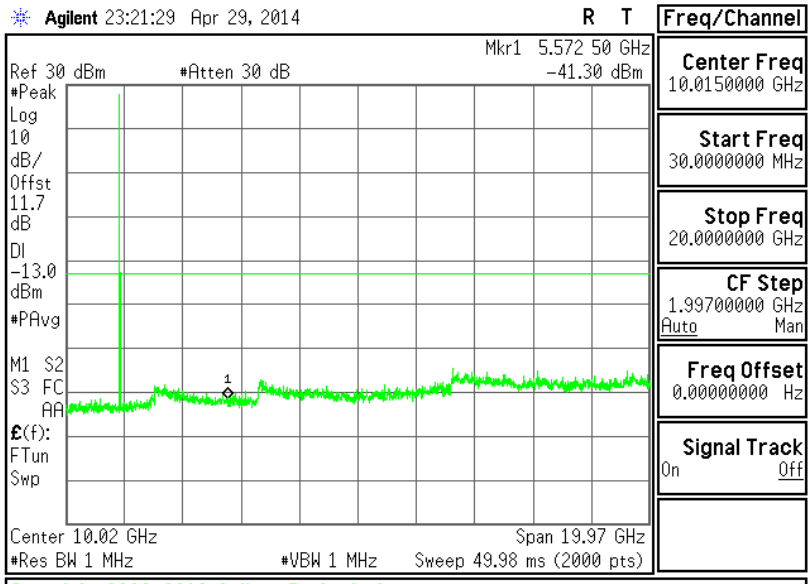


HIGH, RB1-0, 30 TO 20000 MHz

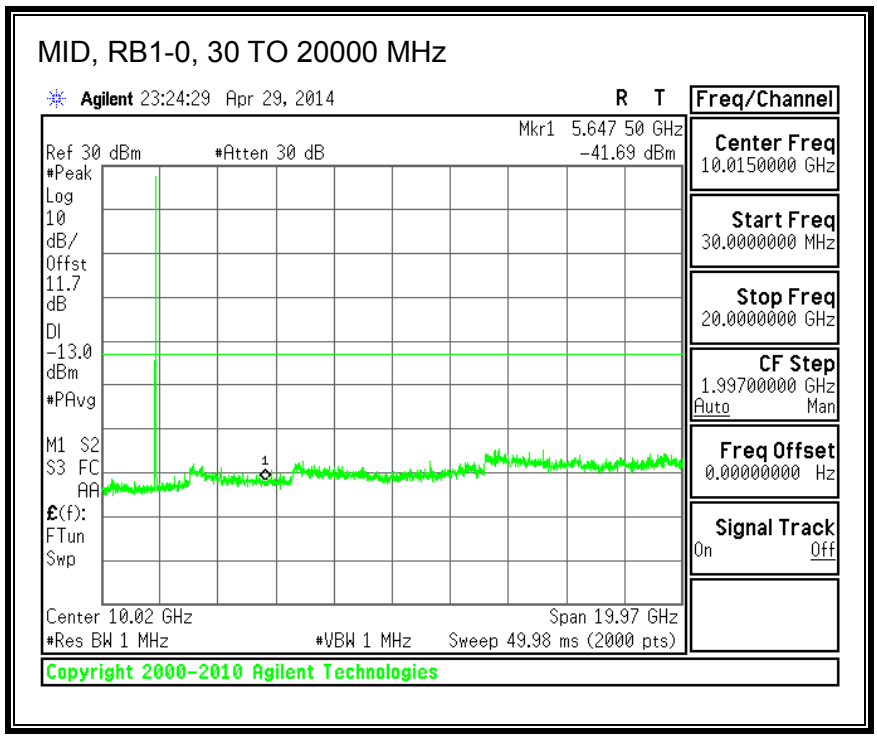


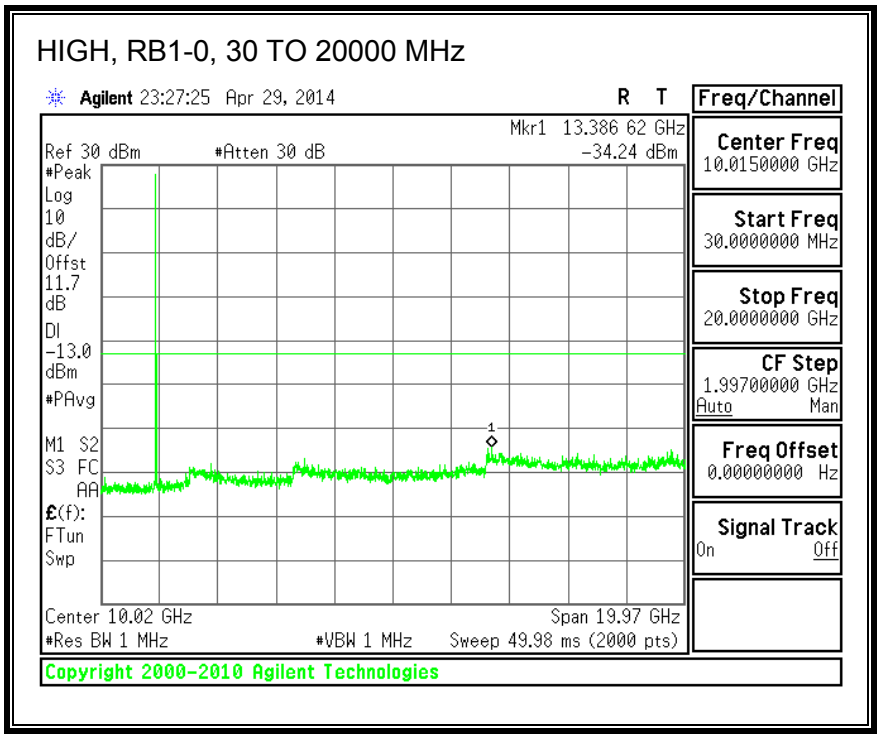
QPSK, (15.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz

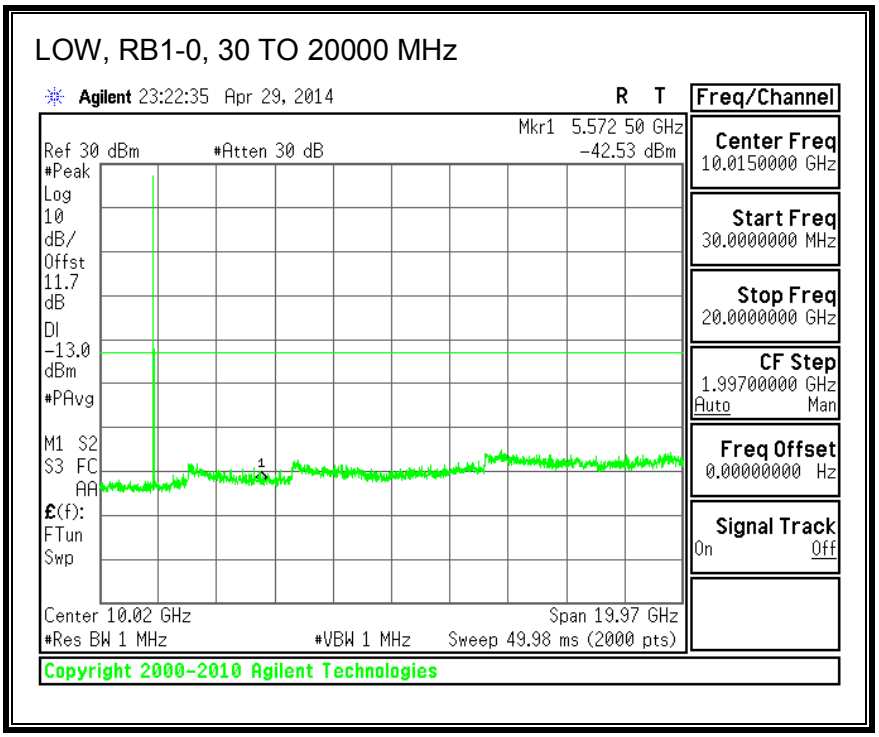


MID, RB1-0, 30 TO 20000 MHz

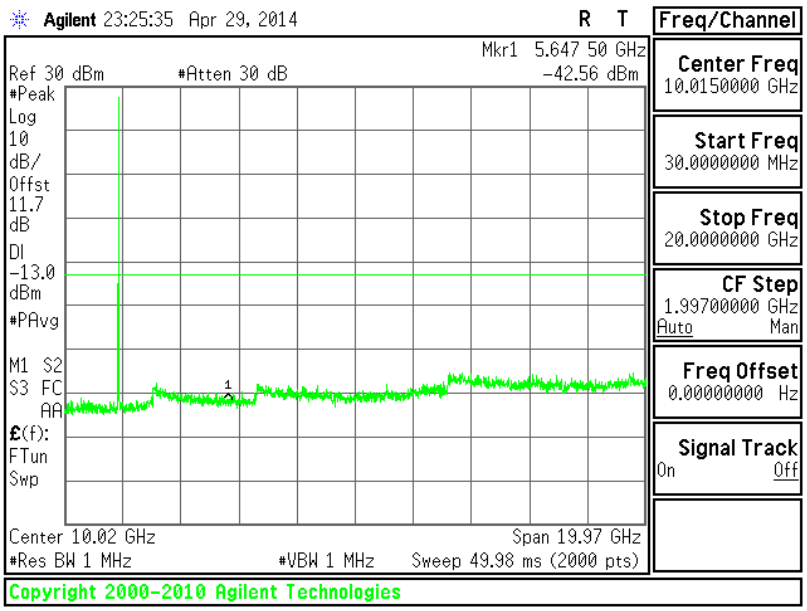




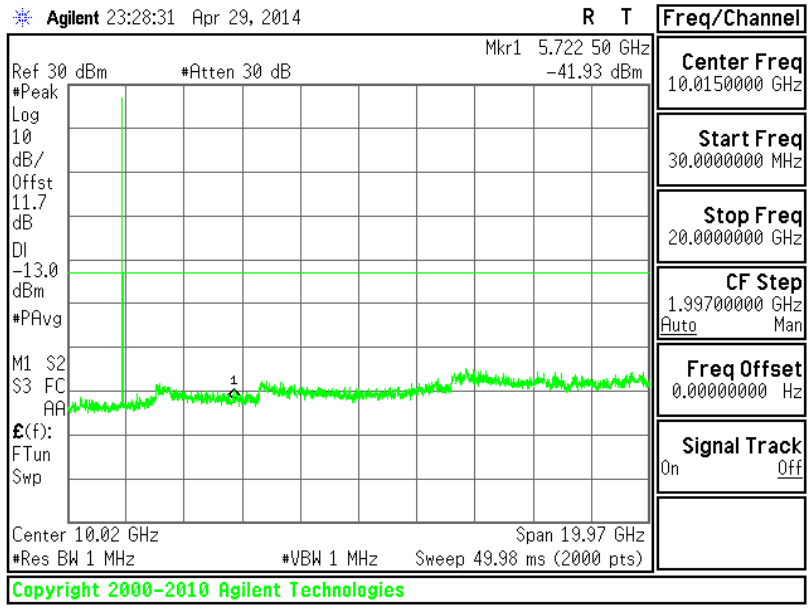
16QAM, (15.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz

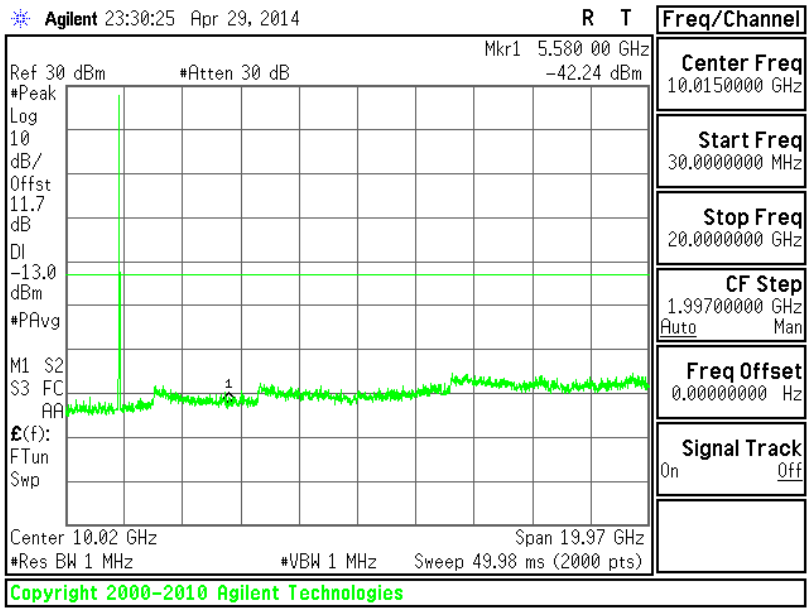


HGIH, RB1-0, 30 TO 20000 MHz

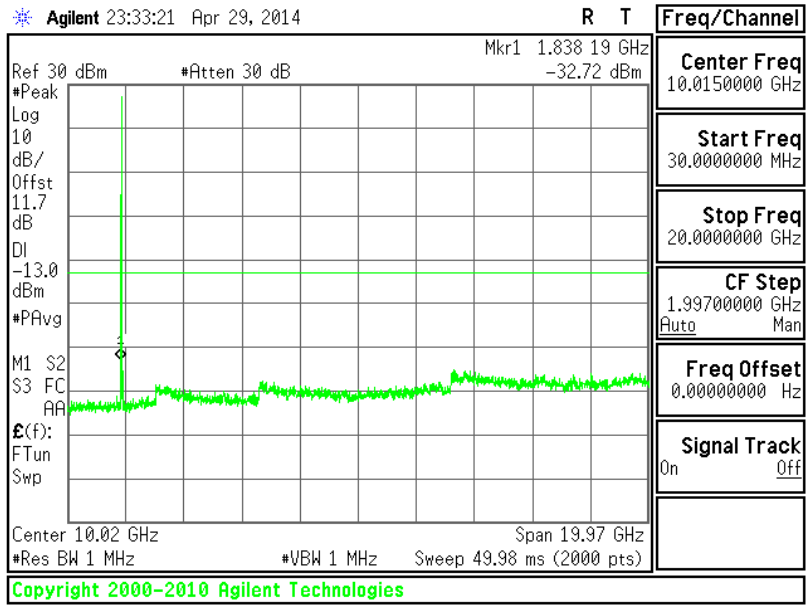


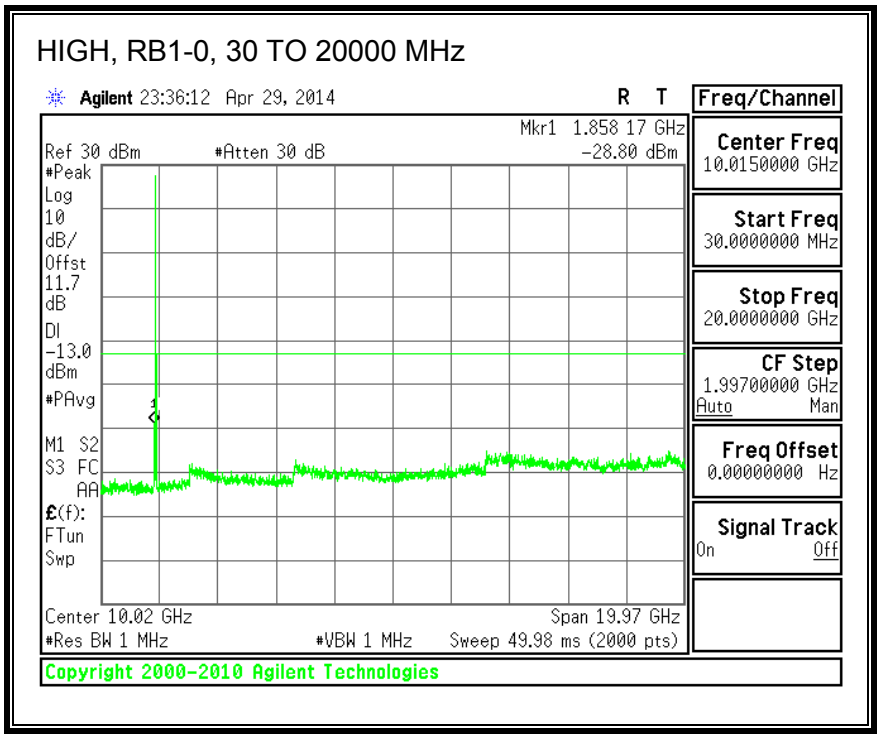
QPSK, (20.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 20000 MHz

