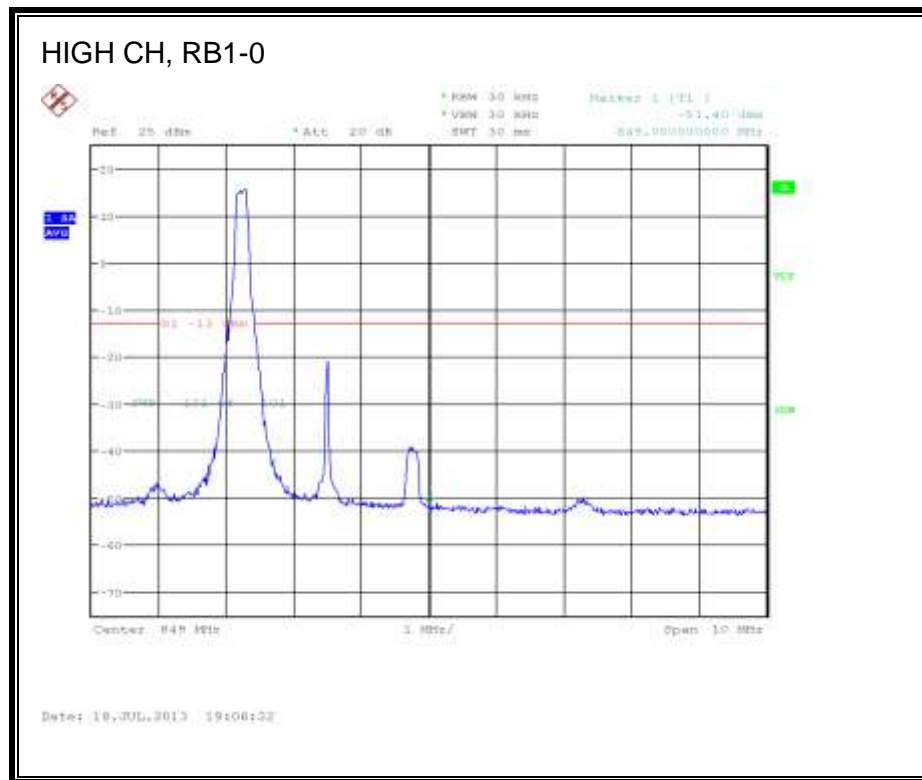
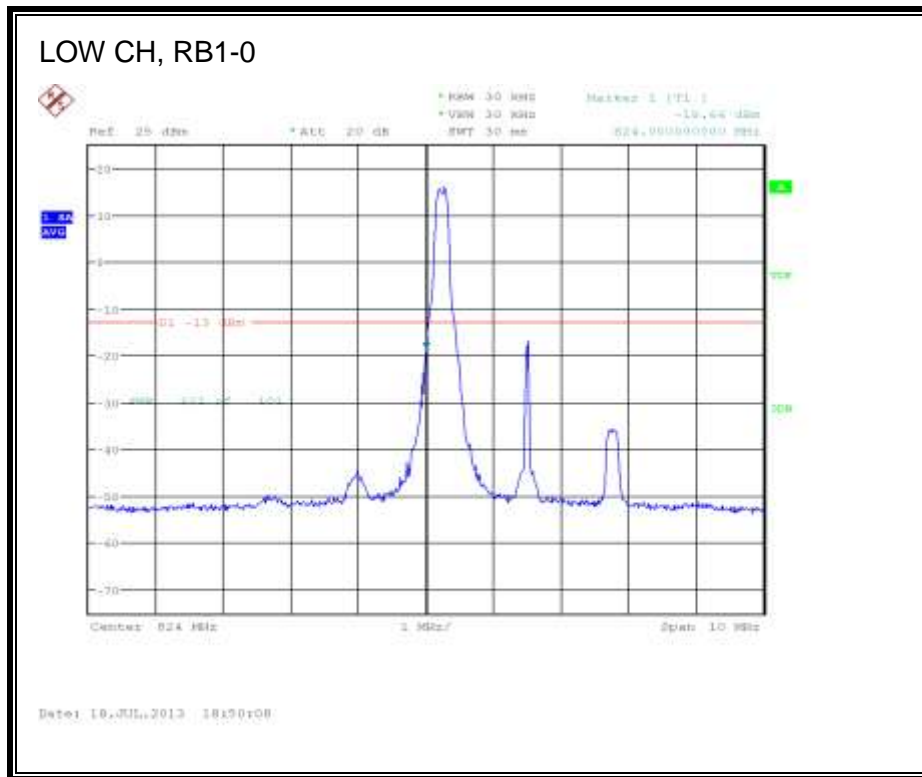
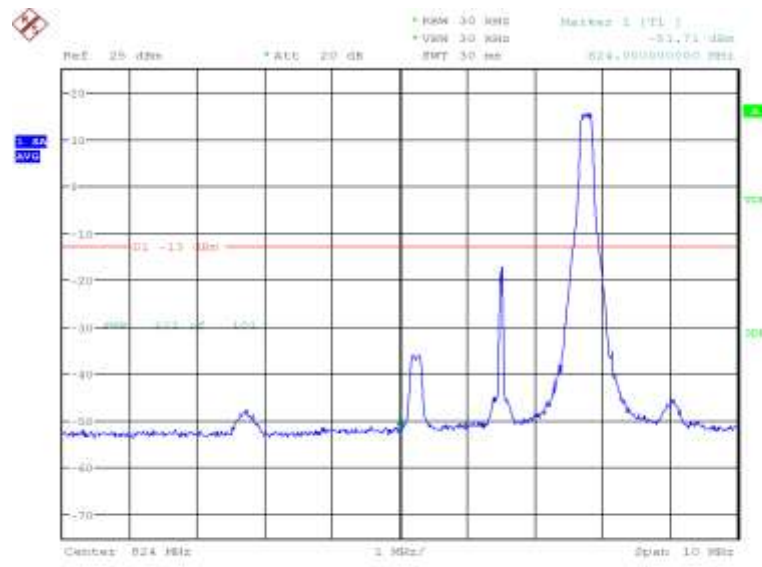


16QAM Band 5 (3 MHz BANDWIDTH)

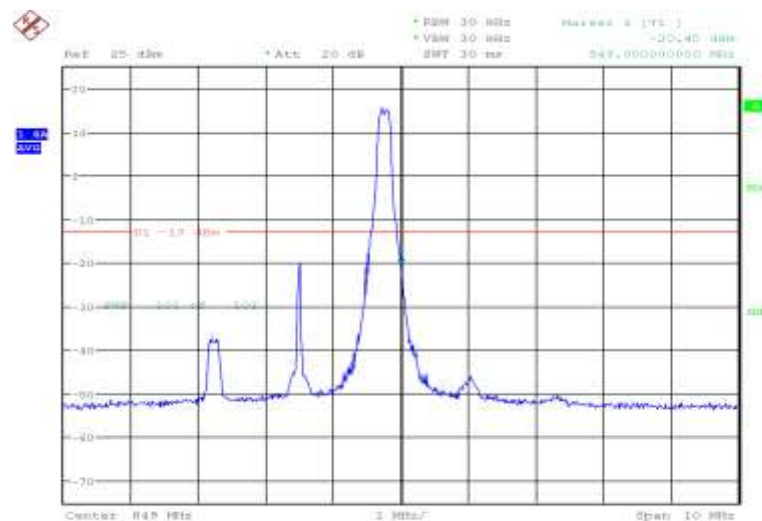


LOW CH, RB1-14

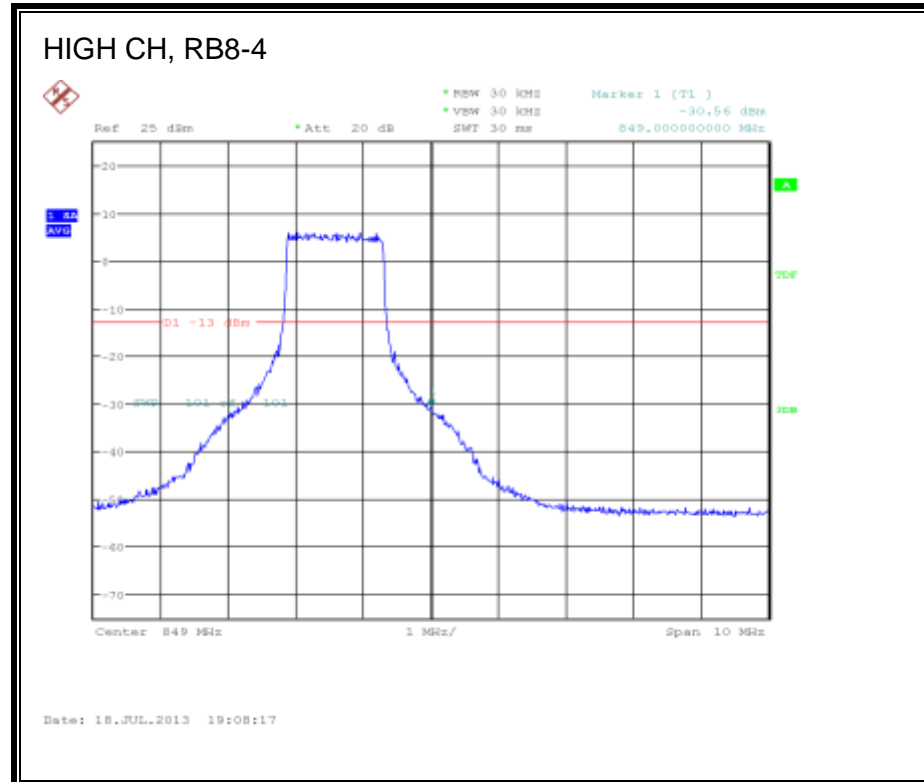


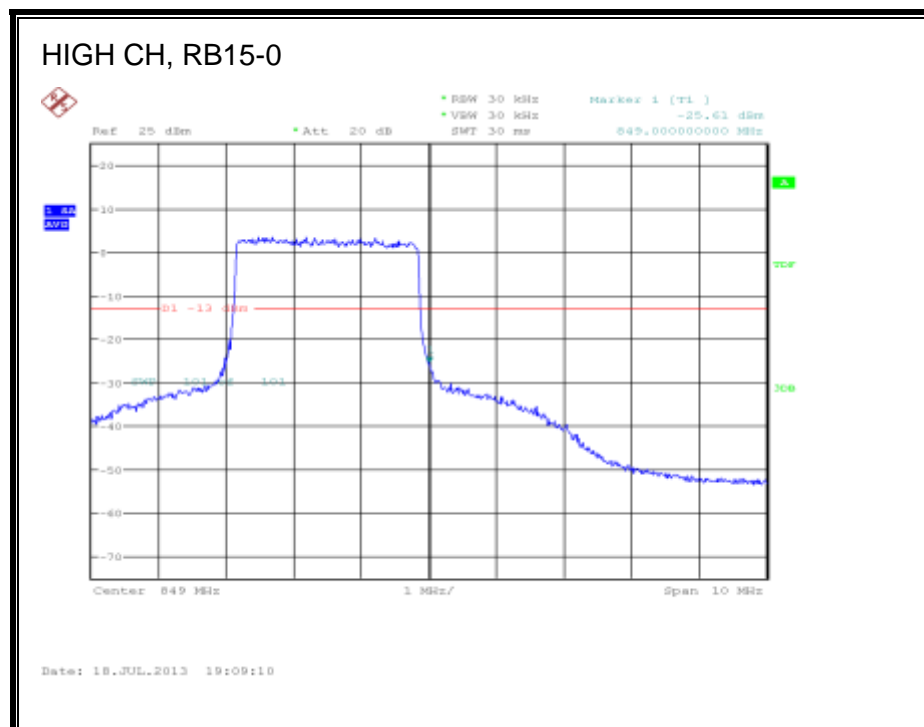
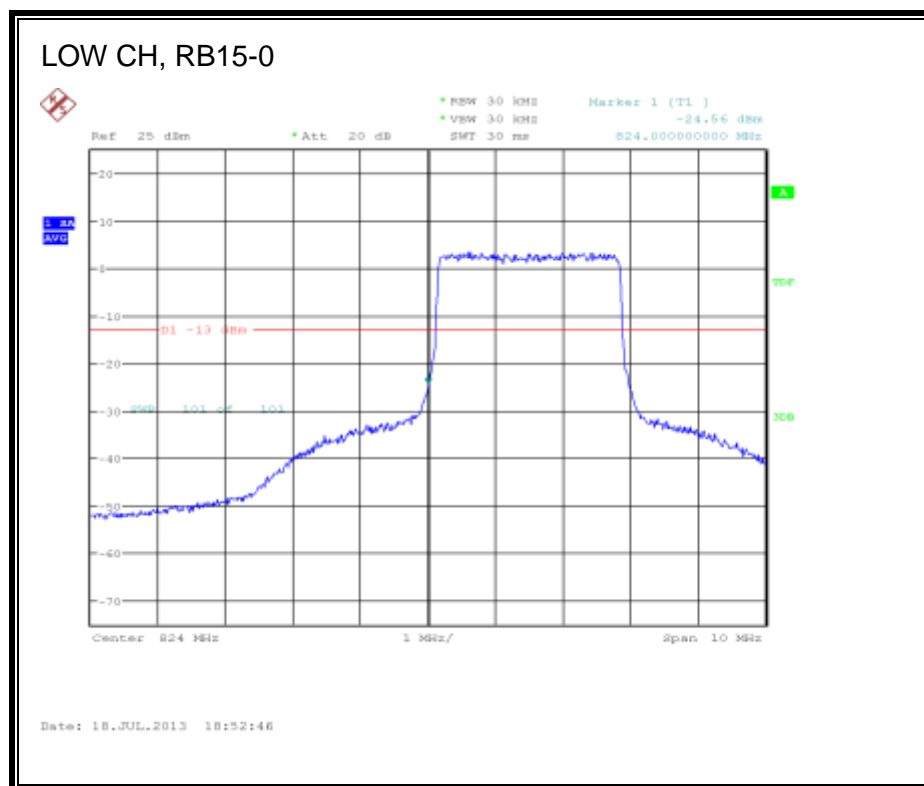
Date: 10 JUL 2013 18:51:01

HIGH CH, RB1-14

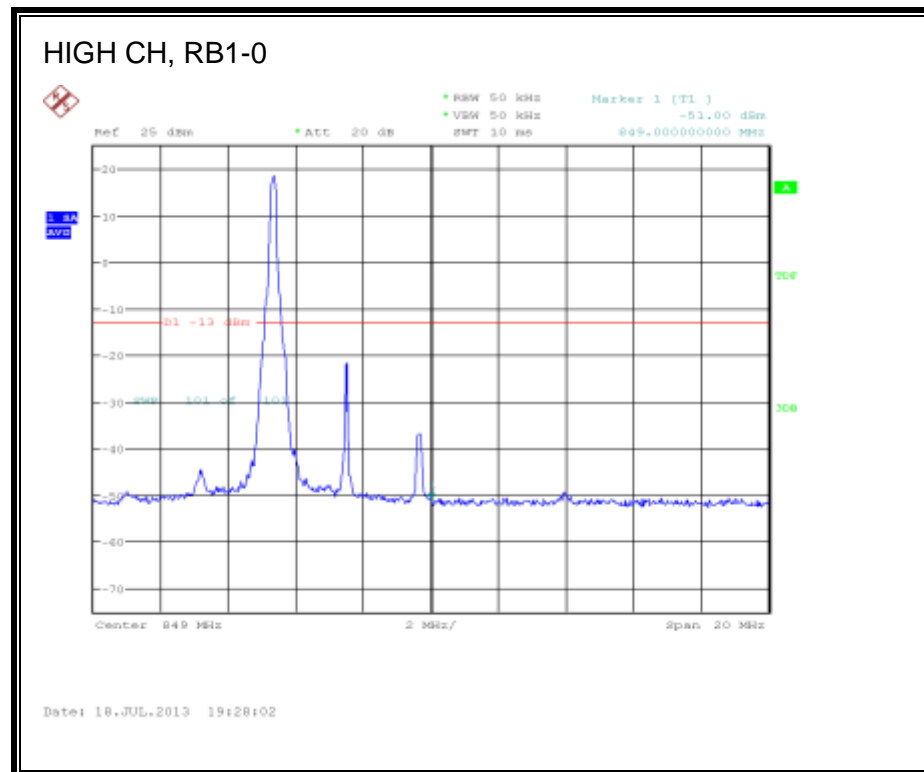
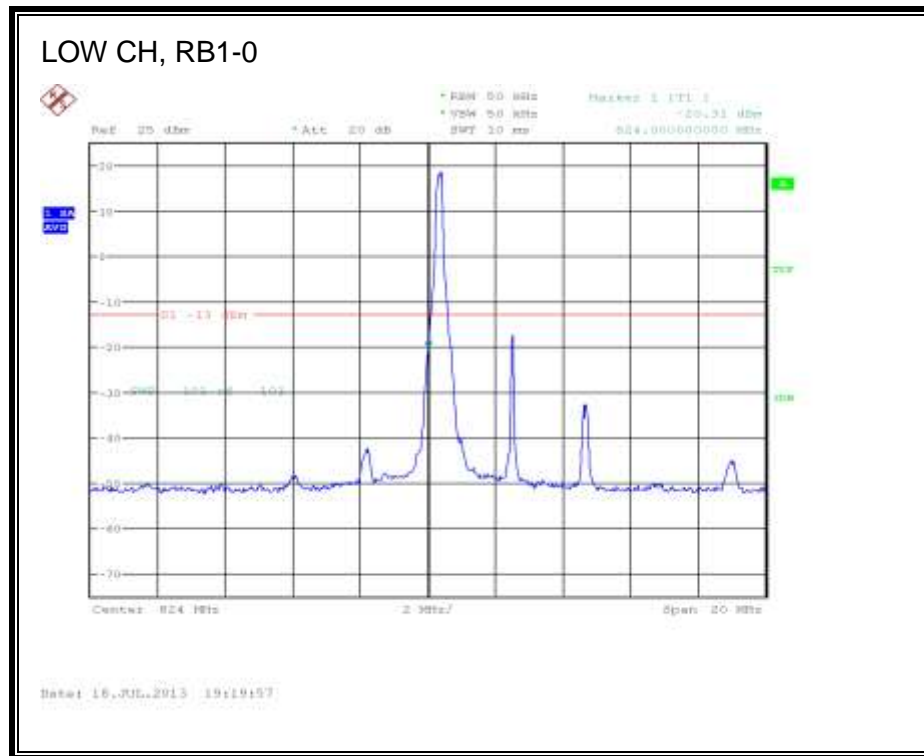


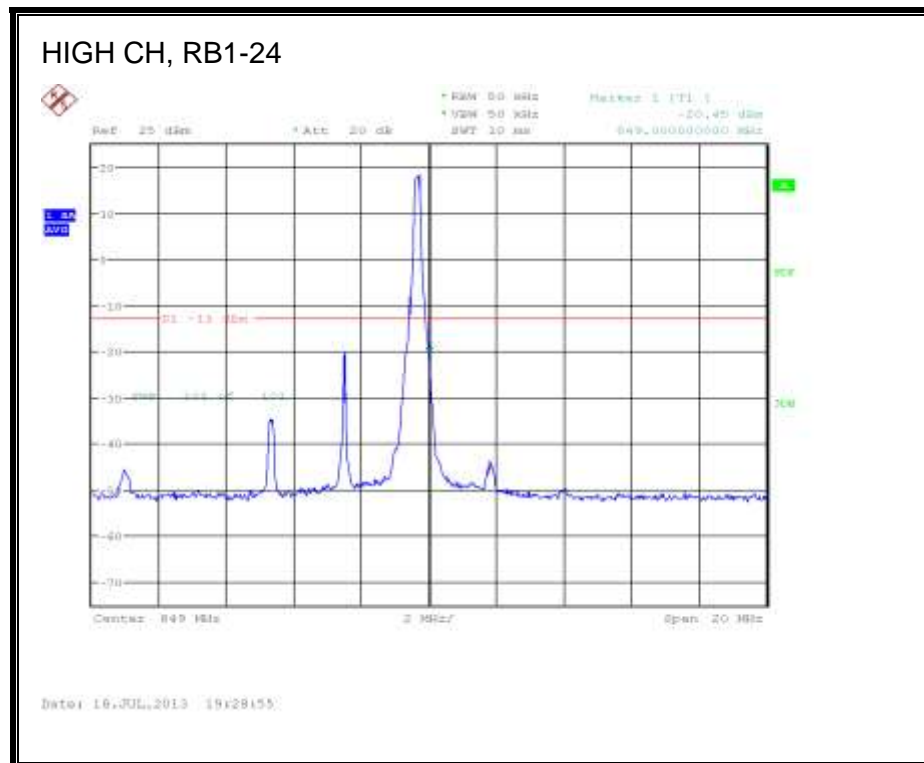
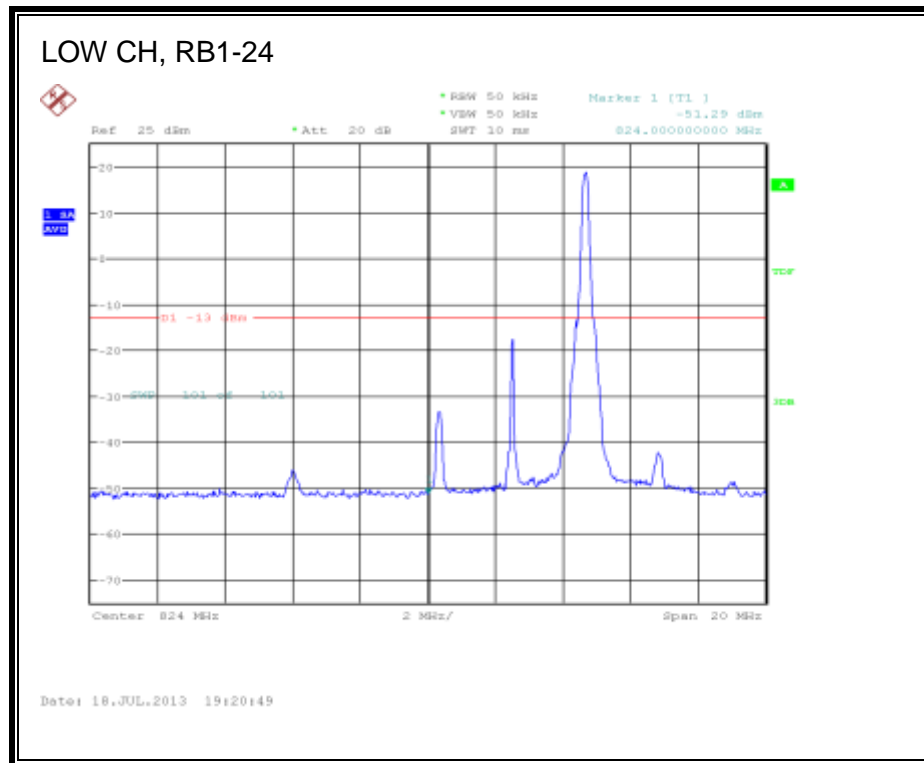
Date: 10 JUL 2013 19:07:25

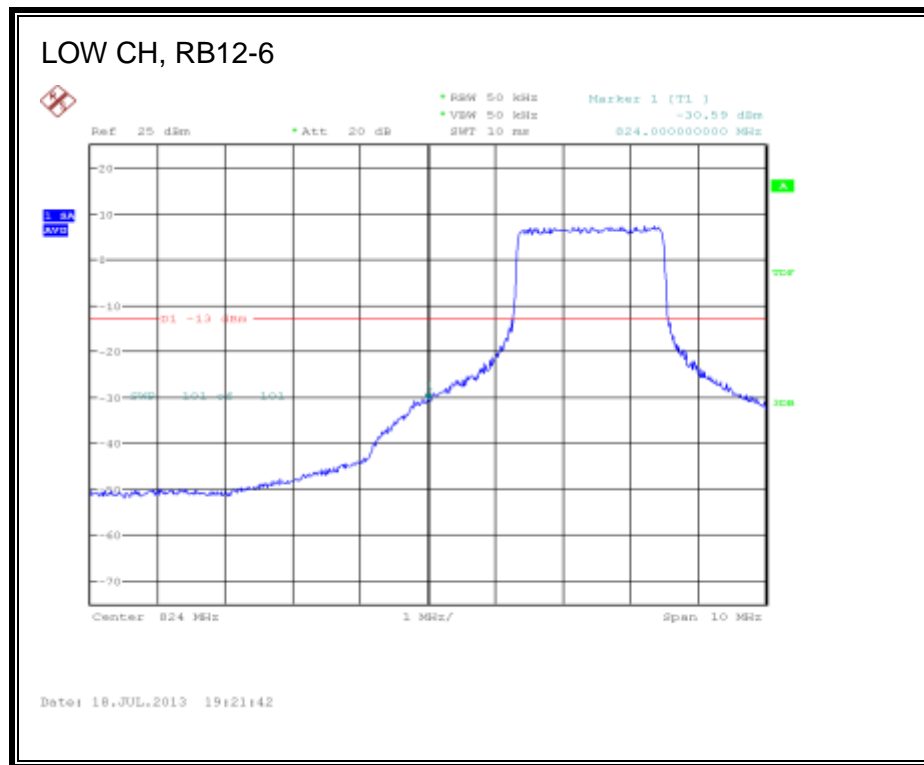


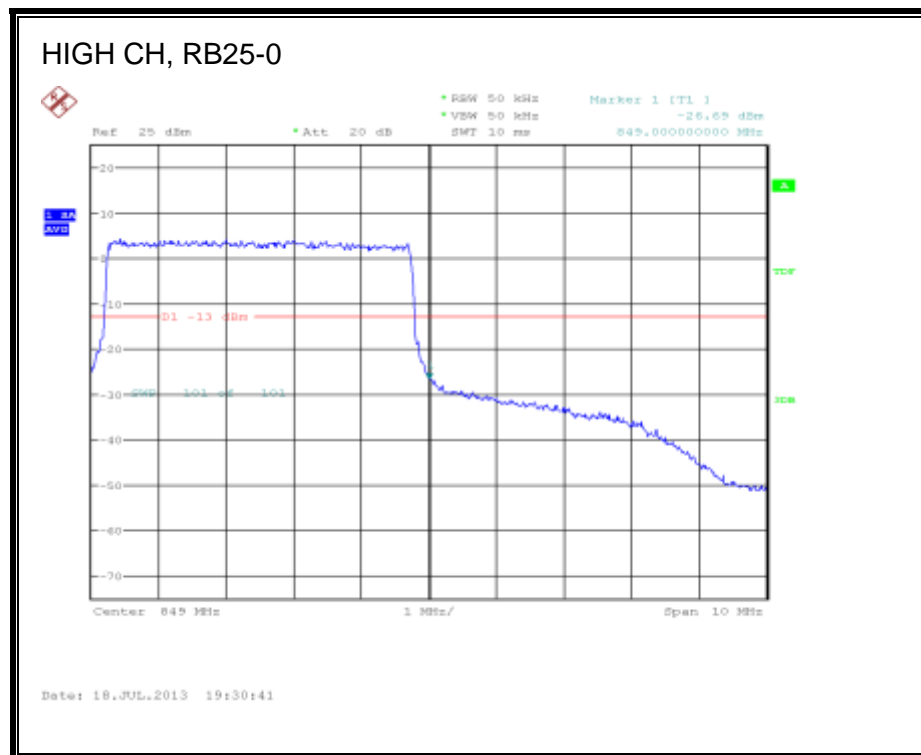


QPSK Band 5 (5 MHz BANDWIDTH)

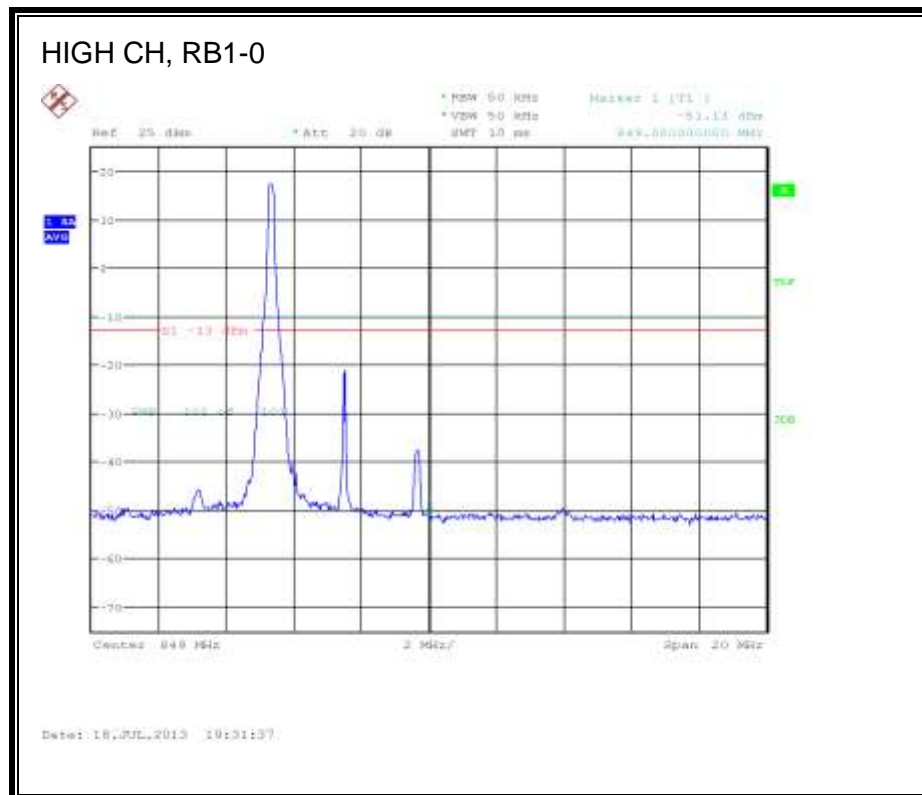
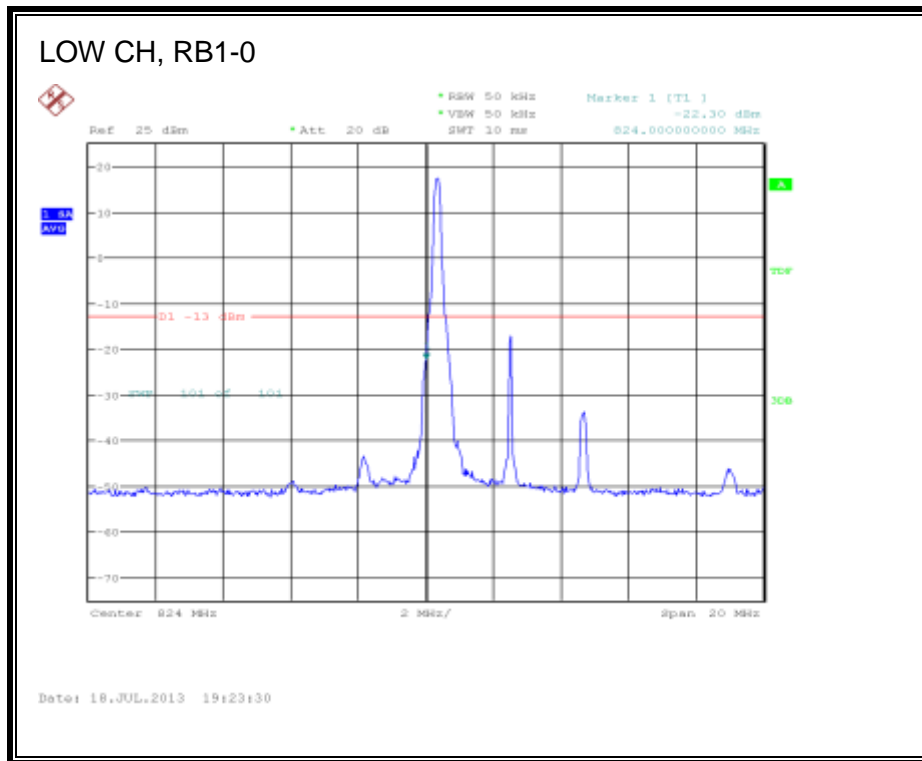


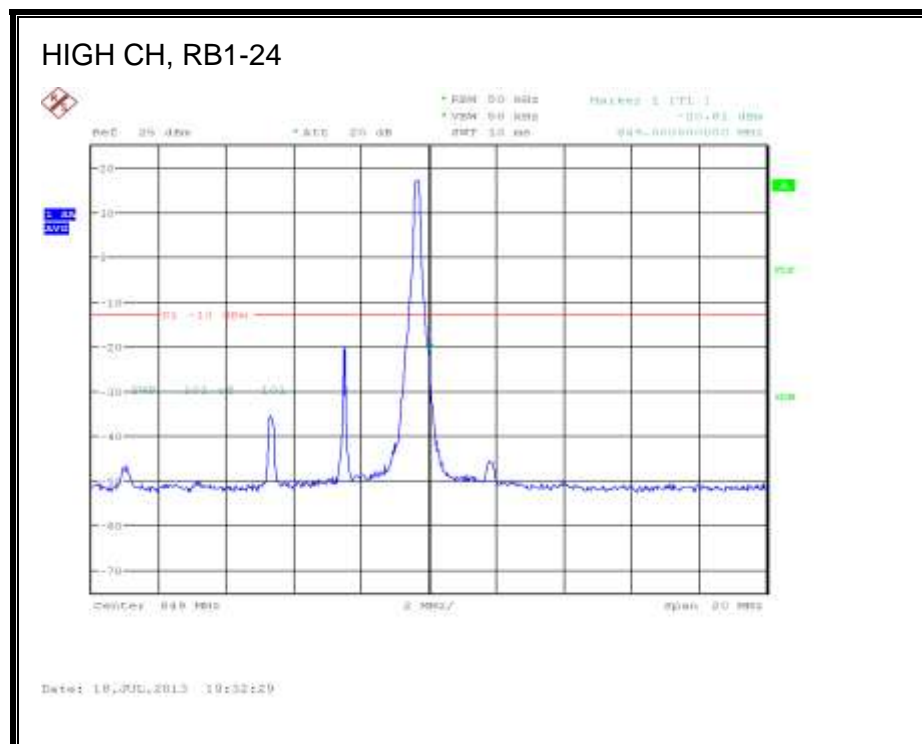
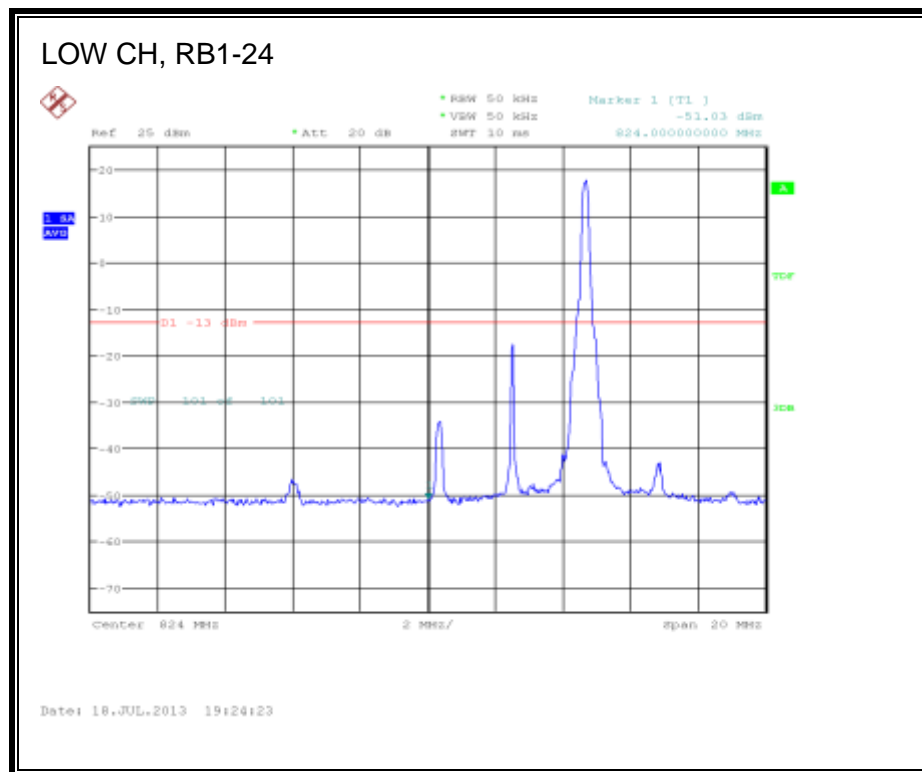