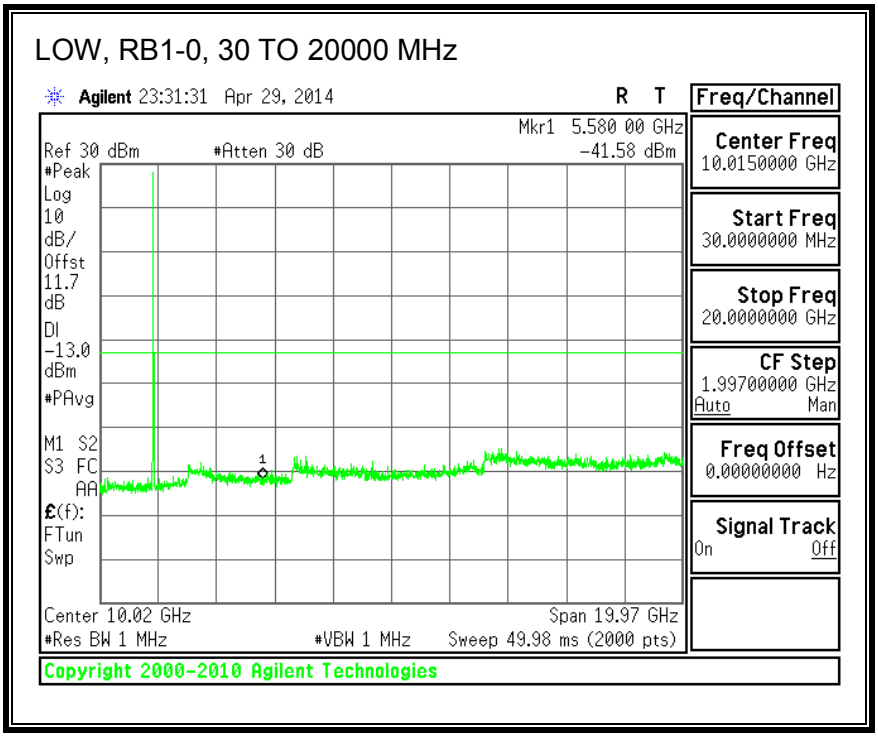


MID, RB1-0, 30 TO 20000 MHz

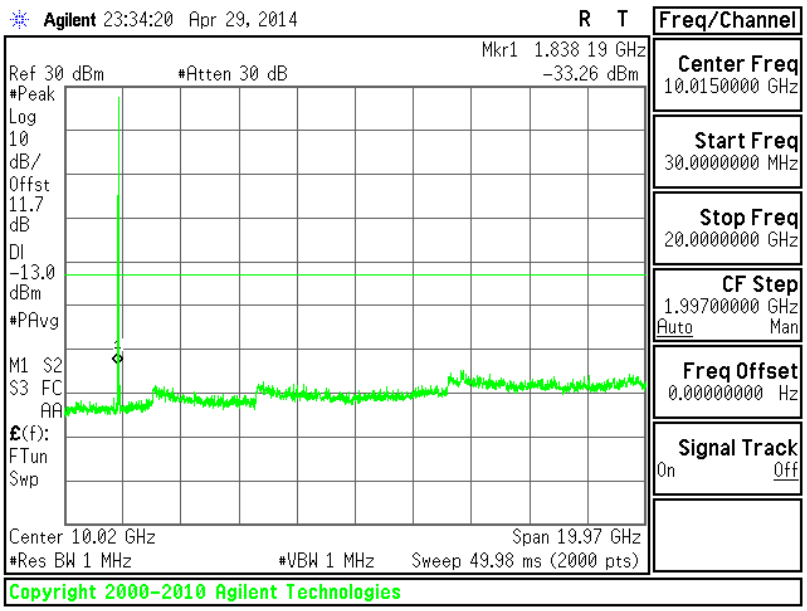




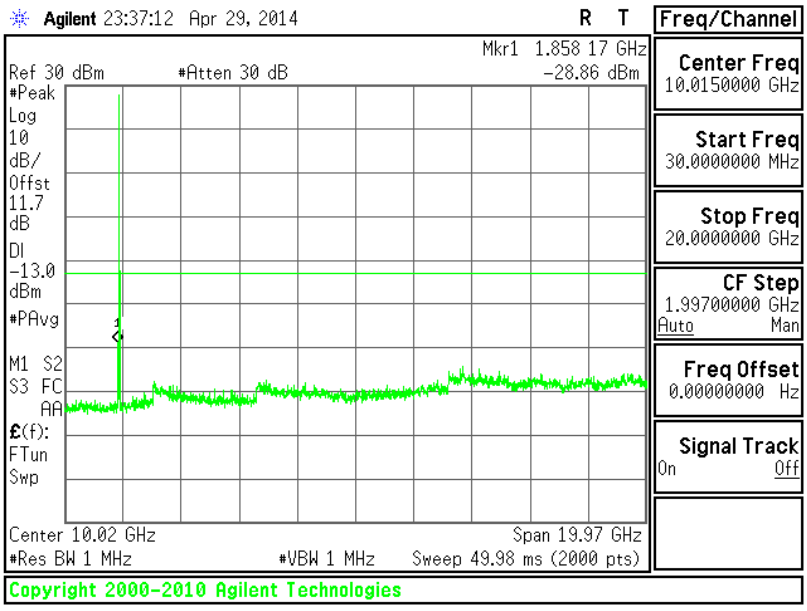
16QAM, (20.0 MHz BAND WIDTH)



MID, RB1-0, 30 TO 20000 MHz



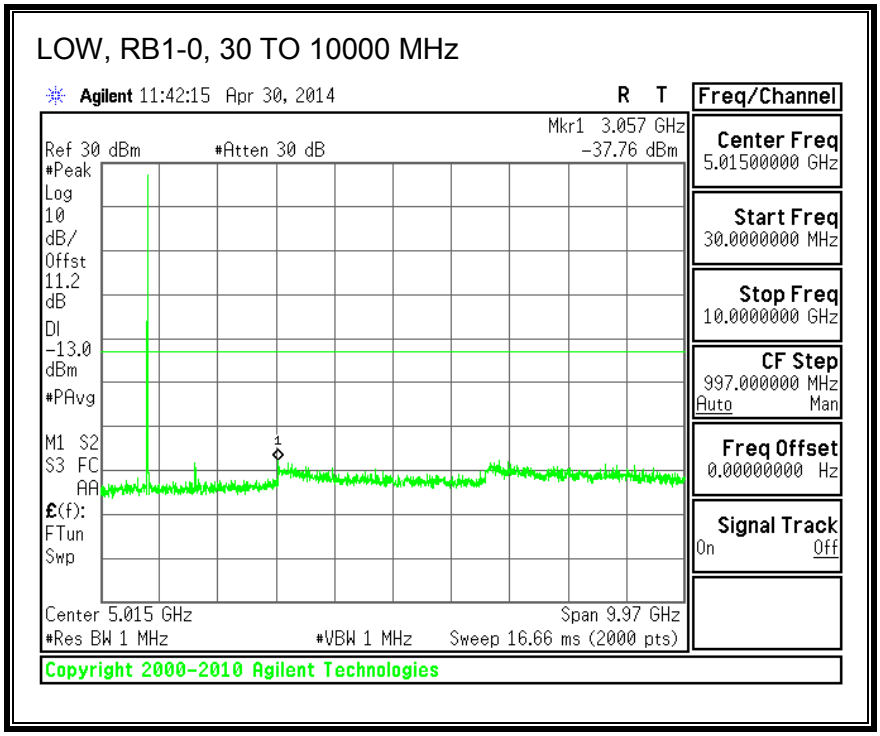
HIGH, RB1-0, 30 TO 20000 MHz



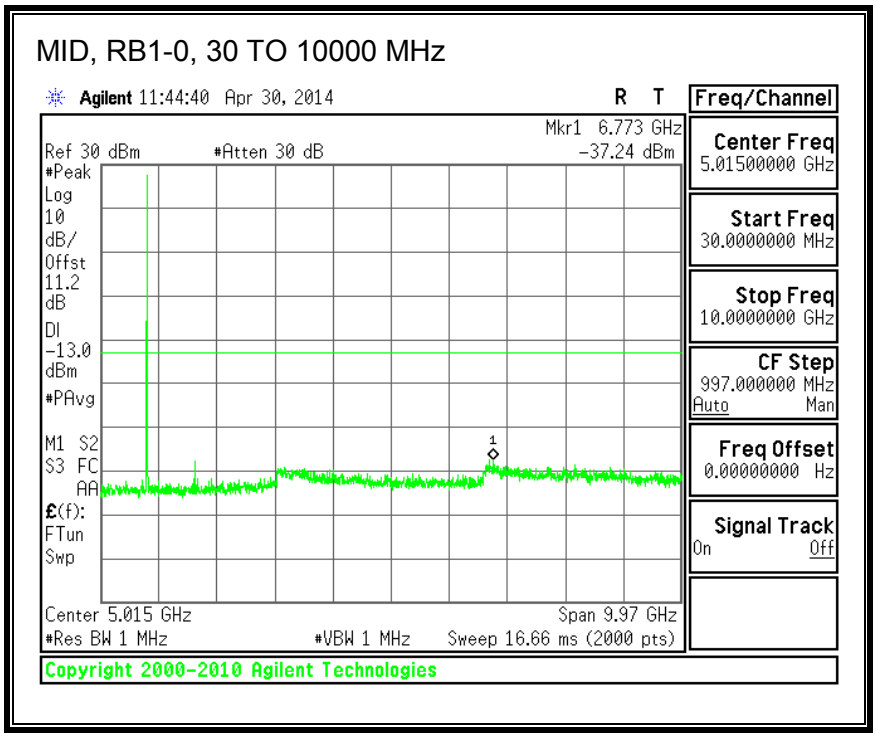
8.3.7. LTE BAND 26

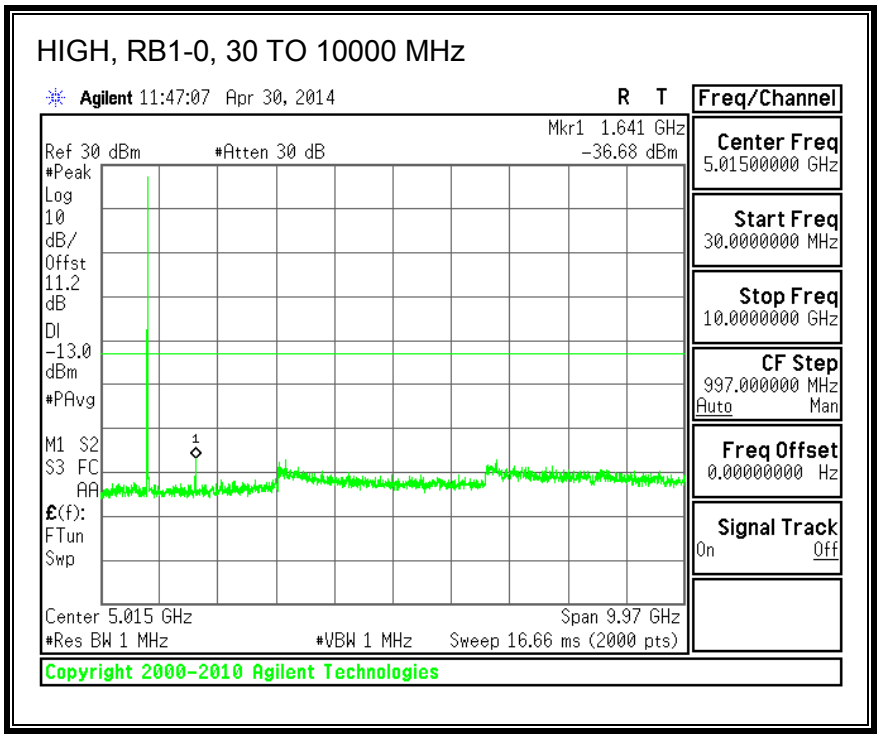
QPSK, (3.0 MHz BAND WIDTH)

LOW, RB1-0, 30 TO 10000 MHz

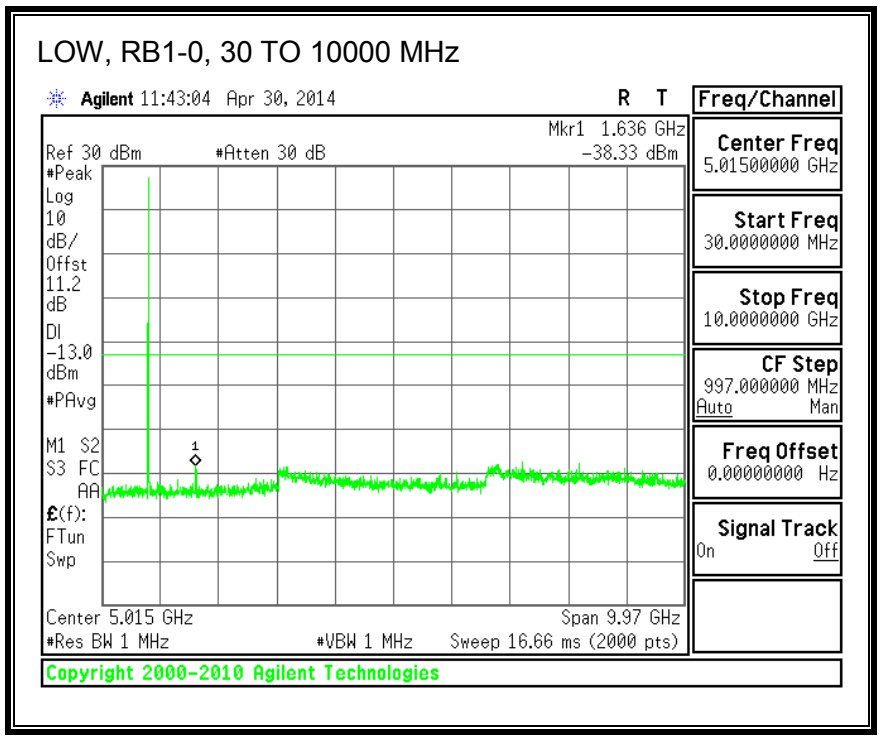


MID, RB1-0, 30 TO 10000 MHz

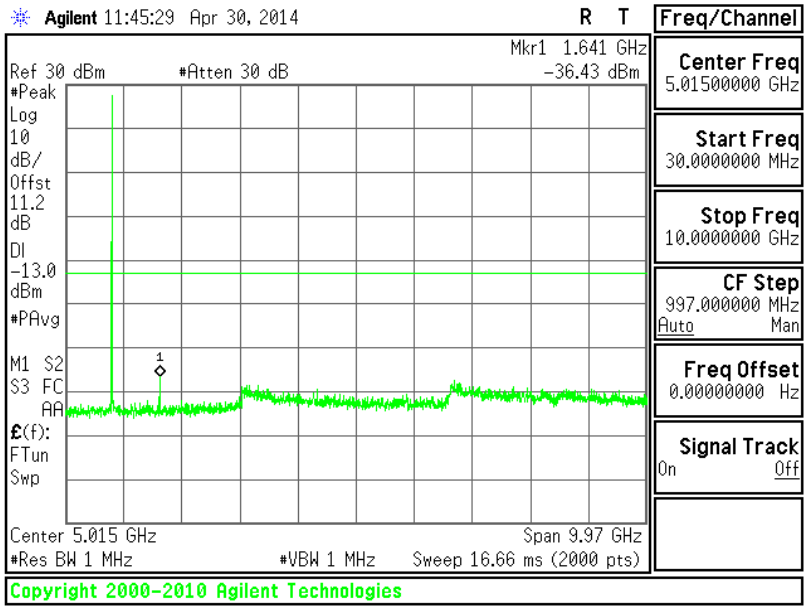




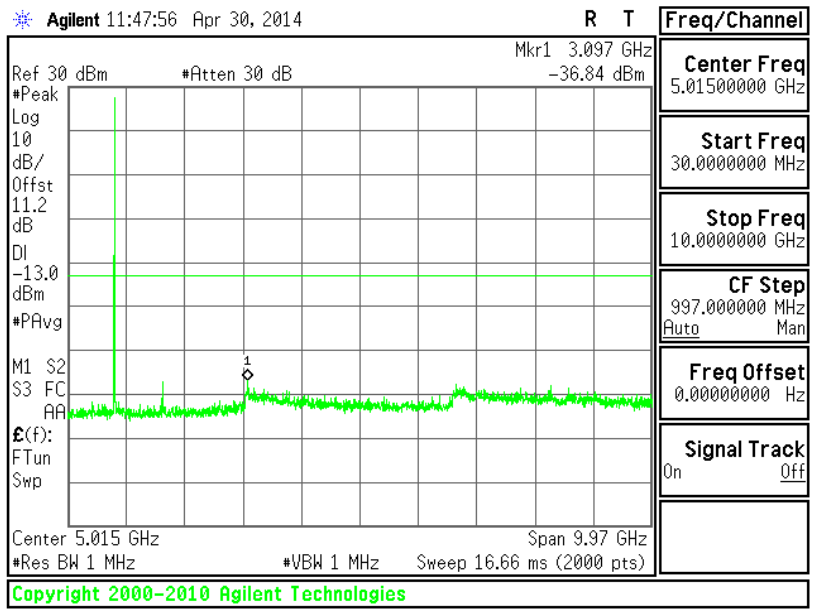
16QAM, (3.0 MHz BAND WIDTH)



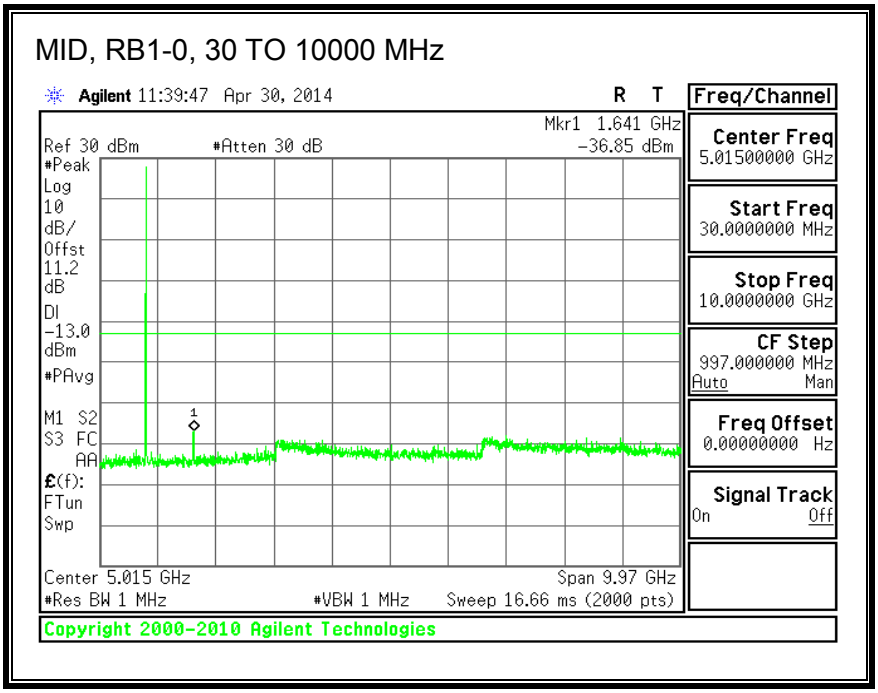
MID, RB1-0, 30 TO 10000 MHz



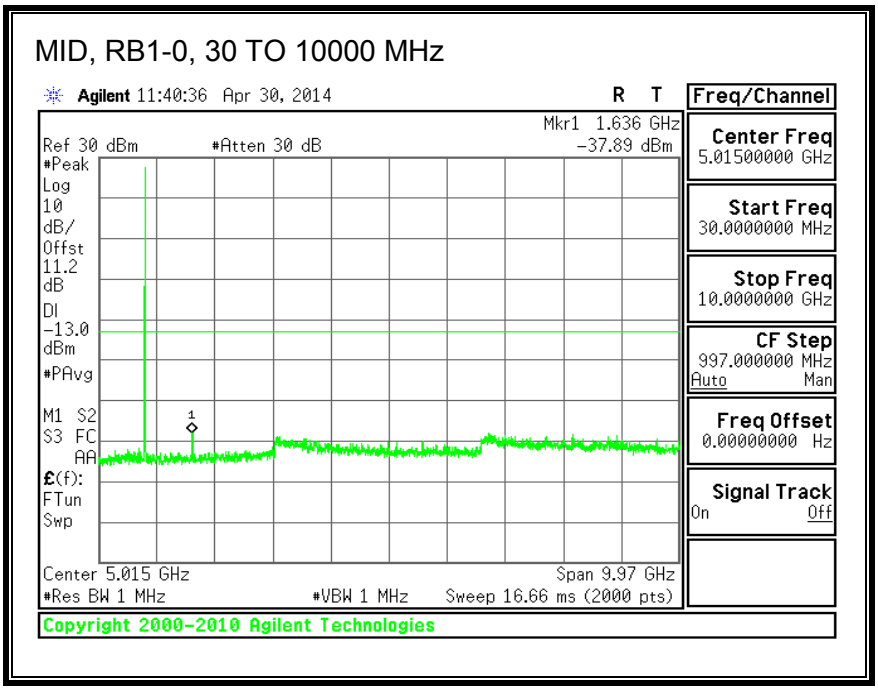
HIGH, RB1-0, 30 TO 10000 MHz



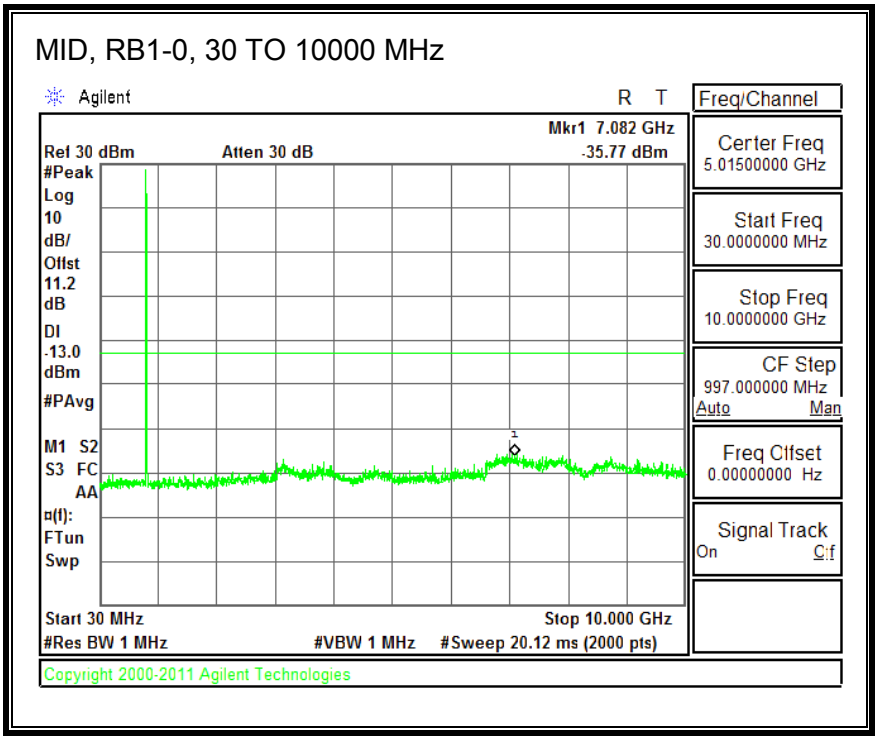
QPSK, (5.0 MHz BAND WIDTH)



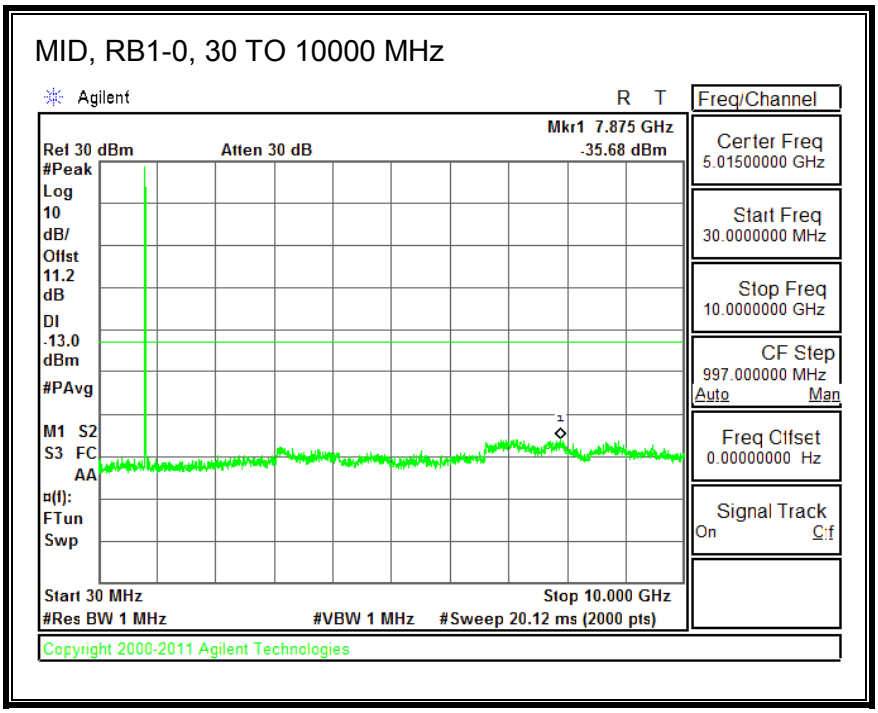
16QAM, (5.0 MHz BAND WIDTH)



QPSK, (10.0 MHz BAND WIDTH)



16QAM, (10.0 MHz BAND WIDTH)



8.4. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

§22.355 & RSS-132 4.3 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

RSS-133 6.3 - 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

RESULTS

See the following pages.

8.4.1. LTE BAND 2

QPSK, (10 MHz BAND WIDTH)

Limit		1850	1910	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1851.0032	1908.9923		
Extreme (50C)		1851.0032	1908.9923	-6.4	-0.003
Extreme (40C)		1851.0032	1908.9923	-7.6	-0.004
Extreme (30C)		1851.0032	1908.9923	-7.5	-0.004
Extreme (10C)		1851.0032	1908.9923	-5.6	-0.003
Extreme (0C)		1851.0032	1908.9923	-8.0	-0.004
Extreme (-10C)		1851.0032	1908.9923	-8.2	-0.004
Extreme (-20C)		1851.0032	1908.9923	-7.0	-0.004
Extreme (-30C)		1851.0032	1908.9923	-5.8	-0.003
25C	10%	1851.0032	1908.9923	-5.0	-0.003
	-10%	1851.0032	1908.9923	9.3	0.005
	End Point	1851.0032	1908.9923	8.8	0.005

16QAM, (10MHz BAND WIDTH)

Limit		1850	1910	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1851.0120	1908.9923		
Extreme (50C)		1851.0119	1908.9923	-11.0	-0.006
Extreme (40C)		1851.0120	1908.9923	-7.0	-0.004
Extreme (30C)		1851.0120	1908.9923	-7.6	-0.004
Extreme (10C)		1851.0120	1908.9923	-7.2	-0.004
Extreme (0C)		1851.0120	1908.9923	-5.5	-0.003
Extreme (-10C)		1851.0120	1908.9923	-10.0	-0.005
Extreme (-20C)		1851.0120	1908.9923	-4.8	-0.003
Extreme (-30C)		1851.0120	1908.9923	-7.5	-0.004
25C	10%	1851.0120	1908.9923	-8.3	-0.004
	-10%	1851.0119	1908.9923	-10.6	-0.006
	End Point	1851.0120	1908.9923	-9.4	-0.005

8.4.2. LTE BAND 4

QPSK, (10 MHz BAND WIDTH)

Limit		1710	1755	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1711.0065	1753.9949		
Extreme (50C)		1711.0065	1753.9949	-8.3	-0.005
Extreme (40C)		1711.0065	1753.9949	-8.0	-0.005
Extreme (30C)		1711.0065	1753.9949	-7.1	-0.004
Extreme (10C)		1711.0065	1753.9949	-7.9	-0.005
Extreme (0C)		1711.0065	1753.9949	-7.9	-0.005
Extreme (-10C)		1711.0065	1753.9949	5.2	0.003
Extreme (-20C)		1711.0065	1753.9949	-6.8	-0.004
Extreme (-30C)		1711.0065	1753.9949	-5.5	-0.003
25C	10%	1711.0065	1753.9949	-6.2	-0.004
	-10%	1711.0065	1753.9949	-6.5	-0.004
	End Point	1711.0065	1753.9949	-5.5	-0.003

16QAM, (10MHz BAND WIDTH)

Limit		1710	1755	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (25C)	Normal	1711.0068	1753.9968		
Extreme (50C)		1711.0068	1753.9968	-7.2	-0.004
Extreme (40C)		1711.0068	1753.9968	-12.0	-0.007
Extreme (30C)		1711.0068	1753.9968	-8.3	-0.005
Extreme (10C)		1711.0068	1753.9968	-6.8	-0.004
Extreme (0C)		1711.0068	1753.9968	-7.0	-0.004
Extreme (-10C)		1711.0068	1753.9968	-7.3	-0.004
Extreme (-20C)		1711.0068	1753.9968	-9.0	-0.005
Extreme (-30C)		1711.0068	1753.9968	-5.2	-0.003
25C	10%	1711.0068	1753.9968	-9.5	-0.005
	-10%	1711.0068	1753.9968	-7.8	-0.004
	End Point	1711.0068	1753.9968	-8.4	-0.005

8.4.3. LTE BAND 5

QPSK, (10 MHz BAND WIDTH)

Limit		824	849	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		824.4964	848.5041		
Extreme (50C)		824.4964	848.5041	-4.2	-0.005
Extreme (40C)		824.4964	848.5041	-7.4	-0.009
Extreme (30C)		824.4964	848.5041	-5.0	-0.006
Extreme (10C)	Normal	824.4964	848.5041	3.2	0.004
Extreme (0C)		824.4964	848.5041	-3.8	-0.005
Extreme (-10C)		824.4964	848.5041	5.2	0.006
Extreme (-20C)		824.4964	848.5041	4.4	0.005
Extreme (-30C)		824.4964	848.5041	3.7	0.004
25C	10%	824.4964	848.5041	-3.6	-0.004
	-10%	824.4964	848.5041	-4.1	-0.005
	End Point	824.4964	848.5041	-3.4	-0.004

16QAM, (10MHz BAND WIDTH)

Limit		824	849	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		824.4973	848.4921		
Extreme (50C)		824.4973	848.4921	-6.0	-0.007
Extreme (40C)		824.4973	848.4921	-6.9	-0.008
Extreme (30C)		824.4973	848.4921	-3.7	-0.004
Extreme (10C)	Normal	824.4973	848.4921	-6.0	-0.007
Extreme (0C)		824.4973	848.4921	-6.2	-0.007
Extreme (-10C)		824.4973	848.4921	3.8	0.004
Extreme (-20C)		824.4973	848.4921	-4.2	-0.005
Extreme (-30C)		824.4973	848.4921	-5.6	-0.007
25C	10%	824.4973	848.4921	2.4	0.003
	-10%	824.4973	848.4921	-5.5	-0.007
	End Point	824.4973	848.4921	4.1	0.005

8.4.4. LTE BAND 13

QPSK, (10 MHz BAND WIDTH)