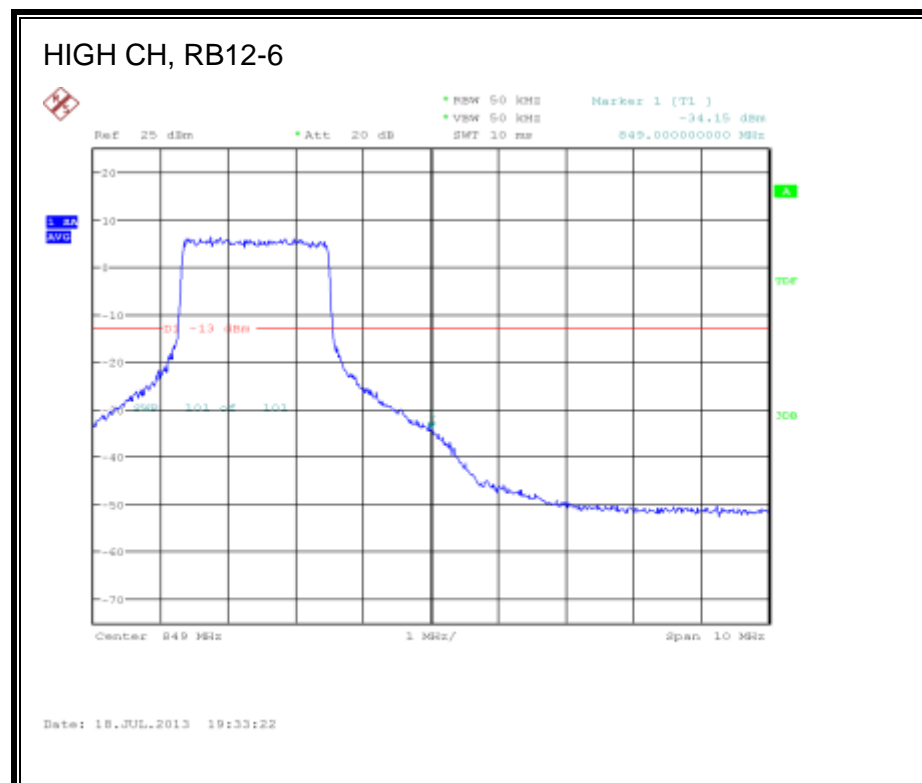
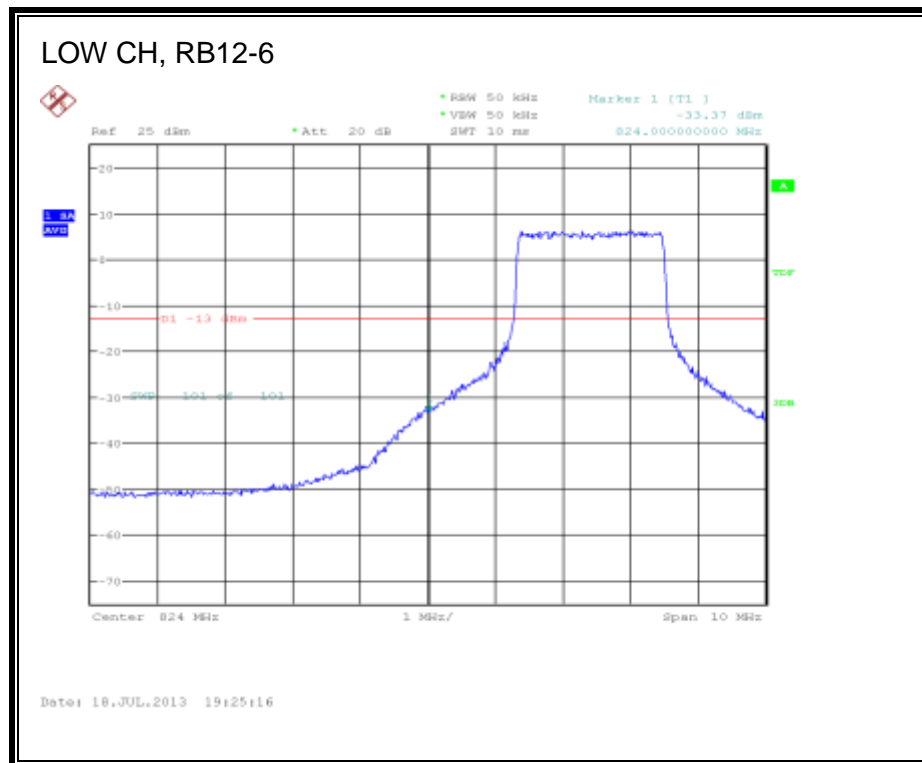


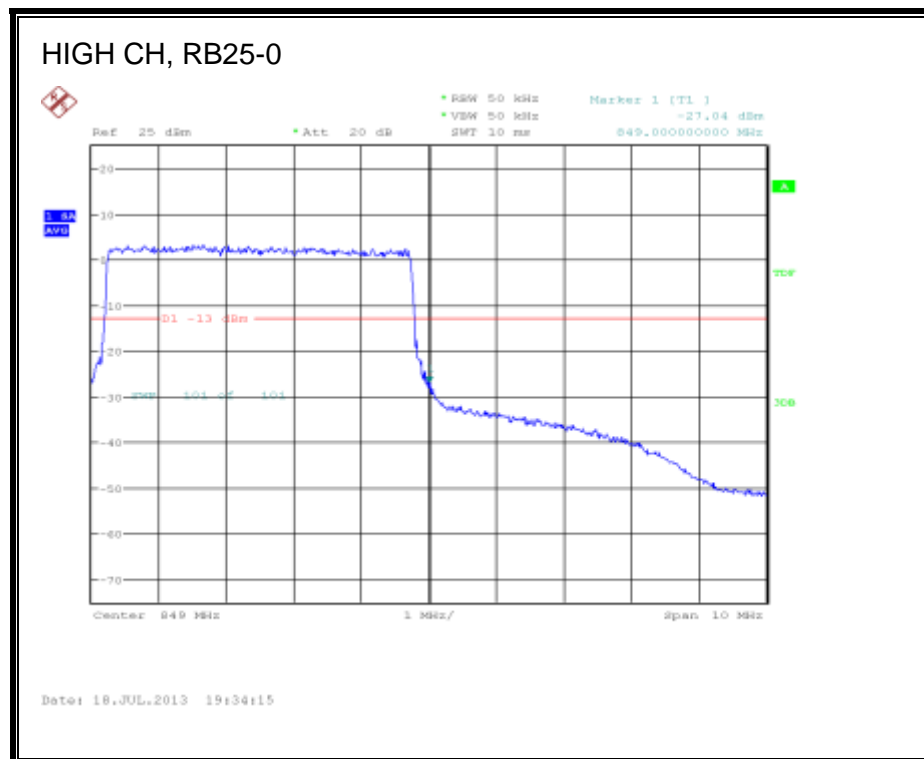
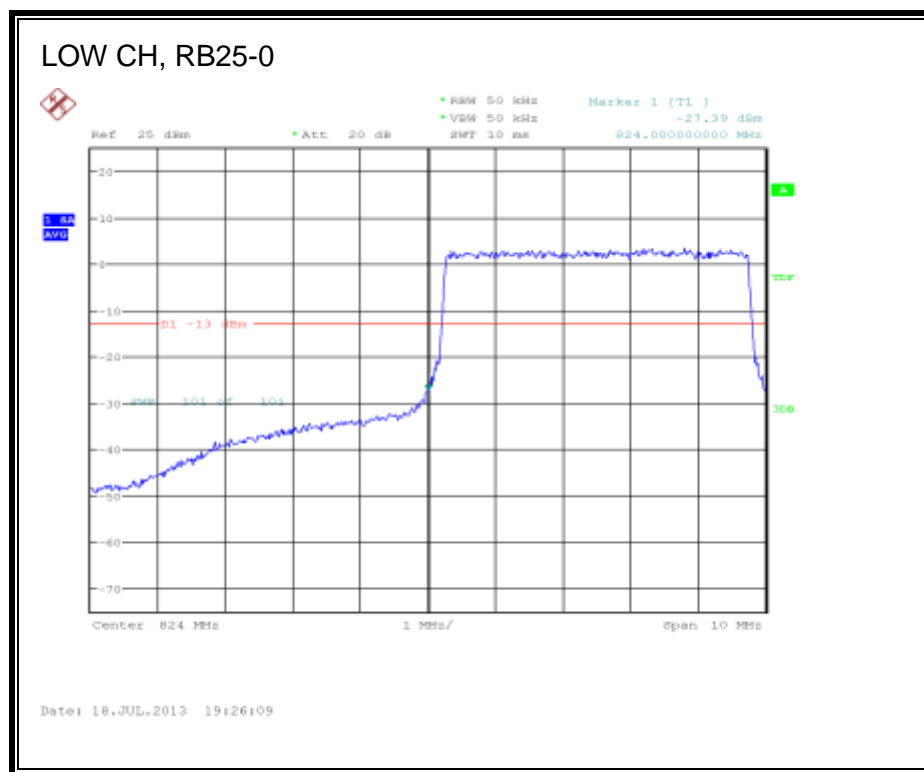


16QAM Band 5 (5 MHz BANDWIDTH)

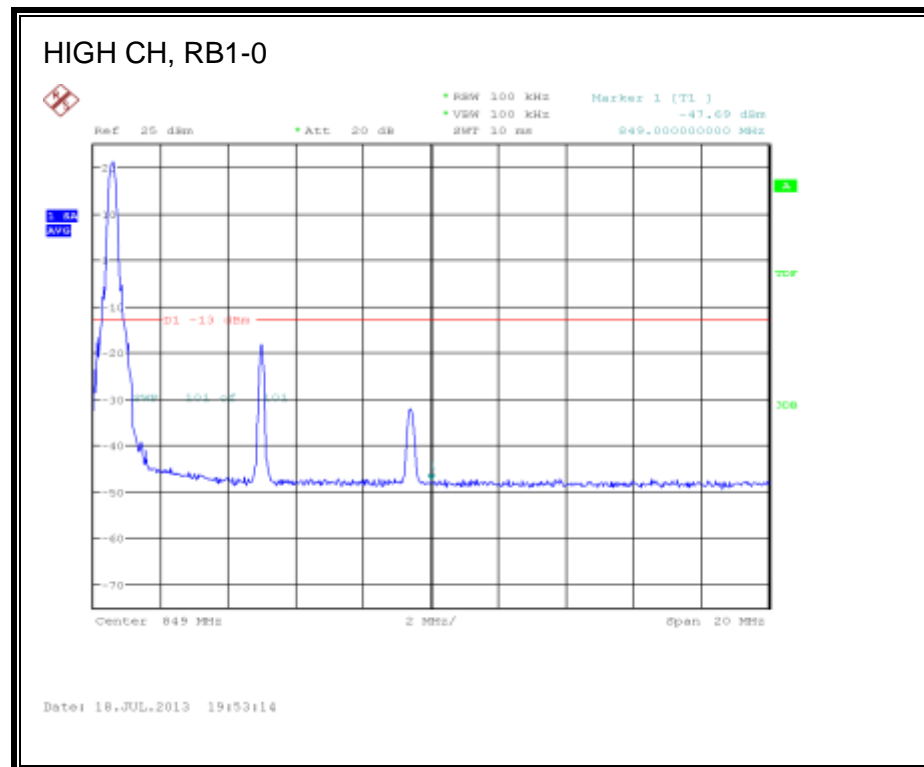
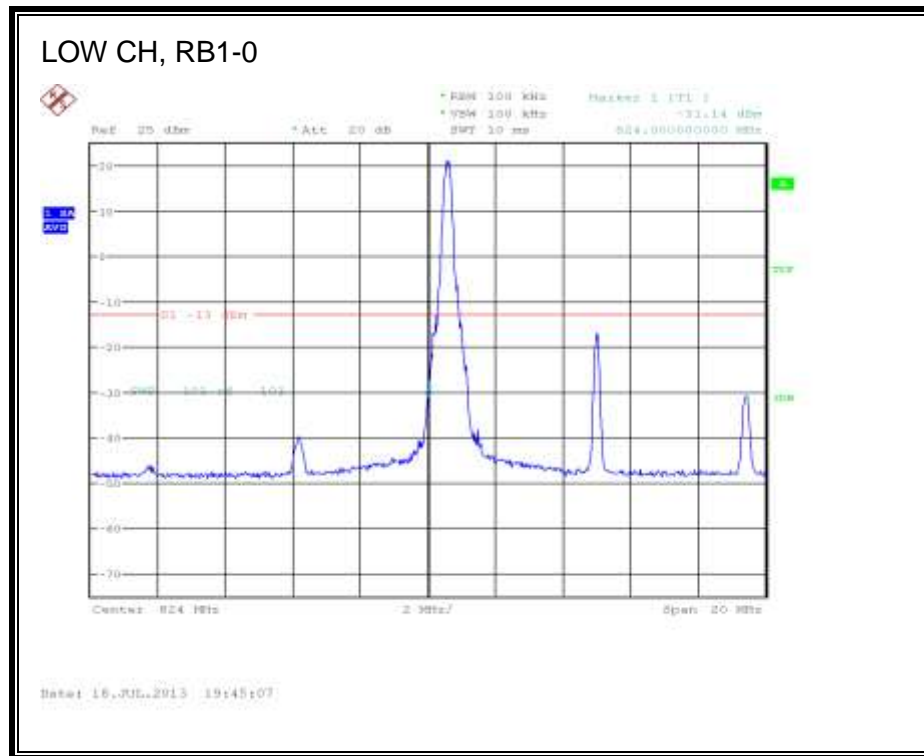


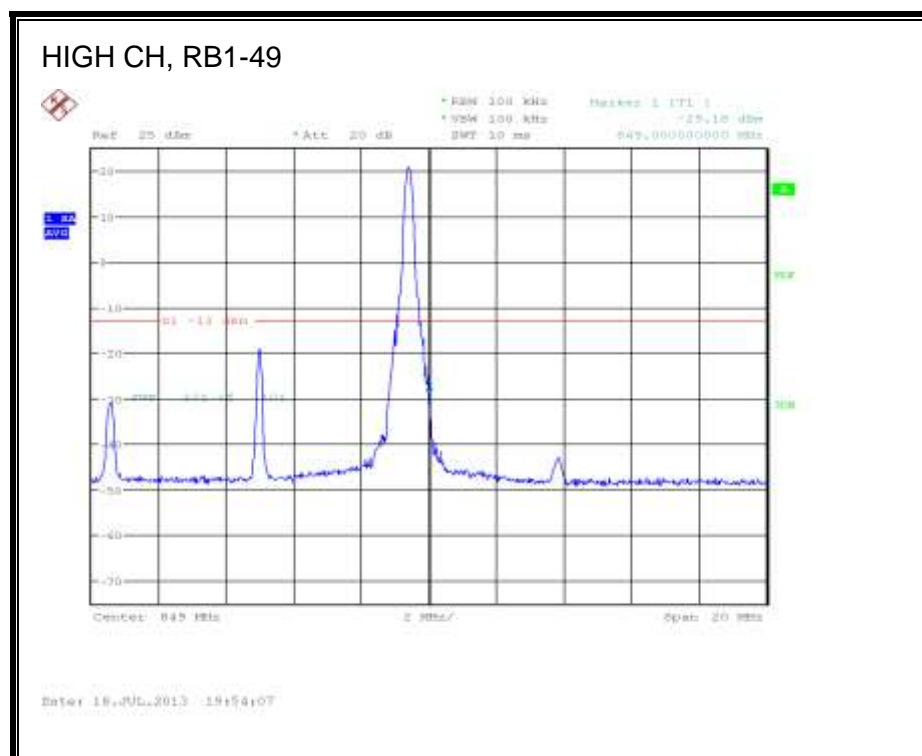
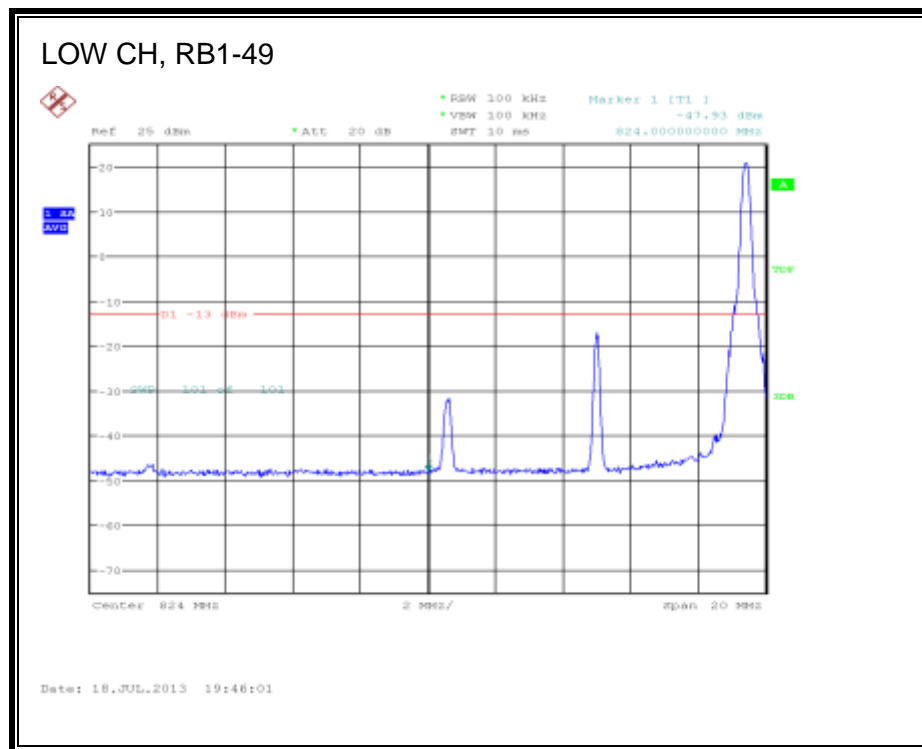


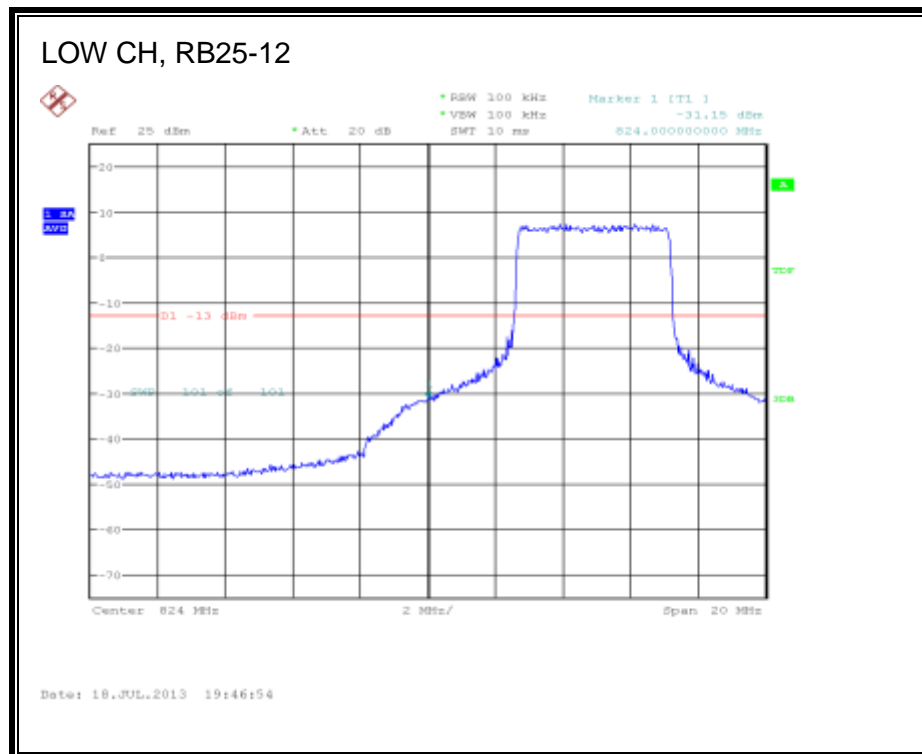


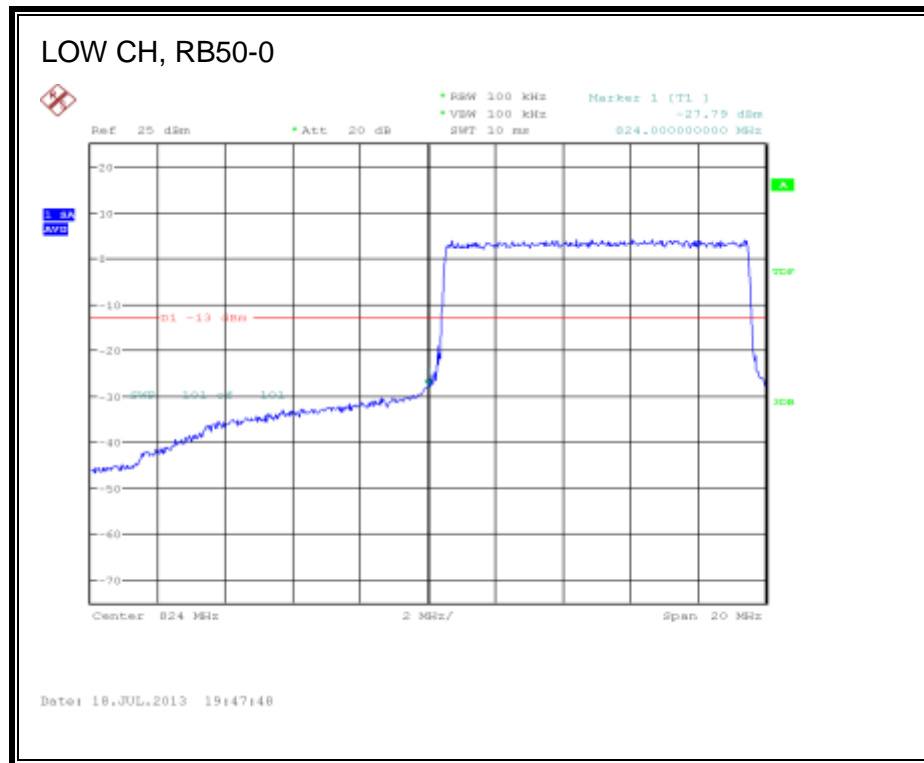


QPSK Band 5 (10 MHz BANDWIDTH)

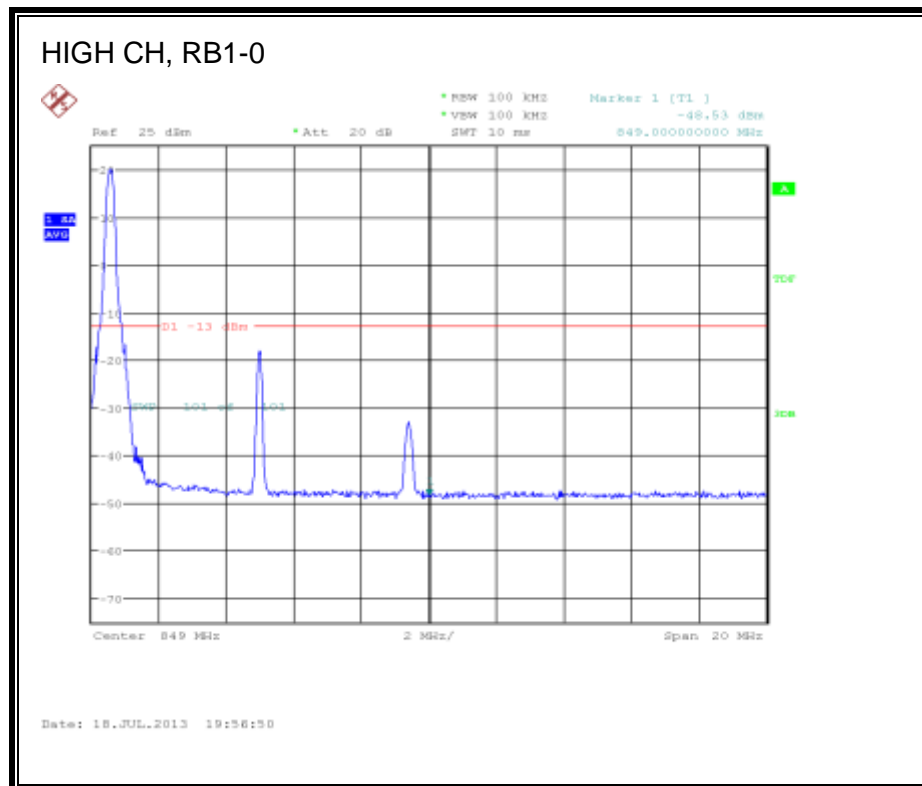
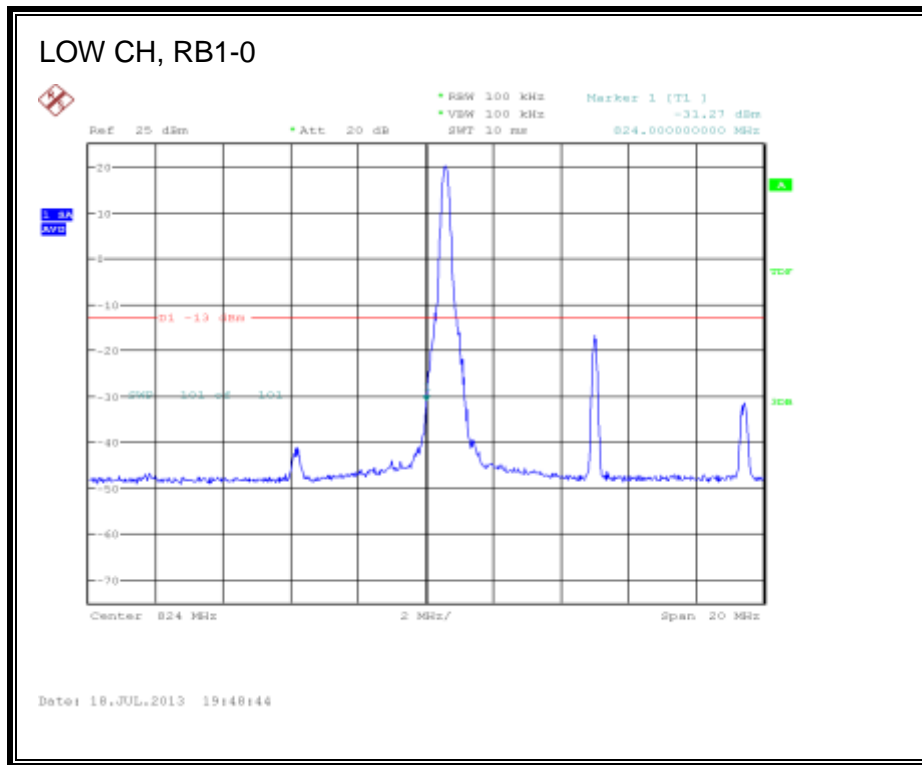


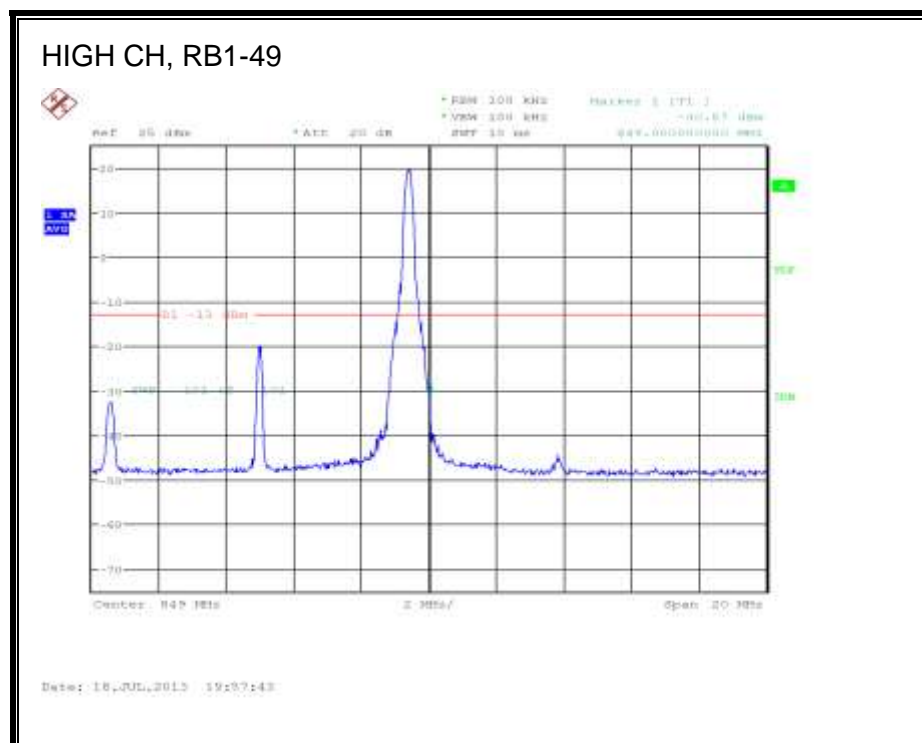
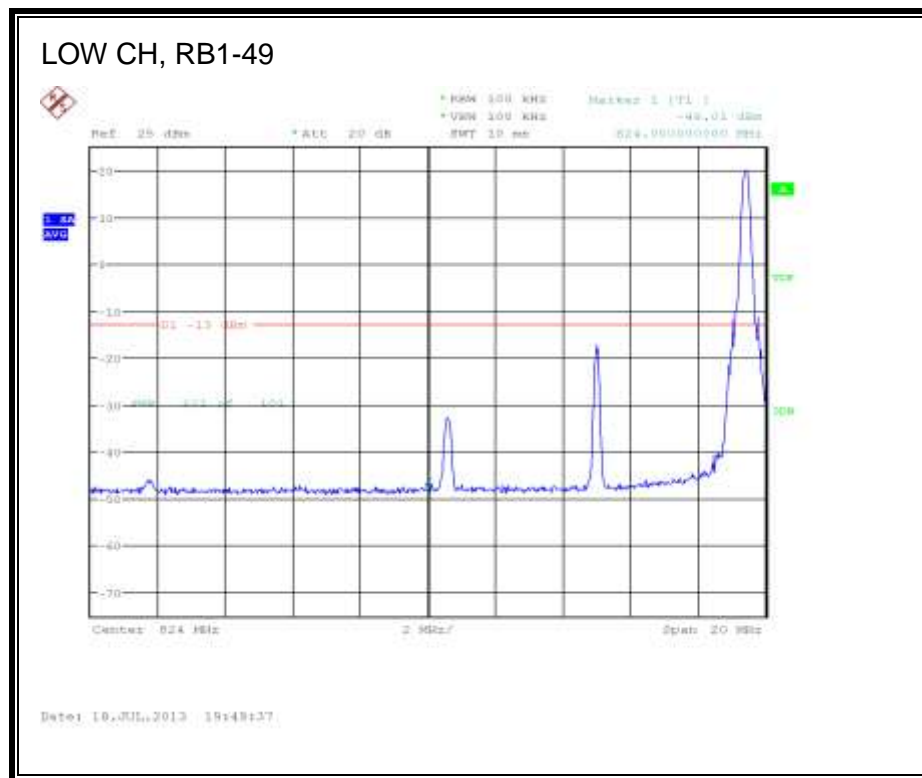


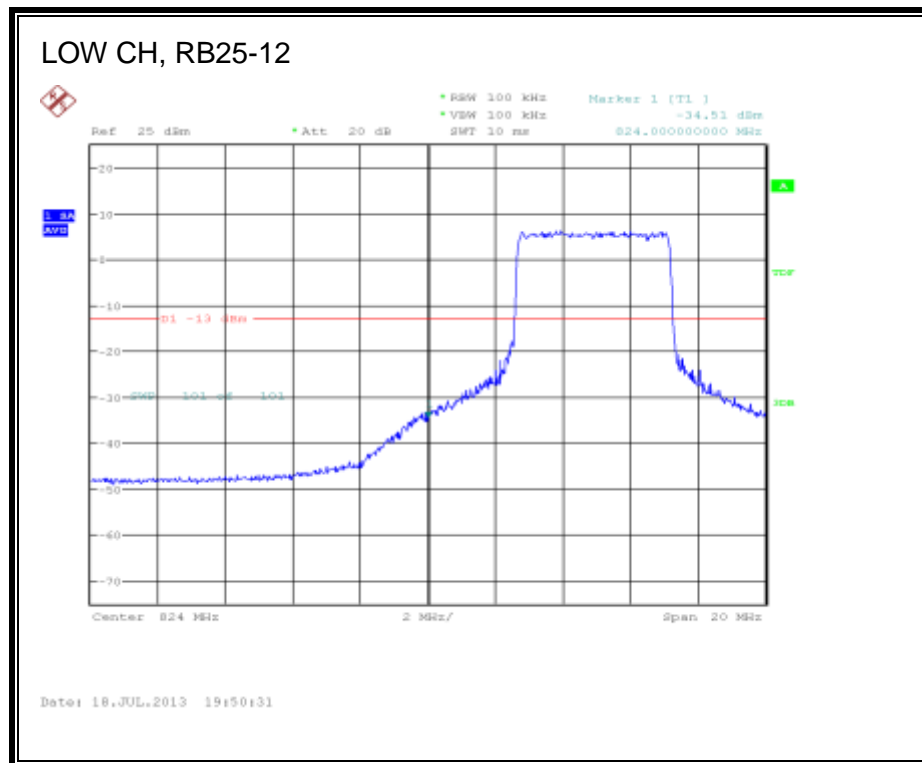


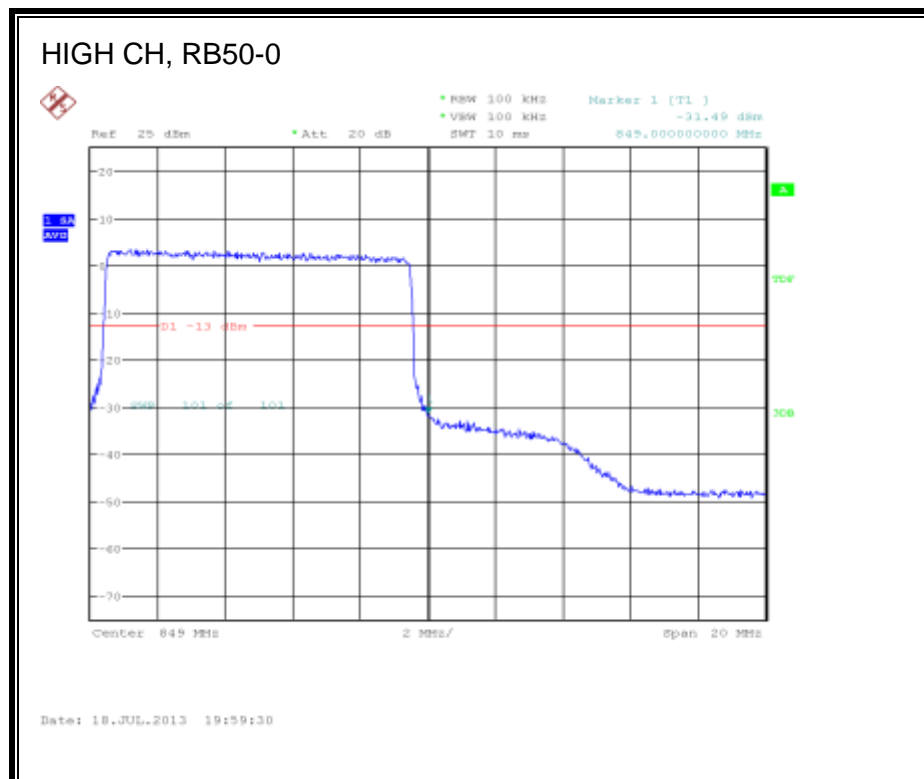
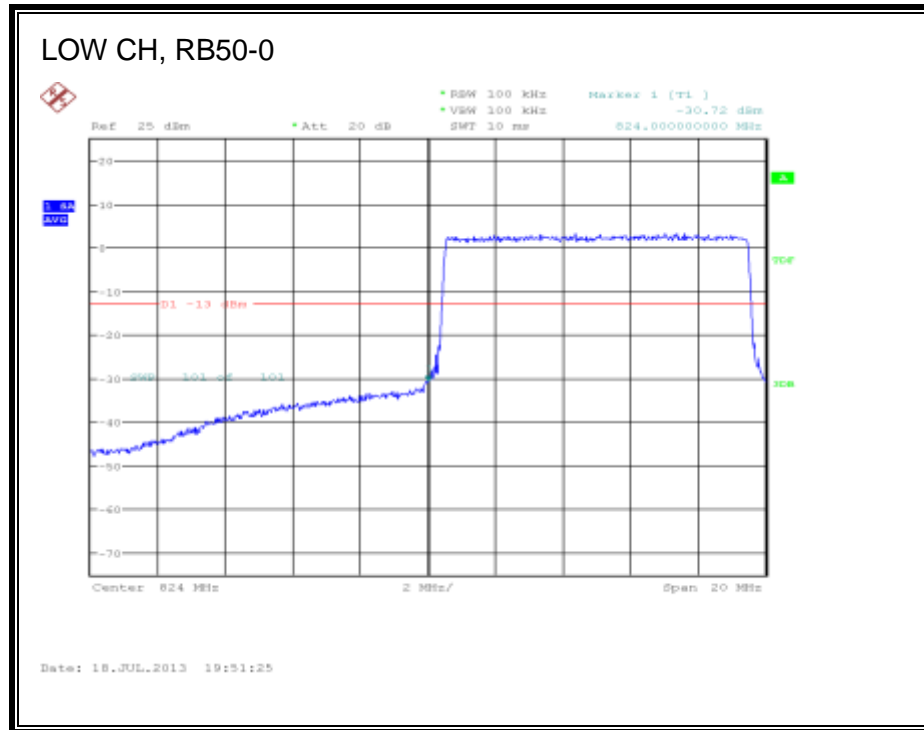


16QAM Band 5 (10 MHz BANDWIDTH)









8.3. OUT OF BAND EMISSIONS

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238

LIMITS

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

The RF output of the transmitter was connected to a spectrum analyzer through a calibrated coaxial cable. Sufficient scans were taken to show the out-of-band Emissions, if any, up to 10th harmonic. Multiple sweeps were recorded in maximum hold mode using a peak detector to ensure that the worst-case emissions were caught.

For each out of band emissions measurement:

- Set display line at -13 dBm
- Set RBW & VBW to 100 kHz for the measurement below 1 GHz, and 1 MHz for the measurement above 1 GHz.

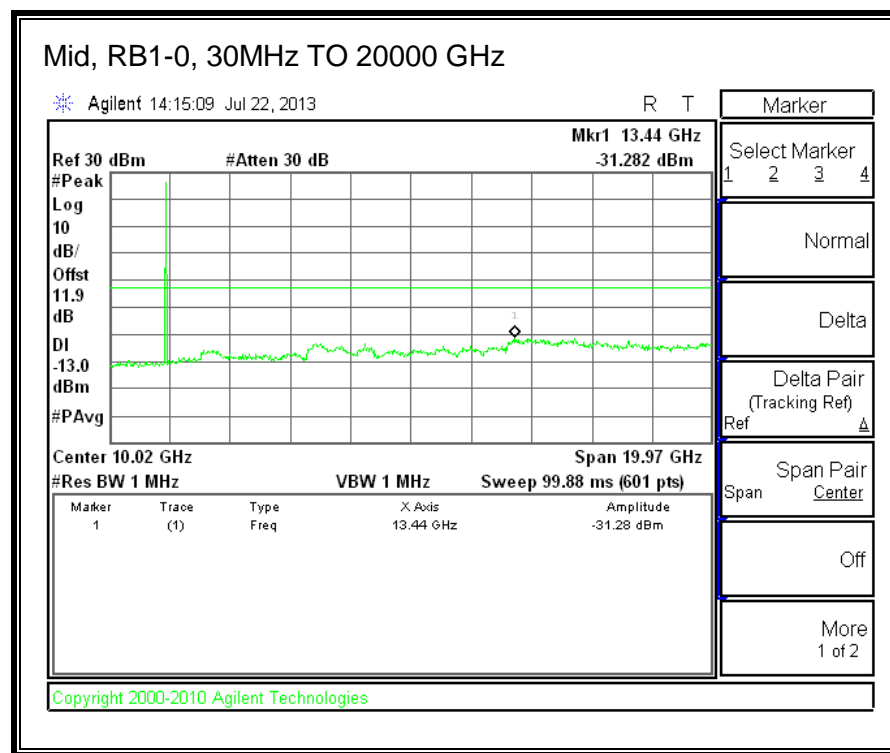
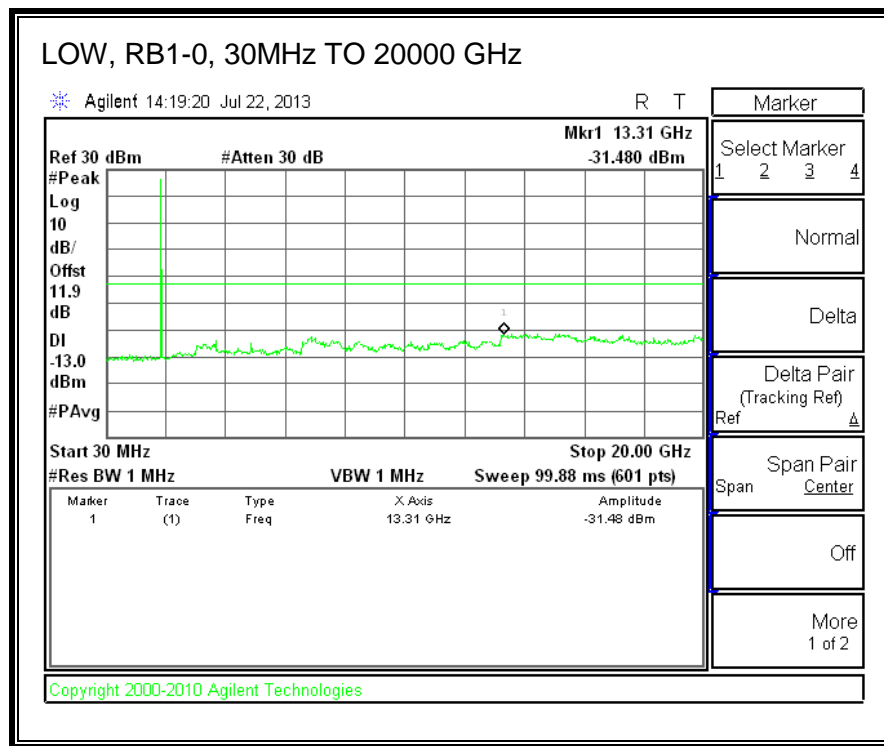
MODES TESTED

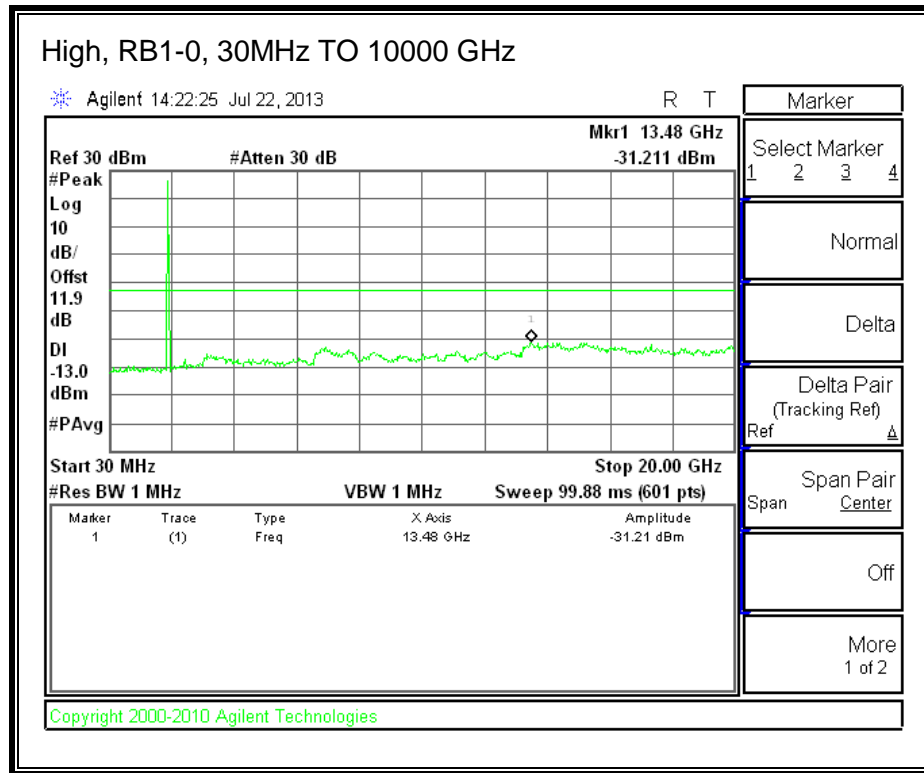
- LTE BAND 2
- LTE BAND 5

RESULTS

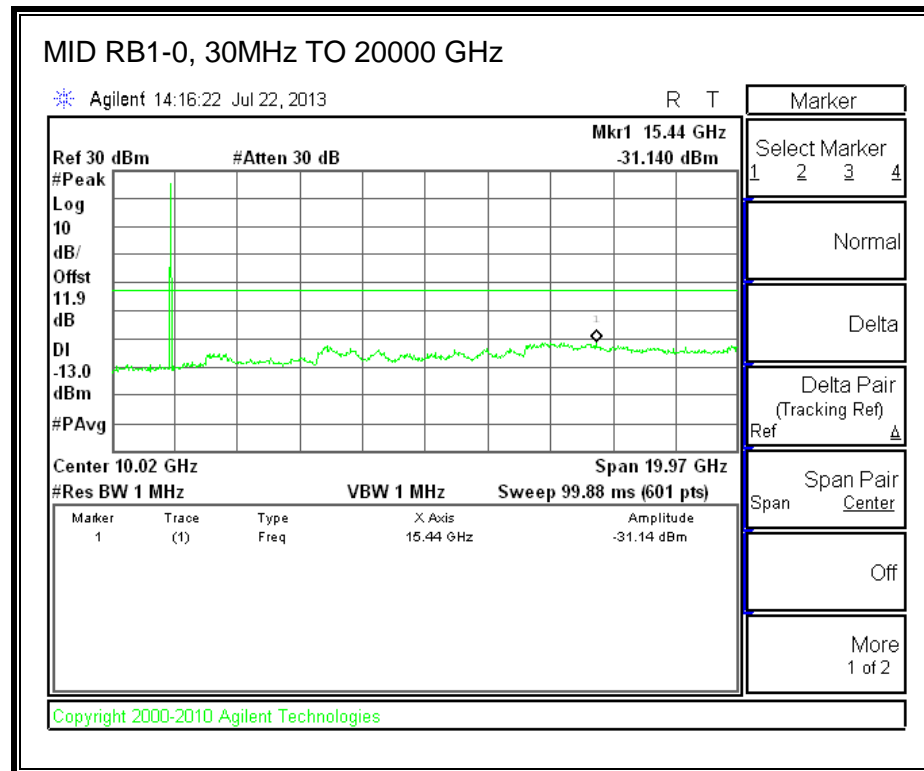
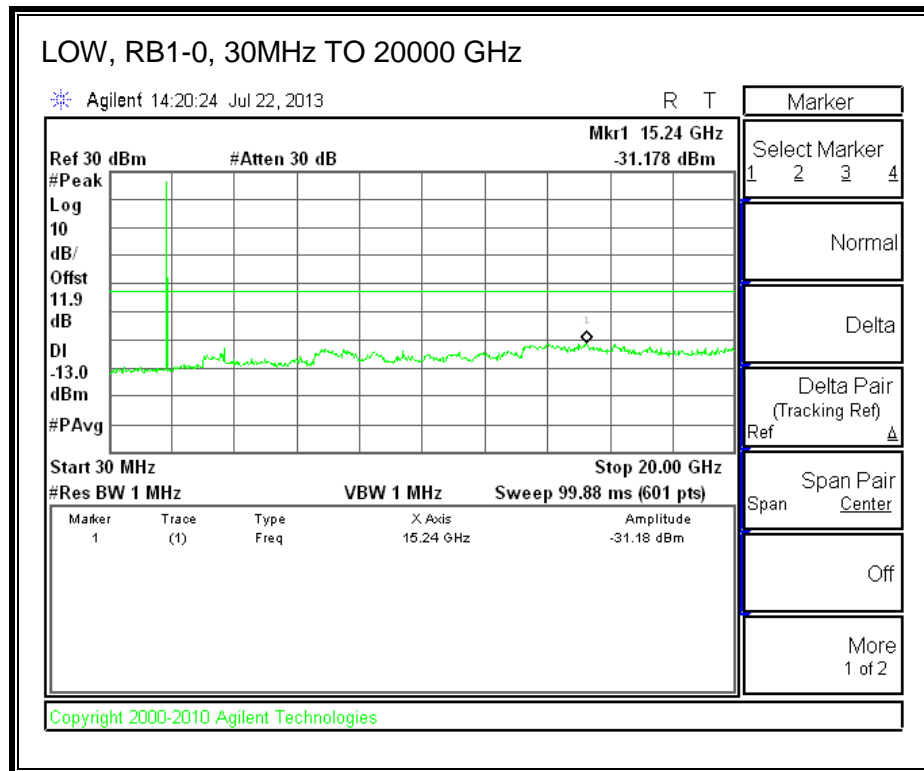
8.3.1. LTE BAND 2

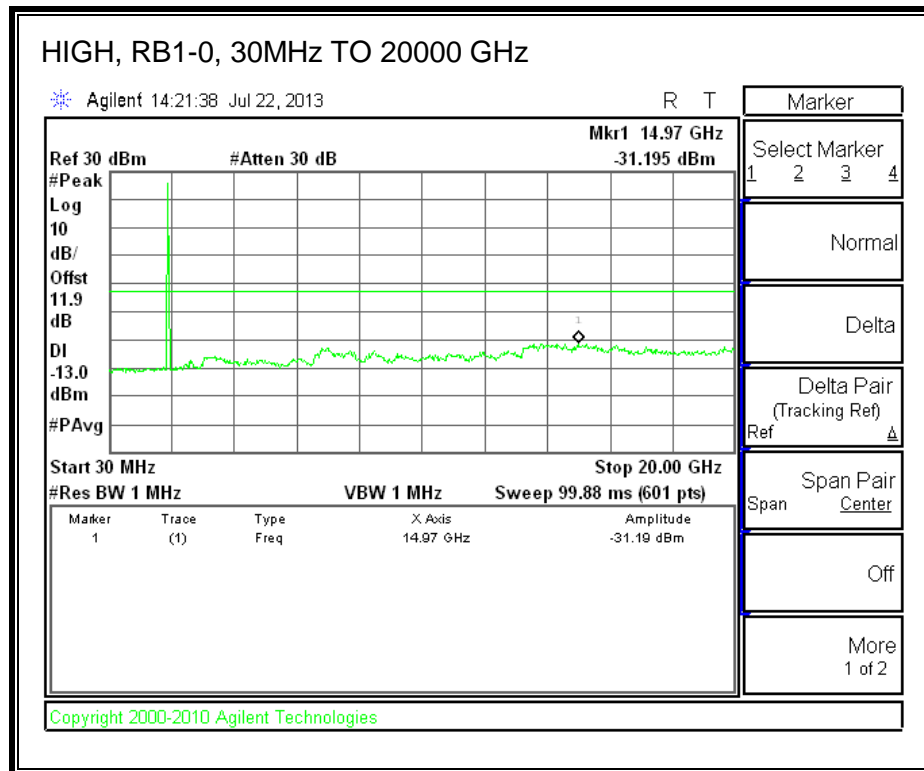
LTE QPSK (1.4 MHz BANDWIDTH)





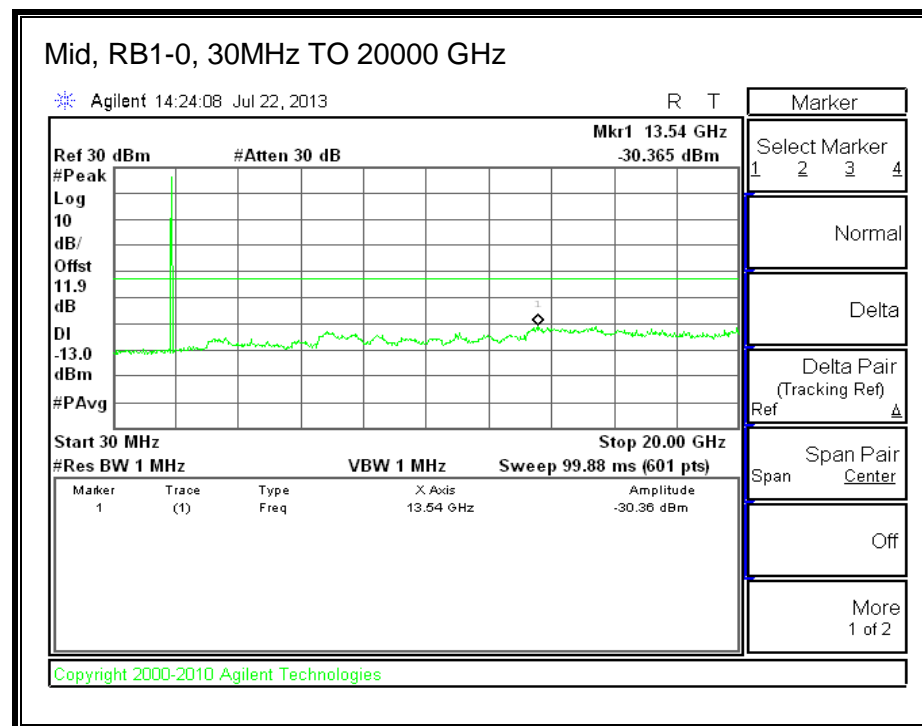
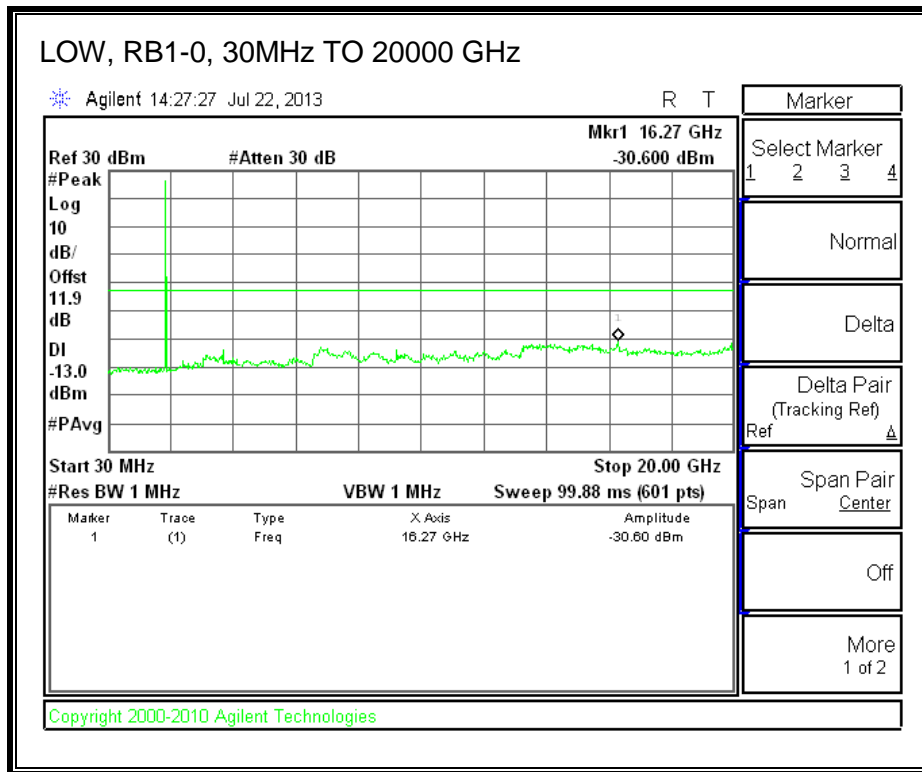
LTE 16QAM

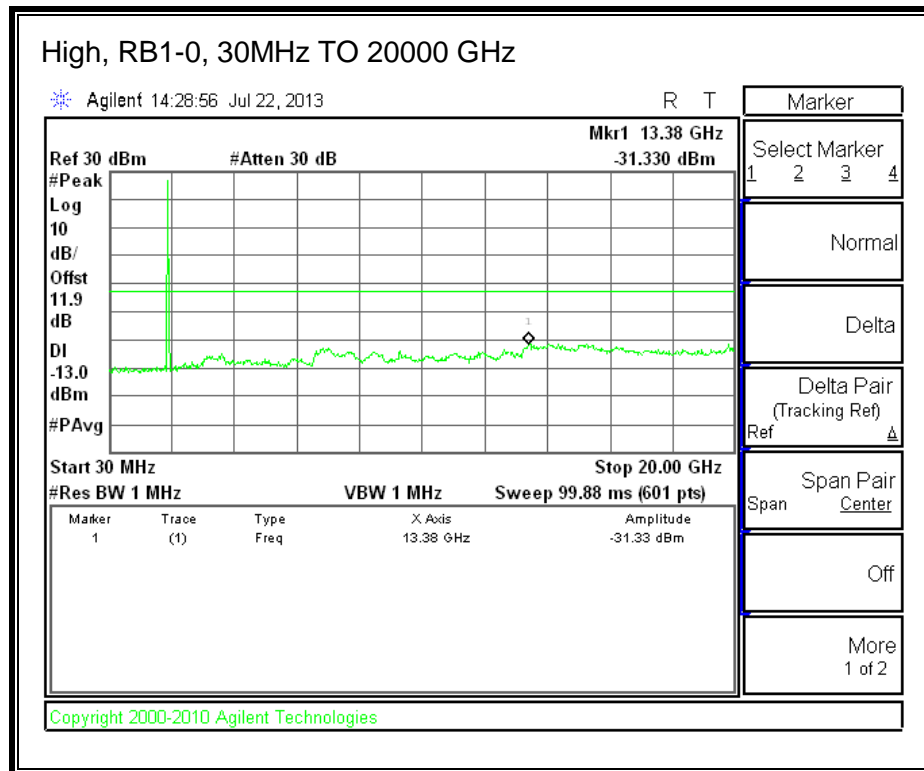




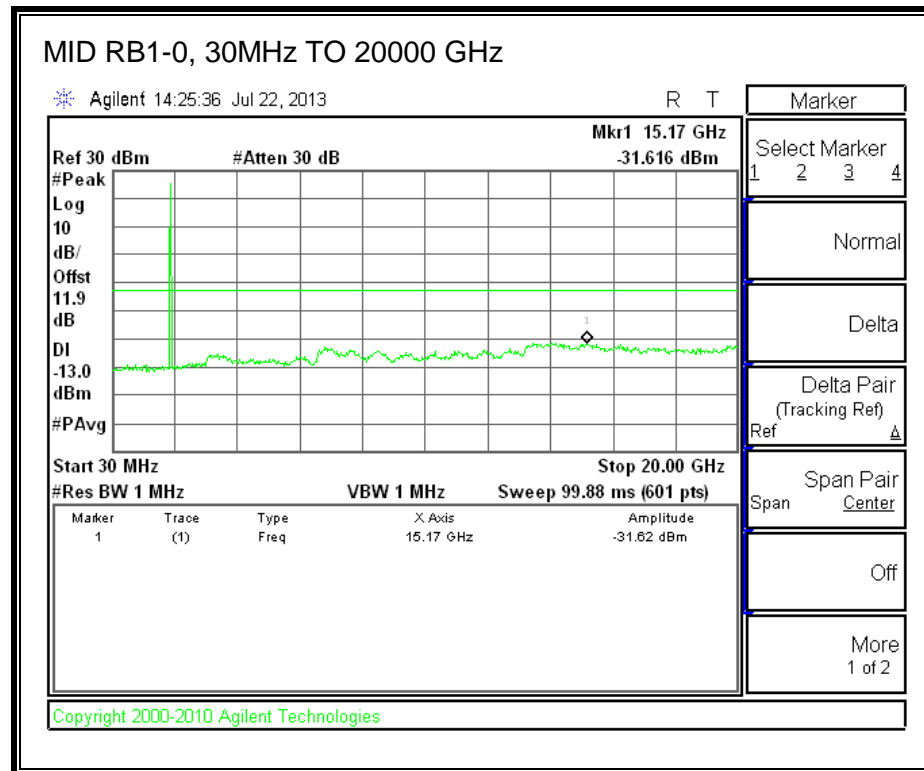
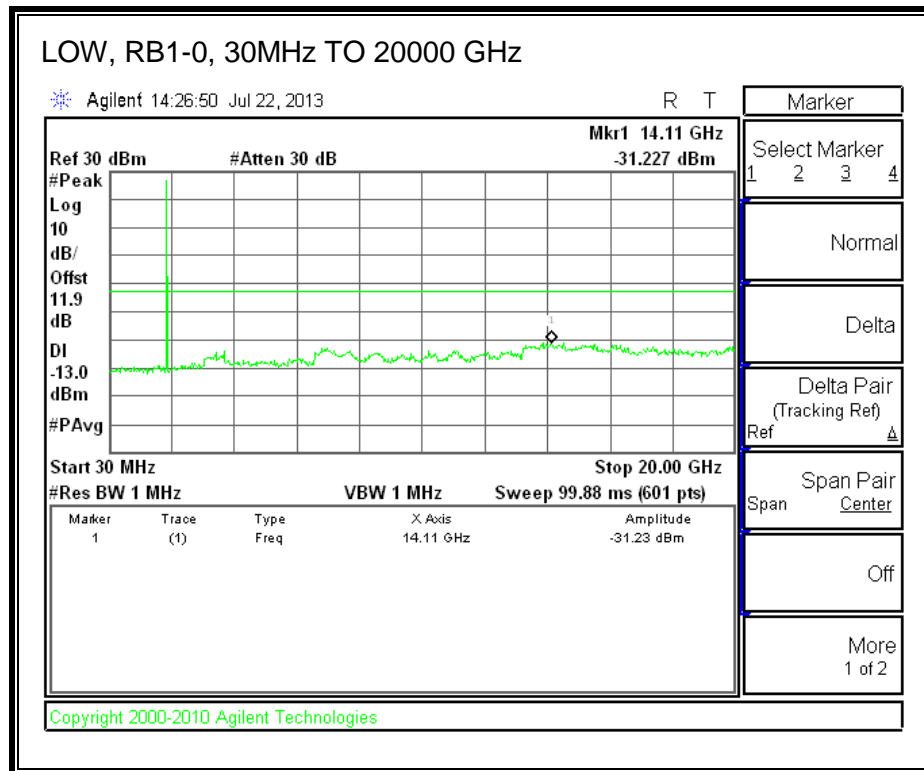
Band 2 (3.0 MHz BANDWIDTH)

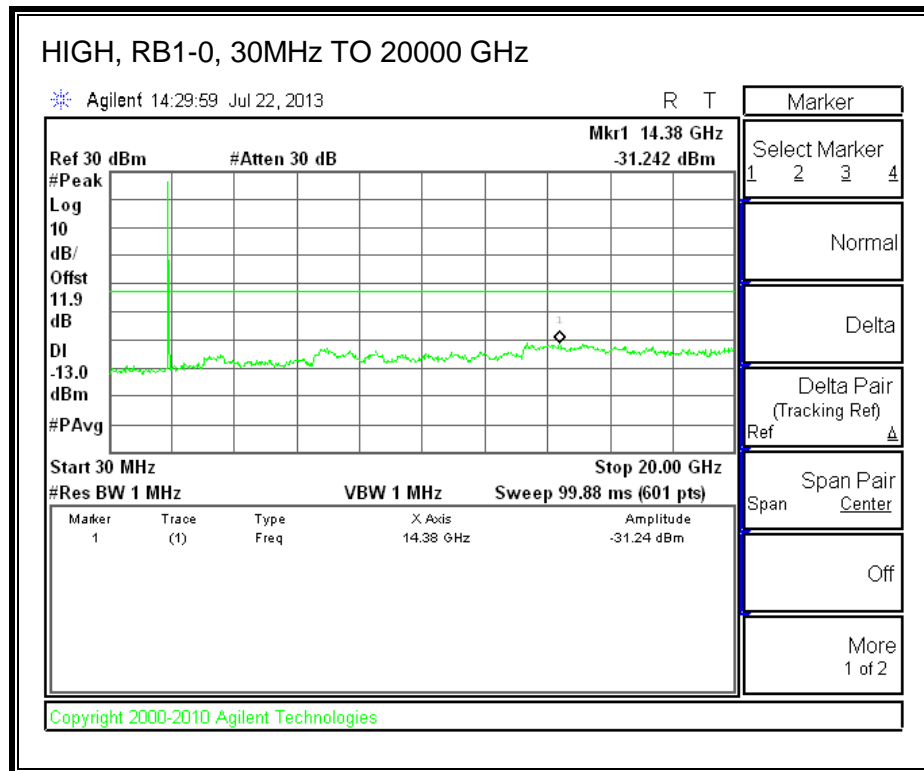
LTE QPSK





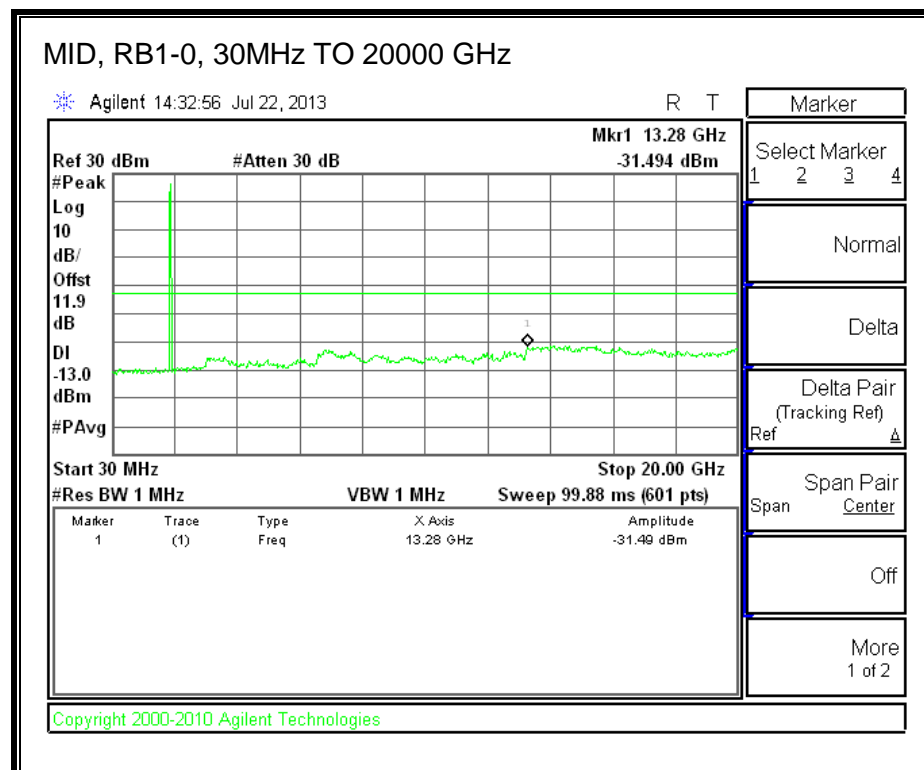
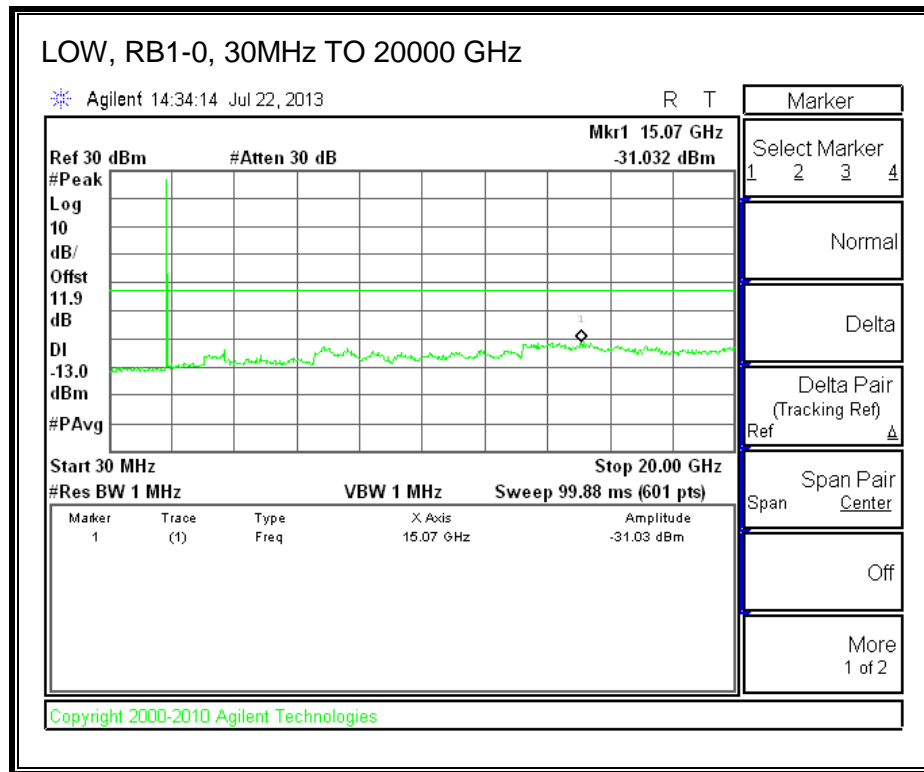
LTE 16QAM

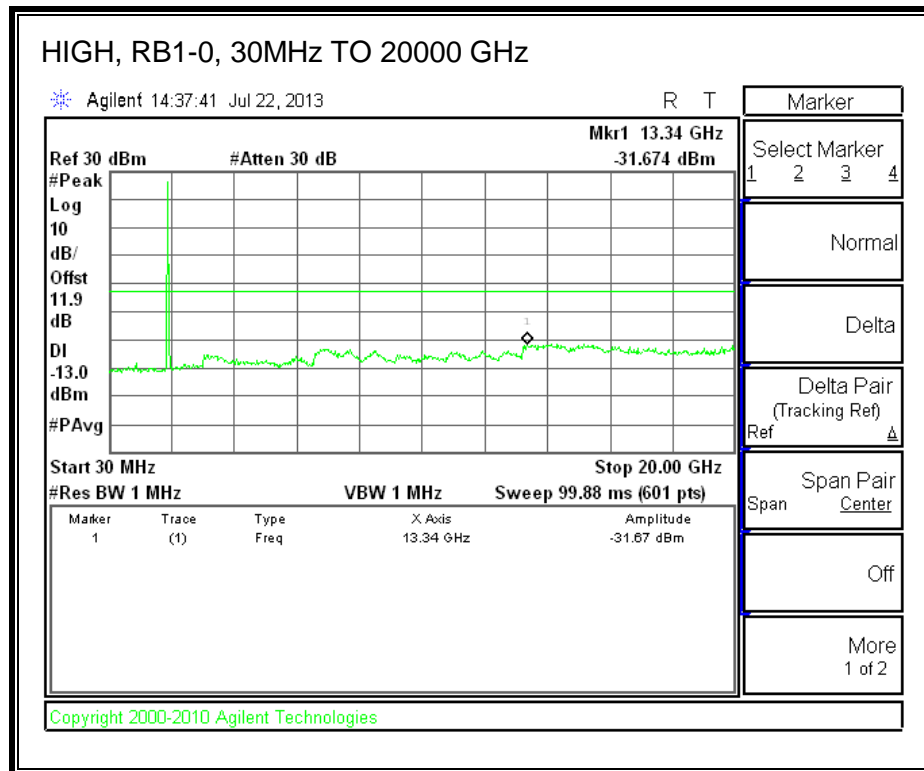




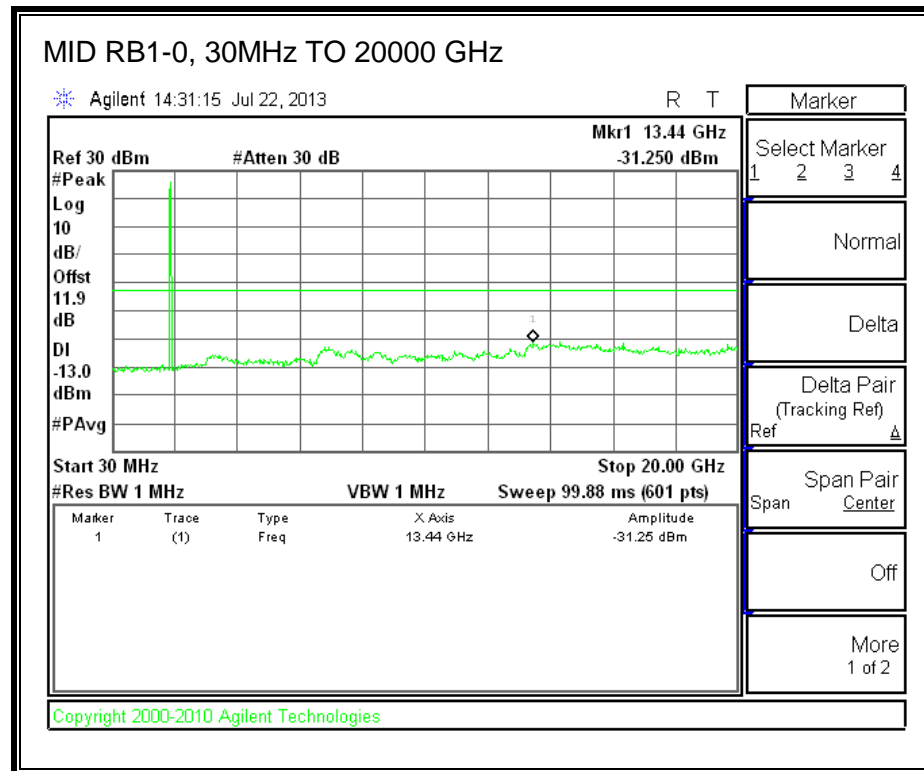
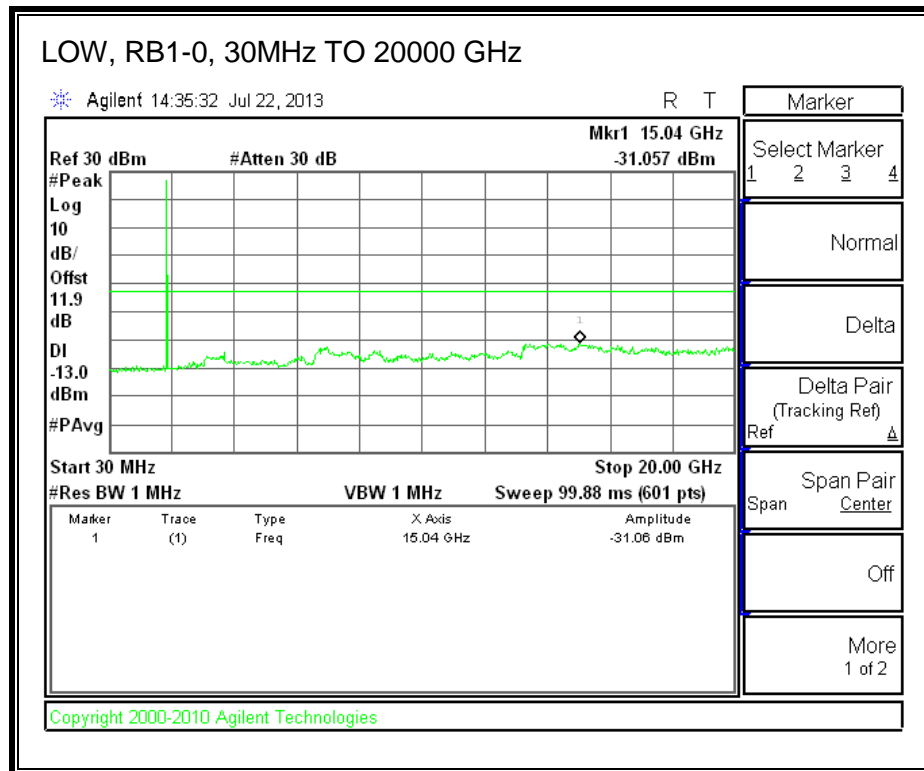
Band 2 (5 MHz BANDWIDTH)