Limit		777	787	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	777.4995	786.4963		
Extreme (50C)		777.4995	786.4963	-4.2	-0.005
Extreme (40C)		777.4995	786.4963	-5.0	-0.006
Extreme (30C)		777.4995	786.4963	-4.0	-0.005
Extreme (10C)		777.4995	786.4963	-5.7	-0.007
Extreme (0C)		777.4995	786.4963	3.1	0.004
Extreme (-10C)		777.4995	786.4963	-3.7	-0.005
Extreme (-20C)		777.4995	786.4963	3.8	0.005
Extreme (-30C)		777.4995	786.4963	-3.3	-0.004
25C	10%	777.4995	786.4963	4.2	0.005
	-10%	777.4995	786.4963	-3.2	-0.004
	End Point	777.4995	786.4963	1.7	0.002

16QAM, (10MHz BAND WIDTH)

Limit		777	787	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	777.5017	786.4963		
Extreme (50C)		777.5017	786.4963	3.7	0.005
Extreme (40C)		777.5017	786.4963	-4.0	-0.005
Extreme (30C)		777.5016	786.4963	-6.8	-0.009
Extreme (10C)		777.5017	786.4963	-2.1	-0.003
Extreme (0C)		777.5017	786.4963	3.8	0.005
Extreme (-10C)		777.5017	786.4963	2.2	0.003
Extreme (-20C)		777.5017	786.4963	3.9	0.005
Extreme (-30C)		777.5017	786.4963	8.8	0.011
25C	10%	777.5017	786.4963	-3.1	-0.004
	-10%	777.5017	786.4963	-3.8	-0.005
	End Point	777.5017	786.4963	-2.4	-0.003

8.4.5. LTE BAND 17

QPSK, (10 MHz BAND WIDTH)

Limit		704	716	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	704.5012	715.4976		
Extreme (50C)		704.5012	715.4976	4.7	0.007
Extreme (40C)		704.5012	715.4976	-3.7	-0.005
Extreme (30C)		704.5012	715.4976	-3.8	-0.005
Extreme (10C)		704.5012	715.4976	2.8	0.004
Extreme (0C)		704.5012	715.4976	3.8	0.005
Extreme (-10C)		704.5012	715.4976	4.2	0.006
Extreme (-20C)		704.5012	715.4976	3.0	0.004
Extreme (-30C)		704.5012	715.4976	3.3	0.005
25C	10%	704.5012	715.4976	3.7	0.005
	-10%	704.5012	715.4976	3.9	0.005
	End Point	704.5012	715.4976	3.6	0.005

16QAM, (10MHz BAND WIDTH)

Limit		704	716	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	704.5036	715.5045		
Extreme (50C)		704.5036	715.5045	14.2	0.020
Extreme (40C)		704.5036	715.5045	-2.1	-0.003
Extreme (30C)		704.5036	715.5045	3.1	0.004
Extreme (10C)		704.5036	715.5045	2.8	0.004
Extreme (0C)		704.5036	715.5045	4.0	0.006
Extreme (-10C)		704.5036	715.5045	5.1	0.007
Extreme (-20C)		704.5036	715.5045	4.3	0.006
Extreme (-30C)		704.5036	715.5045	-4.2	-0.006
25C	10%	704.5036	715.5045	5.1	0.007
	-10%	704.5036	715.5045	3.3	0.005
	End Point	704.5036	715.5045	3.4	0.005

8.4.6. LTE BAND 25

QPSK, (10 MHz BAND WIDTH)

Limit		1850	1915	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1851.0102	1913.9929		
Extreme (50C)		1851.0102	1913.9929	10.2	0.005
Extreme (40C)		1851.0102	1913.9929	11.3	0.006
Extreme (30C)		1851.0102	1913.9929	10.0	0.005
Extreme (10C)		1851.0102	1913.9929	7.9	0.004
Extreme (0C)		1851.0102	1913.9929	12.6	0.007
Extreme (-10C)		1851.0102	1913.9929	2.3	0.001
Extreme (-20C)		1851.0102	1913.9929	8.2	0.004
Extreme (-30C)		1851.0102	1913.9929	11.7	0.006
25C	10%	1851.0102	1913.9929	5.7	0.003
	-10%	1851.0102	1913.9929	7.1	0.004
	End Point	1851.0102	1913.9929	6.4	0.003

16QAM, (10MHz BAND WIDTH)

Limit		1850	1915	Delta (Hz)	Margin (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1850.9923	1913.9943		
Extreme (50C)		1850.9923	1913.9943	2.4	0.001
Extreme (40C)		1850.9923	1913.9943	5.7	0.003
Extreme (30C)		1850.9923	1913.9943	14.0	0.007
Extreme (10C)		1850.9923	1913.9943	9.7	0.005
Extreme (0C)		1850.9923	1913.9943	11.4	0.006
Extreme (-10C)		1850.9923	1913.9943	10.5	0.006
Extreme (-20C)		1850.9923	1913.9943	11.2	0.006
Extreme (-30C)		1850.9923	1913.9943	10.2	0.005
25C	10%	1850.9923	1913.9943	7.3	0.004
	-10%	1850.9923	1913.9943	8.3	0.004
	End Point	1850.9923	1913.9943	7.5	0.004

8.4.7. LTE BAND 26

QPSK, (10 MHz BAND WIDTH)

Limit		814	824	Delta (Hz)	Margin (ppm)
Condition		F low @ -20dBm	F high @ -20dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	814.4406	823.6055		
Extreme (50C)		814.4406	823.6055	4.0	0.005
Extreme (40C)		814.4406	823.6055	-4.5	-0.005
Extreme (30C)		814.4406	823.6055	3.2	0.004
Extreme (10C)		814.4406	823.6055	3.6	0.004
Extreme (0C)		814.4406	823.6055	3.9	0.005
Extreme (-10C)		814.4406	823.6055	5.0	0.006
Extreme (-20C)		814.4406	823.6055	8.7	0.011
Extreme (-30C)		814.4406	823.6055	3.6	0.004
25C	10%	814.4406	823.6055	1.3	0.002
	-10%	814.4406	823.6055	-3.3	-0.004
	End Point	814.4406	823.6055	-3.0	-0.004

16QAM, (10MHz BAND WIDTH)

Limit		814	824	Delta (Hz)	Margin (ppm)
Condition		F low @ -20dBm	F high @ -20dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	814.4462	823.5843		
Extreme (50C)		814.4462	823.5843	2.2	0.003
Extreme (40C)		814.4462	823.5843	3.2	0.004
Extreme (30C)		814.4462	823.5843	-4.3	-0.005
Extreme (10C)		814.4462	823.5843	8.9	0.011
Extreme (0C)		814.4462	823.5843	4.8	0.006
Extreme (-10C)		814.4462	823.5843	3.6	0.004
Extreme (-20C)		814.4462	823.5843	3.9	0.005
Extreme (-30C)		814.4462	823.5843	3.8	0.005
25C	10%	814.4462	823.5843	4.2	0.005
	-10%	814.4462	823.5843	4.7	0.006
	End Point	814.4462	823.5843	4.5	0.005

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.

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

27.50 (c) (10) 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

RESULTS

LAT 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	25.67	368.98
		1880.0	26.15	412.10
		1909.3	**26.30**	426.58
1.4MHz Band 16QAM	6/0	1850.7	24.70	295.12
		1880.0	25.21	331.89
		1909.3	**25.43**	349.14

LAT 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	26.30	426.58
		1880.0	**26.41**	437.52
		1908.5	26.39	435.51
3.0MHz Band 16QAM	15/0	1851.5	25.33	341.19
		1880.0	25.47	352.37
		1908.5	**25.52**	356.45

LAT 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	26.40	436.52
		1880.0	26.36	432.51
		1907.5	**26.48**	444.63
5.0MHz Band 16QAM	25/0	1852.5	25.43	349.14
		1880.0	25.47	352.37
		1907.5	**25.61**	363.92

LAT 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	26.50	446.68
		1880.0	26.28	424.62
		1905.0	**26.56**	452.90
10.0MHz Band 16QAM	50/0	1855.0	25.53	357.27
		1880.0	25.39	345.94
		1905.0	**25.69**	370.68

LAT 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	26.30	426.58
		1880.0	26.23	419.76
		1902.5	**26.86**	485.29
15MHz Band 16QAM	75/0	1857.5	25.33	341.19
		1880.0	25.29	338.06
		1902.5	**25.99**	397.19

LAT 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	25.00	316.23
		1880.0	25.26	335.74
		1900.0	**27.11**	514.04
20.0MHz Band 16QAM	100/0	1860.0	24.03	252.93
		1880.0	24.32	270.40
		1900.0	**26.24**	420.73

UAT 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	19.81	95.72
		1880.0	19.48	88.72
		1909.3	**20.96**	124.74
1.4MHz Band 16QAM	6/0	1850.7	18.94	78.34
		1880.0	18.61	72.61
		1909.3	**20.03**	100.69

UAT 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	19.94	98.63
		1880.0	20.58	114.29
		1908.5	**21.11**	129.12
3.0MHz Band 16QAM	15/0	1851.5	19.07	80.72
		1880.0	19.71	93.54
		1908.5	**20.18**	104.23

UAT 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	20.03	100.69
		1880.0	20.34	108.14
		1907.5	**20.96**	124.74
5.0MHz Band 16QAM	25/0	1852.5	19.16	82.41
		1880.0	19.47	88.51
		1907.5	**20.03**	100.69

UAT 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	20.10	102.33
		1880.0	20.85	121.62
		1905.0	**21.40**	138.04
10.0MHz Band 16QAM	50/0	1855.0	19.23	83.75
		1880.0	19.98	99.54
		1905.0	**20.47**	111.43

UAT 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	19.80	95.50
		1880.0	20.22	105.20
		1902.5	**21.16**	130.62
15MHz Band 16QAM	75/0	1857.5	18.93	78.16
		1880.0	19.35	86.10
		1902.5	**20.23**	105.44

UAT 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	19.60	91.20
		1880.0	20.38	109.14
		1900.0	**20.60**	114.82
20MHz Band 16QAM	100/0	1860.0	18.73	74.64
		1880.0	19.51	89.33
		1900.0	**19.67**	92.68

LAT 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	24.58	287.08
		1732.5	**24.73**	297.17
		1754.3	24.57	286.42
1.4 MHZ BAND 16QAM	6/0	1710.7	23.60	229.09
		1732.5	**23.75**	237.14
		1754.3	23.59	228.56

LAT 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	**25.00**	316.23
		1732.5	24.59	287.74
		1753.5	24.82	303.39
3.0 MHZ BAND 16QAM	15/0	1711.5	**24.08**	255.86
		1732.5	23.72	235.50
		1753.5	23.96	248.89

LAT 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	24.90	309.03
		1732.5	24.61	289.07
		1752.5	**25.12**	325.09
5.0 MHZ BAND 16QAM	25/0	1712.5	23.98	250.03
		1732.5	23.74	236.59
		1752.5	**24.26**	266.69

LAT 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	**25.18**	329.61
		1732.5	24.27	267.30
		1750.0	24.73	297.17
10.0 MHZ BAND 16QAM	50/0	1715.0	23.78	238.78
		1732.5	22.92	195.88
		1750.0	**23.84**	242.10

LAT 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	**25.18**	329.61
		1732.5	24.29	268.53
		1747.5	24.72	296.48
15.0 MHZ BAND 16QAM	75/0	1717.5	**24.26**	266.69
		1732.5	23.42	219.79
		1747.5	23.86	243.22

LAT 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	**25.08**	322.11
		1732.5	24.19	262.42
		1745.0	24.07	255.27
20.0 MHZ BAND 16QAM	100/0	1720.0	**24.16**	260.62
		1732.5	23.32	214.78
		1745.0	23.21	209.41

UAT 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	**20.30**	107.15
		1732.5	20.09	102.09
		1754.3	20.27	106.41
1.4 MHZ BAND 16QAM	6/0	1710.7	**19.47**	88.51
		1732.5	19.17	82.60
		1754.3	19.36	86.30

UAT 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	**20.60**	114.82
		1732.5	19.99	99.77
		1753.5	20.27	106.41
3.0 MHZ BAND 16QAM	15/0	1711.5	**19.77**	94.84
		1732.5	19.07	80.72
		1753.5	19.36	86.30

UAT 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	**20.90**	123.03
		1732.5	19.89	97.50
		1752.5	20.27	106.41
5.0 MHZ BAND 16QAM	25/0	1712.5	**20.07**	101.62
		1732.5	18.97	78.89
		1752.5	19.36	86.30

UAT 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	**21.18**	131.22
		1732.5	19.82	95.94
		1750.0	19.68	92.90
10.0 MHZ BAND 16QAM	50/0	1715.0	**19.92**	98.17
		1732.5	18.53	71.29
		1750.0	18.86	76.91

UAT 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	**20.88**	122.46
		1732.5	20.09	102.09
		1747.5	19.70	93.33
15.0 MHZ BAND 16QAM	75/0	1717.5	**20.92**	123.59
		1732.5	19.17	82.60
		1747.5	18.79	75.68

UAT 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	**20.60**	114.82
		1732.5	20.06	101.39
		1745.0	19.42	87.50
20.0 MHZ BAND 16QAM	100/0	1720.0	**19.77**	94.84
		1732.5	19.14	82.04
		1745.0	18.51	70.96

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
1.4MHz Band QPSK	1/0	824.7	21.15	130.32
		836.5	21.43	139.00
		848.3	**21.46**	139.96
1.4MHz Band 16QAM	1/0	824.7	20.36	108.64
		836.5	20.45	110.92
		848.3	**20.47**	111.43

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

Mode	RB/RB SIZE	f (MHz)	ERIP (Average)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	825.5	21.27	133.97
		836.5	**21.60**	144.54
		847.5	21.43	139.00
3.0 MHZ BAND 16QAM	1/0	825.5	20.48	111.69
		836.5	**20.67**	116.68
		847.5	20.62	115.35

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	826.5	21.24	133.05
		836.5	**21.50**	141.25
		846.5	21.46	139.96
5MHz Band 16QAM	1/0	826.5	20.14	103.28
		836.5	**20.43**	110.41
		846.5	20.43	110.41

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	829.0	21.22	132.43
		836.5	**21.57**	143.55
		844.0	21.03	126.77
10.0 MHZ BAND 16QAM	1/0	829.0	20.37	108.89
		836.5	**20.48**	111.69
		844.0	20.12	102.80

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
1.4MHz Band QPSK	1/0	824.7	20.01	100.23
		836.5	20.10	102.33
		848.3	**20.20**	104.71
1.4MHz Band 16QAM	1/0	824.7	19.00	79.43
		836.5	**19.17**	82.60
		848.3	19.10	81.28

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	825.5	20.02	100.46
		836.5	20.20	104.71
		847.5	**20.88**	122.46
3.0 MHZ BAND 16QAM	1/0	825.5	19.07	80.72
		836.5	19.13	81.85
		847.5	**20.14**	103.28

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
5MHz Band QPSK	1/0	826.5	**20.47**	111.43
		836.5	20.27	106.41
		846.5	19.02	79.80
5MHz Band 16QAM	1/0	826.5	19.00	79.43
		836.5	**19.27**	84.53
		846.5	19.10	81.28

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	829.0	20.48	111.69
		836.5	20.60	114.82
		844.0	**20.71**	117.76
10.0 MHZ BAND 16QAM	1/0	829.0	19.08	80.91
		836.5	**19.32**	85.51
		844.0	19.05	80.35

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	779.5	**20.46**	111.17
		782.0	19.51	89.33
		784.5	20.13	103.04
5.0 MHZ BAND 16QAM	1/0	779.5	19.22	83.56
		782.0	**19.35**	86.10
		784.5	19.23	83.75

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
10 MHZ BAND QPSK	1/0	782.0	**20.07**	101.62
10 MHz BAND 16QAM	1/0		**19.35**	86.10

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	779.5	17.87	61.24
		782.0	19.24	83.95
		784.5	**19.60**	91.20
5.0 MHZ BAND 16QAM	1/0	779.5	16.97	49.77
		782.0	18.14	65.16
		784.5	**18.47**	70.31

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
10 MHZ BAND QPSK	1/0	782.0	**19.04**	80.17
10 MHz BAND 16QAM	1/0		**18.14**	65.16