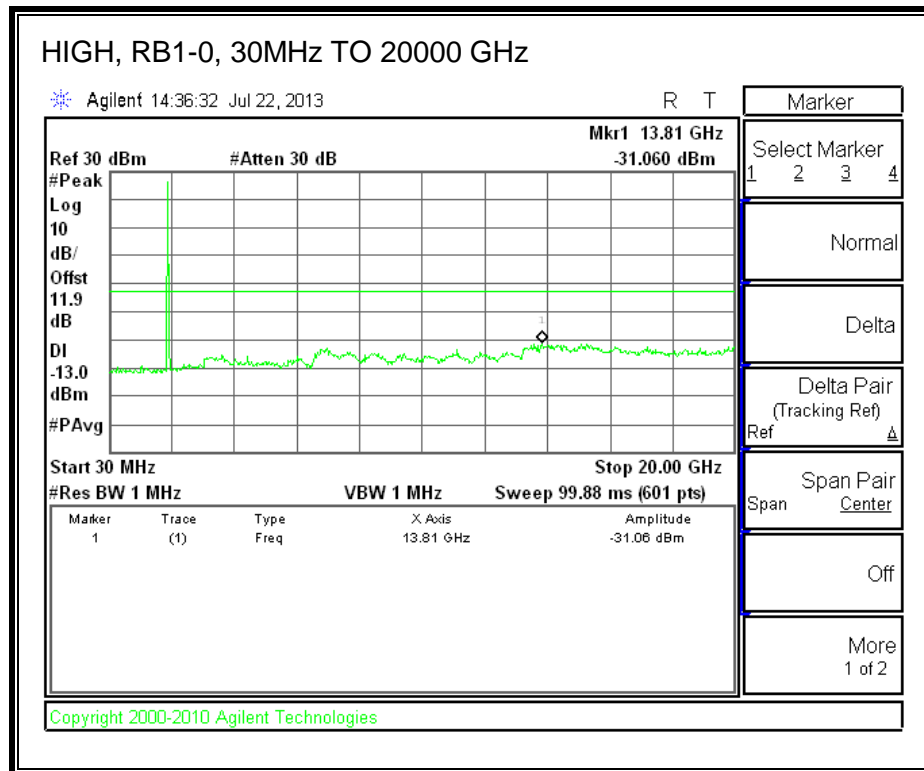
LTE QPSK





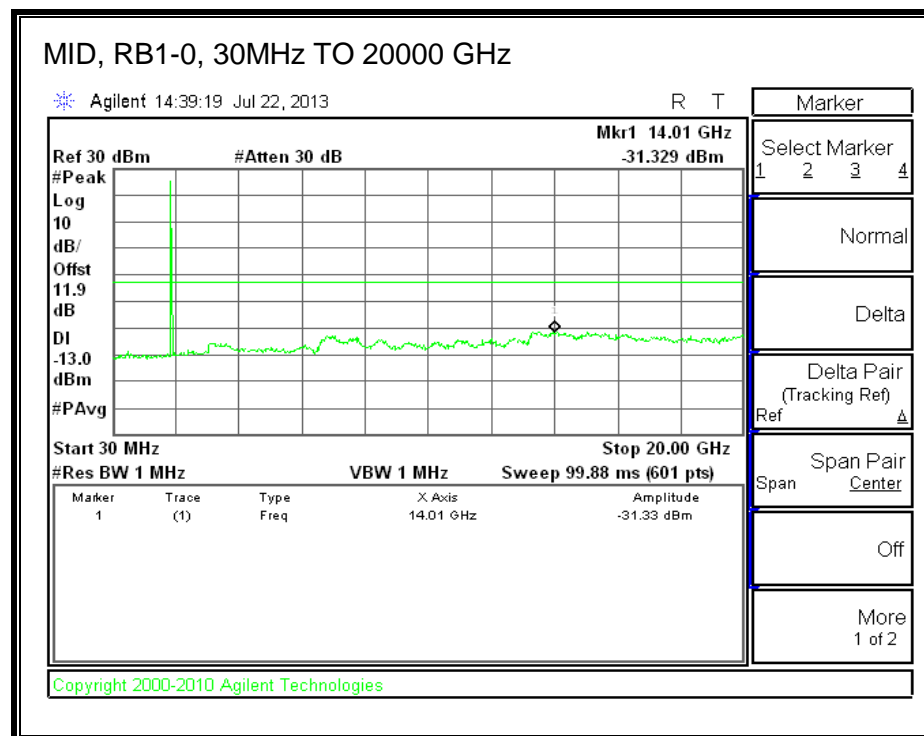
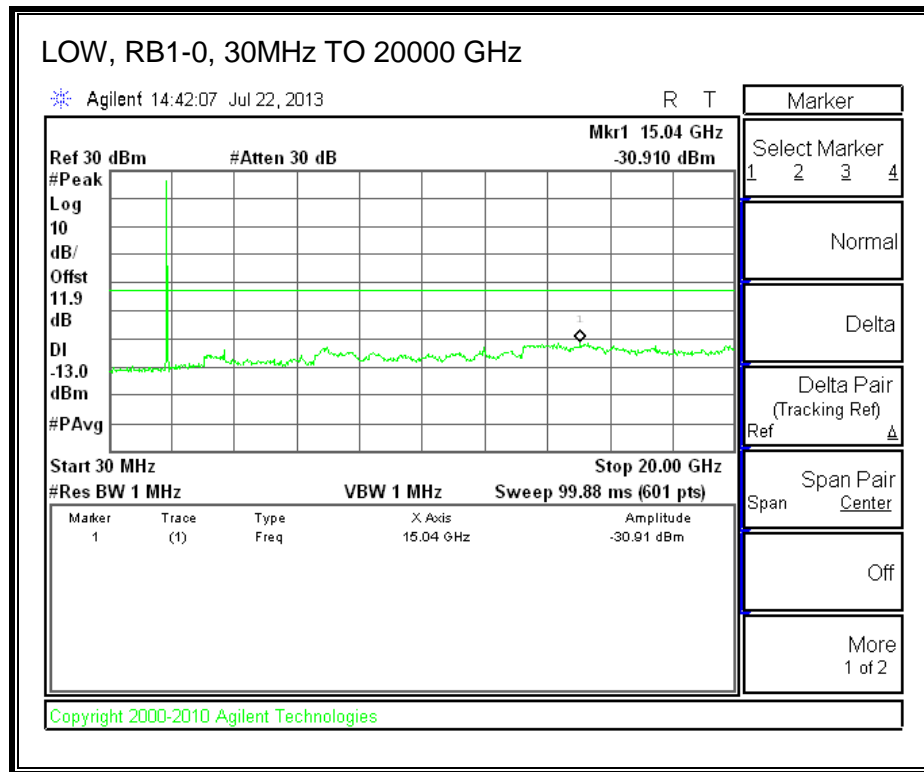
LTE 16QAM

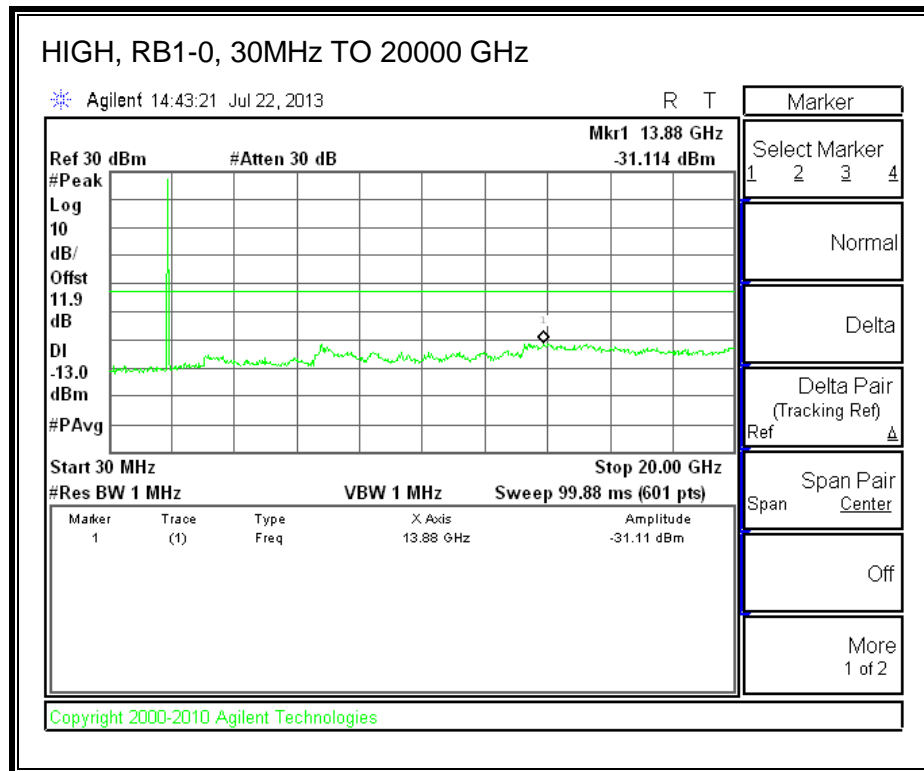




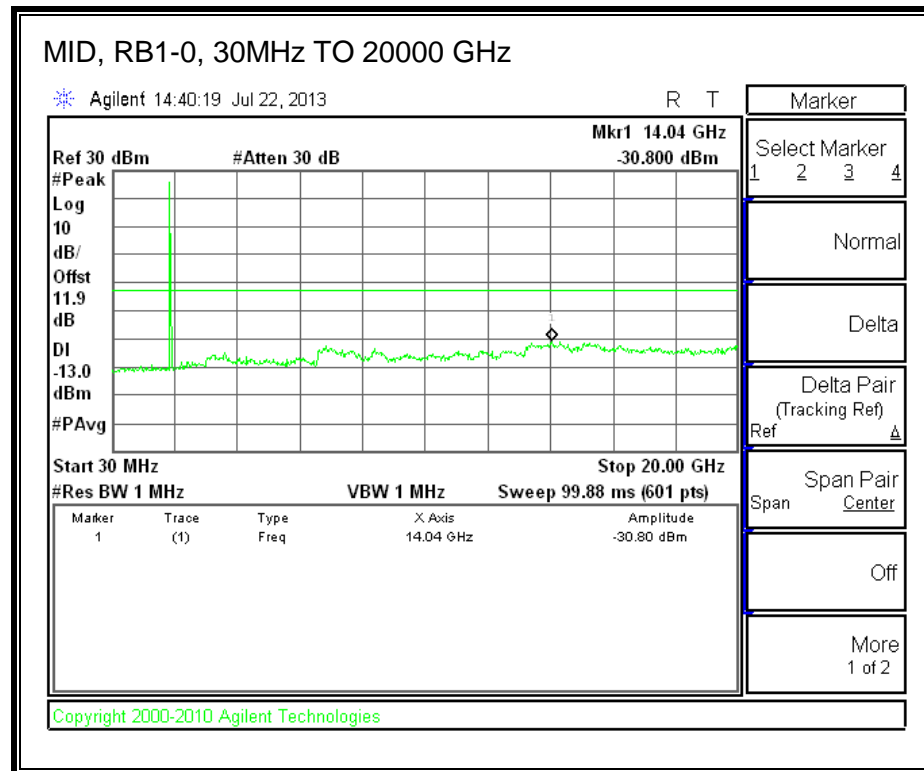
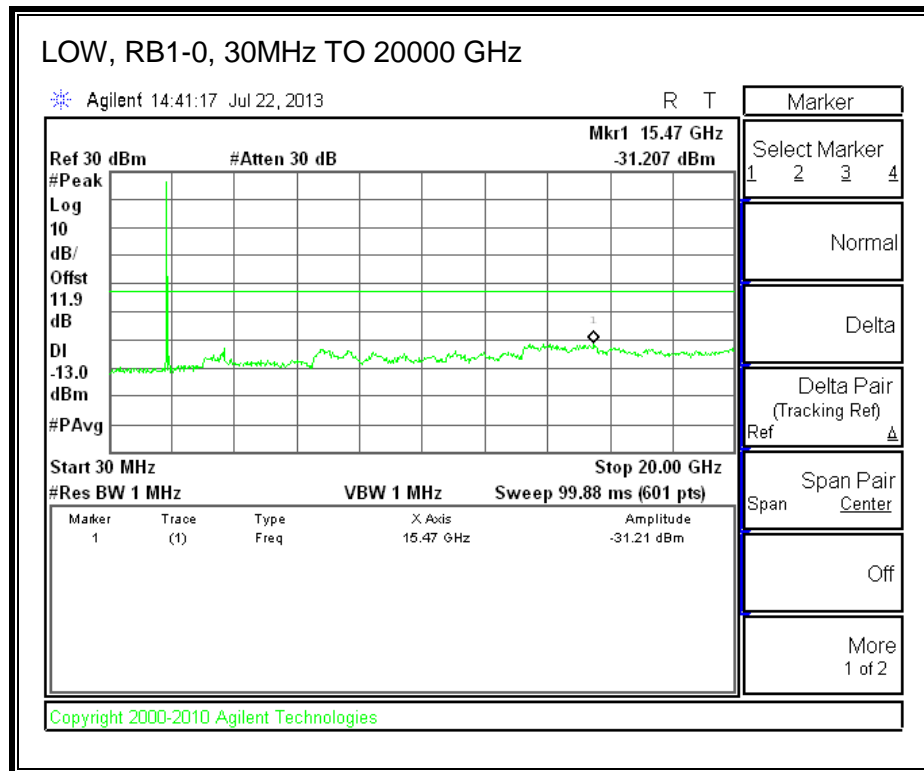
Band 2 (10 MHz BANDWIDTH)

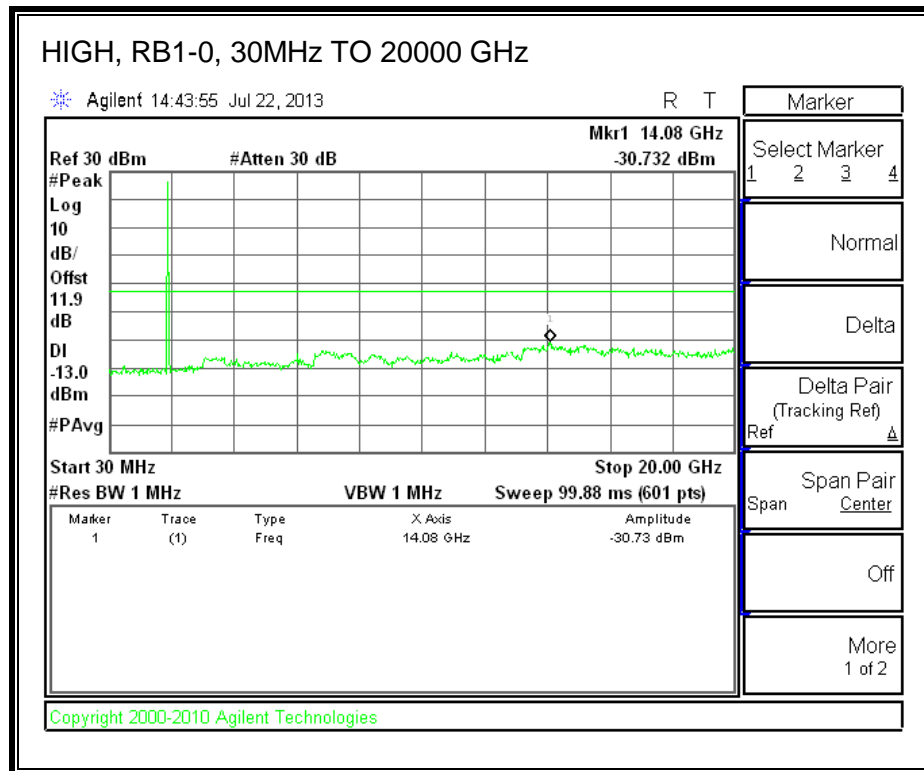
LTE QPSK





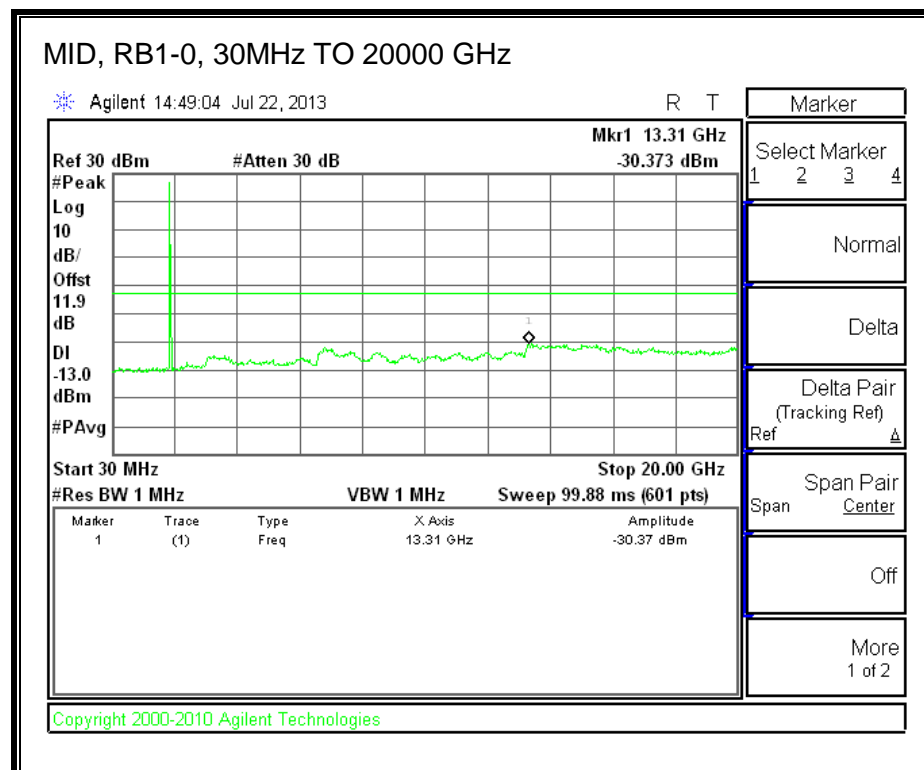
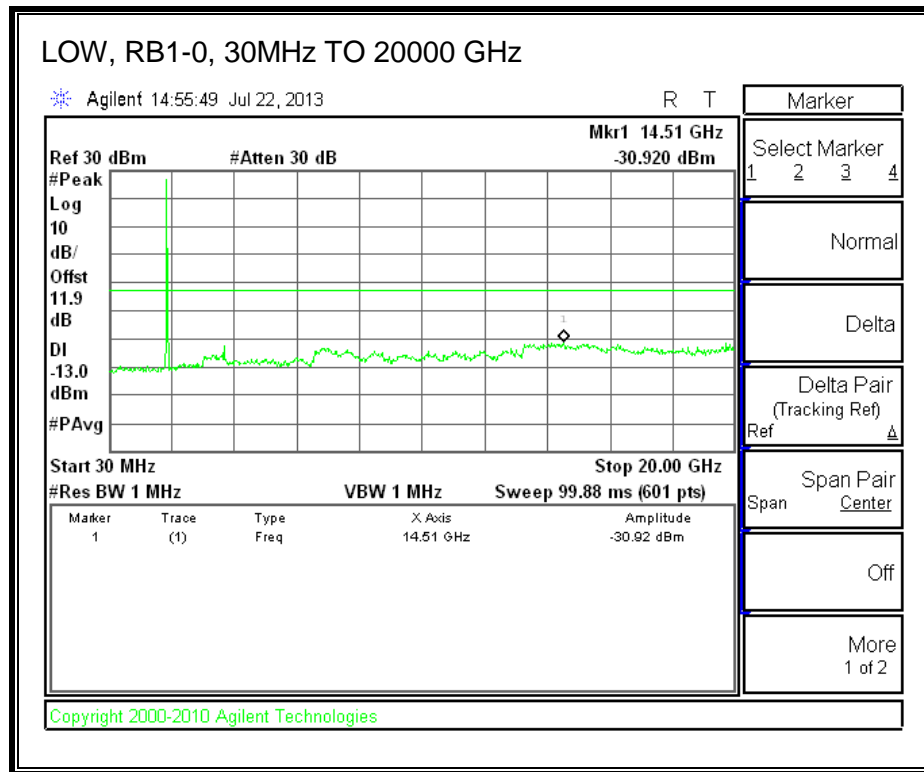
LTE 16QAM

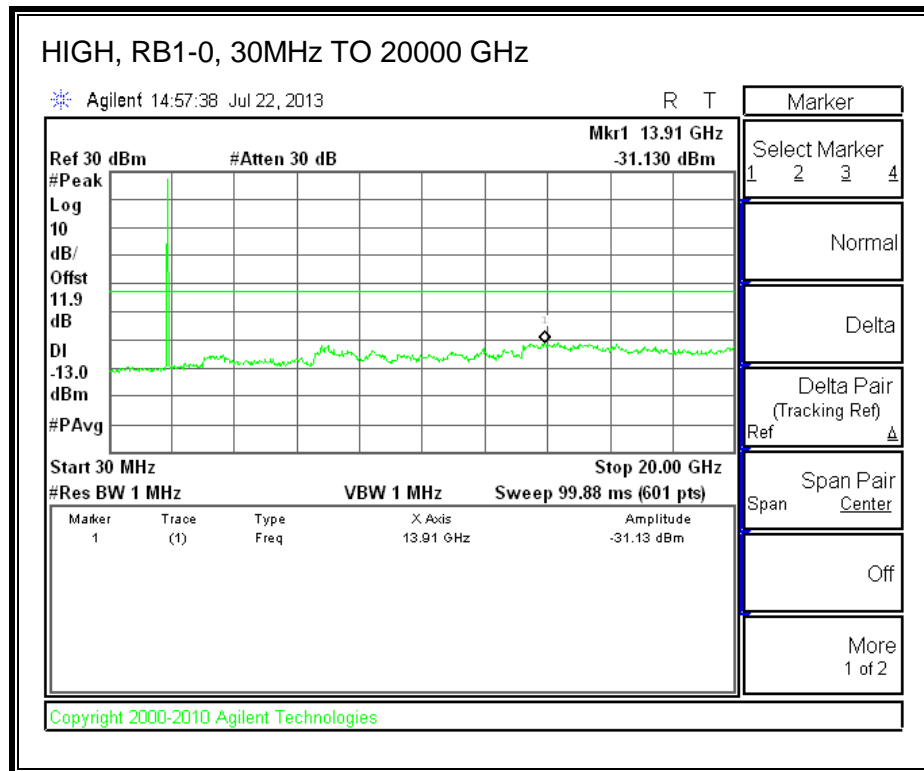




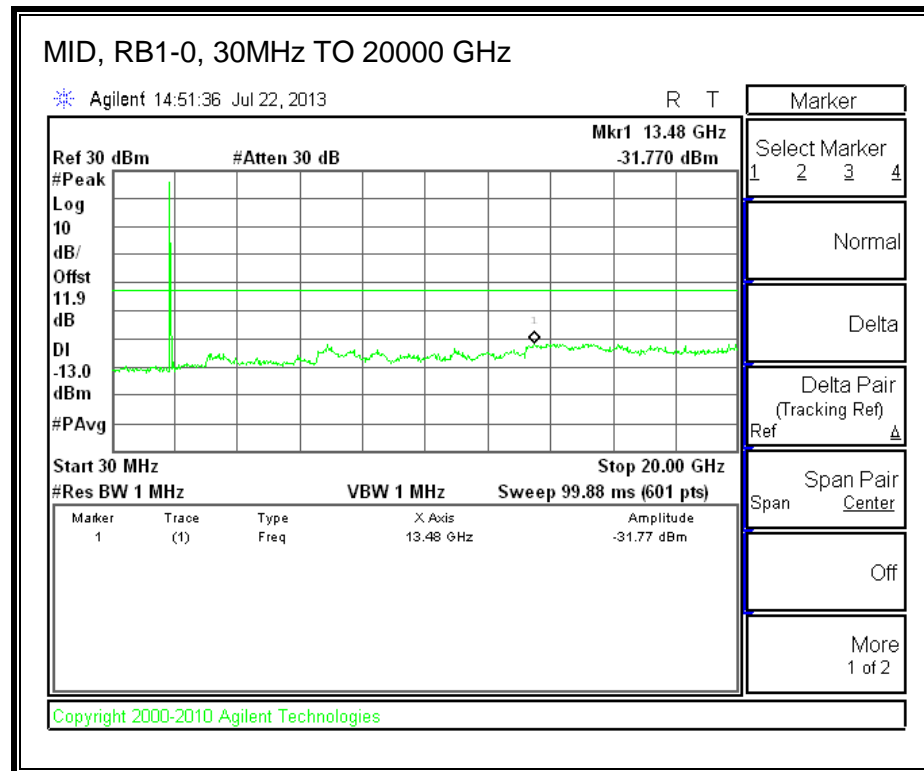
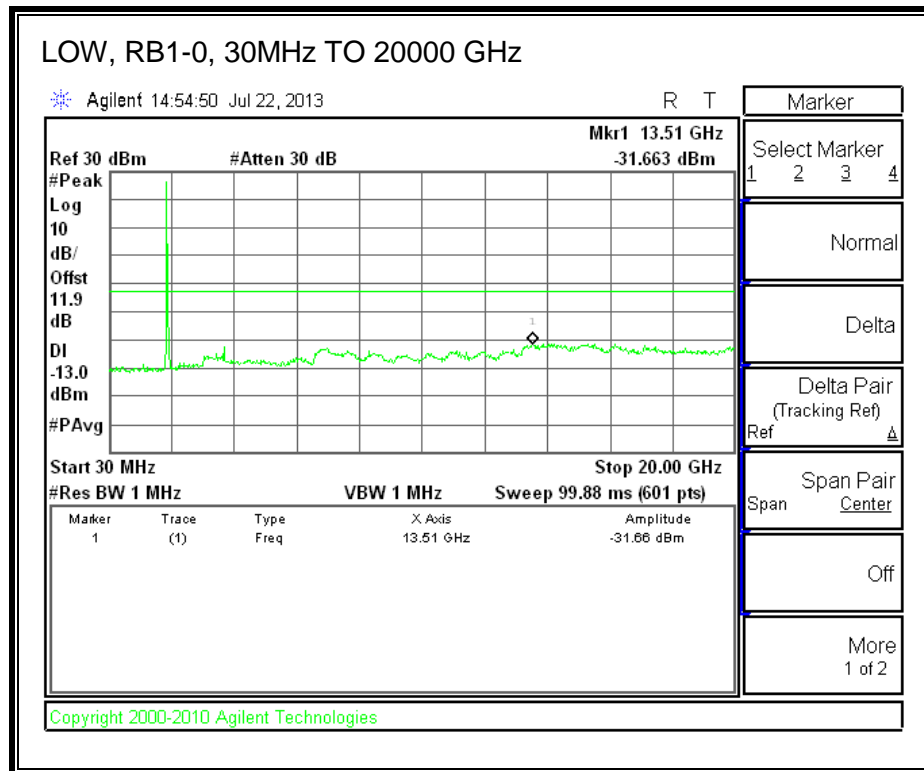
Band 2 (15 MHz BANDWIDTH)

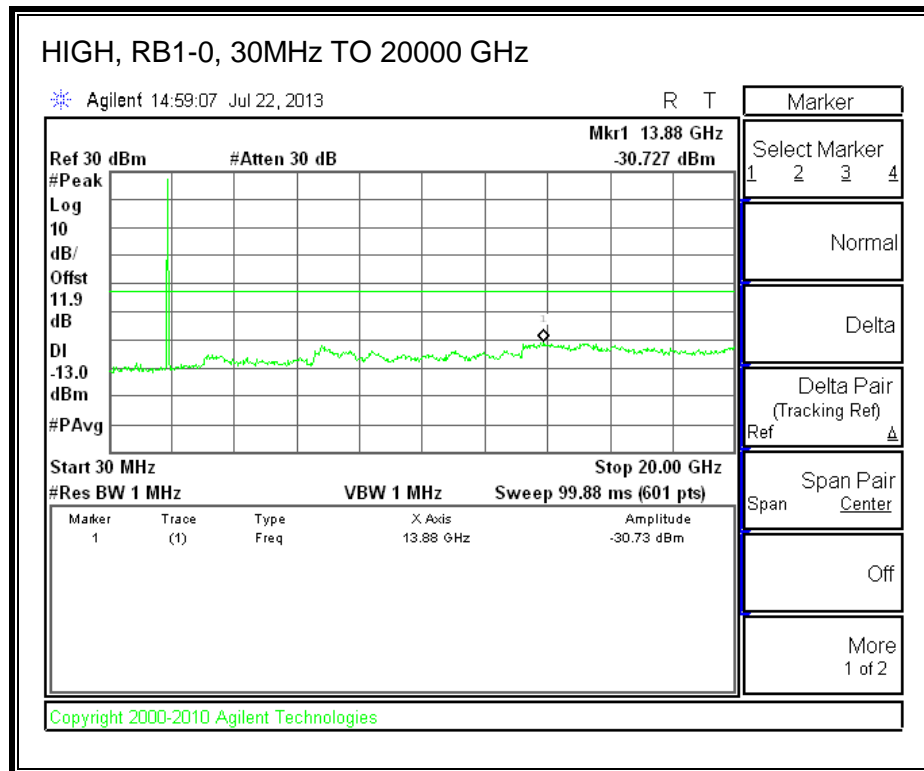
LTE QPSK





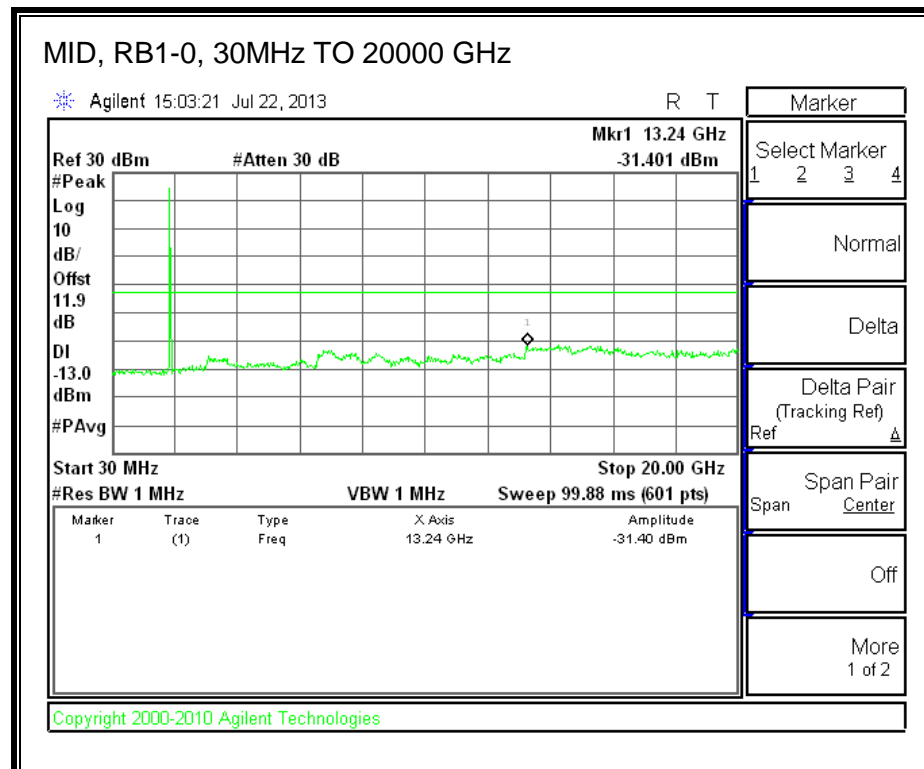
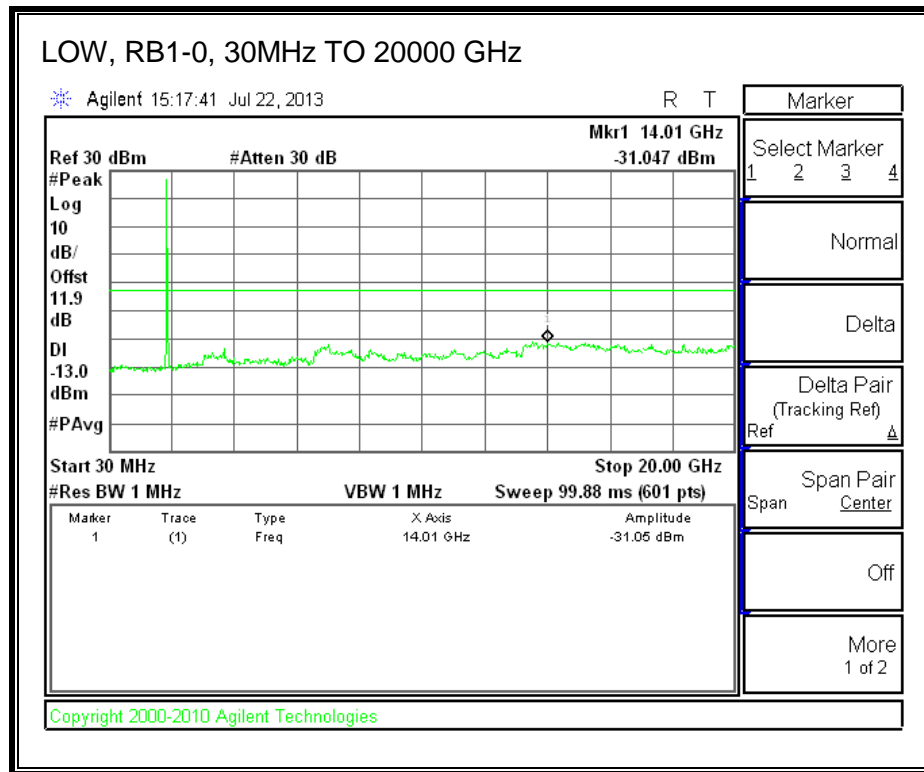
LTE 16QAM

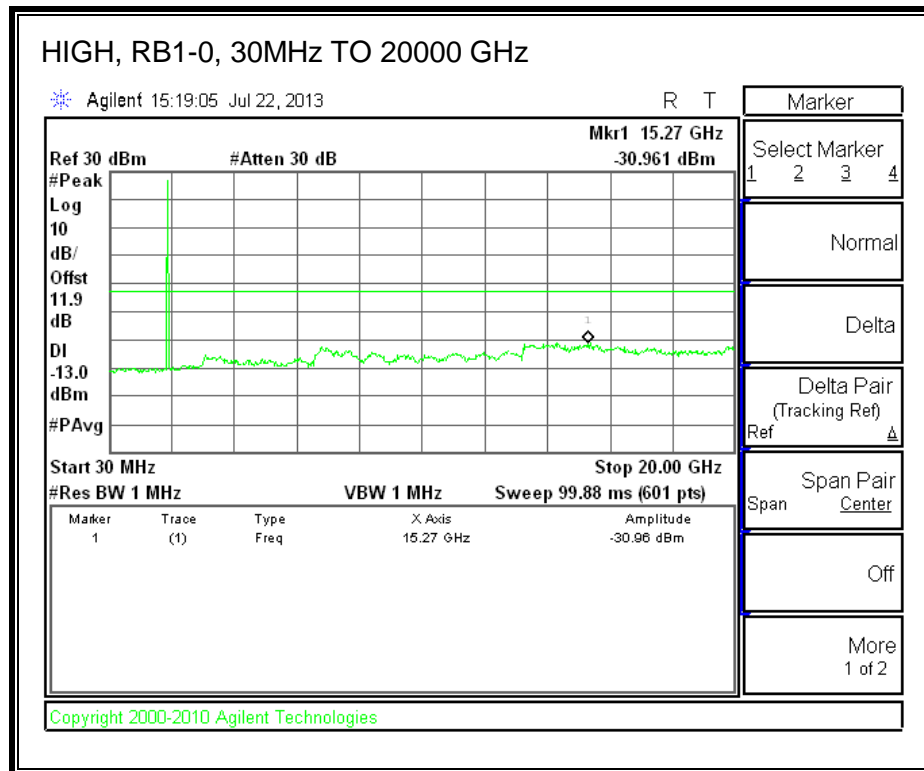




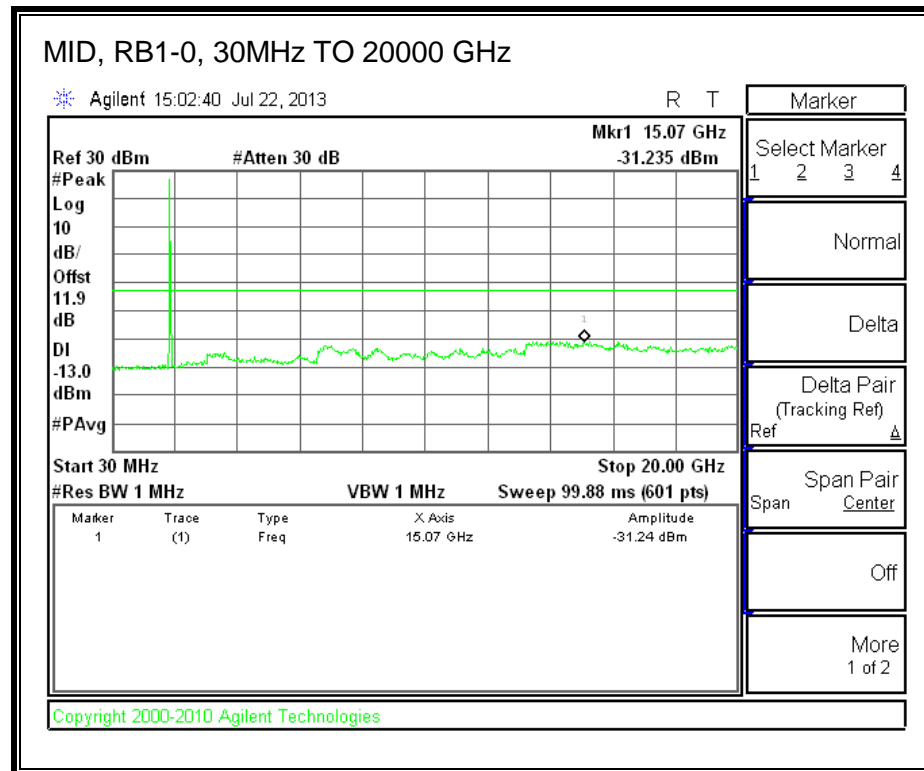
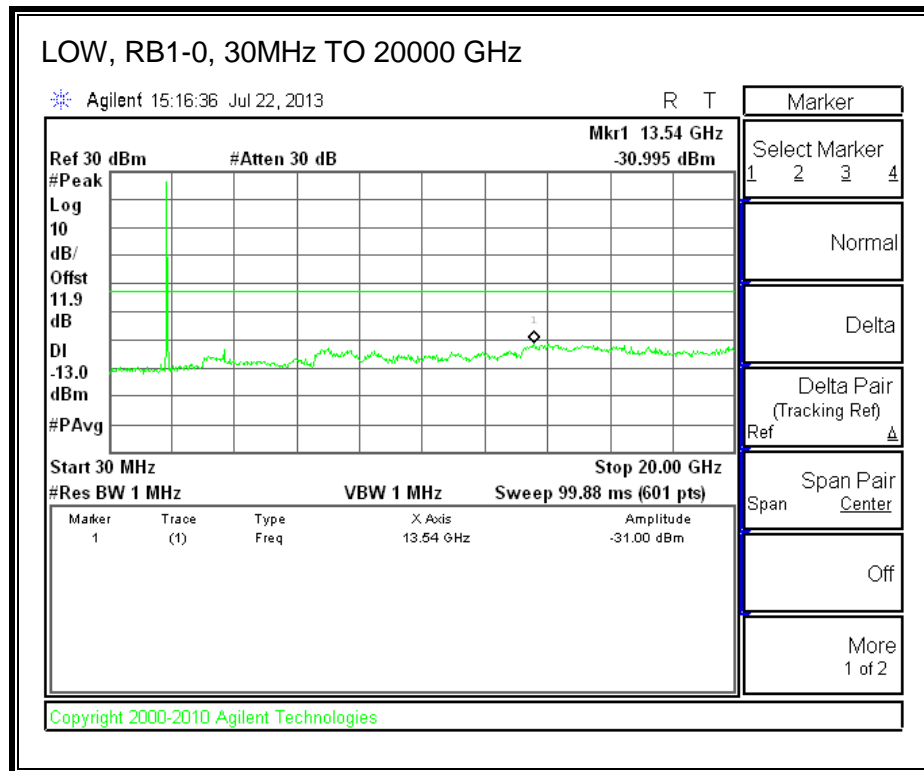
Band 2 (20 MHz BANDWIDTH)

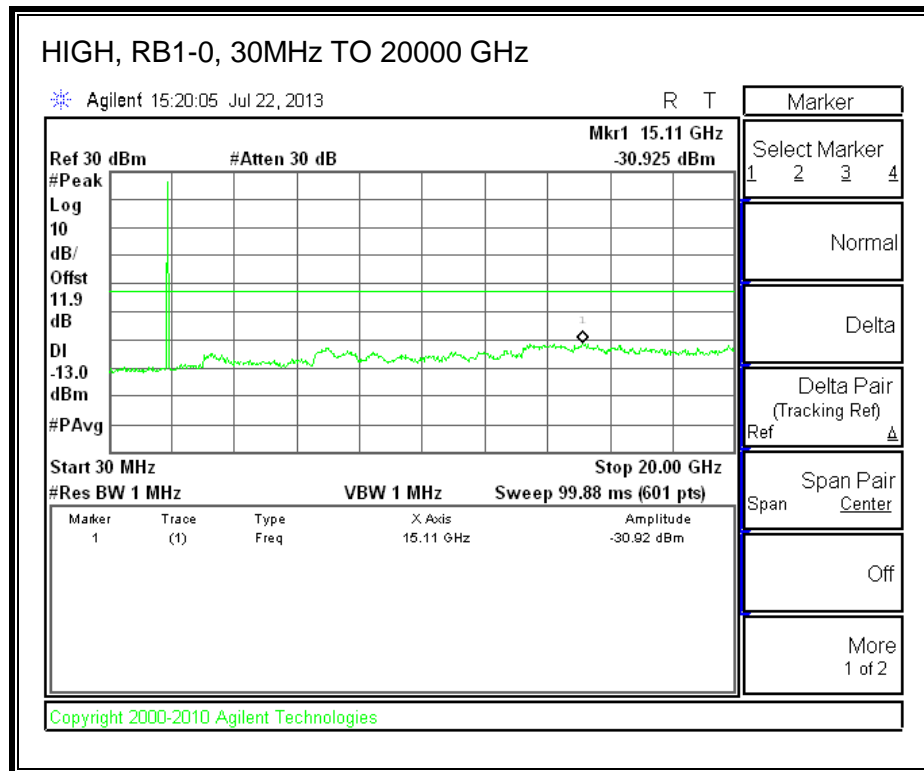
LTE QPSK





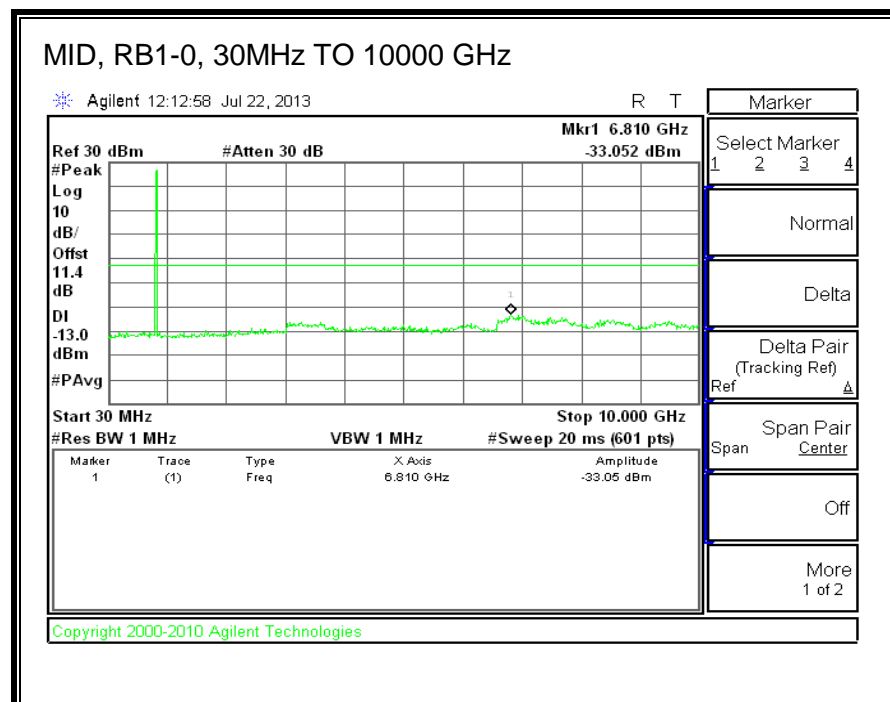
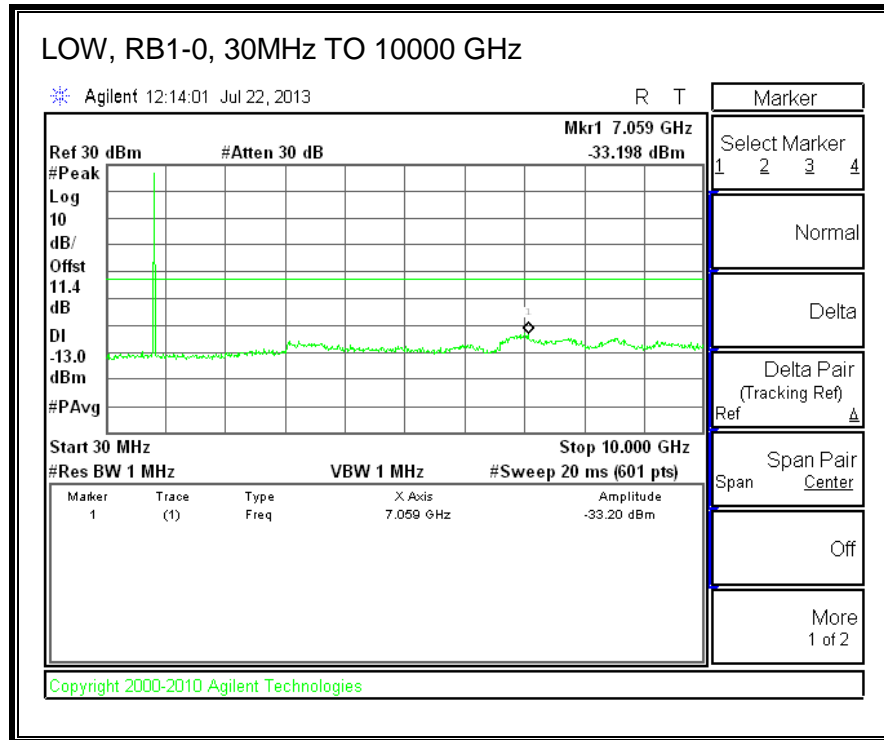
LTE 16QAM

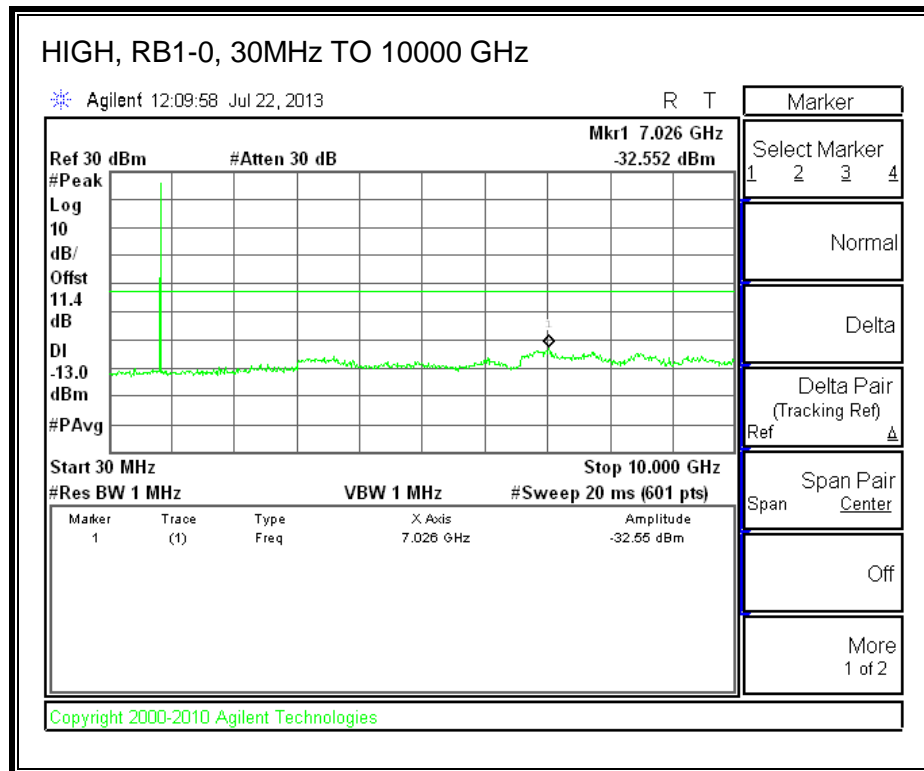




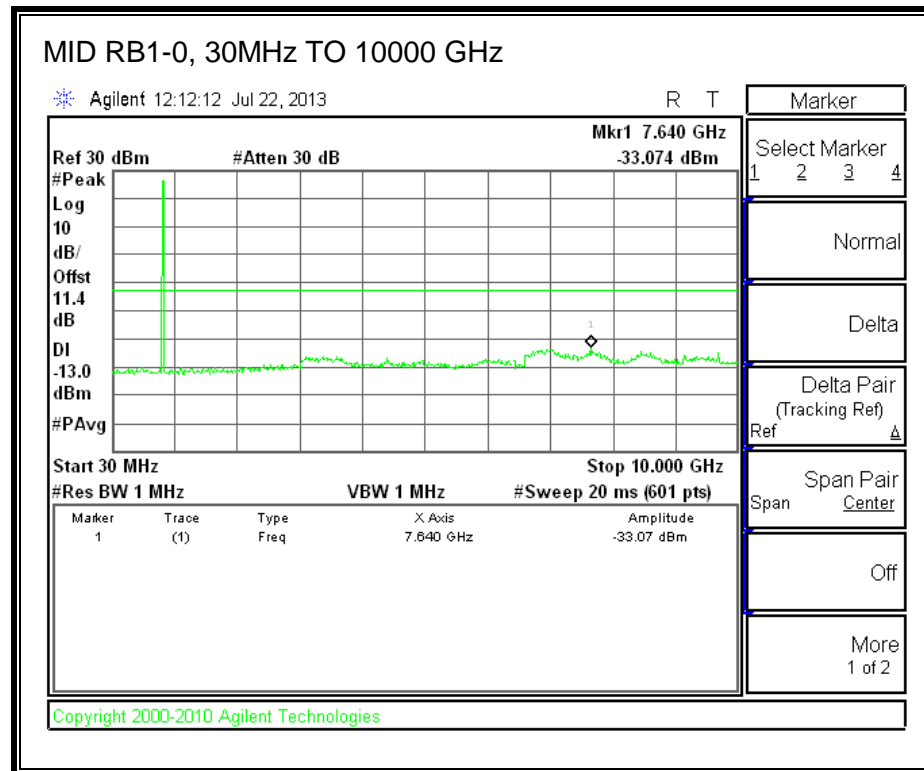
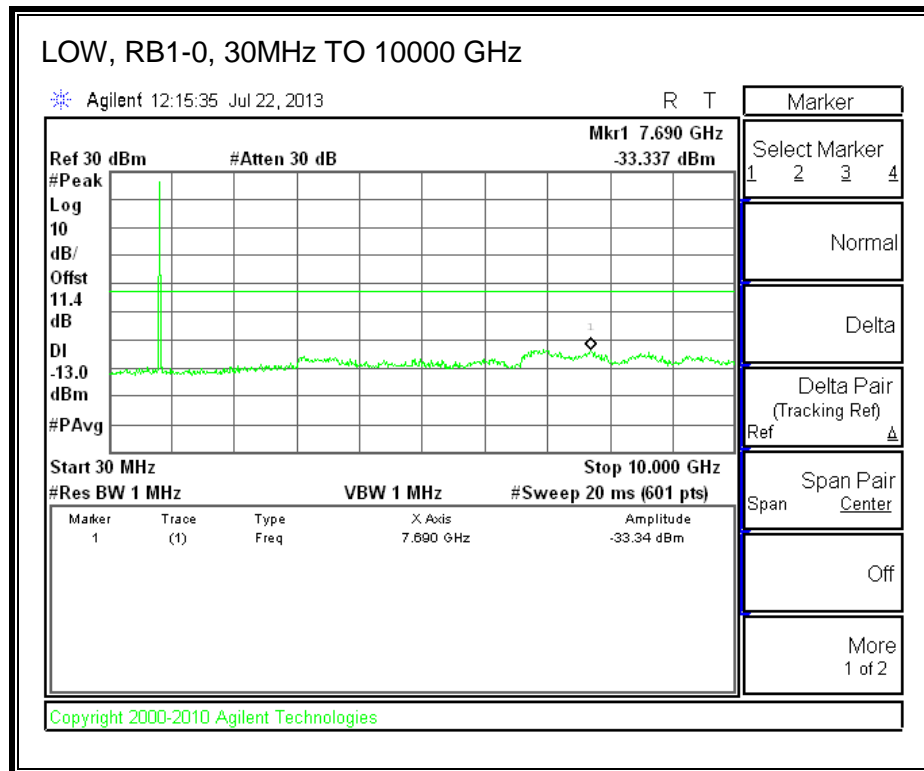
8.3.2. LTE BAND 5

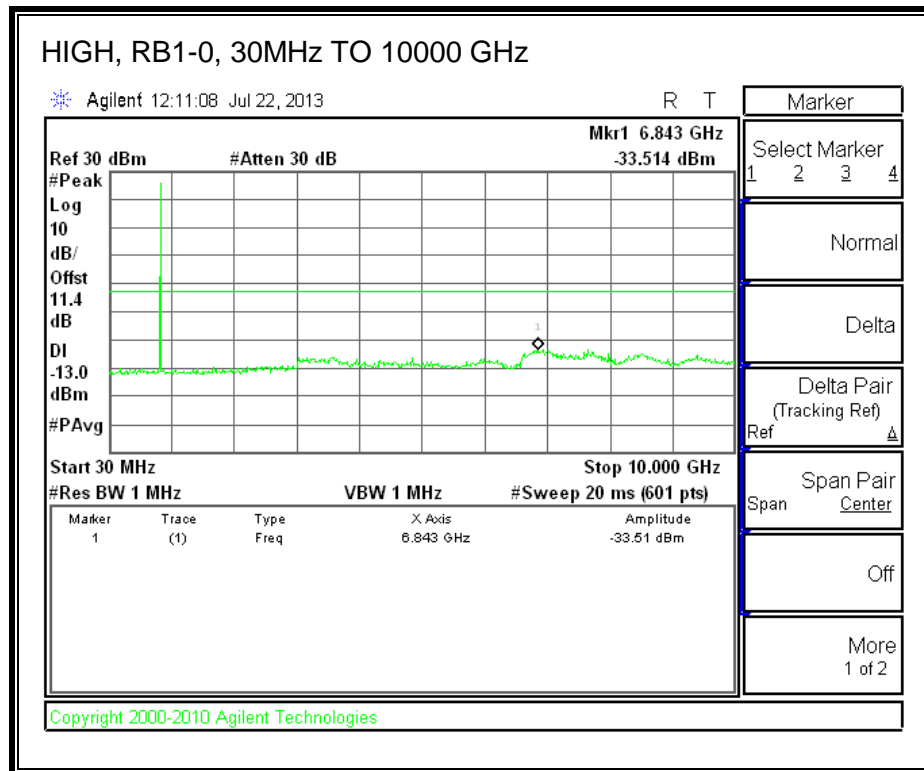
LTE QPSK (1.4 MHz BANDWIDTH)





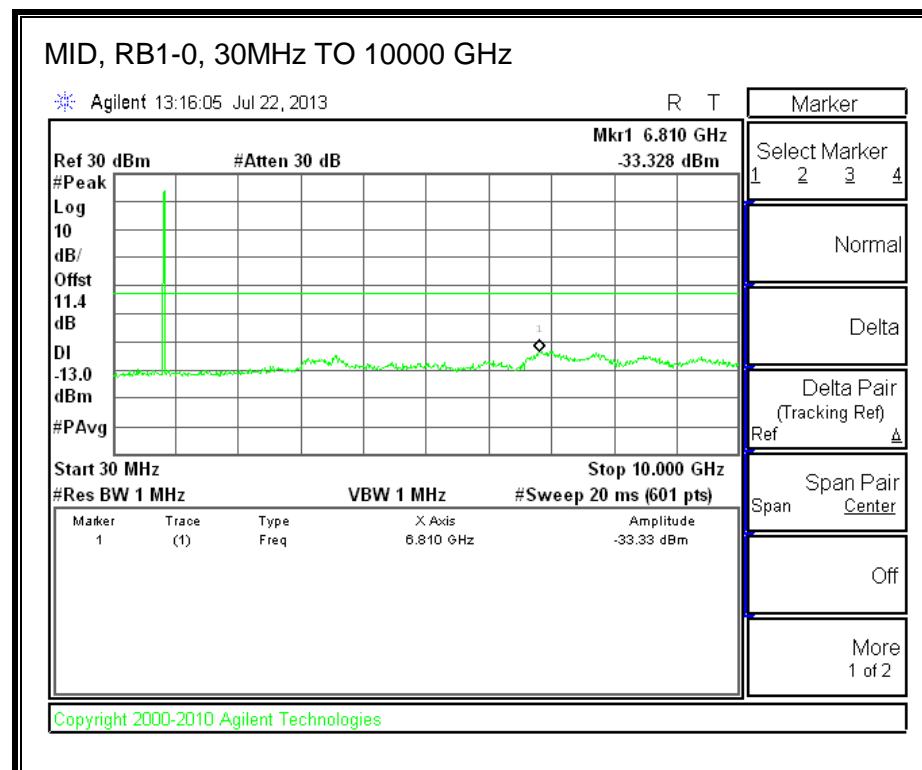
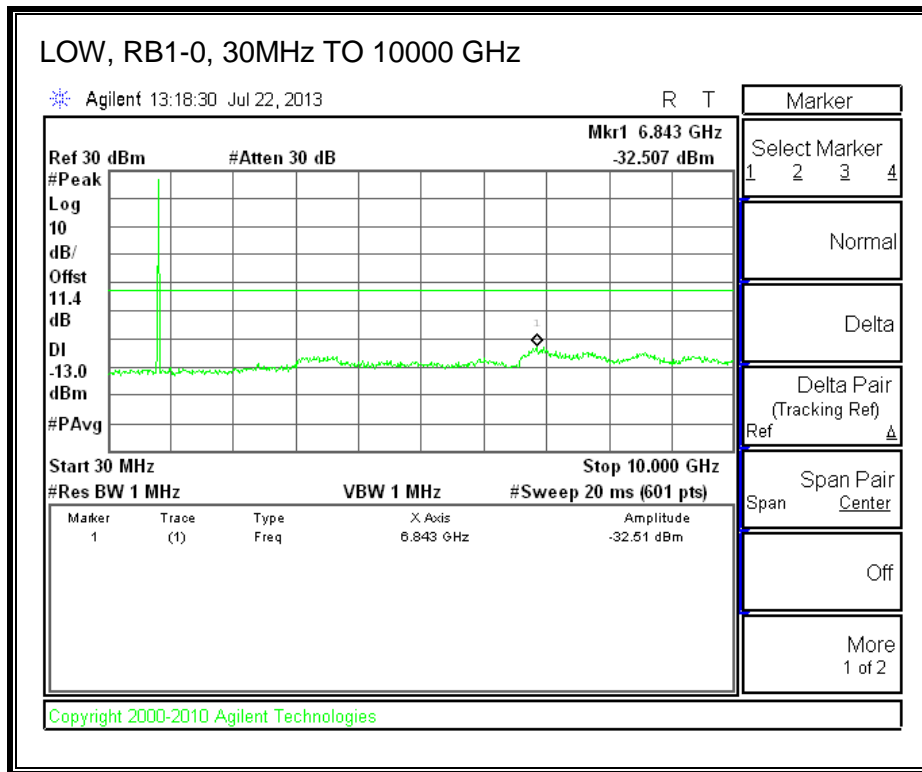
LTE 16QAM

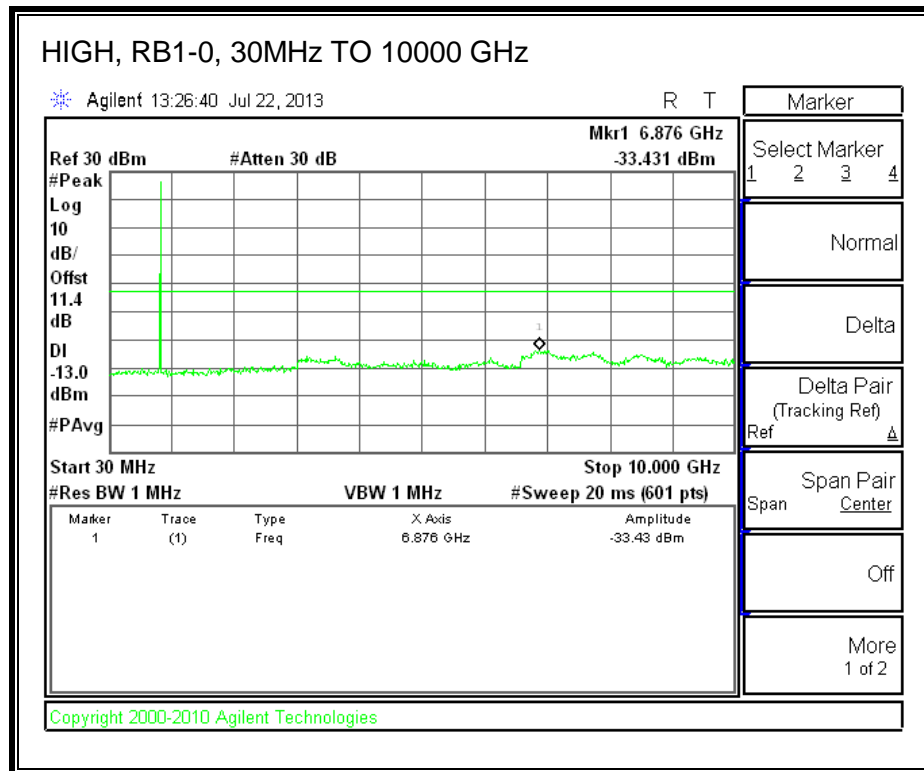




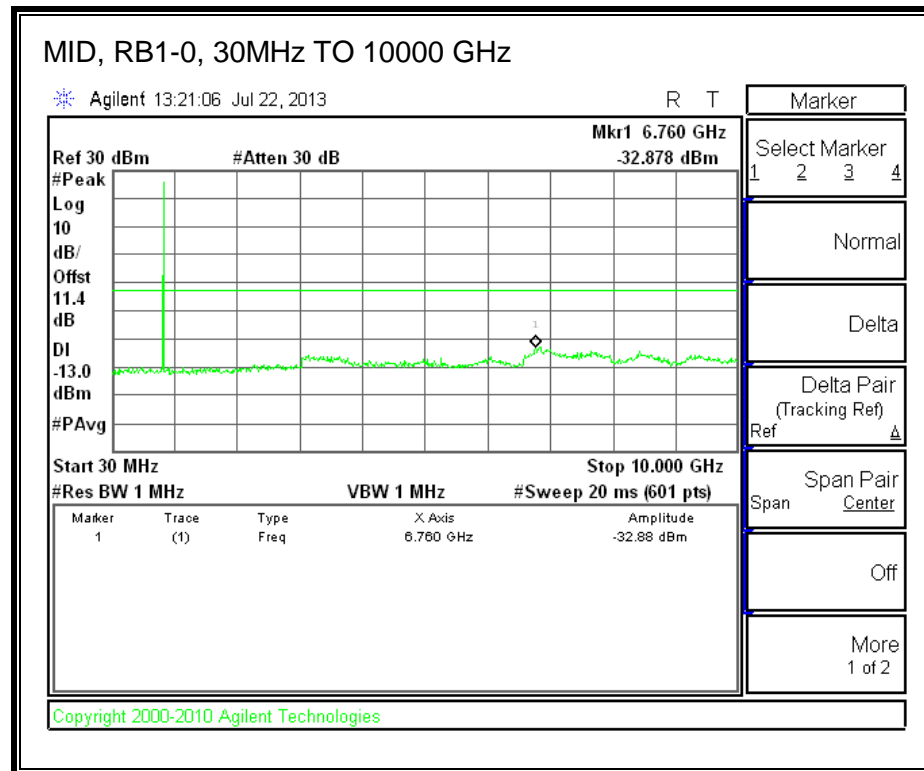
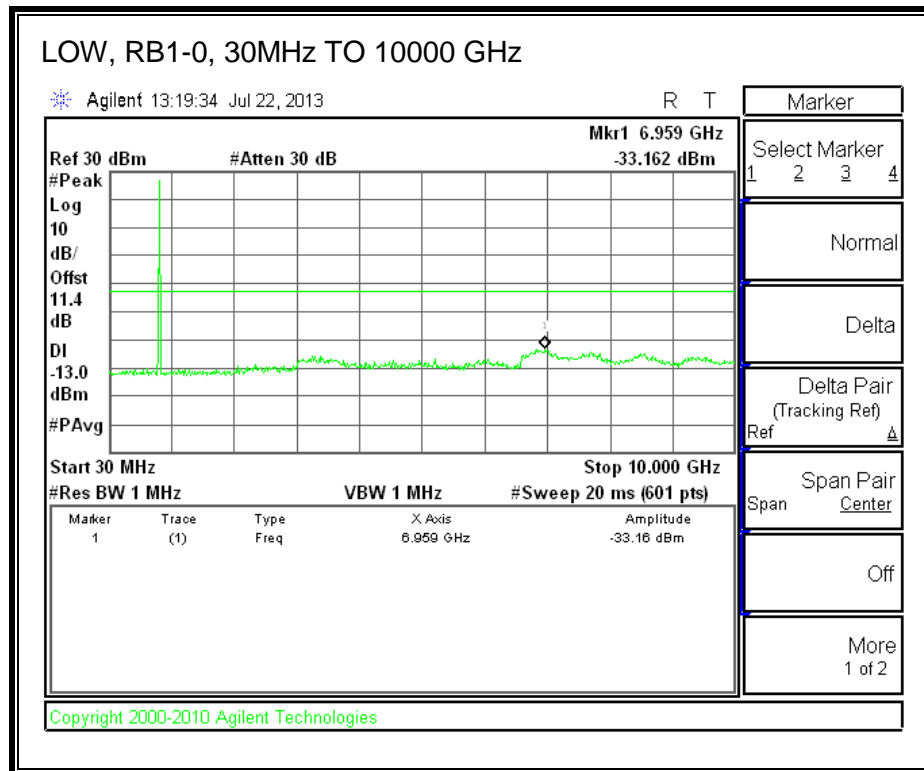
Band 5 (3.0 MHz BANDWIDTH)

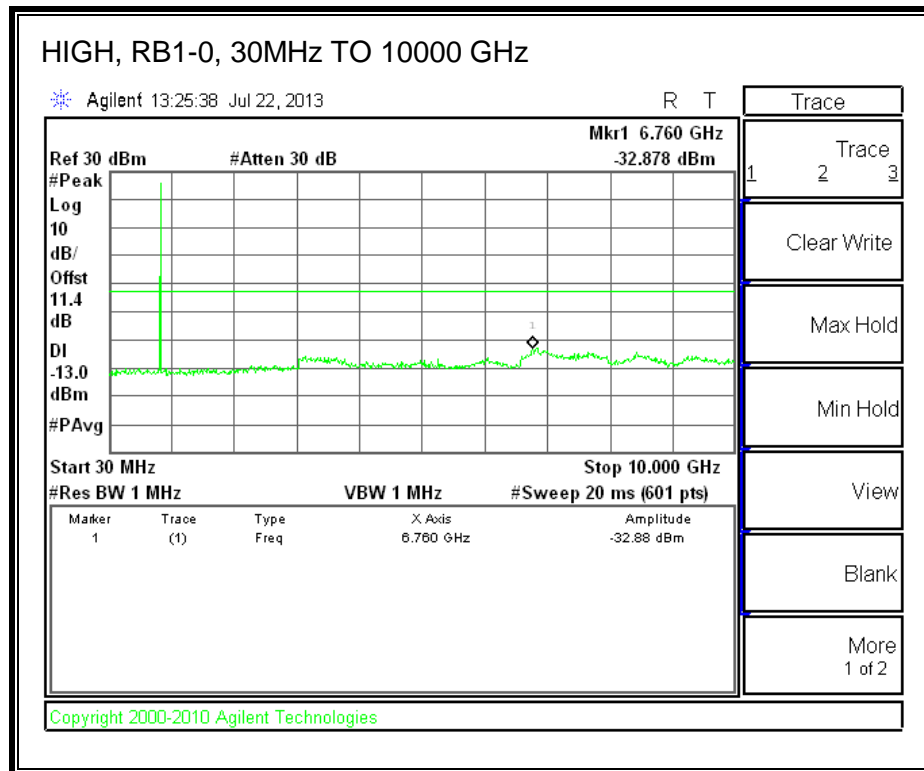
LTE QPSK





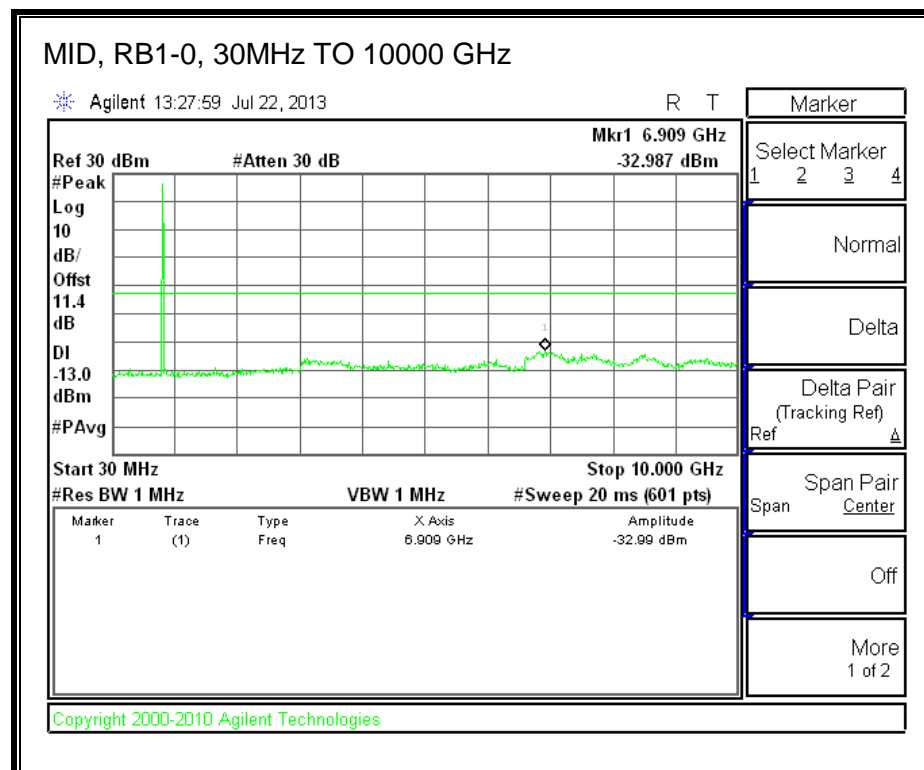
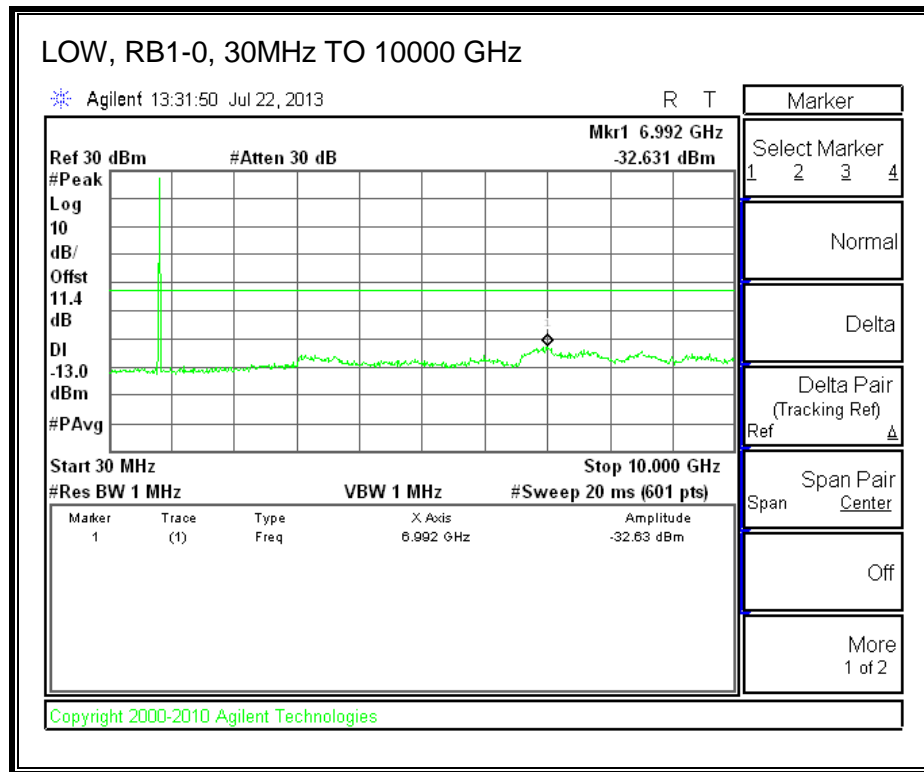
LTE 16QAM