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	706.5	**20.38**	109.14
		710.0	20.36	108.64
		713.5	20.17	103.99
5MHz Band 16QAM	1/0	706.5	**19.36**	86.30
		710.0	19.30	85.11
		713.5	19.00	79.43

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	709.0	**20.45**	110.92
		710.0	20.32	107.65
		711.0	19.97	99.31
10.0 MHZ BAND 16QAM	1/0	709.0	**19.37**	86.50
		710.0	19.25	84.14
		711.0	18.82	76.21

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	706.5	15.98	39.63
		710.0	16.32	42.85
		713.5	**16.43**	43.95
5MHz Band 16QAM	1/0	706.5	15.08	32.21
		710.0	15.42	34.83
		713.5	**15.53**	35.73

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

Mode	RB/RB SIZE	f (MHz)	EIRP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	709.0	16.23	41.98
		710.0	16.27	42.36
		711.0	**16.61**	45.81
10.0 MHZ BAND 16QAM	1/0	709.0	15.33	34.12
		710.0	15.37	34.43
		711.0	**15.71**	37.24

LAT 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	25.70	371.54
		1880.0	25.73	374.11
		1914.3	**26.32**	428.55
1.4 MHZ BAND 16QAM	6/0	1850.7	24.77	299.92
		1880.0	24.68	293.76
		1914.3	**25.41**	347.54

LAT 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	25.82	381.94
		1880.0	25.76	376.70
		1913.5	**26.31**	427.56
3.0 MHZ BAND 16QAM	15/0	1851.5	24.89	308.32
		1880.0	24.83	304.09
		1913.5	**25.40**	346.74

LAT 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	25.67	368.98
		1880.0	**26.43**	439.54
		1912.5	26.10	407.38
5.0 MHZ BAND 16QAM	25/0	1852.5	24.74	297.85
		1880.0	**25.54**	358.10
		1912.5	25.19	330.37

LAT 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	**26.65**	462.38
		1880.0	26.38	434.51
		1910.0	26.60	457.09
10.0 MHZ BAND 16QAM	50/0	1855.0	**25.72**	373.25
		1880.0	25.49	354.00
		1910.0	25.69	370.68

LAT 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	**26.52**	448.75
		1880.0	26.18	414.95
		1907.5	26.33	429.54
15.0 MHZ BAND 16QAM	75/0	1857.5	**25.59**	362.24
		1880.0	25.29	338.06
		1907.5	25.42	348.34

LAT 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	26.40	436.52
		1880.0	25.88	387.26
		1905.0	**26.70**	467.74
20.0 MHZ BAND 16QAM	100/0	1860.0	25.47	352.37
		1880.0	24.95	312.61
		1905.0	**25.79**	379.31

UAT 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	20.23	105.44
		1880.0	20.31	107.40
		1914.3	**21.31**	135.21
1.4 MHZ BAND 16QAM	6/0	1850.7	19.39	86.90
		1880.0	19.37	86.50
		1914.3	**20.36**	108.64

UAT 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	19.99	99.77
		1880.0	20.56	113.76
		1913.5	**21.40**	138.04
3.0 MHZ BAND 16QAM	15/0	1851.5	19.15	82.22
		1880.0	19.62	91.62
		1913.5	**20.45**	110.92

UAT 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	19.98	99.54
		1880.0	20.37	108.89
		1912.5	**20.81**	120.50
5.0 MHZ BAND 16QAM	25/0	1852.5	19.14	82.04
		1880.0	19.43	87.70
		1912.5	**19.86**	96.83

UAT 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	20.14	103.28
		1880.0	20.39	109.40
		1910.0	**21.23**	132.74
10.0 MHZ BAND 16QAM	50/0	1855.0	19.30	85.11
		1880.0	19.45	88.10
		1910.0	**20.28**	106.66

UAT 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	19.80	95.50
		1880.0	20.23	105.44
		1907.5	**20.83**	121.06
15.0 MHZ BAND 16QAM	75/0	1857.5	18.96	78.70
		1880.0	19.29	84.92
		1907.5	**19.88**	97.27

UAT EIRP POWER FOR LTE BAND 25 (20.MHZ BANDWIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
20.0 MHZ BAND QPSK	100/0	1860.0	19.80	95.50
		1880.0	19.98	99.54
		1905.0	**21.32**	135.52
20.0 MHZ BAND 16QAM	100/0	1860.0	18.96	78.70
		1880.0	19.04	80.17
		1905.0	**20.37**	108.89

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	820.3	20.49	111.94
		821.3	20.45	110.92
		822.3	**20.81**	120.50
3.0 MHZ BAND 16QAM	1/0	820.3	19.59	90.99
		821.3	19.45	88.10
		822.3	**19.86**	96.83

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	821.5	**20.86**	121.90
5.0 MHZ BAND 16QAM	1/0	821.5	**19.82**	95.94

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	819.0	**20.23**	105.44
10.0 MHZ BAND 16QAM	1/0	819.0	**19.54**	89.95

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	820.3	18.20	66.07
		821.3	18.47	70.31
		822.3	**18.60**	72.44
3.0 MHZ BAND 16QAM	1/0	820.3	17.30	53.70
		821.3	17.57	57.15
		822.3	**17.70**	58.88

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	821.5	**18.27**	67.14
5.0 MHZ BAND 16QAM	1/0	821.5	**17.17**	52.12

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

Mode	RB/RB SIZE	f (MHz)	EIRP(Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	819.0	**18.17**	65.61
10.0 MHZ BAND 16QAM	1/0	819.0	**17.27**	53.33

9.1.1. LTE BAND 2

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.8	V	0.98	7.88	25.67	33.0	-7.3	
1.851	18.5	H	0.98	7.88	25.35	33.0	-7.7	
Mid Ch								
1.880	18.7	V	0.98	7.86	25.59	33.0	-7.4	
1.880	19.3	H	0.98	7.86	26.15	33.0	-6.9	
High Ch								
1.909	18.2	V	0.98	7.84	25.02	33.0	-8.0	
1.909	19.4	H	0.98	7.84	26.30	33.0	-6.7	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	17.8	V	0.98	7.88	24.70	33.0	-8.3	
1.851	17.5	H	0.98	7.88	24.41	33.0	-8.6	
Mid Ch								
1.880	17.8	V	0.98	7.86	24.70	33.0	-8.3	
1.880	18.3	H	0.98	7.86	25.21	33.0	-7.8	
High Ch								
1.909	17.2	V	0.98	7.84	24.10	33.0	-8.9	
1.909	18.6	H	0.98	7.84	25.43	33.0	-7.6	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	19.4	V	0.98	7.88	26.30	33.0	-6.7	
1.852	18.7	H	0.98	7.88	25.55	33.0	-7.5	
Mid Ch								
1.880	19.3	V	0.98	7.86	26.16	33.0	-6.8	
1.880	19.5	H	0.98	7.86	26.41	33.0	-6.6	
High Ch								
1.909	18.3	V	0.98	7.84	25.12	33.0	-7.9	
1.909	19.5	H	0.98	7.84	26.39	33.0	-6.6	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.4	V	0.98	7.88	25.33	33.0	-7.7	
1.852	17.7	H	0.98	7.88	24.61	33.0	-8.4	
Mid Ch								
1.880	18.4	V	0.98	7.86	25.27	33.0	-7.7	
1.880	18.6	H	0.98	7.86	25.47	33.0	-7.5	
High Ch								
1.909	17.3	V	0.98	7.84	24.20	33.0	-8.8	
1.909	18.7	H	0.98	7.84	25.52	33.0	-7.5	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	19.5	V	0.98	7.88	26.40	33.0	-6.6	
1.853	18.5	H	0.98	7.88	25.44	33.0	-7.6	
Mid Ch								
1.880	19.5	V	0.98	7.86	26.36	33.0	-6.6	
1.880	19.4	H	0.98	7.86	26.25	33.0	-6.8	
High Ch								
1.908	18.5	V	0.98	7.84	25.32	33.0	-7.7	
1.908	19.6	H	0.98	7.84	26.48	33.0	-6.5	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.5	V	0.98	7.88	25.43	33.0	-7.6	
1.853	17.6	H	0.98	7.88	24.50	33.0	-8.5	
Mid Ch								
1.880	18.6	V	0.98	7.86	25.47	33.0	-7.5	
1.880	18.4	H	0.98	7.86	25.31	33.0	-7.7	
High Ch								
1.908	17.5	V	0.98	7.84	24.40	33.0	-8.6	
1.908	18.8	H	0.98	7.84	25.61	33.0	-7.4	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	19.6	V	0.98	7.88	26.50	33.0	-6.5	
1.855	18.4	H	0.98	7.88	25.30	33.0	-7.7	
Mid Ch								
1.880	19.4	V	0.98	7.86	26.28	33.0	-6.7	
1.880	19.4	H	0.98	7.86	26.24	33.0	-6.8	
High Ch								
1.905	18.1	V	0.98	7.84	24.93	33.0	-8.1	
1.905	19.7	H	0.98	7.84	26.56	33.0	-6.4	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.6	V	0.98	7.88	25.53	33.0	-7.5	
1.855	17.5	H	0.98	7.88	24.36	33.0	-8.6	
Mid Ch								
1.880	18.5	V	0.98	7.86	25.39	33.0	-7.6	
1.880	18.4	H	0.98	7.86	25.30	33.0	-7.7	
High Ch								
1.905	17.2	V	0.98	7.84	24.01	33.0	-9.0	
1.905	18.8	H	0.98	7.84	25.69	33.0	-7.3	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	19.4	V	0.98	7.88	26.30	33.0	-6.7	
1.858	18.4	H	0.98	7.88	25.30	33.0	-7.7	
Mid Ch								
1.880	17.7	V	0.98	7.86	24.54	33.0	-8.5	
1.880	19.4	H	0.98	7.86	26.23	33.0	-6.8	
High Ch								
1.903	18.4	V	0.98	7.84	25.26	33.0	-7.7	
1.903	20.0	H	0.98	7.84	26.86	33.0	-6.1	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.4	V	0.98	7.88	25.33	33.0	-7.7	
1.858	17.5	H	0.98	7.88	24.36	33.0	-8.6	
Mid Ch								
1.880	16.8	V	0.98	7.86	23.65	33.0	-9.4	
1.880	18.4	H	0.98	7.86	25.29	33.0	-7.7	
High Ch								
1.903	17.5	V	0.98	7.84	24.34	33.0	-8.7	
1.903	19.1	H	0.98	7.84	25.99	33.0	-7.0	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.1	V	0.98	7.88	25.00	33.0	-8.0	
1.860	18.1	H	0.98	7.88	24.95	33.0	-8.1	
Mid Ch								
1.880	17.9	V	0.98	7.86	24.78	33.0	-8.2	
1.880	18.4	H	0.98	7.86	25.26	33.0	-7.7	
High Ch								
1.900	17.3	V	0.98	7.84	24.16	33.0	-8.8	
1.900	20.3	H	0.98	7.84	27.11	33.0	-5.9	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	17.1	V	0.98	7.88	24.03	33.0	-9.0	
1.860	17.1	H	0.98	7.88	24.01	33.0	-9.0	
Mid Ch								
1.880	17.0	V	0.98	7.86	23.89	33.0	-9.1	
1.880	17.4	H	0.98	7.86	24.32	33.0	-8.7	
High Ch								
1.900	16.4	V	0.98	7.84	23.24	33.0	-9.8	
1.900	19.4	H	0.98	7.84	26.24	33.0	-6.8	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.7	V	0.98	7.88	18.60	33.0	-14.4	
1.851	12.9	H	0.98	7.88	19.81	33.0	-13.2	
Mid Ch								
1.880	11.2	V	0.98	7.86	18.06	33.0	-14.9	
1.880	12.6	H	0.98	7.86	19.48	33.0	-13.5	
High Ch								
1.909	12.3	V	0.98	7.84	19.12	33.0	-13.9	
1.909	14.1	H	0.98	7.84	20.96	33.0	-12.0	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	10.9	V	0.98	7.88	17.77	33.0	-15.2	
1.851	12.0	H	0.98	7.88	18.94	33.0	-14.1	
Mid Ch								
1.880	10.3	V	0.98	7.86	17.15	33.0	-15.9	
1.880	11.7	H	0.98	7.86	18.61	33.0	-14.4	
High Ch								
1.909	11.3	V	0.98	7.84	18.14	33.0	-14.9	
1.909	13.2	H	0.98	7.84	20.03	33.0	-13.0	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	12.0	V	0.98	7.88	18.90	33.0	-14.1	
1.852	13.0	H	0.98	7.88	19.94	33.0	-13.1	
Mid Ch								
1.880	11.4	V	0.98	7.86	18.26	33.0	-14.7	
1.880	13.7	H	0.98	7.86	20.58	33.0	-12.4	
High Ch								
1.909	11.9	V	0.98	7.84	18.80	33.0	-14.2	
1.909	14.3	H	0.98	7.84	21.11	33.0	-11.9	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.2	V	0.98	7.88	18.07	33.0	-14.9	
1.852	12.2	H	0.98	7.88	19.07	33.0	-13.9	
Mid Ch								
1.880	10.5	V	0.98	7.86	17.35	33.0	-15.7	
1.880	12.8	H	0.98	7.86	19.71	33.0	-13.3	
High Ch								
1.909	11.0	V	0.98	7.84	17.82	33.0	-15.2	
1.909	13.3	H	0.98	7.84	20.18	33.0	-12.8	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.8	V	0.98	7.88	18.70	33.0	-14.3	
1.853	13.1	H	0.98	7.88	20.03	33.0	-13.0	
Mid Ch								
1.880	11.5	V	0.98	7.86	18.36	33.0	-14.6	
1.880	13.5	H	0.98	7.86	20.34	33.0	-12.7	
High Ch								
1.908	11.9	V	0.98	7.84	18.78	33.0	-14.2	
1.908	14.1	H	0.98	7.84	20.96	33.0	-12.0	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.0	V	0.98	7.88	17.87	33.0	-15.1	
1.853	12.3	H	0.98	7.88	19.16	33.0	-13.8	
Mid Ch								
1.880	10.6	V	0.98	7.86	17.45	33.0	-15.6	
1.880	12.6	H	0.98	7.86	19.47	33.0	-13.5	
High Ch								
1.908	10.9	V	0.98	7.84	17.80	33.0	-15.2	
1.908	13.2	H	0.98	7.84	20.03	33.0	-13.0	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	12.1	V	0.98	7.88	19.00	33.0	-14.0	
1.855	13.2	H	0.98	7.88	20.10	33.0	-12.9	
Mid Ch								
1.880	11.3	V	0.98	7.86	18.18	33.0	-14.8	
1.880	14.0	H	0.98	7.86	20.85	33.0	-12.2	
High Ch								
1.905	11.7	V	0.98	7.84	18.56	33.0	-14.4	
1.905	14.5	H	0.98	7.84	21.40	33.0	-11.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.3	V	0.98	7.88	18.17	33.0	-14.8	
1.855	12.3	H	0.98	7.88	19.23	33.0	-13.8	
Mid Ch								
1.880	10.4	V	0.98	7.86	17.27	33.0	-15.7	
1.880	13.1	H	0.98	7.86	19.98	33.0	-13.0	
High Ch								
1.905	10.7	V	0.98	7.84	17.58	33.0	-15.4	
1.905	13.6	H	0.98	7.84	20.47	33.0	-12.5	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.9	V	0.98	7.88	18.76	33.0	-14.2	
1.858	12.9	H	0.98	7.88	19.80	33.0	-13.2	
Mid Ch								
1.880	11.2	V	0.98	7.86	18.08	33.0	-14.9	
1.880	13.3	H	0.98	7.86	20.22	33.0	-12.8	
High Ch								
1.903	11.8	V	0.98	7.84	18.66	33.0	-14.3	
1.903	14.3	H	0.98	7.84	21.16	33.0	-11.8	