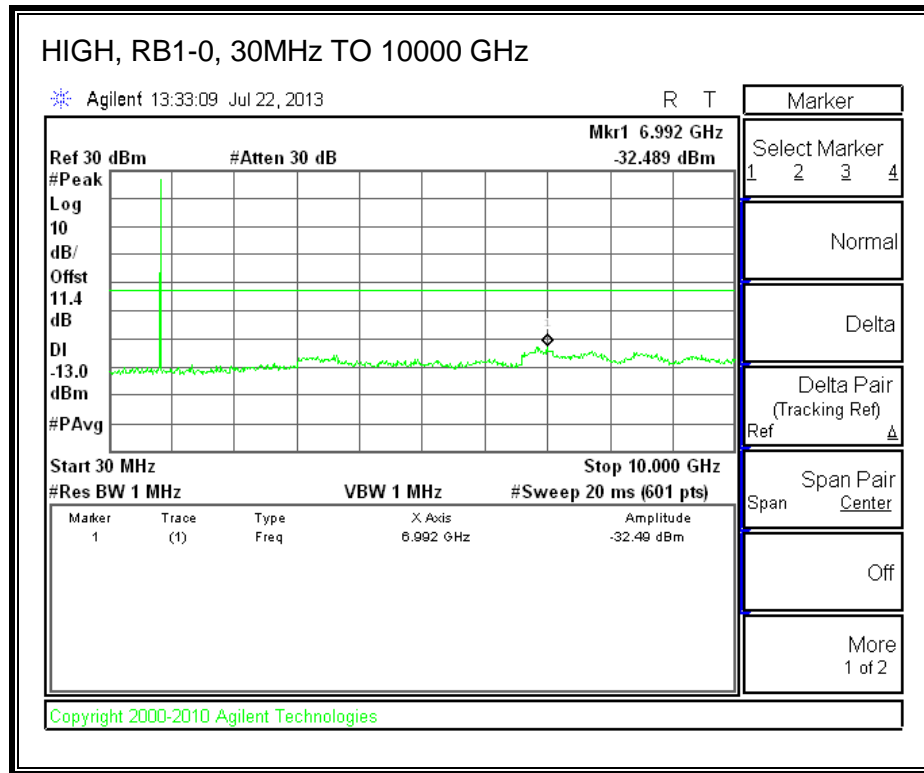




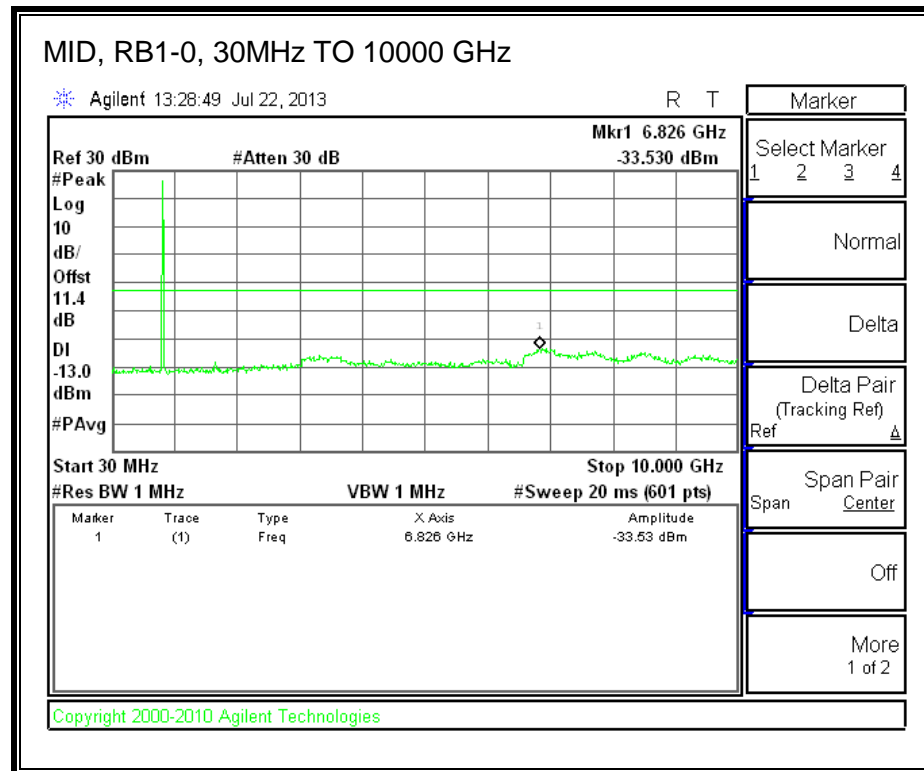
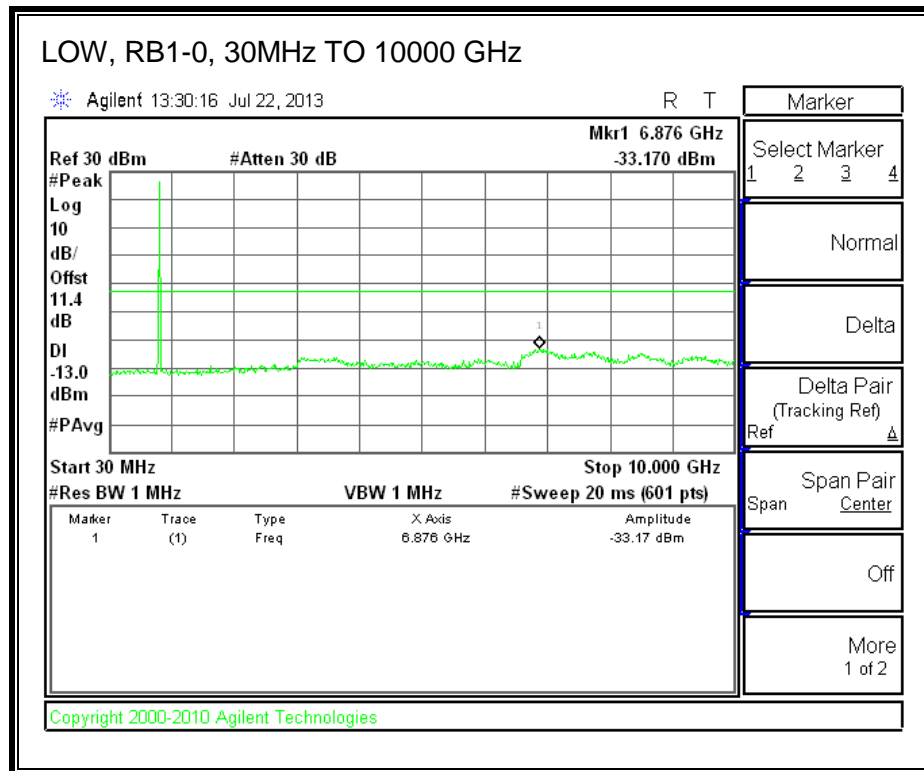
Band 5 (5 MHz BANDWIDTH)

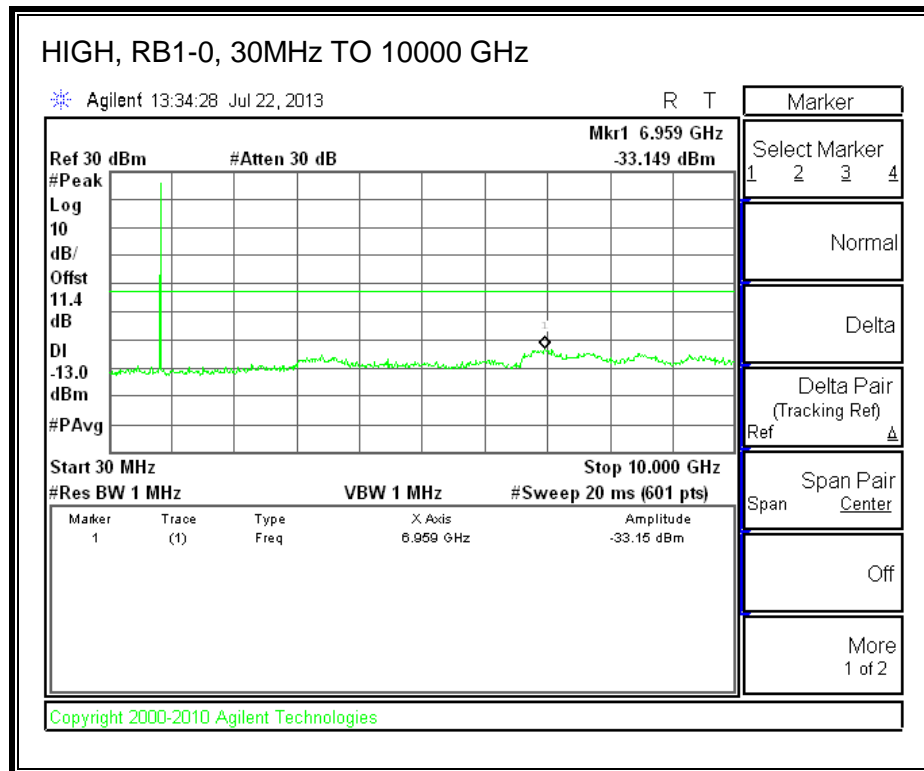
LTE QPSK





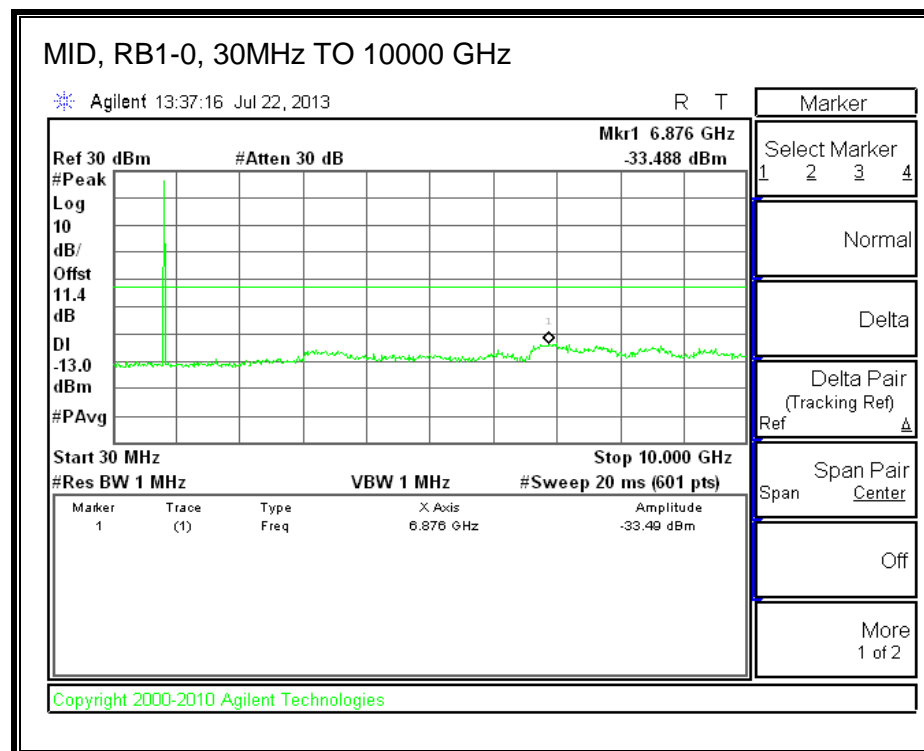
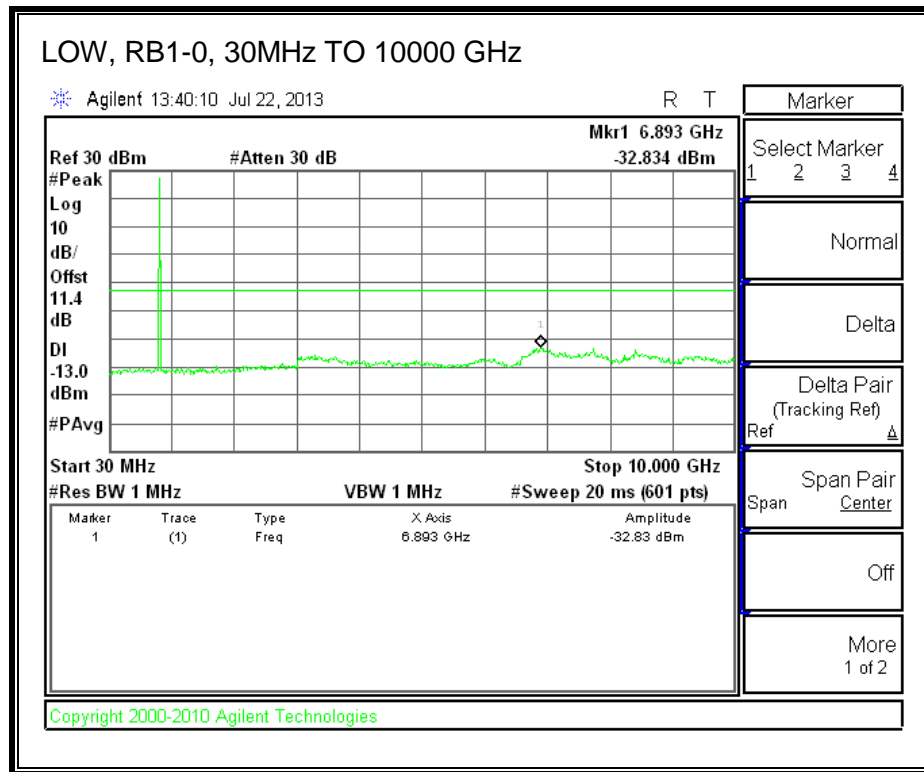
LTE 16QAM

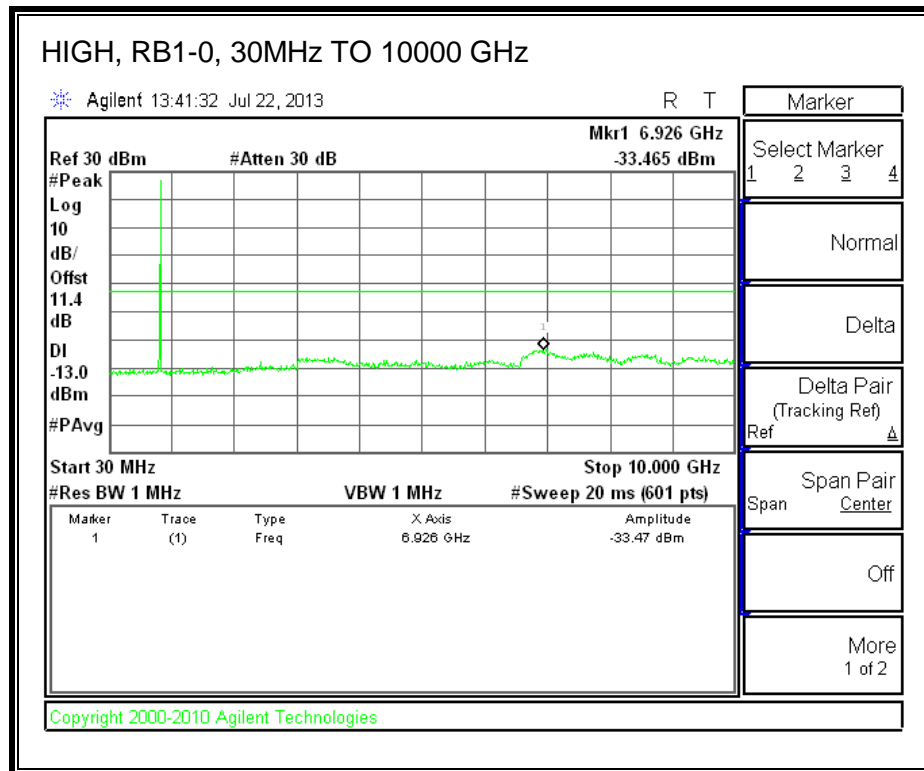




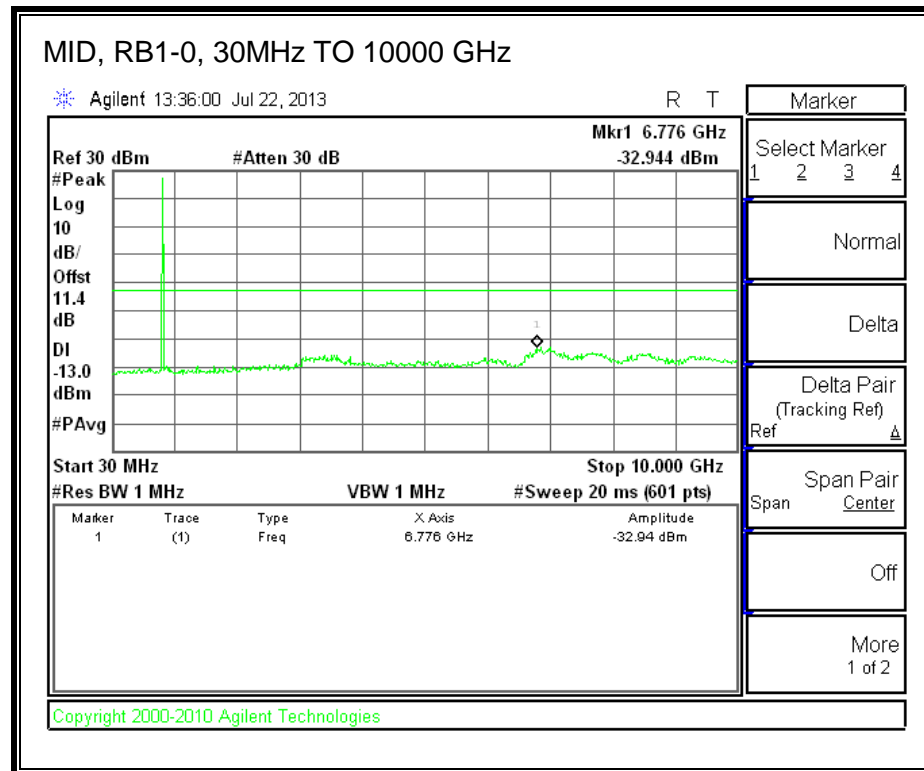
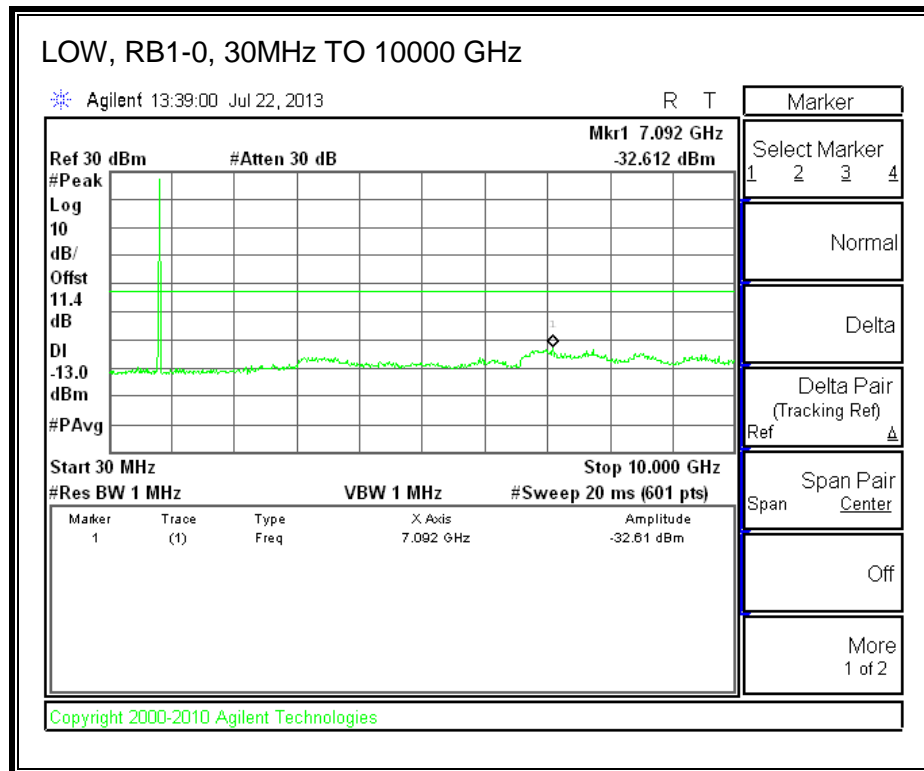
Band 5 (10 MHz BANDWIDTH)

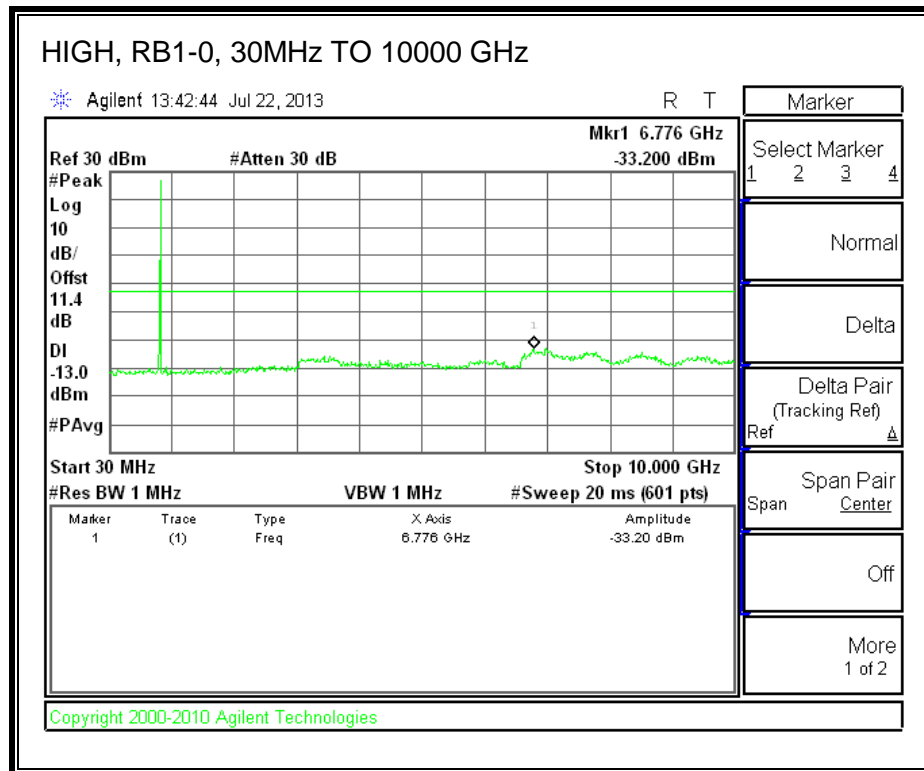
LTE QPSK





LTE 16QAM





8.4. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235

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 $+50^{\circ}\text{C}$
- Voltage = (85% - 115%)

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C 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 $+50^{\circ}\text{C}$ is reached.

Frequency Stability vs Voltage:

The peak frequency error is recorded (worst-case).

MODES TESTED

- LTE Band 2
- LTE Band 5

RESULTS

See the following pages.

QPSK, LTE BAND 2 – 1880.0 MHz

Reference Frequency: PCS Mid Channel 1879.999985Hz @ 20°C Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1879.999962	0.012	2.5
3.80	40	1879.999964	0.011	2.5
3.80	30	1879.999973	0.006	2.5
3.80	20	1879.999985	0	2.5
3.80	10	1880.000027	-0.022	2.5
3.80	0	1880.000034	-0.026	2.5
3.80	-10	1880.000036	-0.027	2.5
3.80	-20	1880.000041	-0.030	2.5
3.80	-30	1880.000038	-0.028	2.5

Reference Frequency: PCS Mid Channel 1879.999985MHz @ 20°C Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	1879.999985	0.00000	2.5
4.20	20	1879.999992	-0.00372	2.5
3.40	20	1879.999978	0.00372	2.5
End Volt(3.2)	20	1879.999982	0.00160	2.5

16QAM-LTE BAND 2 – 1880.0 MHz

Reference Frequency: PCS Mid Channel 1879.999981MHz @ 20°C Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1879.999910	0.038	2.5
3.80	40	1879.999972	0.005	2.5
3.80	30	1879.999976	0.003	2.5
3.80	20	1879.999981	0	2.5
3.80	10	1880.000053	-0.038	2.5
3.80	0	1880.000055	-0.039	2.5
3.80	-10	1880.000071	-0.048	2.5
3.80	-20	1880.000082	-0.054	2.5
3.80	-30	1880.000021	-0.021	2.5

Reference Frequency: PCS Mid Channel 1879.999981MHz @ 20°C Limit: within the authorized block or +/- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (*C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	1879.999981	0.00000	2.5
4.20	20	1880.000015	-0.01809	2.5
3.40	20	1880.000011	-0.01596	2.5
End Volt(3.2)	20	1879.999973	0.00426	2.5

LTE BAND 5 – 836.5MHz, QPSK

Reference Frequency: Cellular Mid Channel 836.500007MHz @ 20°C Limit: to stay +/- 2.5 ppm = 2091.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.500025	-0.022	2.5
3.80	40	836.500022	-0.018	2.5
3.80	30	836.500015	-0.010	2.5
3.80	20	836.500007	0	2.5
3.80	10	836.500011	-0.005	2.5
3.80	0	836.500007	0.000	2.5
3.80	-10	836.499998	0.011	2.5
3.80	-20	836.499995	0.014	2.5
3.90	-30	836.499993	0.017	2.5
Reference Frequency: Cellular Mid Channel 836.500007MHz @ 20°C Limit: to stay +/- 2.5 ppm = 2091.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	836.500007	0	2.5
4.20	20	836.500002	0.007	2.5
3.40	20	836.500018	-0.013	2.5
End Voltage(3.2V)	20	836.500022	-0.018	2.5

LTE BAND 5 – 836.5 MHz, 16QAM

Reference Frequency: Cellular Mid Channel 836.599982MHz @ 20°C Limit: to stay +/- 2.5 ppm = 2091.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.500005	0.022	2.5
3.80	40	836.500003	0.024	2.5
3.80	30	836.500006	0.020	2.5
3.80	20	836.500023	0	2.5
3.80	10	836.500025	-0.002	2.5
3.80	0	836.500026	-0.004	2.5
3.80	-10	836.500018	0.006	2.5
3.80	-20	836.500022	0.001	2.5
3.80	-30	836.500024	-0.001	2.5

Reference Frequency: Cellular Mid Channel 836.500023MHz @ 20°C Limit: to stay +/- 2.5 ppm = 2091.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measured with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	20	836.500023	0	2.5
4.20	20	836.500026	-0.004	2.5
3.40	20	836.500012	0.013	2.5
End Volt(3.2)	20	836.500006	0.020	2.5

9. RADIATED TEST RESULTS

9.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

FCC: §2.1046, §22.913 and §24.232

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.

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

TEST PROCEDURE

ANSI / TIA / EIA 603C Clause 2.2.17

KDB 971168 v02r01 RF power output using broadband peak and average power meter method.

MODES TESTED

- LTE Band 2
- LTE Band 5

RESULTS

9.1.1. LAT / PORT A

LTE BAND 2 (1.4 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
1.4MHz Band QPSK	6/0	1850.7	28.30	676.08
		1880.0	27.98	628.06
		1909.3	28.54	714.50
1.4MHz Band 16QAM	6/0	1850.7	27.30	537.03
		1880.0	26.98	498.88
		1909.3	27.54	567.54

LTE Band 2 (3.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
3.0MHz Band QPSK	15/0	1851.5	28.70	741.31
		1880.0	28.48	704.69
		1908.5	28.44	698.23
3.0MHz Band 16QAM	15/0	1851.5	27.70	588.84
		1880.0	27.48	559.76
		1908.5	27.44	554.63

LTE Band 2 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
5.0MHz Band QPSK	25/0	1852.5	29.20	831.76
		1880.0	29.28	847.23
		1907.5	29.14	820.35
5.0MHz Band 16QAM	25/0	1852.5	28.20	660.69
		1880.0	28.28	672.98
		1907.5	28.14	651.63

LTE Band 2 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
10.0MHz Band QPSK	50/0	1855.0	29.30	851.14
		1880.0	29.78	950.60
		1905.0	29.89	974.99
10.0MHz Band 16QAM	50/0	1855.0	28.40	691.83
		1880.0	28.78	755.09
		1905.0	28.84	765.60

LTE Band 2 (15.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
15MHz Band QPSK	75/0	1857.5	28.90	776.25
		1880.0	29.28	847.23
		1902.5	29.14	820.35
15MHz Band 16QAM	75/0	1857.5	27.90	616.60
		1880.0	28.28	672.98
		1902.5	28.14	651.63

LTE Band 2 (20.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
20.0MHz Band QPSK	100/0	1860.0	28.60	724.44
		1880.0	28.38	688.65
		1900.0	28.64	731.14
20MHz Band 16QAM	100/0	1860.0	27.70	588.84
		1880.0	27.38	547.02
		1900.0	27.64	580.76

LTE BAND 5 (1.4 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
1.4MHz Band QPSK	1/0	824.7	18.50	70.79
		836.5	19.80	95.50
		848.3	19.40	87.10
1.4MHz Band 16QAM	1/0	824.7	17.60	57.54
		836.5	18.90	77.62
		848.3	18.50	70.79

LTE Band 5 (3.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	825.5	18.50	70.79
		836.5	19.60	91.20
		847.5	19.00	79.43
3.0 MHZ BAND 16QAM	1/0	825.5	17.60	57.54
		836.5	18.50	70.79
		847.5	18.10	64.57

LTE Band 5 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	826.5	18.60	72.44
		836.5	19.30	85.11
		846.5	18.90	77.62
5MHz Band 16QAM	1/0	826.5	17.70	58.88
		836.5	18.40	69.18
		846.5	18.00	63.10

LTE Band 5 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	829.0	18.50	70.79
		836.5	19.60	91.20
		844.0	18.13	65.01
10.0 MHZ BAND 16QAM	1/0	829.0	17.80	60.26
		836.5	18.60	72.44
		844.0	17.80	60.26

9.1.2. UAT / PORT B

LTE Band 2 (1.4 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
1.4MHz Band QPSK	6/0	1850.7	20.80	120.23
		1880.0	21.08	128.23
		1909.3	20.14	103.28
1.4MHz Band 16QAM	6/0	1850.7	19.80	95.50
		1880.0	20.08	101.86
		1909.3	19.24	83.95

LTE Band 2 (3.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
3.0MHz Band QPSK	15/0	1851.5	20.50	112.20
		1880.0	20.58	114.29
		1908.5	19.94	98.63
3.0MHz Band 16QAM	15/0	1851.5	19.60	91.20
		1880.0	19.78	95.06
		1908.5	19.04	80.17

LTE Band 2 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
5.0MHz Band QPSK	25/0	1852.5	19.90	97.72
		1880.0	20.18	104.23
		1907.5	19.14	82.04
5.0MHz Band 16QAM	25/0	1852.5	19.00	79.43
		1880.0	19.28	84.72
		1907.5	18.24	66.68

LTE Band 2 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
10.0MHz Band QPSK	50/0	1855.0	20.40	109.65
		1880.0	20.78	119.67
		1905.0	20.04	100.93
10.0MHz Band 16QAM	50/0	1855.0	19.40	87.10
		1880.0	19.88	97.27
		1905.0	19.14	82.04

LTE Band 2 (15.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
15MHz Band QPSK	75/0	1857.5	20.70	117.49
		1880.0	20.88	122.46
		1902.5	20.34	108.14
15MHz Band 16QAM	75/0	1857.5	19.70	93.33
		1880.0	19.88	97.27
		1902.5	19.34	85.90

LTE Band 2 (20.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP (Peak)	
			dBm	mW
20.0MHz Band QPSK	100/0	1860.0	19.50	89.13
		1880.0	20.28	106.66
		1900.0	19.14	82.04
20MHz Band 16QAM	100/0	1860.0	18.50	70.79
		1880.0	19.28	84.72
		1900.0	18.24	66.68

LTE Band 5 (1.4 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
1.4MHz Band QPSK	1/0	824.7	18.30	67.61
		836.5	18.30	67.61
		848.3	18.10	64.57
1.4MHz Band 16QAM	1/0	824.7	17.30	53.70
		836.5	17.30	53.70
		848.3	17.10	51.29

LTE Band 5 (3.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	825.5	18.30	67.61
		836.5	18.30	67.61
		847.5	17.90	61.66
3.0 MHZ BAND 16QAM	1/0	825.5	17.20	52.48
		836.5	17.30	53.70
		847.5	16.90	48.98

LTE Band 5 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	826.5	18.30	67.61
		836.5	18.00	63.10
		846.5	18.20	66.07
5MHz Band 16QAM	1/0	826.5	17.20	52.48
		836.5	17.00	50.12
		846.5	17.30	53.70

LTE Band 5 (10 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	829.0	18.90	77.62
		836.5	17.50	56.23
		844.0	18.00	63.10
10.0 MHZ BAND 16QAM	1/0	829.0	17.90	61.66
		836.5	16.70	46.77
		844.0	17.10	51.29

LAT / PORT A

LTE BAND 2

QPSK Band 2 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 1.4MHz BW						
		QPSK, Peak, RB6-0						
		A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	20.9	V	1.50	7.94	27.34	33.0	-5.7	
1.851	21.0	H	1.50	8.80	28.30	33.0	-4.7	
Mid Ch								
1.880	20.5	V	1.50	7.95	26.95	33.0	-6.1	
1.880	20.8	H	1.50	8.68	27.98	33.0	-5.0	
High Ch								
1.909	21.1	V	1.50	7.97	27.57	33.0	-5.4	
1.909	21.5	H	1.50	8.57	28.54	33.0	-4.5	
Rev. 3.17.11								

16QAM Band 2 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 1.4MHz BW						
		16QAM, Peak, RB6-0						
		A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	19.9	V	1.50	7.94	26.34	33.0	-6.7	
1.851	20.0	H	1.50	8.80	27.30	33.0	-5.7	
Mid Ch								
1.880	19.5	V	1.50	7.95	25.95	33.0	-7.1	
1.880	19.8	H	1.50	8.68	26.98	33.0	-6.0	
High Ch								
1.909	20.1	V	1.50	7.97	26.57	33.0	-6.4	
1.909	20.5	H	1.50	8.57	27.54	33.0	-5.5	
Rev. 3.17.11								

QPSK Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 3MHz BW						
		QPSK, Peak, RB15-0						
		A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	21.1	V	1.50	7.94	27.54	33.0	-5.5	
1.852	21.4	H	1.50	8.80	28.70	33.0	-4.3	
Mid Ch								
1.880	21.0	V	1.50	7.95	27.45	33.0	-5.6	
1.880	21.3	H	1.50	8.68	28.48	33.0	-4.5	
High Ch								
1.909	21.2	V	1.50	7.97	27.67	33.0	-5.3	
1.909	21.4	H	1.50	8.57	28.44	33.0	-4.6	
Rev. 3.17.11								

16QAM Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 3MHz BW						
		16QAM, Peak, RB15-0						
		A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	20.3	V	1.50	7.94	26.74	33.0	-6.3	
1.852	20.4	H	1.50	8.80	27.70	33.0	-5.3	
Mid Ch								
1.880	20.1	V	1.50	7.95	26.55	33.0	-6.5	
1.880	20.3	H	1.50	8.68	27.48	33.0	-5.5	
High Ch								
1.909	20.2	V	1.50	7.97	26.67	33.0	-6.3	
1.909	20.4	H	1.50	8.57	27.44	33.0	-5.6	
Rev: 3.17.11								