Rev. 10.24.13

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

UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.0	V	0.98	7.88	17.93	33.0	-15.1	
1.858	12.0	H	0.98	7.88	18.93	33.0	-14.1	
Mid Ch								
1.880	10.3	V	0.98	7.86	17.17	33.0	-15.8	
1.880	12.5	H	0.98	7.86	19.35	33.0	-13.7	
High Ch								
1.903	10.8	V	0.98	7.84	17.68	33.0	-15.3	
1.903	13.4	H	0.98	7.84	20.23	33.0	-12.8	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.4	V	0.98	7.88	18.30	33.0	-14.7	
1.860	12.7	H	0.98	7.88	19.60	33.0	-13.4	
Mid Ch								
1.880	11.2	V	0.98	7.86	18.08	33.0	-14.9	
1.880	13.5	H	0.98	7.86	20.38	33.0	-12.6	
High Ch								
1.900	11.3	V	0.98	7.84	18.16	33.0	-14.8	
1.900	13.7	H	0.98	7.84	20.60	33.0	-12.4	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 2 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	10.6	V	0.98	7.88	17.47	33.0	-15.5	
1.860	11.8	H	0.98	7.88	18.73	33.0	-14.3	
Mid Ch								
1.880	10.3	V	0.98	7.86	17.17	33.0	-15.8	
1.880	12.6	H	0.98	7.86	19.51	33.0	-13.5	
High Ch								
1.900	10.3	V	0.98	7.84	17.18	33.0	-15.8	
1.900	12.8	H	0.98	7.84	19.67	33.0	-13.3	

Rev. 10.24.13

9.1.2. LTE BAND 4

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	15.1	V	0.95	8.25	22.40	30.0	-7.6	
1.711	17.3	H	0.95	8.25	24.58	30.0	-5.4	
Mid Ch								
1.733	16.6	V	0.95	8.17	23.78	30.0	-6.2	
1.733	17.5	H	0.95	8.17	24.73	30.0	-5.3	
High Ch								
1.754	17.1	V	0.95	8.09	24.24	30.0	-5.8	
1.754	17.4	H	0.95	8.09	24.57	30.0	-5.4	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	14.1	V	0.95	8.25	21.42	30.0	-8.6	
1.711	16.3	H	0.95	8.25	23.60	30.0	-6.4	
Mid Ch								
1.733	15.6	V	0.95	8.17	22.80	30.0	-7.2	
1.733	16.5	H	0.95	8.17	23.75	30.0	-6.3	
High Ch								
1.754	16.1	V	0.95	8.09	23.26	30.0	-6.7	
1.754	16.5	H	0.95	8.09	23.59	30.0	-6.4	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	15.5	V	0.95	8.25	22.80	30.0	-7.2	
1.712	17.7	H	0.95	8.25	25.00	30.0	-5.0	
Mid Ch								
1.733	16.9	V	0.95	8.17	24.07	30.0	-5.9	
1.733	17.4	H	0.95	8.17	24.59	30.0	-5.4	
High Ch								
1.754	17.3	V	0.95	8.09	24.44	30.0	-5.6	
1.754	17.7	H	0.95	8.09	24.82	30.0	-5.2	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	14.6	V	0.95	8.25	21.86	30.0	-8.1	
1.712	16.8	H	0.95	8.25	24.08	30.0	-5.9	
Mid Ch								
1.733	15.9	V	0.95	8.17	23.16	30.0	-6.8	
1.733	16.5	H	0.95	8.17	23.72	30.0	-6.3	
High Ch								
1.754	16.4	V	0.95	8.09	23.49	30.0	-6.5	
1.754	16.8	H	0.95	8.09	23.96	30.0	-6.0	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	15.1	V	0.95	8.25	22.37	30.0	-7.6	
1.713	17.6	H	0.95	8.25	24.90	30.0	-5.1	
Mid Ch								
1.733	16.4	V	0.95	8.17	23.62	30.0	-6.4	
1.733	17.4	H	0.95	8.17	24.61	30.0	-5.4	
High Ch								
1.753	17.1	V	0.95	8.09	24.24	30.0	-5.8	
1.753	18.0	H	0.95	8.09	25.12	30.0	-4.9	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	14.1	V	0.95	8.25	21.43	30.0	-8.6	
1.713	16.7	H	0.95	8.25	23.98	30.0	-6.0	
Mid Ch								
1.733	15.5	V	0.95	8.17	22.71	30.0	-7.3	
1.733	16.5	H	0.95	8.17	23.74	30.0	-6.3	
High Ch								
1.753	16.2	V	0.95	8.09	23.29	30.0	-6.7	
1.753	17.1	H	0.95	8.09	24.26	30.0	-5.7	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	15.7	V	0.95	8.25	23.02	30.0	-7.0	
1.715	17.9	H	0.95	8.25	25.18	30.0	-4.8	
Mid Ch								
1.733	16.5	V	0.95	8.17	23.72	30.0	-6.3	
1.733	17.1	H	0.95	8.17	24.27	30.0	-5.7	
High Ch								
1.750	16.9	V	0.95	8.09	24.04	30.0	-6.0	
1.750	17.6	H	0.95	8.09	24.73	30.0	-5.3	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	14.7	V	0.95	8.25	22.03	30.0	-8.0	
1.715	16.5	H	0.95	8.25	23.78	30.0	-6.2	
Mid Ch								
1.733	15.3	V	0.95	8.17	22.53	30.0	-7.5	
1.733	15.7	H	0.95	8.17	22.92	30.0	-7.1	
High Ch								
1.750	15.5	V	0.95	8.09	22.68	30.0	-7.3	
1.750	16.7	H	0.95	8.09	23.84	30.0	-6.2	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	15.7	V	0.95	8.25	22.97	30.0	-7.0	
1.718	17.9	H	0.95	8.25	25.18	30.0	-4.8	
Mid Ch								
1.733	15.7	V	0.95	8.17	22.92	30.0	-7.1	
1.733	17.1	H	0.95	8.17	24.29	30.0	-5.7	
High Ch								
1.748	16.8	V	0.95	8.09	23.96	30.0	-6.0	
1.748	17.6	H	0.95	8.09	24.72	30.0	-5.3	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	14.7	V	0.95	8.25	22.03	30.0	-8.0	
1.718	17.0	H	0.95	8.25	24.26	30.0	-5.7	
Mid Ch								
1.733	14.8	V	0.95	8.17	22.01	30.0	-8.0	
1.733	16.2	H	0.95	8.17	23.42	30.0	-6.6	
High Ch								
1.748	15.9	V	0.95	8.09	23.01	30.0	-7.0	
1.748	16.7	H	0.95	8.09	23.86	30.0	-6.1	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	15.4	V	0.95	8.25	22.69	30.0	-7.3	
1.720	17.8	H	0.95	8.25	25.08	30.0	-4.9	
Mid Ch								
1.733	15.8	V	0.95	8.17	23.02	30.0	-7.0	
1.733	17.0	H	0.95	8.17	24.19	30.0	-5.8	
High Ch								
1.745	16.1	V	0.95	8.09	23.19	30.0	-6.8	
1.745	16.9	H	0.95	8.09	24.07	30.0	-5.9	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	14.5	V	0.95	8.25	21.75	30.0	-8.3	
1.720	16.9	H	0.95	8.25	24.16	30.0	-5.8	
Mid Ch								
1.733	14.9	V	0.95	8.17	22.11	30.0	-7.9	
1.733	16.1	H	0.95	8.17	23.32	30.0	-6.7	
High Ch								
1.745	15.1	V	0.95	8.09	22.24	30.0	-7.8	
1.745	16.1	H	0.95	8.09	23.21	30.0	-6.8	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.3	V	0.95	8.25	18.60	30.0	-11.4	
1.711	13.0	H	0.95	8.25	20.30	30.0	-9.7	
Mid Ch								
1.733	11.1	V	0.95	8.17	18.32	30.0	-11.7	
1.733	12.9	H	0.95	8.17	20.09	30.0	-9.9	
High Ch								
1.754	10.6	V	0.95	8.09	17.74	30.0	-12.3	
1.754	13.1	H	0.95	8.09	20.27	30.0	-9.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	10.5	V	0.95	8.25	17.77	30.0	-12.2	
1.711	12.2	H	0.95	8.25	19.47	30.0	-10.5	
Mid Ch								
1.733	10.2	V	0.95	8.17	17.45	30.0	-12.6	
1.733	12.0	H	0.95	8.17	19.17	30.0	-10.8	
High Ch								
1.754	9.6	V	0.95	8.09	16.78	30.0	-13.2	
1.754	12.2	H	0.95	8.09	19.36	30.0	-10.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	12.6	V	0.95	8.25	19.90	30.0	-10.1	
1.712	13.3	H	0.95	8.25	20.60	30.0	-9.4	
Mid Ch								
1.733	12.5	V	0.95	8.17	19.72	30.0	-10.3	
1.733	12.8	H	0.95	8.17	19.99	30.0	-10.0	
High Ch								
1.754	12.6	V	0.95	8.09	19.74	30.0	-10.3	
1.754	13.1	H	0.95	8.09	20.27	30.0	-9.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.8	V	0.95	8.25	19.07	30.0	-10.9	
1.712	12.5	H	0.95	8.25	19.77	30.0	-10.2	
Mid Ch								
1.733	11.6	V	0.95	8.17	18.85	30.0	-11.2	
1.733	11.9	H	0.95	8.17	19.07	30.0	-10.9	
High Ch								
1.754	11.6	V	0.95	8.09	18.78	30.0	-11.2	
1.754	12.2	H	0.95	8.09	19.36	30.0	-10.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	12.4	V	0.95	8.25	19.70	30.0	-10.3	
1.713	13.6	H	0.95	8.25	20.90	30.0	-9.1	
Mid Ch								
1.733	12.5	V	0.95	8.17	19.72	30.0	-10.3	
1.733	12.7	H	0.95	8.17	19.89	30.0	-10.1	
High Ch								
1.753	12.1	V	0.95	8.09	19.24	30.0	-10.8	
1.753	13.1	H	0.95	8.09	20.27	30.0	-9.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.6	V	0.95	8.25	18.87	30.0	-11.1	
1.713	12.8	H	0.95	8.25	20.07	30.0	-9.9	
Mid Ch								
1.733	11.6	V	0.95	8.17	18.85	30.0	-11.2	
1.733	11.8	H	0.95	8.17	18.97	30.0	-11.0	
High Ch								
1.753	11.1	V	0.95	8.09	18.28	30.0	-11.7	
1.753	12.2	H	0.95	8.09	19.36	30.0	-10.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	12.5	V	0.95	8.25	19.84	30.0	-10.2	
1.715	13.9	H	0.95	8.25	21.18	30.0	-8.8	
Mid Ch								
1.733	12.3	V	0.95	8.17	19.52	30.0	-10.5	
1.733	12.6	H	0.95	8.17	19.82	30.0	-10.2	
High Ch								
1.750	12.1	V	0.95	8.09	19.19	30.0	-10.8	
1.750	12.5	H	0.95	8.09	19.68	30.0	-10.3	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.7	V	0.95	8.25	19.00	30.0	-11.0	
1.715	12.6	H	0.95	8.25	19.92	30.0	-10.1	
Mid Ch								
1.733	11.2	V	0.95	8.17	18.44	30.0	-11.6	
1.733	11.3	H	0.95	8.17	18.53	30.0	-11.5	
High Ch								
1.750	10.7	V	0.95	8.09	17.85	30.0	-12.1	
1.750	11.7	H	0.95	8.09	18.86	30.0	-11.1	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	12.8	V	0.95	8.25	20.09	30.0	-9.9	
1.718	13.6	H	0.95	8.25	20.88	30.0	-9.1	
Mid Ch								
1.733	12.8	V	0.95	8.17	20.02	30.0	-10.0	
1.733	12.9	H	0.95	8.17	20.09	30.0	-9.9	
High Ch								
1.748	12.1	V	0.95	8.09	19.19	30.0	-10.8	
1.748	12.6	H	0.95	8.09	19.70	30.0	-10.3	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	13.6	V	0.95	8.25	20.92	30.0	-9.1	
1.718	12.7	H	0.95	8.25	20.05	30.0	-10.0	
Mid Ch								
1.733	11.9	V	0.95	8.17	19.15	30.0	-10.9	
1.733	12.0	H	0.95	8.17	19.17	30.0	-10.8	
High Ch								
1.748	11.1	V	0.95	8.09	18.23	30.0	-11.8	
1.748	11.7	H	0.95	8.09	18.79	30.0	-11.2	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	12.4	V	0.95	8.25	19.69	30.0	-10.3	
1.720	13.3	H	0.95	8.25	20.60	30.0	-9.4	
Mid Ch								
1.733	12.3	V	0.95	8.17	19.52	30.0	-10.5	
1.733	12.8	H	0.95	8.17	20.06	30.0	-9.9	
High Ch								
1.745	12.1	V	0.95	8.09	19.19	30.0	-10.8	
1.745	12.3	H	0.95	8.09	19.42	30.0	-10.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 4 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.6	V	0.95	8.25	18.86	30.0	-11.1	
1.720	12.5	H	0.95	8.25	19.77	30.0	-10.2	
Mid Ch								
1.733	11.4	V	0.95	8.17	18.65	30.0	-11.4	
1.733	11.9	H	0.95	8.17	19.14	30.0	-10.9	
High Ch								
1.745	11.1	V	0.95	8.09	18.23	30.0	-11.8	
1.745	11.4	H	0.95	8.09	18.51	30.0	-11.5	

Rev. 10.24.13

9.1.3. LTE BAND 5

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 5 QPSK 1.4MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	ERIP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	13.92	V	0.6	0.0	13.30	15.45	38.45	40.60	-25.1	
824.70	19.62	H	0.6	0.0	19.00	21.15	38.45	40.60	-19.5	
Mid Ch										
836.50	14.03	V	0.6	0.0	13.41	15.56	38.45	40.60	-25.0	
836.50	19.90	H	0.6	0.0	19.28	21.43	38.45	40.60	-19.2	
High Ch										
848.30	13.83	V	0.6	0.0	13.21	15.36	38.45	40.60	-25.2	
848.30	19.92	H	0.6	0.0	19.31	21.46	38.45	40.60	-19.1	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 5 16QAM 1.4MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	13.15	V	0.6	0.0	12.53	14.68	38.45	40.60	-25.9	
824.70	18.83	H	0.6	0.0	18.21	20.36	38.45	40.60	-20.2	
Mid Ch										
836.50	13.18	V	0.6	0.0	12.56	14.71	38.45	40.60	-25.9	
836.50	18.92	H	0.6	0.0	18.30	20.45	38.45	40.60	-20.2	
High Ch										
848.30	12.84	V	0.6	0.0	12.22	14.37	38.45	40.60	-26.2	
848.30	18.93	H	0.6	0.0	18.32	20.47	38.45	40.60	-20.1	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 5 QPSK 3MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	13.91	V	0.6	0.0	13.29	15.44	38.45	40.60	-25.2	
825.50	19.74	H	0.6	0.0	19.12	21.27	38.45	40.60	-19.3	
Mid Ch										
836.50	13.99	V	0.6	0.0	13.37	15.52	38.45	40.60	-25.1	
836.50	20.07	H	0.6	0.0	19.45	21.60	38.45	40.60	-19.0	
High Ch										
847.50	13.60	V	0.6	0.0	12.98	15.13	38.45	40.60	-25.5	
847.50	19.89	H	0.6	0.0	19.28	21.43	38.45	40.60	-19.2	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 5 16QAM 3MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	13.14	V	0.6	0.0	12.52	14.67	38.45	40.60	-25.9	
825.50	18.95	H	0.6	0.0	18.33	20.48	38.45	40.60	-20.1	
Mid Ch										
836.50	12.96	V	0.6	0.0	12.34	14.49	38.45	40.60	-26.1	
836.50	19.14	H	0.6	0.0	18.52	20.67	38.45	40.60	-19.9	
High Ch										
847.50	12.80	V	0.6	0.0	12.18	14.33	38.45	40.60	-26.3	
847.50	19.08	H	0.6	0.0	18.47	20.62	38.45	40.60	-20.0	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 5 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	13.74	V	0.6	0.0	13.12	15.27	38.45	40.60	-25.3	
826.50	19.71	H	0.6	0.0	19.09	21.24	38.45	40.60	-19.4	
Mid Ch										
836.50	13.69	V	0.6	0.0	13.07	15.22	38.45	40.60	-25.4	
836.50	19.97	H	0.6	0.0	19.35	21.50	38.45	40.60	-19.1	
High Ch										
846.50	14.08	V	0.6	0.0	13.46	15.61	38.45	40.60	-25.0	
846.50	19.92	H	0.6	0.0	19.31	21.46	38.45	40.60	-19.1	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 5 16QAM 5MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	12.96	V	0.6	0.0	12.34	14.49	38.45	40.60	-26.1	
826.50	18.61	H	0.6	0.0	17.99	20.14	38.45	40.60	-20.5	
Mid Ch										
836.50	12.77	V	0.6	0.0	12.15	14.30	38.45	40.60	-26.3	
836.50	18.90	H	0.6	0.0	18.28	20.43	38.45	40.60	-20.2	
High Ch										
846.50	13.15	V	0.6	0.0	12.53	14.68	38.45	40.60	-25.9	
846.50	18.89	H	0.6	0.0	18.28	20.43	38.45	40.60	-20.2	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 5 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	14.11	V	0.6	0.0	13.49	15.64	38.45	40.60	-25.0	
829.00	19.69	H	0.6	0.0	19.07	21.22	38.45	40.60	-19.4	
Mid Ch										
836.50	14.21	V	0.6	0.0	13.59	15.74	38.45	40.60	-24.9	
836.50	20.04	H	0.6	0.0	19.42	21.57	38.45	40.60	-19.0	
High Ch										
844.00	14.25	V	0.6	0.0	13.63	15.78	38.45	40.60	-24.8	
844.00	19.49	H	0.6	0.0	18.88	21.03	38.45	40.60	-19.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 5 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	13.19	V	0.6	0.0	12.57	14.72	38.45	40.60	-25.9	
829.00	18.84	H	0.6	0.0	18.22	20.37	38.45	40.60	-20.2	
Mid Ch										
836.50	13.20	V	0.6	0.0	12.58	14.73	38.45	40.60	-25.9	
836.50	18.95	H	0.6	0.0	18.33	20.48	38.45	40.60	-20.1	
High Ch										
844.00	13.29	V	0.6	0.0	12.67	14.82	38.45	40.60	-25.8	
844.00	18.58	H	0.6	0.0	17.97	20.12	38.45	40.60	-20.5	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: T Wang
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, and 8ft SMA Cable