QPSK Band 2 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 5MHz BW						
		QPSK, Peak, RB25-0						
		A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	21.9	V	1.50	7.94	28.34	33.0	-4.7	
1.853	21.9	H	1.50	8.80	29.20	33.0	-3.8	
Mid Ch								
1.880	22.1	V	1.50	7.95	28.55	33.0	-4.5	
1.880	22.1	H	1.50	8.68	29.28	33.0	-3.7	
High Ch								
1.908	21.9	V	1.50	7.97	28.37	33.0	-4.6	
1.908	22.1	H	1.50	8.57	29.14	33.0	-3.9	
Rev: 3.17.11								

16QAM Band 2 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 5MHz BW 16QAM, Peak, RB25-0 A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	20.9	V	1.50	7.94	27.34	33.0	-5.7	
1.853	20.9	H	1.50	8.80	28.20	33.0	-4.8	
Mid Ch								
1.880	21.1	V	1.50	7.95	27.55	33.0	-5.5	
1.880	21.1	H	1.50	8.68	28.28	33.0	-4.7	
High Ch								
1.908	20.9	V	1.50	7.97	27.37	33.0	-5.6	
1.908	21.1	H	1.50	8.57	28.14	33.0	-4.9	
Rev. 3.17.11								

QPSK Band 2 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 10MHz BW						
		QPSK, Peak, RB50-0						
		A33, LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	22.2	V	1.50	7.94	28.59	33.0	-4.4	
1.855	22.0	H	1.50	8.80	29.30	33.0	-3.7	
Mid Ch								
1.880	22.1	V	1.50	7.95	28.55	33.0	-4.5	
1.880	22.6	H	1.50	8.68	29.78	33.0	-3.2	
High Ch								
1.905	21.7	V	1.50	7.97	28.17	33.0	-4.8	
1.905	22.8	H	1.50	8.57	29.89	33.0	-3.1	
Rev. 3.17.11								

16QAM Band 2 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 10MHz BW						
		16QAM, Peak, RB50-0						
		A33, LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	21.1	V	1.50	7.94	27.54	33.0	-5.5	
1.855	21.1	H	1.50	8.80	28.40	33.0	-4.6	
Mid Ch								
1.880	21.2	V	1.50	7.95	27.65	33.0	-5.4	
1.880	21.6	H	1.50	8.68	28.78	33.0	-4.2	
High Ch								
1.905	20.7	V	1.50	7.97	27.17	33.0	-5.8	
1.905	21.8	H	1.50	8.57	28.84	33.0	-4.2	
Rev: 3.17.11								

LTE QPSK Band 2 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 15MHz BW						
		QPSK, Peak, RB75-0						
		A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	21.1	V	1.50	7.94	27.54	33.0	-5.5	
1.858	21.6	H	1.50	8.80	28.90	33.0	-4.1	
Mid Ch								
1.880	21.8	V	1.50	7.95	28.25	33.0	-4.8	
1.880	22.1	H	1.50	8.68	29.28	33.0	-3.7	
High Ch								
1.903	22.0	V	1.50	7.97	28.47	33.0	-4.5	
1.903	22.1	H	1.50	8.57	29.14	33.0	-3.9	
Rev. 3.17.11								

16QAM Band 2 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 15MHz BW						
		16QAM, Peak, RB75-0						
		A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	20.1	V	1.50	7.94	26.54	33.0	-6.5	
1.858	20.6	H	1.50	8.80	27.90	33.0	-5.1	
Mid Ch								
1.880	20.8	V	1.50	7.95	27.25	33.0	-5.8	
1.880	21.1	H	1.50	8.68	28.28	33.0	-4.7	
High Ch								
1.903	21.0	V	1.50	7.97	27.47	33.0	-5.5	
1.903	21.1	H	1.50	8.57	28.14	33.0	-4.9	
Rev. 3.17.11								

QPSK Band 2 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 20MHz BW						
		QPSK, Peak, RB100-0						
		A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	21.8	V	1.50	7.94	28.24	33.0	-4.8	
1.860	21.3	H	1.50	8.80	28.60	33.0	-4.4	
Mid Ch								
1.880	21.5	V	1.50	7.95	27.95	33.0	-5.1	
1.880	21.2	H	1.50	8.68	28.38	33.0	-4.6	
High Ch								
1.900	22.1	V	1.50	7.97	28.57	33.0	-4.4	
1.900	21.6	H	1.50	8.57	28.64	33.0	-4.4	
Rev: 3.17.11								

16QAM Band 2 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/20/13						
Test Engineer:		Lieu Nguyen						
Configuration:		EUT Only						
Mode:		LTE band 2, 20MHz BW 16QAM, Peak, RB100-0 A33 LAT						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	20.8	V	1.50	7.94	27.24	33.0	-5.8	
1.860	20.4	H	1.50	8.80	27.70	33.0	-5.3	
Mid Ch								
1.880	20.4	V	1.50	7.95	26.85	33.0	-6.2	
1.880	20.2	H	1.50	8.68	27.38	33.0	-5.6	
High Ch								
1.900	21.1	V	1.50	7.97	27.57	33.0	-5.4	
1.900	20.6	H	1.50	8.57	27.64	33.0	-5.4	
Rev: 3.17.11								

LAT LTE BAND 5

QPSK Band 5 (1.4 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/20/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT only						
Mode:		LTE Band 5 , 1.4MHz BW						
		QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	19.10	V	0.6	0.0	18.50	38.5	-19.9	
824.70	5.90	H	0.6	0.0	5.30	38.5	-33.1	
Mid Ch								
836.50	20.40	V	0.6	0.0	19.80	38.5	-18.6	
836.50	6.80	H	0.6	0.0	6.20	38.5	-32.2	
High Ch								
848.30	20.00	V	0.6	0.0	19.40	38.5	-19.0	
848.30	6.20	H	0.6	0.0	5.60	38.5	-32.8	
Rev. 3.17.11								

16QAM Band 5 (1.4 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/20/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT only						
Mode:		LTE Band 5 , 1.4MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	18.20	V	0.6	0.0	17.60	38.5	-20.8	
824.70	5.00	H	0.6	0.0	4.40	38.5	-34.0	
Mid Ch								
836.50	19.50	V	0.6	0.0	18.90	38.5	-19.5	
836.50	5.90	H	0.6	0.0	5.30	38.5	-33.1	
High Ch								
848.30	19.10	V	0.6	0.0	18.50	38.5	-19.9	
848.30	5.30	H	0.6	0.0	4.70	38.5	-33.7	
Rev. 3.17.11								

QPSK Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/20/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT only						
Mode:		LTE Band 5 , 3MHz BW QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	19.10	V	0.6	0.0	18.50	38.5	-19.9	
825.50	5.80	H	0.6	0.0	5.20	38.5	-33.2	
Mid Ch								
836.50	20.20	V	0.6	0.0	19.60	38.5	-18.8	
836.50	55.00	H	0.6	0.0	54.40	38.5	16.0	
High Ch								
847.50	19.60	V	0.6	0.0	19.00	38.5	-19.4	
847.50	6.20	H	0.6	0.0	5.60	38.5	-32.8	
Rev. 3.17.11								

16QAM Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/20/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT only						
Mode:		LTE Band 5 , 3MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	18.20	V	0.6	0.0	17.60	38.5	-20.8	
825.50	4.90	H	0.6	0.0	4.30	38.5	-34.1	
Mid Ch								
836.50	19.10	V	0.6	0.0	18.50	38.5	-19.9	
836.50	5.90	H	0.6	0.0	5.30	38.5	-33.1	
High Ch								
847.50	18.70	V	0.6	0.0	18.10	38.5	-20.3	
847.50	5.30	H	0.6	0.0	4.70	38.5	-33.7	
Rev. 3.17.11								

QPSK Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/20/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT only						
Mode:		LTE Band 5 , 5MHz BW QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	19.20	V	0.6	0.0	18.60	38.5	-19.8	
826.50	6.00	H	0.6	0.0	5.40	38.5	-33.0	
Mid Ch								
836.50	19.90	V	0.6	0.0	19.30	38.5	-19.1	
836.50	7.10	H	0.6	0.0	6.50	38.5	-31.9	
High Ch								
846.50	19.50	V	0.6	0.0	18.90	38.5	-19.5	
846.50	6.20	H	0.6	0.0	5.60	38.5	-32.8	
Rev. 3.17.11								

16QAM Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/20/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT only						
Mode:		LTE Band 5 , 5MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	18.30	V	0.6	0.0	17.70	38.5	-20.7	
826.50	5.10	H	0.6	0.0	4.50	38.5	-33.9	
Mid Ch								
836.50	19.00	V	0.6	0.0	18.40	38.5	-20.0	
836.50	6.20	H	0.6	0.0	5.60	38.5	-32.8	
High Ch								
846.50	18.60	V	0.6	0.0	18.00	38.5	-20.4	
846.50	5.30	H	0.6	0.0	4.70	38.5	-33.7	
Rev. 3.17.11								

QPSK Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/20/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT only						
Mode:		LTE Band 5 , 10MHz BW QPSK Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	19.10	V	0.6	0.0	18.50	38.5	-19.9	
829.00	5.30	H	0.6	0.0	4.70	38.5	-33.7	
Mid Ch								
836.50	20.20	V	0.6	0.0	19.60	38.5	-18.8	
836.50	5.70	H	0.6	0.0	5.10	38.5	-33.3	
High Ch								
844.00	18.73	V	0.6	0.0	18.13	38.5	-20.3	
844.00	5.80	H	0.6	0.0	5.20	38.5	-33.2	
Rev. 3.17.11								

16QAM Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/20/13						
Test Engineer:		Kiya Kedida						
Configuration:		EUT only						
Mode:		LTE Band 5 , 10MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	18.40	V	0.6	0.0	17.80	38.5	-20.6	
829.00	5.00	H	0.6	0.0	4.40	38.5	-34.0	
Mid Ch								
836.50	19.20	V	0.6	0.0	18.60	38.5	-19.8	
836.50	4.90	H	0.6	0.0	4.30	38.5	-34.1	
High Ch								
844.00	18.40	V	0.6	0.0	17.80	38.5	-20.6	
844.00	5.04	H	0.6	0.0	4.44	38.5	-34.0	
Rev. 3.17.11								

UAT / PORT B

LTE BAND 2

QPSK Band 2 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 1.4MHz BW QPSK, Peak, RB6-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	12.7	V	1.50	7.94	19.14	33.0	-13.9	
1.851	13.5	H	1.50	8.80	20.80	33.0	-12.2	
Mid Ch								
1.880	12.3	V	1.50	7.95	18.75	33.0	-14.3	
1.880	13.9	H	1.50	8.68	21.08	33.0	-11.9	
High Ch								
1.909	12.8	V	1.50	7.97	19.27	33.0	-13.7	
1.909	13.1	H	1.50	8.57	20.14	33.0	-12.9	
Rev. 3.17.11								

16QAM Band 2 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 1.4MHz BW						
		16QAM, Peak, RB6-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.851	11.8	V	1.50	7.94	18.24	33.0	-14.8	
1.851	12.5	H	1.50	8.80	19.80	33.0	-13.2	
Mid Ch								
1.880	11.4	V	1.50	7.95	17.85	33.0	-15.2	
1.880	12.9	H	1.50	8.68	20.08	33.0	-12.9	
High Ch								
1.909	11.7	V	1.50	7.97	18.17	33.0	-14.8	
1.909	12.2	H	1.50	8.57	19.24	33.0	-13.8	
Rev. 3.17.11								

QPSK Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 3MHz BW QPSK, Peak, RB15-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	13.1	V	1.50	7.94	19.54	33.0	-13.5	
1.852	13.2	H	1.50	8.80	20.50	33.0	-12.5	
Mid Ch								
1.880	11.4	V	1.50	7.95	17.85	33.0	-15.2	
1.880	13.4	H	1.50	8.68	20.58	33.0	-12.4	
High Ch								
1.909	12.2	V	1.50	7.97	18.67	33.0	-14.3	
1.909	12.9	H	1.50	8.57	19.94	33.0	-13.1	
Rev: 3.17.11								

16QAM Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 3MHz BW 16QAM, Peak, RB15-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.852	12.3	V	1.50	7.94	18.74	33.0	-14.3	
1.852	12.3	H	1.50	8.80	19.60	33.0	-13.4	
Mid Ch								
1.880	10.4	V	1.50	7.95	16.85	33.0	-16.2	
1.880	12.6	H	1.50	8.68	19.78	33.0	-13.2	
High Ch								
1.909	10.9	V	1.50	7.97	17.37	33.0	-15.6	
1.909	12.0	H	1.50	8.57	19.04	33.0	-14.0	
Rev: 3.17.11								

QPSK Band 2 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 5MHz BW QPSK, Peak, RB25-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	12.7	V	1.50	7.94	19.14	33.0	-13.9	
1.853	12.6	H	1.50	8.80	19.90	33.0	-13.1	
Mid Ch								
1.880	12.2	V	1.50	7.95	18.65	33.0	-14.4	
1.880	13.0	H	1.50	8.68	20.18	33.0	-12.8	
High Ch								
1.908	12.2	V	1.50	7.97	18.67	33.0	-14.3	
1.908	12.1	H	1.50	8.57	19.14	33.0	-13.9	
Rev. 3.17.11								

16QAM Band 2 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 5MHz BW 16QAM, Peak, RB25-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.853	11.8	V	1.50	7.94	18.24	33.0	-14.8	
1.853	11.7	H	1.50	8.80	19.00	33.0	-14.0	
Mid Ch								
1.880	11.4	V	1.50	7.95	17.85	33.0	-15.2	
1.880	12.1	H	1.50	8.68	19.28	33.0	-13.7	
High Ch								
1.908	11.2	V	1.50	7.97	17.67	33.0	-15.3	
1.908	11.2	H	1.50	8.57	18.24	33.0	-14.8	
Rev: 3.17.11								

QPSK Band 2 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 10MHz BW QPSK, Peak, RB50-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	13.3	V	1.50	7.94	19.74	33.0	-13.3	
1.855	13.1	H	1.50	8.80	20.40	33.0	-12.6	
Mid Ch								
1.880	13.0	V	1.50	7.95	19.45	33.0	-13.6	
1.880	13.6	H	1.50	8.68	20.78	33.0	-12.2	
High Ch								
1.905	13.2	V	1.50	7.97	19.67	33.0	-13.3	
1.905	13.0	H	1.50	8.57	20.04	33.0	-13.0	
Rev: 3.17.11								

16QAM Band 2 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 10MHz BW						
		16QAM, Peak, RB50-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.855	12.3	V	1.50	7.94	18.74	33.0	-14.3	
1.855	12.1	H	1.50	8.80	19.40	33.0	-13.6	
Mid Ch								
1.880	12.0	V	1.50	7.95	18.45	33.0	-14.6	
1.880	12.7	H	1.50	8.68	19.88	33.0	-13.1	
High Ch								
1.905	12.3	V	1.50	7.97	18.77	33.0	-14.2	
1.905	12.1	H	1.50	8.57	19.14	33.0	-13.9	
Rev. 3.17.11								

QPSK Band 2 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 15MHz BW						
		QPSK, Peak, RB75-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	12.9	V	1.50	7.94	19.34	33.0	-13.7	
1.858	13.4	H	1.50	8.80	20.70	33.0	-12.3	
Mid Ch								
1.880	12.6	V	1.50	7.95	19.05	33.0	-14.0	
1.880	13.7	H	1.50	8.68	20.88	33.0	-12.1	
High Ch								
1.903	13.0	V	1.50	7.97	19.47	33.0	-13.5	
1.903	13.3	H	1.50	8.57	20.34	33.0	-12.7	
Rev. 3.17.11								

EIRP LTE 16QAM Band 2 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 15MHz BW 16QAM, Peak, RB75-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.858	11.9	V	1.50	7.94	18.34	33.0	-14.7	
1.858	12.4	H	1.50	8.80	19.70	33.0	-13.3	
Mid Ch								
1.880	11.6	V	1.50	7.95	18.05	33.0	-15.0	
1.880	12.7	H	1.50	8.68	19.88	33.0	-13.1	
High Ch								
1.903	12.0	V	1.50	7.97	18.47	33.0	-14.5	
1.903	12.3	H	1.50	8.57	19.34	33.0	-13.7	
Rev: 3.17.11								

QPSK Band 2 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2, 20MHz BW						
		QPSK, Peak, RB100-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	12.3	V	1.50	7.94	18.74	33.0	-14.3	
1.860	12.2	H	1.50	8.80	19.50	33.0	-13.5	
Mid Ch								
1.880	12.2	V	1.50	7.95	18.65	33.0	-14.4	
1.880	13.1	H	1.50	8.68	20.28	33.0	-12.7	
High Ch								
1.900	12.3	V	1.50	7.97	18.77	33.0	-14.2	
1.900	12.1	H	1.50	8.57	19.14	33.0	-13.9	
Rev. 3.17.11								

16QAM Band 2 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15637						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT Only						
Mode:		LTE band 2: 20MHz BW 16QAM, Peak, RB100-0						
Test Equipment:								
Receiving: Horn T59, and Chamber D SMA Cables								
Substitution: Horn T217 Substitution, 4ft SMA Cable Warehouse								
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch								
1.860	10.9	V	1.50	7.94	17.34	33.0	-15.7	
1.860	11.2	H	1.50	8.80	18.50	33.0	-14.5	
Mid Ch								
1.880	10.7	V	1.50	7.95	17.15	33.0	-15.9	
1.880	12.1	H	1.50	8.68	19.28	33.0	-13.7	
High Ch								
1.900	11.0	V	1.50	7.97	17.47	33.0	-15.5	
1.900	11.2	H	1.50	8.57	18.24	33.0	-14.8	
Rev. 3.17.11								

UAT LTE BAND 5

QPSK (1.4 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT only						
Mode:		LTE Band 5 , 1.4MHz BW						
		QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	18.90	V	0.6	0.0	18.30	38.5	-20.1	
824.70	3.40	H	0.6	0.0	2.80	38.5	-35.6	
Mid Ch								
836.50	18.90	V	0.6	0.0	18.30	38.5	-20.1	
836.50	2.90	H	0.6	0.0	2.30	38.5	-36.1	
High Ch								
848.30	18.70	V	0.6	0.0	18.10	38.5	-20.3	
848.30	1.50	H	0.6	0.0	0.90	38.5	-37.5	
Rev. 3.17.11								

16QAM Band 5 (1.4 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT only						
Mode:		LTE Band 5 , 1.4MHz BW						
		16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
824.70	17.90	V	0.6	0.0	17.30	38.5	-21.1	
824.70	2.40	H	0.6	0.0	1.80	38.5	-36.6	
Mid Ch								
836.50	17.90	V	0.6	0.0	17.30	38.5	-21.1	
836.50	1.90	H	0.6	0.0	1.30	38.5	-37.1	
High Ch								
848.30	17.70	V	0.6	0.0	17.10	38.5	-21.3	
848.30	0.50	H	0.6	0.0	-0.10	38.5	-38.5	
Rev. 3.17.11								

QPSK Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT only						
Mode:		LTE Band 5 , 3MHz BW						
		QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	18.90	V	0.6	0.0	18.30	38.5	-20.1	
825.50	3.60	H	0.6	0.0	3.00	38.5	-35.4	
Mid Ch								
836.50	18.90	V	0.6	0.0	18.30	38.5	-20.1	
836.50	2.70	H	0.6	0.0	2.10	38.5	-36.3	
High Ch								
847.50	18.50	V	0.6	0.0	17.90	38.5	-20.5	
847.50	2.00	H	0.6	0.0	1.40	38.5	-37.0	
Rev. 3.17.11								

16QAM Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT only						
Mode:		LTE Band 5 , 3MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
825.50	17.80	V	0.6	0.0	17.20	38.5	-21.2	
825.50	2.70	H	0.6	0.0	2.10	38.5	-36.3	
Mid Ch								
836.50	17.90	V	0.6	0.0	17.30	38.5	-21.1	
836.50	1.90	H	0.6	0.0	1.30	38.5	-37.1	
High Ch								
847.50	17.50	V	0.6	0.0	16.90	38.5	-21.5	
847.50	1.00	H	0.6	0.0	0.40	38.5	-38.0	
Rev. 3.17.11								

QPSK Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT only						
Mode:		LTE Band 5 , 5MHz BW						
		QPSK, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	18.90	V	0.6	0.0	18.30	38.5	-20.1	
826.50	3.60	H	0.6	0.0	3.00	38.5	-35.4	
Mid Ch								
836.50	18.60	V	0.6	0.0	18.00	38.5	-20.4	
836.50	2.50	H	0.6	0.0	1.90	38.5	-36.5	
High Ch								
846.50	18.80	V	0.6	0.0	18.20	38.5	-20.2	
846.50	2.80	H	0.6	0.0	2.20	38.5	-36.2	
Rev. 3.17.11								

16QAM Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT only						
Mode:		LTE Band 5 , 5MHz BW 16QAM, Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
826.50	17.80	V	0.6	0.0	17.20	38.5	-21.2	
826.50	2.00	H	0.6	0.0	1.40	38.5	-37.0	
Mid Ch								
836.50	17.60	V	0.6	0.0	17.00	38.5	-21.4	
836.50	1.90	H	0.6	0.0	1.30	38.5	-37.1	
High Ch								
846.50	17.90	V	0.6	0.0	17.30	38.5	-21.1	
846.50	2.20	H	0.6	0.0	1.60	38.5	-36.8	
Rev. 3.17.11								

QPSK Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT only						
Mode:		LTE Band 5 , 10MHz BW						
		QPSK Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	19.50	V	0.6	0.0	18.90	38.5	-19.5	
829.00	3.40	H	0.6	0.0	2.80	38.5	-35.6	
Mid Ch								
836.50	18.10	V	0.6	0.0	17.50	38.5	-20.9	
836.50	1.90	H	0.6	0.0	1.30	38.5	-37.1	
High Ch								
844.00	18.60	V	0.6	0.0	18.00	38.5	-20.4	
844.00	3.00	H	0.6	0.0	2.40	38.5	-36.0	
Rev. 3.17.11								

16QAM Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement Compliance Certification Services Chamber D								
Company:		Apple						
Project #:		13U15673						
Date:		07/22/13						
Test Engineer:		Mona Hua						
Configuration:		EUT only						
Mode:		LTE Band 5 , 10MHz BW 16QAM Average, RB1-0						
Test Equipment:								
Receiving: Sunol T243, and Chamber D N-type Cable (Setup this one for testing EUT)								
Substitution: Dipole S/N: 00022117, 4ft SMA Cable Warehouse.								
f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
829.00	18.50	V	0.6	0.0	17.90	38.5	-20.5	
829.00	2.40	H	0.6	0.0	1.80	38.5	-36.6	
Mid Ch								
836.50	17.30	V	0.6	0.0	16.70	38.5	-21.7	
836.50	1.40	H	0.6	0.0	0.80	38.5	-37.6	
High Ch								
844.00	17.70	V	0.6	0.0	17.10	38.5	-21.3	
844.00	2.20	H	0.6	0.0	1.60	38.5	-36.8	
Rev. 3.17.11								

9.2. PEAK-TO-AVERAGE RATIO

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

LTE BAND 5

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	1.4	RB1 0	836.5	26.92	22.83	4.09
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	1.4	RB1 0	836.5	26.96	21.75	5.21
*Peak Reading = Average Reading + Peak-to-Average Ratio						

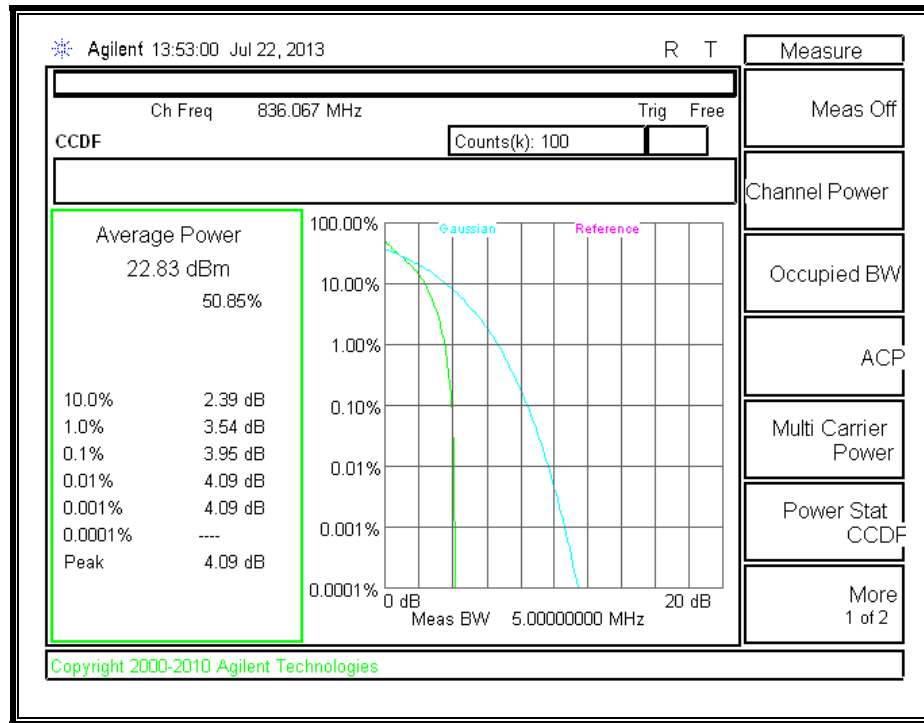
Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	3	RB1 0	836.5	27.03	22.83	4.2
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	3	RB1 0	836.5	26.94	21.7	5.24
*Peak Reading = Average Reading + Peak-to-Average Ratio						

Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	5	RB1 0	836.5	26.88	22.79	4.09
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	5	RB1 0	836.5	26.8	21.7	5.1
*Peak Reading = Average Reading + Peak-to-Average Ratio						

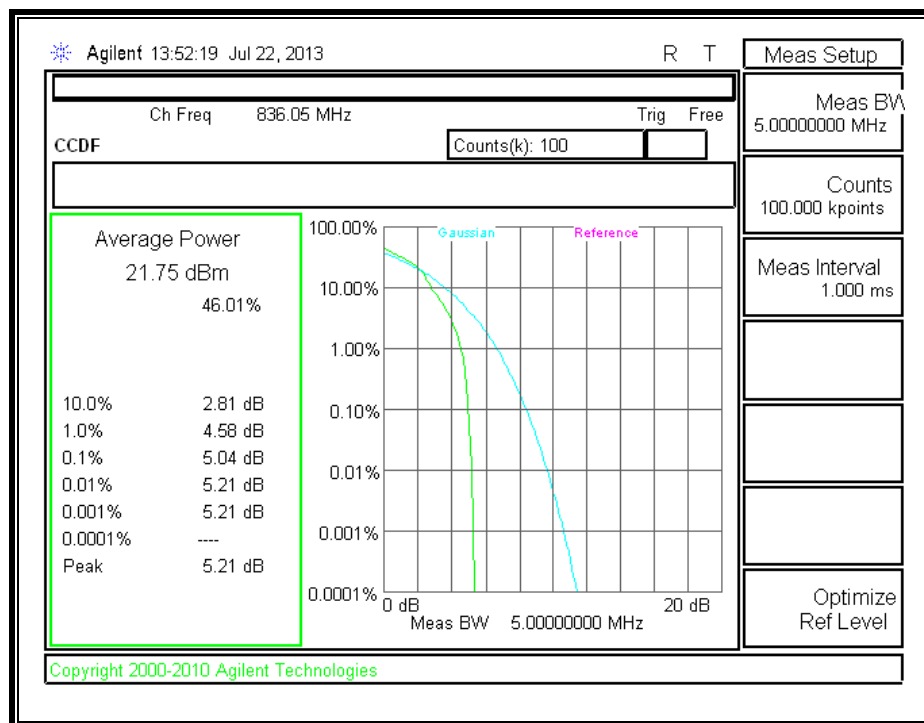
Mode	Channel Band-width (MHZ)	Modulation	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
				*Peak	Average	
QPSK	10	RB1 0	836.5	27.1	22.67	4.43
Mode	Channel Band-width	Ch. No.	f (MHz)	Couducted Power (dBm)		Peak-to-Average Ratio
				*Peak	Average	
16QAM	10	RB1 0	836.5	27.11	21.73	5.38
*Peak Reading = Average Reading + Peak-to-Average Ratio						

LTE BAND 5

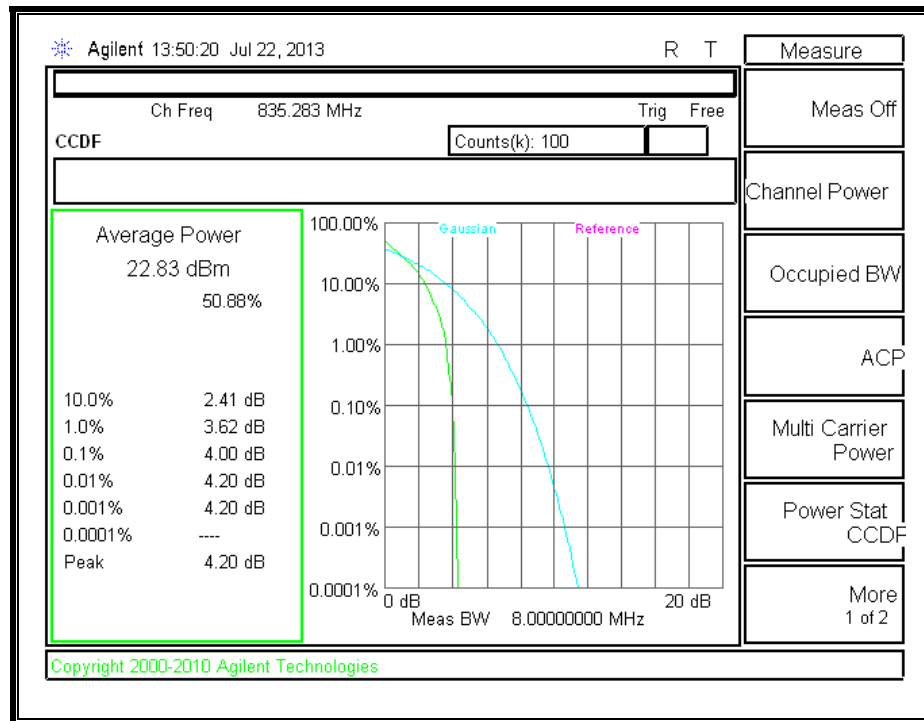
1.4MHz QPSK



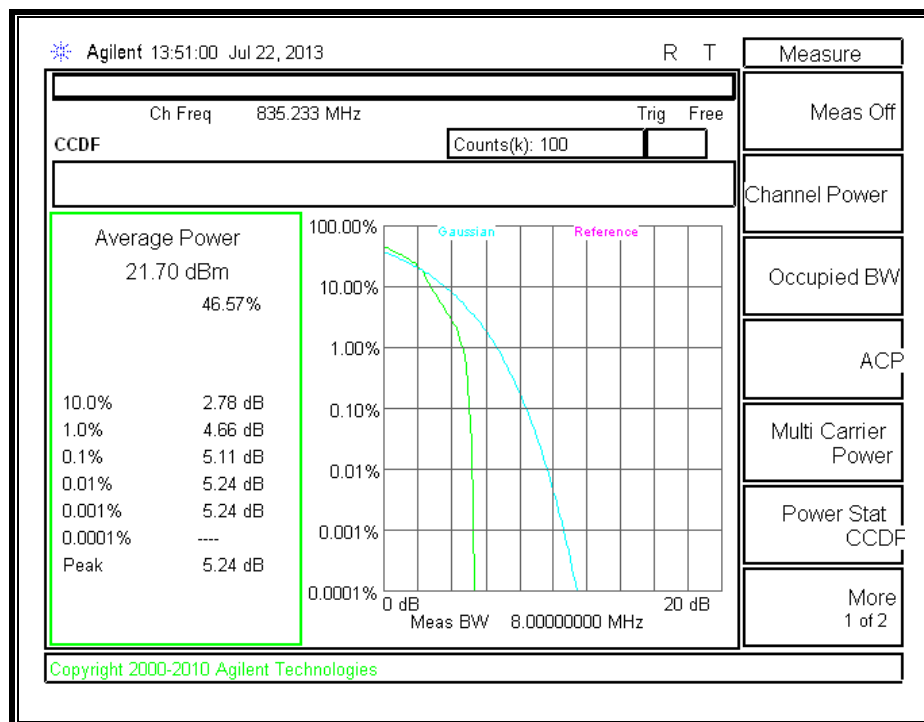
1.4MHz 16QAM



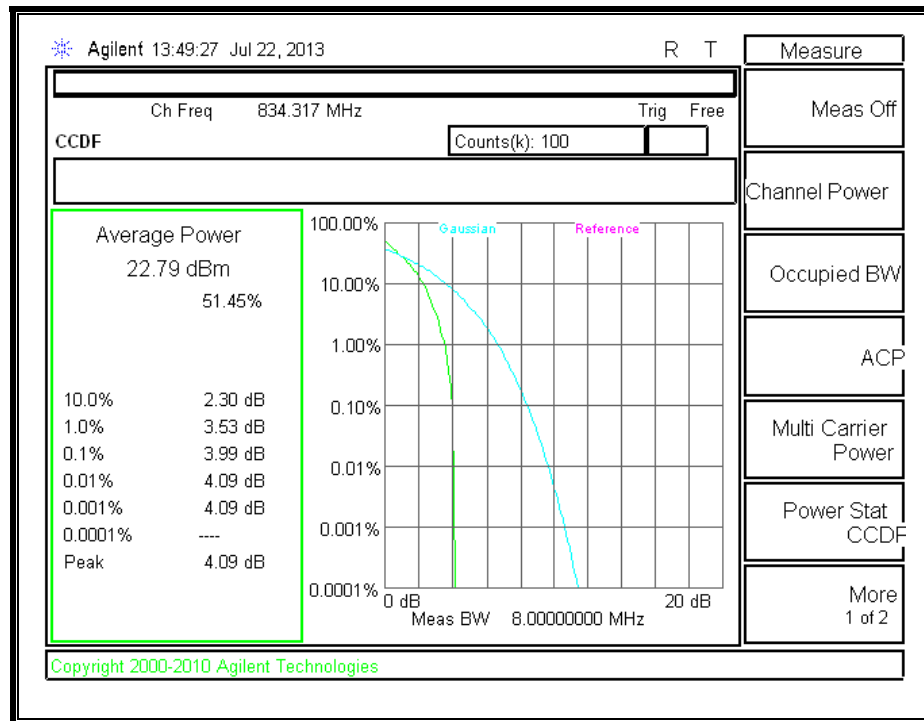
3.0MHz QPSK, RB1-0



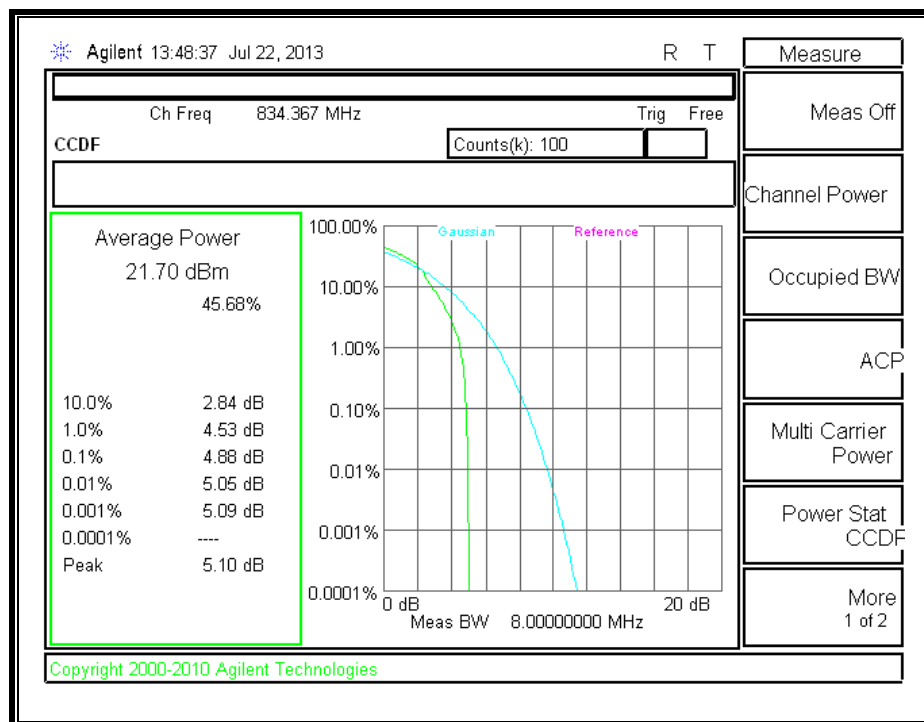
3.0MHz 16QAM



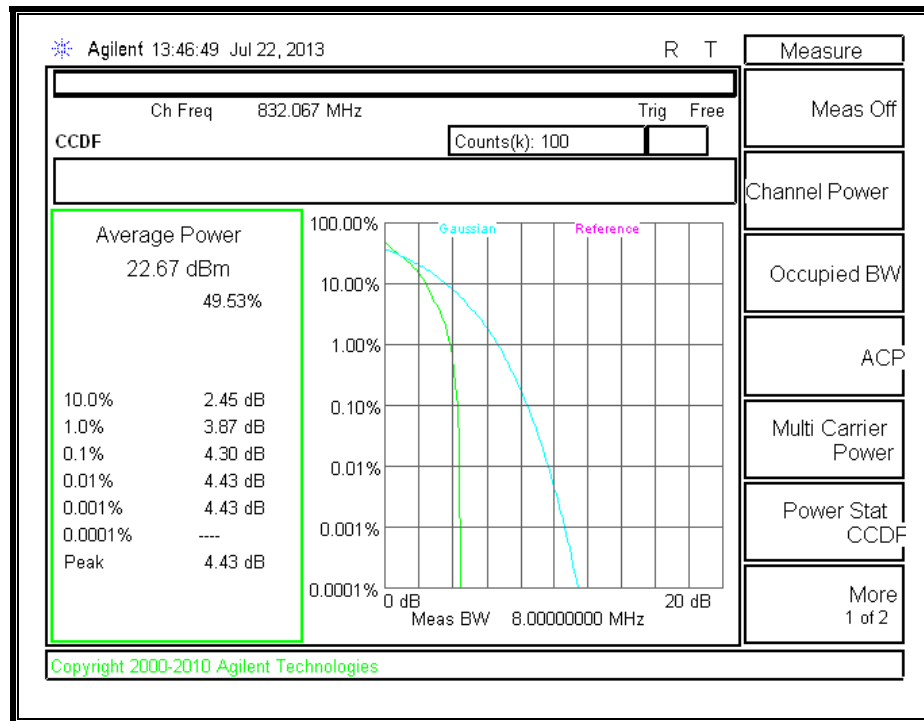
5.0MHz QPSK



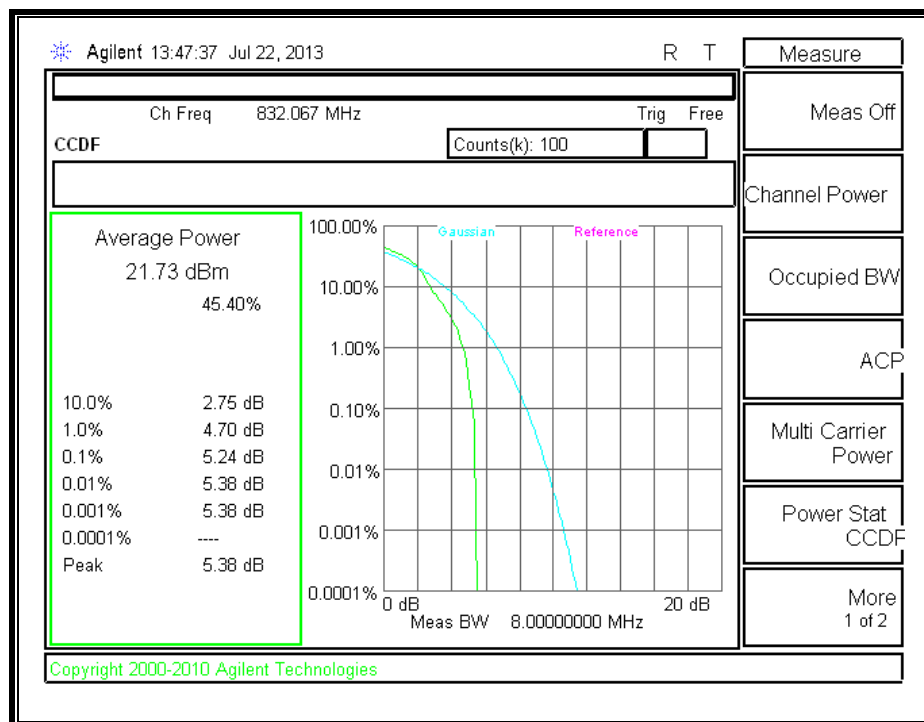
5.0MHz 16QAM



10MHz QPSK



10MHz 16QAM



9.3. FIELD STRENGTH OF SPURIOUS RADIATION

RULE PART(S)

FCC: §2.1053, §22.917, §24.238

LIMIT

§22.917 (e) and §24.238 (a): Out of band emissions. The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitting power (P) by a factor of at least $43 + 10 \log (P)$ dB.