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	11.23	V	0.6	0.0	10.61	12.76	38.45	40.60	-27.8	
824.70	18.48	H	0.6	0.0	17.86	20.01	38.45	40.60	-20.6	
Mid Ch										
836.50	10.11	V	0.6	0.0	9.49	11.64	38.45	40.60	-29.0	
836.50	18.57	H	0.6	0.0	17.95	20.10	38.45	40.60	-20.5	
High Ch										
848.30	9.81	V	0.6	0.0	9.19	11.34	38.45	40.60	-29.3	
848.30	18.67	H	0.6	0.0	18.05	20.20	38.45	40.60	-20.4	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: T Wang
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, and 8ft SMA Cable

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	10.28	V	0.6	0.0	9.66	11.81	38.45	40.60	-28.8	
824.70	17.47	H	0.6	0.0	16.85	19.00	38.45	40.60	-21.6	
Mid Ch										
836.50	9.18	V	0.6	0.0	8.56	10.71	38.45	40.60	-29.9	
836.50	17.64	H	0.6	0.0	17.02	19.17	38.45	40.60	-21.4	
High Ch										
848.30	8.92	V	0.6	0.0	8.30	10.45	38.45	40.60	-30.1	
848.30	17.57	H	0.6	0.0	16.95	19.10	38.45	40.60	-21.5	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: LTE Band 5 QPSK 3MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	9.88	V	0.6	0.0	9.26	11.41	38.45	40.60	-29.2	
825.50	18.49	H	0.6	0.0	17.87	20.02	38.45	40.60	-20.6	
Mid Ch										
836.50	8.62	V	0.6	0.0	8.00	10.15	38.45	40.60	-30.4	
836.50	18.67	H	0.6	0.0	18.05	20.20	38.45	40.60	-20.4	
High Ch										
847.50	9.21	V	0.6	0.0	8.59	10.74	38.45	40.60	-29.9	
847.50	19.35	H	0.6	0.0	18.73	20.88	38.45	40.60	-19.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: LTE Band 5 16QAM 3MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	9.30	V	0.6	0.0	8.68	10.83	38.45	40.60	-29.8	
825.50	17.54	H	0.6	0.0	16.92	19.07	38.45	40.60	-21.5	
Mid Ch										
836.50	8.94	V	0.6	0.0	8.32	10.47	38.45	40.60	-30.1	
836.50	17.60	H	0.6	0.0	16.98	19.13	38.45	40.60	-21.5	
High Ch										
847.50	9.54	V	0.6	0.0	8.92	11.07	38.45	40.60	-29.5	
847.50	18.61	H	0.6	0.0	17.99	20.14	38.45	40.60	-20.5	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: LTE Band 5 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	10.36	V	0.6	0.0	9.74	11.89	38.45	40.60	-28.7	
826.50	18.94	H	0.6	0.0	18.32	20.47	38.45	40.60	-20.1	
Mid Ch										
836.50	9.73	V	0.6	0.0	9.11	11.26	38.45	40.60	-29.3	
836.50	18.74	H	0.6	0.0	18.12	20.27	38.45	40.60	-20.3	
High Ch										
846.50	9.75	V	0.6	0.0	9.13	11.28	38.45	40.60	-29.3	
846.50	17.49	H	0.6	0.0	16.87	19.02	38.45	40.60	-21.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: LTE Band 5 16QAM 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	10.20	V	0.6	0.0	9.58	11.73	38.45	40.60	-28.9	
826.50	17.47	H	0.6	0.0	16.85	19.00	38.45	40.60	-21.6	
Mid Ch										
836.50	9.86	V	0.6	0.0	9.24	11.39	38.45	40.60	-29.2	
836.50	17.74	H	0.6	0.0	17.12	19.27	38.45	40.60	-21.3	
High Ch										
846.50	9.53	V	0.6	0.0	8.91	11.06	38.45	40.60	-29.5	
846.50	17.57	H	0.6	0.0	16.95	19.10	38.45	40.60	-21.5	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14u17673
Date: 6/17/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: LTE Band 5 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	10.77	V	0.6	0.0	10.15	12.30	38.45	40.60	-28.3	
829.00	18.95	H	0.6	0.0	18.33	20.48	38.45	40.60	-20.1	
Mid Ch										
836.50	10.17	V	0.6	0.0	9.55	11.70	38.45	40.60	-28.9	
836.50	19.07	H	0.6	0.0	18.45	20.60	38.45	40.60	-20.0	
High Ch										
844.00	10.36	V	0.6	0.0	9.74	11.89	38.45	40.60	-28.7	
844.00	19.18	H	0.6	0.0	18.56	20.71	38.45	40.60	-19.9	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: Macie
Configuration: EUT Only
Mode: LTE Band 5 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	9.67	V	0.6	0.0	9.05	11.20	38.45	40.60	-29.4	
829.00	17.55	H	0.6	0.0	16.93	19.08	38.45	40.60	-21.5	
Mid Ch										
836.50	8.24	V	0.6	0.0	7.62	9.77	38.45	40.60	-30.8	
836.50	17.79	H	0.6	0.0	17.17	19.32	38.45	40.60	-21.3	
High Ch										
844.00	9.20	V	0.6	0.0	8.58	10.73	38.45	40.60	-29.9	
844.00	17.52	H	0.6	0.0	16.90	19.05	38.45	40.60	-21.5	

Rev. 10.24.13

9.1.4. LTE BAND 13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 13 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	12.30	V	0.55	0.0	11.75	13.90	34.77	36.99	-23.1	
779.50	18.86	H	0.55	0.0	18.31	20.46	34.77	36.99	-16.5	
Mid Ch										
782.00	14.30	V	0.55	0.0	13.75	15.90	34.77	36.99	-21.1	
782.00	17.91	H	0.55	0.0	17.36	19.51	34.77	36.99	-17.5	
High Ch										
784.50	14.54	V	0.55	0.0	13.99	16.14	34.77	36.99	-20.9	
784.50	18.53	H	0.55	0.0	17.98	20.13	34.77	36.99	-16.9	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:	Apple
Project #:	14U17673
Date:	06/17/14
Test Engineer:	M. Hua
Configuration:	EUT Only
Mode:	LTE Band 13 16QAM5MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	11.34	V	0.55	0.0	10.79	12.94	34.77	36.99	-24.0	
779.50	17.62	H	0.55	0.0	17.07	19.22	34.77	36.99	-17.8	
Mid Ch										
782.00	13.34	V	0.55	0.0	12.79	14.94	34.77	36.99	-22.1	
782.00	17.75	H	0.55	0.0	17.20	19.35	34.77	36.99	-17.6	
High Ch										
784.50	13.38	V	0.55	0.0	12.83	14.98	34.77	36.99	-22.0	
784.50	17.63	H	0.55	0.0	17.08	19.23	34.77	36.99	-17.8	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 13 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	12.98	V	0.55	0.0	12.43	14.58	34.77	36.99	-22.4	
782.00	18.47	H	0.55	0.0	17.92	20.07	34.77	36.99	-16.9	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 13 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	12.24	V	0.55	0.0	11.69	13.84	34.77	36.99	-23.2	
782.00	17.75	H	0.55	0.0	17.20	19.35	34.77	36.99	-17.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: LTE Band 13 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	9.98	V	0.55	0.0	9.43	11.58	34.77	36.99	-25.4	
779.50	16.27	H	0.55	0.0	15.72	17.87	34.77	36.99	-19.1	
Mid Ch										
782.00	9.58	V	0.55	0.0	9.03	11.18	34.77	36.99	-25.8	
782.00	17.64	H	0.55	0.0	17.09	19.24	34.77	36.99	-17.8	
High Ch										
784.50	9.82	V	0.55	0.0	9.27	11.42	34.77	36.99	-25.6	
784.50	18.00	H	0.55	0.0	17.45	19.60	34.77	36.99	-17.4	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: LTE Band 13 16QAM5MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	8.88	V	0.55	0.0	8.33	10.48	34.77	36.99	-26.5	
779.50	15.37	H	0.55	0.0	14.82	16.97	34.77	36.99	-20.0	
Mid Ch										
782.00	8.38	V	0.55	0.0	7.83	9.98	34.77	36.99	-27.0	
782.00	16.54	H	0.55	0.0	15.99	18.14	34.77	36.99	-18.9	
High Ch										
784.50	8.72	V	0.55	0.0	8.17	10.32	34.77	36.99	-26.7	
784.50	16.87	H	0.55	0.0	16.32	18.47	34.77	36.99	-18.5	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: LTE Band 13 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	9.38	V	0.55	0.0	8.83	10.98	34.77	36.99	-26.0	
782.00	17.44	H	0.55	0.0	16.89	19.04	34.77	36.99	-18.0	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: LTE Band 13 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	8.48	V	0.55	0.0	7.93	10.08	34.77	36.99	-26.9	
782.00	16.54	H	0.55	0.0	15.99	18.14	34.77	36.99	-18.9	

Rev. 10.24.13

9.1.5. LTE BAND 17

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 17 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	10.90	V	0.55	0.0	10.35	12.50	34.77	36.99	-24.5	
706.50	18.78	H	0.55	0.0	18.23	20.38	34.77	36.99	-16.6	
Mid Ch										
710.00	10.92	V	0.55	0.0	10.37	12.52	34.77	36.99	-24.5	
710.00	18.76	H	0.55	0.0	18.21	20.36	34.77	36.99	-16.6	
High Ch										
713.50	11.05	V	0.55	0.0	10.50	12.65	34.77	36.99	-24.3	
713.50	18.57	H	0.55	0.0	18.02	20.17	34.77	36.99	-16.8	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 17 16QAM 5MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	9.85	V	0.55	0.0	9.30	11.45	34.77	36.99	-25.5	
706.50	17.76	H	0.55	0.0	17.21	19.36	34.77	36.99	-17.6	
Mid Ch										
710.00	9.87	V	0.55	0.0	9.32	11.47	34.77	36.99	-25.5	
710.00	17.70	H	0.55	0.0	17.15	19.30	34.77	36.99	-17.7	
High Ch										
713.50	9.97	V	0.55	0.0	9.42	11.57	34.77	36.99	-25.4	
713.50	17.40	H	0.55	0.0	16.85	19.00	34.77	36.99	-18.0	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 17 QPSK 10MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	11.04	V	0.55	0.0	10.49	12.64	34.77	36.99	-24.3	
709.00	18.85	H	0.55	0.0	18.30	20.45	34.77	36.99	-16.5	
Mid Ch										
710.00	10.92	V	0.55	0.0	10.37	12.52	34.77	36.99	-24.5	
710.00	18.72	H	0.55	0.0	18.17	20.32	34.77	36.99	-16.7	
High Ch										
711.00	10.95	V	0.55	0.0	10.40	12.55	34.77	36.99	-24.4	
711.00	18.37	H	0.55	0.0	17.82	19.97	34.77	36.99	-17.0	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 17 16QAM 10MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	9.99	V	0.55	0.0	9.44	11.59	34.77	36.99	-25.4	
709.00	17.77	H	0.55	0.0	17.22	19.37	34.77	36.99	-17.6	
Mid Ch										
710.00	9.90	V	0.55	0.0	9.35	11.50	34.77	36.99	-25.5	
710.00	17.65	H	0.55	0.0	17.10	19.25	34.77	36.99	-17.7	
High Ch										
711.00	9.99	V	0.55	0.0	9.44	11.59	34.77	36.99	-25.4	
711.00	17.22	H	0.55	0.0	16.67	18.82	34.77	36.99	-18.2	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
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, and 8ft SMA Cable

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	6.88	V	0.55	0.0	6.33	8.48	34.77	36.99	-28.5	
706.50	14.38	H	0.55	0.0	13.83	15.98	34.77	36.99	-21.0	
Mid Ch										
710.00	7.65	V	0.55	0.0	7.10	9.25	34.77	36.99	-27.7	
710.00	14.72	H	0.55	0.0	14.17	16.32	34.77	36.99	-20.7	
High Ch										
713.50	8.14	V	0.55	0.0	7.59	9.74	34.77	36.99	-27.3	
713.50	14.83	H	0.55	0.0	14.28	16.43	34.77	36.99	-20.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
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, and 8ft SMA Cable

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	5.78	V	0.55	0.0	5.23	7.38	34.77	36.99	-29.6	
706.50	13.48	H	0.55	0.0	12.93	15.08	34.77	36.99	-21.9	
Mid Ch										
710.00	6.75	V	0.55	0.0	6.20	8.35	34.77	36.99	-28.6	
710.00	13.82	H	0.55	0.0	13.27	15.42	34.77	36.99	-21.6	
High Ch										
713.50	8.04	V	0.55	0.0	7.49	9.64	34.77	36.99	-27.4	
713.50	13.93	H	0.55	0.0	13.38	15.53	34.77	36.99	-21.5	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
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, and 8ft SMA Cable

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	7.40	V	0.55	0.0	6.85	9.00	34.77	36.99	-28.0	
709.00	14.63	H	0.55	0.0	14.08	16.23	34.77	36.99	-20.8	
Mid Ch										
710.00	7.61	V	0.55	0.0	7.06	9.21	34.77	36.99	-27.8	
710.00	14.67	H	0.55	0.0	14.12	16.27	34.77	36.99	-20.7	
High Ch										
711.00	7.58	V	0.55	0.0	7.03	9.18	34.77	36.99	-27.8	
711.00	15.01	H	0.55	0.0	14.46	16.61	34.77	36.99	-20.4	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
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, and 8ft SMA Cable

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	6.50	V	0.55	0.0	5.95	8.10	34.77	36.99	-28.9	
709.00	13.73	H	0.55	0.0	13.18	15.33	34.77	36.99	-21.7	
Mid Ch										
710.00	6.61	V	0.55	0.0	6.06	8.21	34.77	36.99	-28.8	
710.00	13.77	H	0.55	0.0	13.22	15.37	34.77	36.99	-21.6	
High Ch										
711.00	6.92	V	0.55	0.0	6.37	8.52	34.77	36.99	-28.5	
711.00	14.11	H	0.55	0.0	13.56	15.71	34.77	36.99	-21.3	

Rev. 10.24.13

9.1.6. LTE BAND 25

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.8	V	0.98	7.88	25.70	33.0	-7.3	
1.851	18.5	H	0.98	7.88	25.40	33.0	-7.6	
Mid Ch								
1.883	18.4	V	0.98	7.86	25.26	33.0	-7.7	
1.883	18.9	H	0.98	7.86	25.73	33.0	-7.3	
High Ch								
1.914	18.2	V	0.98	7.84	25.06	33.0	-7.9	
1.914	19.5	H	0.98	7.84	26.32	33.0	-6.7	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	17.9	V	0.98	7.88	24.77	33.0	-8.2	
1.851	17.7	H	0.98	7.88	24.57	33.0	-8.4	
Mid Ch								
1.883	17.6	V	0.98	7.86	24.46	33.0	-8.5	
1.883	17.8	H	0.98	7.86	24.68	33.0	-8.3	
High Ch								
1.914	17.3	V	0.98	7.84	24.11	33.0	-8.9	
1.914	18.6	H	0.98	7.84	25.41	33.0	-7.6	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.9	V	0.98	7.88	25.82	33.0	-7.2	
1.852	18.4	H	0.98	7.88	25.30	33.0	-7.7	
Mid Ch								
1.883	18.9	V	0.98	7.86	25.76	33.0	-7.2	
1.883	18.8	H	0.98	7.86	25.68	33.0	-7.3	
High Ch								
1.914	18.2	V	0.98	7.84	25.06	33.0	-7.9	
1.914	19.5	H	0.98	7.84	26.31	33.0	-6.7	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.0	V	0.98	7.88	24.89	33.0	-8.1	
1.852	17.6	H	0.98	7.88	24.47	33.0	-8.5	
Mid Ch								
1.883	18.0	V	0.98	7.86	24.83	33.0	-8.2	
1.883	17.9	H	0.98	7.86	24.79	33.0	-8.2	
High Ch								
1.914	17.3	V	0.98	7.84	24.11	33.0	-8.9	
1.914	18.5	H	0.98	7.84	25.40	33.0	-7.6	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.8	V	0.98	7.88	25.67	33.0	-7.3	
1.853	18.3	H	0.98	7.88	25.24	33.0	-7.8	
Mid Ch								
1.883	18.7	V	0.98	7.86	25.53	33.0	-7.5	
1.883	19.6	H	0.98	7.86	26.43	33.0	-6.6	
High Ch								
1.913	18.2	V	0.98	7.84	25.06	33.0	-7.9	
1.913	19.2	H	0.98	7.84	26.10	33.0	-6.9	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	17.8	V	0.98	7.88	24.74	33.0	-8.3	
1.853	17.5	H	0.98	7.88	24.41	33.0	-8.6	
Mid Ch								
1.883	17.7	V	0.98	7.86	24.60	33.0	-8.4	
1.883	18.7	H	0.98	7.86	25.54	33.0	-7.5	
High Ch								
1.913	17.3	V	0.98	7.84	24.11	33.0	-8.9	
1.913	18.3	H	0.98	7.84	25.19	33.0	-7.8	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	19.8	V	0.98	7.88	26.65	33.0	-6.4	
1.855	18.4	H	0.98	7.88	25.30	33.0	-7.7	
Mid Ch								
1.883	19.4	V	0.98	7.86	26.31	33.0	-6.7	
1.883	19.5	H	0.98	7.86	26.38	33.0	-6.6	
High Ch								
1.910	18.2	V	0.98	7.84	25.03	33.0	-8.0	
1.910	19.7	H	0.98	7.84	26.60	33.0	-6.4	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.8	V	0.98	7.88	25.72	33.0	-7.3	
1.855	17.6	H	0.98	7.88	24.47	33.0	-8.5	
Mid Ch								
1.883	18.5	V	0.98	7.86	25.38	33.0	-7.6	
1.883	18.6	H	0.98	7.86	25.49	33.0	-7.5	
High Ch								
1.910	17.2	V	0.98	7.84	24.08	33.0	-8.9	
1.910	18.8	H	0.98	7.84	25.69	33.0	-7.3	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	19.6	V	0.98	7.88	26.52	33.0	-6.5	
1.858	18.3	H	0.98	7.88	25.17	33.0	-7.8	
Mid Ch								
1.883	19.2	V	0.98	7.86	26.08	33.0	-6.9	
1.883	19.3	H	0.98	7.86	26.18	33.0	-6.8	
High Ch								
1.908	17.3	V	0.98	7.84	24.13	33.0	-8.9	
1.908	19.5	H	0.98	7.84	26.33	33.0	-6.7	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.7	V	0.98	7.88	25.59	33.0	-7.4	
1.858	17.4	H	0.98	7.88	24.34	33.0	-8.7	
Mid Ch								
1.883	18.3	V	0.98	7.86	25.15	33.0	-7.9	
1.883	18.4	H	0.98	7.86	25.29	33.0	-7.7	
High Ch								
1.908	16.3	V	0.98	7.84	23.18	33.0	-9.8	
1.908	18.6	H	0.98	7.84	25.42	33.0	-7.6	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	19.5	V	0.98	7.88	26.40	33.0	-6.6	
1.860	18.2	H	0.98	7.88	25.10	33.0	-7.9	
Mid Ch								
1.883	19.0	V	0.98	7.86	25.88	33.0	-7.1	
1.883	18.9	H	0.98	7.86	25.76	33.0	-7.2	
High Ch								
1.905	18.4	V	0.98	7.84	25.23	33.0	-7.8	
1.905	19.8	H	0.98	7.84	26.70	33.0	-6.3	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Project #: 14U17673
Date: 06/16/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	18.6	V	0.98	7.88	25.47	33.0	-7.5	
1.860	17.4	H	0.98	7.88	24.27	33.0	-8.7	
Mid Ch								
1.883	18.1	V	0.98	7.86	24.95	33.0	-8.1	
1.883	18.0	H	0.98	7.86	24.87	33.0	-8.1	
High Ch								
1.905	17.4	V	0.98	7.84	24.28	33.0	-8.7	
1.905	18.9	H	0.98	7.84	25.79	33.0	-7.2	

Rev. 06.16.14

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 1.4MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.9	V	0.98	7.88	18.80	33.0	-14.2	
1.851	13.3	H	0.98	7.88	20.23	33.0	-12.8	
Mid Ch								
1.883	11.6	V	0.98	7.86	18.46	33.0	-14.5	
1.883	13.4	H	0.98	7.86	20.31	33.0	-12.7	
High Ch								
1.914	11.9	V	0.98	7.84	18.76	33.0	-14.2	
1.914	14.5	H	0.98	7.84	21.31	33.0	-11.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 1.4MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.0	V	0.98	7.88	17.93	33.0	-15.1	
1.851	12.5	H	0.98	7.88	19.39	33.0	-13.6	
Mid Ch								
1.883	10.7	V	0.98	7.86	17.59	33.0	-15.4	
1.883	12.5	H	0.98	7.86	19.37	33.0	-13.6	
High Ch								
1.914	11.0	V	0.98	7.84	17.84	33.0	-15.2	
1.914	13.5	H	0.98	7.84	20.36	33.0	-12.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 3MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.8	V	0.98	7.88	18.70	33.0	-14.3	
1.852	13.1	H	0.98	7.88	19.99	33.0	-13.0	
Mid Ch								
1.883	10.8	V	0.98	7.86	17.66	33.0	-15.3	
1.883	13.7	H	0.98	7.86	20.56	33.0	-12.4	
High Ch								
1.914	11.9	V	0.98	7.84	18.76	33.0	-14.2	
1.914	14.5	H	0.98	7.84	21.40	33.0	-11.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 3MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	10.9	V	0.98	7.88	17.83	33.0	-15.2	
1.852	12.3	H	0.98	7.88	19.15	33.0	-13.9	
Mid Ch								
1.883	9.9	V	0.98	7.86	16.79	33.0	-16.2	
1.883	12.7	H	0.98	7.86	19.62	33.0	-13.4	
High Ch								
1.914	11.0	V	0.98	7.84	17.84	33.0	-15.2	
1.914	13.6	H	0.98	7.84	20.45	33.0	-12.6	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 5MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.6	V	0.98	7.88	18.50	33.0	-14.5	
1.853	13.1	H	0.98	7.88	19.98	33.0	-13.0	
Mid Ch								
1.883	10.8	V	0.98	7.86	17.66	33.0	-15.3	
1.883	13.5	H	0.98	7.86	20.37	33.0	-12.6	
High Ch								
1.913	11.7	V	0.98	7.84	18.56	33.0	-14.4	
1.913	14.0	H	0.98	7.84	20.81	33.0	-12.2	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 5MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	10.7	V	0.98	7.88	17.63	33.0	-15.4	
1.853	12.2	H	0.98	7.88	19.14	33.0	-13.9	
Mid Ch								
1.883	9.9	V	0.98	7.86	16.79	33.0	-16.2	
1.883	12.6	H	0.98	7.86	19.43	33.0	-13.6	
High Ch								
1.913	10.8	V	0.98	7.84	17.64	33.0	-15.4	
1.913	13.0	H	0.98	7.84	19.86	33.0	-13.1	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 10MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	12.0	V	0.98	7.88	18.90	33.0	-14.1	
1.855	13.2	H	0.98	7.88	20.14	33.0	-12.9	
Mid Ch								
1.883	10.8	V	0.98	7.86	17.68	33.0	-15.3	
1.883	13.5	H	0.98	7.86	20.39	33.0	-12.6	
High Ch								
1.910	11.6	V	0.98	7.84	18.43	33.0	-14.6	
1.910	14.4	H	0.98	7.84	21.23	33.0	-11.8	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 10MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.1	V	0.98	7.88	18.03	33.0	-15.0	
1.855	12.4	H	0.98	7.88	19.30	33.0	-13.7	
Mid Ch								
1.883	9.9	V	0.98	7.86	16.81	33.0	-16.2	
1.883	12.6	H	0.98	7.86	19.45	33.0	-13.6	
High Ch								
1.910	10.7	V	0.98	7.84	17.51	33.0	-15.5	
1.910	13.4	H	0.98	7.84	20.28	33.0	-12.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 15MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.9	V	0.98	7.88	18.80	33.0	-14.2	
1.858	12.9	H	0.98	7.88	19.80	33.0	-13.2	
Mid Ch								
1.883	10.6	V	0.98	7.86	17.48	33.0	-15.5	
1.883	13.4	H	0.98	7.86	20.23	33.0	-12.8	
High Ch								
1.908	11.5	V	0.98	7.84	18.33	33.0	-14.7	
1.908	14.0	H	0.98	7.84	20.83	33.0	-12.2	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 15MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.0	V	0.98	7.88	17.93	33.0	-15.1	
1.858	12.1	H	0.98	7.88	18.96	33.0	-14.0	
Mid Ch								
1.883	9.7	V	0.98	7.86	16.61	33.0	-16.4	
1.883	12.4	H	0.98	7.86	19.29	33.0	-13.7	
High Ch								
1.908	10.6	V	0.98	7.84	17.41	33.0	-15.6	
1.908	13.0	H	0.98	7.84	19.88	33.0	-13.1	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 QPSK 20MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	11.8	V	0.98	7.88	18.70	33.0	-14.3	
1.860	12.9	H	0.98	7.88	19.80	33.0	-13.2	
Mid Ch								
1.883	10.2	V	0.98	7.86	17.08	33.0	-15.9	
1.883	13.1	H	0.98	7.86	19.98	33.0	-13.0	
High Ch								
1.905	11.6	V	0.98	7.84	18.45	33.0	-14.6	
1.905	14.5	H	0.98	7.84	21.32	33.0	-11.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: R. Zheng
Configuration: EUT Only
Mode: LTE Band 25 16QAM 20MHz BW

Test Equipment:
Receiving: Horn T344, and Chamber D SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

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	10.9	V	0.98	7.88	17.83	33.0	-15.2	
1.860	12.1	H	0.98	7.88	18.96	33.0	-14.0	
Mid Ch								
1.883	9.3	V	0.98	7.86	16.21	33.0	-16.8	
1.883	12.2	H	0.98	7.86	19.04	33.0	-14.0	
High Ch								
1.905	10.7	V	0.98	7.84	17.53	33.0	-15.5	
1.905	13.5	H	0.98	7.84	20.37	33.0	-12.6	

Rev. 10.24.13

9.1.7. LTE BAND 26

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 26 QPSK 3MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	13.84	V	0.62	0.0	13.22	15.37	38.45	40.60	-25.2	
820.30	18.96	H	0.62	0.0	18.34	20.49	38.45	40.60	-20.1	
Mid Ch										
821.30	12.98	V	0.62	0.0	12.36	14.51	38.45	40.60	-26.1	
821.30	18.92	H	0.62	0.0	18.30	20.45	38.45	40.60	-20.2	
High Ch										
822.30	12.97	V	0.62	0.0	12.35	14.50	38.45	40.60	-26.1	
822.30	19.28	H	0.62	0.0	18.66	20.81	38.45	40.60	-19.8	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 26 16QAM 3MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	12.69	V	0.62	0.0	12.07	14.22	38.45	40.60	-26.4	
820.30	18.06	H	0.62	0.0	17.44	19.59	38.45	40.60	-21.0	
Mid Ch										
821.30	11.94	V	0.62	0.0	11.32	13.47	38.5	40.6	-27.1	
821.30	17.92	H	0.62	0.0	17.30	19.45	38.5	40.6	-21.2	
High Ch										
822.30	12.02	V	0.62	0.0	11.40	13.55	38.5	40.6	-27.1	
822.30	18.33	H	0.62	0.0	17.71	19.86	38.5	40.6	-20.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 26 QPSK 5MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	12.75	V	0.62	0.0	12.13	14.28	38.45	40.60	-26.3	
821.30	19.33	H	0.62	0.0	18.71	20.86	38.45	40.60	-19.7	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company: Apple
Project #: 14U17673
Date: 06/17/14
Test Engineer: M. Hua
Configuration: EUT Only
Mode: LTE Band 26 16QAM 5MHz BW

Test Equipment:
Receiving: Sunol T407, and Chamber D Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	11.78	V	0.62	0.0	11.16	13.31	38.45	40.60	-27.3	
821.30	18.29	H	0.62	0.0	17.67	19.82	38.45	40.60	-20.8	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/20/2014
Test Engineer: Macie
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 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 EIRP (dB)	Notes
Mid Ch										
819.00	12.94	V	0.62	0.0	12.32	14.47	38.45	40.60	-26.1	
819.00	18.70	H	0.62	0.0	18.08	20.23	38.45	40.60	-20.4	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/20/2014
Test Engineer: Macie
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
Low Ch										
819.00	11.72	V	0.62	0.0	11.10	13.25	38.45	40.60	-27.4	
819.00	18.01	H	0.62	0.0	17.39	19.54	38.45	40.60	-21.1	

Rev. 10.24.13

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

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company: Apple
Project #: 14U17673
Date: 6/17/2014
Test Engineer: T Wang
Configuration: EUT Only
Mode: LTE Band 26 QPSK 3MHz BW

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole S/N: 00022117, and 8ft SMA Cable

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	10.78	V	0.62	0.0	10.16	12.31	38.45	40.60	-28.3	
820.30	16.67	H	0.62	0.0	16.05	18.20	38.45	40.60	-22.4	
Mid Ch										
821.30	9.98	V	0.62	0.0	9.36	11.51	38.45	40.60	-29.1	
821.30	16.94	H	0.62	0.0	16.32	18.47	38.45	40.60	-22.1	
High Ch										
822.30	10.02	V	0.62	0.0	9.40	11.55	38.45	40.60	-29.1	
822.30	17.07	H	0.62	0.0	16.45	18.60	38.45	40.60	-22.0	

Rev. 10.24.13