TEST PROCEDURE

For Cellular equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 100 kHz or greater. In the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 100 kHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at least one percent of the emission bandwidth of the fundamental emission of the transmitter may be employed. A narrower resolution bandwidth is permitted in all cases to improve measurement accuracy provided the measured power is integrated over the full required measurement bandwidth (i.e. 1 MHz or 1 percent of emission bandwidth, as specified). The emission bandwidth is defined as the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

MODES TESTED

- LTE BAND 2 and 5

RESULTS

9.3.1. LAT / PORT A

LTE BAND 2

QPSK Band 2 (1.4 MHz BANDWIDTH)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 1.4MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.7MHz)									
3.701	-21.0	V	3.0	30.2	1.0	-50.2	-13.0	-37.2	
5.552	-23.0	V	3.0	28.4	1.0	-50.4	-13.0	-37.4	
3.701	-21.5	H	3.0	30.2	1.0	-50.7	-13.0	-37.7	
5.552	-22.4	H	3.0	28.4	1.0	-49.8	-13.0	-36.8	
Mid Ch, (1880MHz)									
3.760	-20.7	V	3.0	30.1	1.0	-49.8	-13.0	-36.8	
5.640	-22.7	V	3.0	28.3	1.0	-50.0	-13.0	-37.0	
3.760	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.640	-22.1	H	3.0	28.3	1.0	-49.4	-13.0	-36.4	
High Ch, (1909.3MHz)									
3.819	-21.1	V	3.0	30.1	1.0	-50.2	-13.0	-37.2	
5.728	-23.4	V	3.0	28.2	1.0	-50.6	-13.0	-37.6	
3.819	-21.3	H	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.728	-22.2	H	3.0	28.2	1.0	-49.4	-13.0	-36.4	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (1.4 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 1.4MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.7MHz)									
3.701	-20.9	V	3.0	30.2	1.0	-50.1	-13.0	-37.1	
5.552	-23.2	V	3.0	28.4	1.0	-50.6	-13.0	-37.6	
3.701	-22.0	H	3.0	30.2	1.0	-51.2	-13.0	-38.2	
5.552	-22.0	H	3.0	28.4	1.0	-49.4	-13.0	-36.4	
Mid Ch, (1880MHz)									
3.760	-20.8	V	3.0	30.1	1.0	-49.9	-13.0	-36.9	
5.640	-22.8	V	3.0	28.3	1.0	-50.1	-13.0	-37.1	
3.760	-21.5	H	3.0	30.1	1.0	-50.6	-13.0	-37.6	
5.640	-22.1	H	3.0	28.3	1.0	-49.4	-13.0	-36.4	
High Ch, (1909.3MHz)									
3.819	-20.9	V	3.0	30.1	1.0	-50.0	-13.0	-37.0	
5.728	-22.6	V	3.0	28.2	1.0	-49.8	-13.0	-36.8	
3.819	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.728	-22.0	H	3.0	28.2	1.0	-49.2	-13.0	-36.2	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (3.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 3MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.5MHz)									
3.703	-20.9	V	3.0	30.2	1.0	-50.1	-13.0	-37.1	
5.554	-22.8	V	3.0	28.4	1.0	-50.2	-13.0	-37.2	
3.703	-20.8	H	3.0	30.2	1.0	-49.9	-13.0	-36.9	
5.554	-21.1	H	3.0	28.4	1.0	-48.5	-13.0	-35.5	
Mid Ch, (1880MHz)									
3.760	-19.9	V	3.0	30.1	1.0	-49.0	-13.0	-36.0	
5.640	-23.5	V	3.0	28.3	1.0	-50.8	-13.0	-37.8	
3.760	-20.6	H	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.640	-21.9	H	3.0	28.3	1.0	-49.2	-13.0	-36.2	
High Ch, (1908.5MHz)									
3.817	-19.9	V	3.0	30.1	1.0	-49.0	-13.0	-36.0	
5.725	-22.0	V	3.0	28.2	1.0	-49.2	-13.0	-36.2	
3.817	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.725	-21.6	H	3.0	28.2	1.0	-48.8	-13.0	-35.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (3.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 3MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.5MHz)									
3.703	-19.8	V	3.0	30.2	1.0	-49.0	-13.0	-36.0	
5.554	-23.3	V	3.0	28.4	1.0	-50.7	-13.0	-37.7	
3.703	-21.4	H	3.0	30.2	1.0	-50.5	-13.0	-37.5	
5.554	-21.3	H	3.0	28.4	1.0	-48.7	-13.0	-35.7	
Mid Ch, (1880MHz)									
3.760	-20.4	V	3.0	30.1	1.0	-49.5	-13.0	-36.5	
5.640	-23.1	V	3.0	28.3	1.0	-50.4	-13.0	-37.4	
3.760	-20.6	H	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.640	-21.9	H	3.0	28.3	1.0	-49.2	-13.0	-36.2	
High Ch, (1908.5MHz)									
3.817	-19.8	V	3.0	30.1	1.0	-48.9	-13.0	-35.9	
5.725	-22.1	V	3.0	28.2	1.0	-49.3	-13.0	-36.3	
3.817	-21.3	H	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.725	-21.7	H	3.0	28.2	1.0	-48.9	-13.0	-35.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (5.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 5MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.5MHz)									
3.705	-21.7	V	3.0	30.2	1.0	-50.9	-13.0	-37.9	
5.557	-23.7	V	3.0	28.4	1.0	-51.1	-13.0	-38.1	
3.705	-21.5	H	3.0	30.2	1.0	-50.6	-13.0	-37.6	
5.557	-21.7	H	3.0	28.4	1.0	-49.0	-13.0	-36.0	
Mid Ch, (1880MHz)									
3.760	-20.5	V	3.0	30.1	1.0	-49.6	-13.0	-36.6	
5.640	-22.5	V	3.0	28.3	1.0	-49.8	-13.0	-36.8	
3.760	-20.4	H	3.0	30.1	1.0	-49.5	-13.0	-36.5	
5.640	-21.9	H	3.0	28.3	1.0	-49.2	-13.0	-36.2	
High Ch, (1907.5MHz)									
3.815	-20.1	V	3.0	30.1	1.0	-49.2	-13.0	-36.2	
5.722	-22.0	V	3.0	28.2	1.0	-49.2	-13.0	-36.2	
3.815	-21.3	H	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.722	-21.7	H	3.0	28.2	1.0	-48.9	-13.0	-35.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (5.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 5MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.5MHz)									
3.705	-21.5	V	3.0	30.2	1.0	-50.7	-13.0	-37.7	
5.557	-23.1	V	3.0	28.4	1.0	-50.5	-13.0	-37.5	
3.705	-21.5	H	3.0	30.2	1.0	-50.6	-13.0	-37.6	
5.557	-21.6	H	3.0	28.4	1.0	-48.9	-13.0	-35.9	
Mid Ch, (1880MHz)									
3.760	-20.6	V	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.640	-22.5	V	3.0	28.3	1.0	-49.8	-13.0	-36.8	
3.760	-20.7	H	3.0	30.1	1.0	-49.8	-13.0	-36.8	
5.640	-21.7	H	3.0	28.3	1.0	-49.0	-13.0	-36.0	
High Ch, (1907.5MHz)									
3.815	-20.5	V	3.0	30.1	1.0	-49.6	-13.0	-36.6	
5.722	-22.1	V	3.0	28.2	1.0	-49.3	-13.0	-36.3	
3.815	-21.3	H	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.722	-21.4	H	3.0	28.2	1.0	-48.6	-13.0	-35.6	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (10.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 10MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855MHz)									
3.710	-20.3	V	3.0	30.2	1.0	-49.5	-13.0	-36.5	
5.565	-22.9	V	3.0	28.4	1.0	-50.3	-13.0	-37.3	
3.710	-21.3	H	3.0	30.2	1.0	-50.4	-13.0	-37.4	
5.565	-21.9	H	3.0	28.4	1.0	-49.2	-13.0	-36.2	
Mid Ch, (1880MHz)									
3.760	-20.4	V	3.0	30.1	1.0	-49.5	-13.0	-36.5	
5.640	-22.7	V	3.0	28.3	1.0	-50.0	-13.0	-37.0	
3.760	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.640	-21.2	H	3.0	28.3	1.0	-48.5	-13.0	-35.5	
High Ch, (1905MHz)									
3.810	-20.9	V	3.0	30.1	1.0	-50.0	-13.0	-37.0	
5.715	-22.5	V	3.0	28.2	1.0	-49.7	-13.0	-36.7	
3.810	-21.5	H	3.0	30.1	1.0	-50.6	-13.0	-37.6	
5.715	-21.8	H	3.0	28.2	1.0	-49.0	-13.0	-36.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (10.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 10MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855MHz)									
3.710	-20.6	V	3.0	30.2	1.0	-49.8	-13.0	-36.8	
5.565	-23.0	V	3.0	28.4	1.0	-50.4	-13.0	-37.4	
3.710	-21.3	H	3.0	30.2	1.0	-50.4	-13.0	-37.4	
5.565	-22.0	H	3.0	28.4	1.0	-49.3	-13.0	-36.3	
Mid Ch, (1880MHz)									
3.760	-20.5	V	3.0	30.1	1.0	-49.6	-13.0	-36.6	
5.640	-22.5	V	3.0	28.3	1.0	-49.8	-13.0	-36.8	
3.760	-20.4	H	3.0	30.1	1.0	-49.5	-13.0	-36.5	
5.640	-21.3	H	3.0	28.3	1.0	-48.6	-13.0	-35.6	
High Ch, (1905MHz)									
3.810	-20.5	V	3.0	30.1	1.0	-49.6	-13.0	-36.6	
5.715	-22.4	V	3.0	28.2	1.0	-49.6	-13.0	-36.6	
3.810	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.715	-21.7	H	3.0	28.2	1.0	-48.9	-13.0	-35.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (15.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 15MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1857.5MHz)									
3.715	-20.1	V	3.0	30.2	1.0	-49.3	-13.0	-36.3	
5.573	-23.1	V	3.0	28.3	1.0	-50.5	-13.0	-37.5	
3.715	-21.6	H	3.0	30.2	1.0	-50.7	-13.0	-37.7	
5.573	-21.8	H	3.0	28.3	1.0	-49.1	-13.0	-36.1	
Mid Ch, (1880MHz)									
3.760	-20.6	V	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.640	-22.5	V	3.0	28.3	1.0	-49.8	-13.0	-36.8	
3.760	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.640	-22.4	H	3.0	28.3	1.0	-49.7	-13.0	-36.7	
High Ch, (1902.5MHz)									
3.805	-21.1	V	3.0	30.1	1.0	-50.2	-13.0	-37.2	
5.708	-23.2	V	3.0	28.2	1.0	-50.4	-13.0	-37.4	
3.805	-21.5	H	3.0	30.1	1.0	-50.6	-13.0	-37.6	
5.708	-22.0	H	3.0	28.2	1.0	-49.2	-13.0	-36.2	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (15.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 15MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1857.5MHz)									
3.715	-20.0	V	3.0	30.2	1.0	-49.2	-13.0	-36.2	
5.573	-23.0	V	3.0	28.3	1.0	-50.4	-13.0	-37.4	
3.715	-21.5	H	3.0	30.2	1.0	-50.6	-13.0	-37.6	
5.573	-21.7	H	3.0	28.3	1.0	-49.0	-13.0	-36.0	
Mid Ch, (1880MHz)									
3.760	-20.5	V	3.0	30.1	1.0	-49.6	-13.0	-36.6	
5.640	-22.4	V	3.0	28.3	1.0	-49.7	-13.0	-36.7	
3.760	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.640	-24.3	H	3.0	28.3	1.0	-51.6	-13.0	-38.6	
High Ch, (1902.5MHz)									
3.805	-21.0	V	3.0	30.1	1.0	-50.1	-13.0	-37.1	
5.708	-22.8	V	3.0	28.2	1.0	-50.0	-13.0	-37.0	
3.805	-21.5	H	3.0	30.1	1.0	-50.6	-13.0	-37.6	
5.708	-22.2	H	3.0	28.2	1.0	-49.4	-13.0	-36.4	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (20.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 20MHz har QPFK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860MHz)									
3.720	-21.4	V	3.0	30.2	1.0	-50.6	-13.0	-37.6	
5.580	-22.8	V	3.0	28.3	1.0	-50.1	-13.0	-37.1	
3.720	-21.4	H	3.0	30.2	1.0	-50.5	-13.0	-37.5	
5.580	-21.2	H	3.0	28.3	1.0	-48.5	-13.0	-35.5	
Mid Ch, (1880MHz)									
3.760	-20.0	V	3.0	30.1	1.0	-49.1	-13.0	-36.1	
5.640	-23.2	V	3.0	28.3	1.0	-50.5	-13.0	-37.5	
3.760	-19.8	H	3.0	30.1	1.0	-48.9	-13.0	-35.9	
5.640	-21.7	H	3.0	28.3	1.0	-49.0	-13.0	-36.0	
High Ch, (1900MHz)									
3.800	-19.7	V	3.0	30.1	1.0	-48.8	-13.0	-35.8	
5.700	-22.0	V	3.0	28.2	1.0	-49.3	-13.0	-36.3	
3.800	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.700	-21.6	H	3.0	28.2	1.0	-48.8	-13.0	-35.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (20.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 20MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.5MHz)									
3.705	-21.0	V	3.0	30.2	1.0	-50.2	-13.0	-37.2	
5.558	-23.3	V	3.0	28.4	1.0	-50.7	-13.0	-37.7	
3.705	-21.2	H	3.0	30.2	1.0	-50.3	-13.0	-37.3	
5.558	-21.2	H	3.0	28.4	1.0	-48.5	-13.0	-35.5	
Mid Ch, (1880MHz)									
3.760	-20.6	V	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.640	-23.0	V	3.0	28.3	1.0	-50.3	-13.0	-37.3	
3.760	-20.6	H	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.640	-21.8	H	3.0	28.3	1.0	-49.1	-13.0	-36.1	
High Ch, (1907.5MHz)									
3.815	-19.8	V	3.0	30.1	1.0	-48.9	-13.0	-35.9	
5.723	-22.0	V	3.0	28.2	1.0	-49.2	-13.0	-36.2	
3.815	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.723	-21.3	H	3.0	28.2	1.0	-48.5	-13.0	-35.5	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

BAND 5

QPSK Band 5 (1.4 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 1.4MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-26.4	V	3.0	32.7	1.0	-58.1	-13.0	-45.1	
2.477	-24.4	V	3.0	31.4	1.0	-54.8	-13.0	-41.8	
1.651	-27.8	H	3.0	32.7	1.0	-59.5	-13.0	-46.5	
2.477	-25.9	H	3.0	31.4	1.0	-56.3	-13.0	-43.3	
Mid Ch, (836.5MHz)									
1.670	-25.4	V	3.0	32.6	1.0	-57.0	-13.0	-44.0	
2.510	-24.3	V	3.0	31.5	1.0	-54.8	-13.0	-41.8	
1.670	-27.8	H	3.0	32.6	1.0	-59.5	-13.0	-46.5	
2.510	-25.9	H	3.0	31.5	1.0	-56.4	-13.0	-43.4	
High Ch, (847.5MHz)									
1.695	-25.7	V	3.0	32.6	1.0	-57.2	-13.0	-44.2	
2.542	-23.5	V	3.0	31.4	1.0	-53.9	-13.0	-40.9	
1.695	-28.0	H	3.0	32.6	1.0	-59.5	-13.0	-46.5	
2.542	-25.6	H	3.0	31.4	1.0	-56.0	-13.0	-43.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 5 (1.4 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 1.4MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-25.6	V	3.0	32.7	1.0	-57.3	-13.0	-44.3	
2.477	-24.2	V	3.0	31.4	1.0	-54.6	-13.0	-41.6	
1.651	-27.9	H	3.0	32.7	1.0	-59.6	-13.0	-46.6	
2.477	-26.0	H	3.0	31.4	1.0	-56.4	-13.0	-43.4	
Mid Ch, (836.5MHz)									
1.670	-25.4	V	3.0	32.6	1.0	-57.0	-13.0	-44.0	
2.510	-24.2	V	3.0	31.5	1.0	-54.7	-13.0	-41.7	
1.670	-27.8	H	3.0	32.6	1.0	-59.5	-13.0	-46.5	
2.510	-25.9	H	3.0	31.5	1.0	-56.4	-13.0	-43.4	
High Ch, (847.5MHz)									
1.695	-26.6	V	3.0	32.6	1.0	-58.1	-13.0	-45.1	
2.542	-23.5	V	3.0	31.4	1.0	-53.9	-13.0	-40.9	
1.695	-28.1	H	3.0	32.6	1.0	-59.6	-13.0	-46.6	
2.542	-25.5	H	3.0	31.4	1.0	-55.9	-13.0	-42.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 5 (3.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 3MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-25.4	V	3.0	32.7	1.0	-57.1	-13.0	-44.1	
2.477	-24.2	V	3.0	31.4	1.0	-54.6	-13.0	-41.6	
1.651	-27.8	H	3.0	32.7	1.0	-59.5	-13.0	-46.5	
2.477	-26.0	H	3.0	31.4	1.0	-56.4	-13.0	-43.4	
Mid Ch, (836.5MHz)									
1.670	-25.3	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.510	-24.3	V	3.0	31.5	1.0	-54.8	-13.0	-41.8	
1.670	-27.7	H	3.0	32.6	1.0	-59.4	-13.0	-46.4	
2.510	-25.8	H	3.0	31.5	1.0	-56.3	-13.0	-43.3	
High Ch, (847.5MHz)									
1.695	-25.8	V	3.0	32.6	1.0	-57.3	-13.0	-44.3	
2.542	-23.8	V	3.0	31.4	1.0	-54.2	-13.0	-41.2	
1.695	-28.0	H	3.0	32.6	1.0	-59.5	-13.0	-46.5	
2.542	-25.4	H	3.0	31.4	1.0	-55.8	-13.0	-42.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 5 (3.0 MHz BANDWIDTH)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 3MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-26.6	V	3.0	32.7	1.0	-58.3	-13.0	-45.3	
2.477	-24.2	V	3.0	31.4	1.0	-54.6	-13.0	-41.6	
1.651	-28.0	H	3.0	32.7	1.0	-59.7	-13.0	-46.7	
2.477	-25.9	H	3.0	31.4	1.0	-56.3	-13.0	-43.3	
Mid Ch, (836.5MHz)									
1.670	-25.3	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.510	-24.5	V	3.0	31.5	1.0	-55.0	-13.0	-42.0	
1.670	-27.5	H	3.0	32.6	1.0	-59.2	-13.0	-46.2	
2.510	-26.3	H	3.0	31.5	1.0	-56.8	-13.0	-43.8	
High Ch, (847.5MHz)									
1.695	-25.7	V	3.0	32.6	1.0	-57.2	-13.0	-44.2	
2.542	-23.8	V	3.0	31.4	1.0	-54.2	-13.0	-41.2	
1.695	-28.1	H	3.0	32.6	1.0	-59.6	-13.0	-46.6	
2.542	-25.4	H	3.0	31.4	1.0	-55.8	-13.0	-42.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 5 (5.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 5MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (826.5MHz)									
1.653	-27.6	V	3.0	32.7	1.0	-59.3	-13.0	-46.3	
2.480	-23.3	V	3.0	31.4	1.0	-53.7	-13.0	-40.7	
1.653	-28.5	H	3.0	32.7	1.0	-60.1	-13.0	-47.1	
2.480	-26.6	H	3.0	31.4	1.0	-57.0	-13.0	-44.0	
Mid Ch, (836.5MHz)									
1.670	-25.4	V	3.0	32.6	1.0	-57.0	-13.0	-44.0	
2.510	-24.3	V	3.0	31.5	1.0	-54.8	-13.0	-41.8	
1.670	-27.1	H	3.0	32.6	1.0	-58.8	-13.0	-45.8	
2.510	-26.5	H	3.0	31.5	1.0	-57.0	-13.0	-44.0	
High Ch, (846.5MHz)									
1.693	-25.3	V	3.0	32.6	1.0	-56.8	-13.0	-43.8	
2.539	-24.0	V	3.0	31.4	1.0	-54.4	-13.0	-41.4	
1.640	-27.9	H	3.0	32.7	1.0	-59.6	-13.0	-46.6	
2.539	-25.8	H	3.0	31.4	1.0	-56.3	-13.0	-43.3	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 5 (5.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 5MHz har 16QAM							
Chamber		Pre-amplifer		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (826.5MHz)									
1.653	-25.8	V	3.0	32.7	1.0	-57.5	-13.0	-44.5	
2.480	-24.3	V	3.0	31.4	1.0	-54.7	-13.0	-41.7	
1.653	-28.8	H	3.0	32.7	1.0	-60.4	-13.0	-47.4	
2.480	-26.6	H	3.0	31.4	1.0	-57.0	-13.0	-44.0	
Mid Ch, (836.5MHz)									
1.670	-25.4	V	3.0	32.6	1.0	-57.0	-13.0	-44.0	
2.510	-24.5	V	3.0	31.5	1.0	-55.0	-13.0	-42.0	
1.670	-27.1	H	3.0	32.6	1.0	-58.8	-13.0	-45.8	
2.510	-26.3	H	3.0	31.5	1.0	-56.8	-13.0	-43.8	
High Ch, (846.5MHz)									
1.693	-25.3	V	3.0	32.6	1.0	-56.8	-13.0	-43.8	
2.539	-23.8	V	3.0	31.4	1.0	-54.2	-13.0	-41.2	
1.640	-28.1	H	3.0	32.7	1.0	-59.8	-13.0	-46.8	
2.539	-26.0	H	3.0	31.4	1.0	-56.5	-13.0	-43.5	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 5 (10.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 10MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-26.6	V	3.0	32.6	1.0	-58.3	-13.0	-45.3	
2.487	-23.1	V	3.0	31.4	1.0	-53.5	-13.0	-40.5	
1.658	-27.2	H	3.0	32.6	1.0	-58.8	-13.0	-45.8	
2.487	-25.8	H	3.0	31.4	1.0	-56.3	-13.0	-43.3	
Mid Ch, (836.5MHz)									
1.670	-25.4	V	3.0	32.6	1.0	-57.0	-13.0	-44.0	
2.510	-24.2	V	3.0	31.5	1.0	-54.7	-13.0	-41.7	
1.670	-27.6	H	3.0	32.6	1.0	-59.3	-13.0	-46.3	
2.510	-26.4	H	3.0	31.5	1.0	-56.9	-13.0	-43.9	
High Ch, (844MHz)									
1.690	-25.4	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.532	-24.1	V	3.0	31.5	1.0	-54.6	-13.0	-41.6	
1.690	-27.8	H	3.0	32.6	1.0	-59.4	-13.0	-46.4	
2.532	-25.5	H	3.0	31.5	1.0	-56.0	-13.0	-43.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 5 (10.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 10MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-27.0	V	3.0	32.6	1.0	-58.7	-13.0	-45.7	
2.487	-23.2	V	3.0	31.4	1.0	-53.6	-13.0	-40.6	
1.658	-27.8	H	3.0	32.6	1.0	-59.4	-13.0	-46.4	
2.487	-25.8	H	3.0	31.4	1.0	-56.3	-13.0	-43.3	
Mid Ch, (836.5MHz)									
1.670	-25.6	V	3.0	32.6	1.0	-57.2	-13.0	-44.2	
2.510	-25.1	V	3.0	31.5	1.0	-55.6	-13.0	-42.6	
1.670	-27.5	H	3.0	32.6	1.0	-59.2	-13.0	-46.2	
2.510	-26.3	H	3.0	31.5	1.0	-56.8	-13.0	-43.8	
High Ch, (844MHz)									
1.690	-25.4	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.532	-24.2	V	3.0	31.5	1.0	-54.7	-13.0	-41.7	
1.690	-28.1	H	3.0	32.6	1.0	-59.7	-13.0	-46.7	
2.532	-25.6	H	3.0	31.5	1.0	-56.1	-13.0	-43.1	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

9.3.2. UAT / PORT B

BAND 2

QPSK Band 2 (1.4 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 1.4MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.7MHz)									
3.701	-20.8	V	3.0	30.2	1.0	-50.0	-13.0	-37.0	
5.552	-22.9	V	3.0	28.4	1.0	-50.3	-13.0	-37.3	
3.701	-21.4	H	3.0	30.2	1.0	-50.6	-13.0	-37.6	
5.552	-22.4	H	3.0	28.4	1.0	-49.8	-13.0	-36.8	
Mid Ch, (1880MHz)									
3.760	-21.1	V	3.0	30.1	1.0	-50.2	-13.0	-37.2	
5.640	-22.9	V	3.0	28.3	1.0	-50.2	-13.0	-37.2	
3.760	-21.6	H	3.0	30.1	1.0	-50.7	-13.0	-37.7	
5.640	-22.1	H	3.0	28.3	1.0	-49.4	-13.0	-36.4	
High Ch, (1909.3MHz)									
3.819	-21.6	V	3.0	30.1	1.0	-50.7	-13.0	-37.7	
5.728	-22.9	V	3.0	28.2	1.0	-50.1	-13.0	-37.1	
3.819	-21.8	H	3.0	30.1	1.0	-50.9	-13.0	-37.9	
5.728	-21.7	H	3.0	28.2	1.0	-48.9	-13.0	-35.9	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (1.4 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 1.4MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1850.7MHz)									
3.701	-21.0	V	3.0	30.2	1.0	-50.2	-13.0	-37.2	
5.552	-23.3	V	3.0	28.4	1.0	-50.7	-13.0	-37.7	
3.701	-22.0	H	3.0	30.2	1.0	-51.2	-13.0	-38.2	
5.552	-22.0	H	3.0	28.4	1.0	-49.4	-13.0	-36.4	
#VALUE!									
Mid Ch, (1880MHz)									
3.760	-21.0	V	3.0	30.1	1.0	-50.1	-13.0	-37.1	
5.640	-22.8	V	3.0	28.3	1.0	-50.1	-13.0	-37.1	
3.760	-21.6	H	3.0	30.1	1.0	-50.7	-13.0	-37.7	
5.640	-22.1	H	3.0	28.3	1.0	-49.4	-13.0	-36.4	
High Ch, (1909.3MHz)									
3.819	-21.0	V	3.0	30.1	1.0	-50.1	-13.0	-37.1	
5.728	-22.6	V	3.0	28.2	1.0	-49.8	-13.0	-36.8	
3.819	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.728	-22.0	H	3.0	28.2	1.0	-49.2	-13.0	-36.2	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (3.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 3MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.5MHz)									
3.703	-21.2	V	3.0	30.2	1.0	-50.4	-13.0	-37.4	
5.554	-22.7	V	3.0	28.4	1.0	-50.1	-13.0	-37.1	
3.703	-21.0	H	3.0	30.2	1.0	-50.1	-13.0	-37.1	
5.554	-21.5	H	3.0	28.4	1.0	-48.9	-13.0	-35.9	
Mid Ch, (1880MHz)									
3.760	-20.5	V	3.0	30.1	1.0	-49.6	-13.0	-36.6	
5.640	-23.0	V	3.0	28.3	1.0	-50.3	-13.0	-37.3	
3.760	-21.0	H	3.0	30.1	1.0	-50.1	-13.0	-37.1	
5.640	-21.8	H	3.0	28.3	1.0	-49.1	-13.0	-36.1	
High Ch, (1908.5MHz)									
3.817	-20.4	V	3.0	30.1	1.0	-49.5	-13.0	-36.5	
5.725	-22.1	V	3.0	28.2	1.0	-49.3	-13.0	-36.3	
3.817	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.725	-21.5	H	3.0	28.2	1.0	-48.7	-13.0	-35.7	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (3.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 3MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1851.5MHz)									
3.703	-20.1	V	3.0	30.2	1.0	-49.3	-13.0	-36.3	
5.554	-23.0	V	3.0	28.4	1.0	-50.4	-13.0	-37.4	
3.703	-21.3	H	3.0	30.2	1.0	-50.4	-13.0	-37.4	
5.554	-21.4	H	3.0	28.4	1.0	-48.8	-13.0	-35.8	
Mid Ch, (1880MHz)									
3.760	-21.4	V	3.0	30.1	1.0	-50.5	-13.0	-37.5	
5.640	-23.1	V	3.0	28.3	1.0	-50.4	-13.0	-37.4	
3.760	-20.6	H	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.640	-21.9	H	3.0	28.3	1.0	-49.2	-13.0	-36.2	
High Ch, (1908.5MHz)									
3.817	-20.6	V	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.725	-22.8	V	3.0	28.2	1.0	-50.0	-13.0	-37.0	
3.817	-21.3	H	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.725	-21.8	H	3.0	28.2	1.0	-49.0	-13.0	-36.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (5.0 MHz BANDWIDTH)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 5MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.5MHz)									
3.705	-21.8	V	3.0	30.2	1.0	-51.0	-13.0	-38.0	
5.557	-23.5	V	3.0	28.4	1.0	-50.9	-13.0	-37.9	
3.705	-22.0	H	3.0	30.2	1.0	-51.1	-13.0	-38.1	
5.557	-21.7	H	3.0	28.4	1.0	-49.0	-13.0	-36.0	
Mid Ch, (1880MHz)									
3.760	-21.1	V	3.0	30.1	1.0	-50.2	-13.0	-37.2	
5.640	-23.0	V	3.0	28.3	1.0	-50.3	-13.0	-37.3	
3.760	-21.8	H	3.0	30.1	1.0	-50.9	-13.0	-37.9	
5.640	-21.9	H	3.0	28.3	1.0	-49.2	-13.0	-36.2	
High Ch, (1907.5MHz)									
3.815	-20.6	V	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.722	-22.6	V	3.0	28.2	1.0	-49.8	-13.0	-36.8	
3.815	-21.3	H	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.722	-21.6	H	3.0	28.2	1.0	-48.8	-13.0	-35.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (5.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 5MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1852.5MHz)									
3.705	-21.1	V	3.0	30.2	1.0	-50.3	-13.0	-37.3	
5.557	-23.1	V	3.0	28.4	1.0	-50.5	-13.0	-37.5	
3.705	-21.8	H	3.0	30.2	1.0	-50.9	-13.0	-37.9	
5.557	-21.6	H	3.0	28.4	1.0	-48.9	-13.0	-35.9	
Mid Ch, (1880MHz)									
3.760	-21.5	V	3.0	30.1	1.0	-50.6	-13.0	-37.6	
5.640	-23.2	V	3.0	28.3	1.0	-50.5	-13.0	-37.5	
3.760	-21.4	H	3.0	30.1	1.0	-50.5	-13.0	-37.5	
5.640	-21.7	H	3.0	28.3	1.0	-49.0	-13.0	-36.0	
High Ch, (1907.5MHz)									
3.815	-20.7	V	3.0	30.1	1.0	-49.8	-13.0	-36.8	
5.722	-22.6	V	3.0	28.2	1.0	-49.8	-13.0	-36.8	
3.815	-21.3	H	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.722	-21.6	H	3.0	28.2	1.0	-48.8	-13.0	-35.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (10.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 10MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855MHz)									
3.710	-20.5	V	3.0	30.2	1.0	-49.7	-13.0	-36.7	
5.565	-23.0	V	3.0	28.4	1.0	-50.4	-13.0	-37.4	
3.710	-21.5	H	3.0	30.2	1.0	-50.6	-13.0	-37.6	
5.565	-21.7	H	3.0	28.4	1.0	-49.0	-13.0	-36.0	
Mid Ch, (1880MHz)									
3.760	-20.6	V	3.0	30.1	1.0	-49.7	-13.0	-36.7	
5.640	-23.1	V	3.0	28.3	1.0	-50.4	-13.0	-37.4	
3.760	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.640	-21.9	H	3.0	28.3	1.0	-49.2	-13.0	-36.2	
High Ch, (1905MHz)									
3.810	-20.9	V	3.0	30.1	1.0	-50.0	-13.0	-37.0	
5.715	-23.1	V	3.0	28.2	1.0	-50.3	-13.0	-37.3	
3.810	-21.9	H	3.0	30.1	1.0	-51.0	-13.0	-38.0	
5.715	-21.8	H	3.0	28.2	1.0	-49.0	-13.0	-36.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (10.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company: Apple									
Project #: 13U15637									
Date: 07/23/13									
Test Engineer: Lieu Nguyen									
Configuration: EUT									
Mode: TX, LTE B2 10MHz har 16QAM									
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1855MHz)									
3.710	-21.6	V	3.0	30.2	1.0	-50.8	-13.0	-37.8	
5.565	-23.0	V	3.0	28.4	1.0	-50.4	-13.0	-37.4	
3.710	-21.6	H	3.0	30.2	1.0	-50.7	-13.0	-37.7	
5.565	-22.3	H	3.0	28.4	1.0	-49.6	-13.0	-36.6	
Mid Ch, (1880MHz)									
3.760	-21.4	V	3.0	30.1	1.0	-50.5	-13.0	-37.5	
5.640	-23.1	V	3.0	28.3	1.0	-50.4	-13.0	-37.4	
3.760	-22.0	H	3.0	30.1	1.0	-51.1	-13.0	-38.1	
5.640	-21.9	H	3.0	28.3	1.0	-49.2	-13.0	-36.2	
High Ch, (1905MHz)									
3.810	-21.1	V	3.0	30.1	1.0	-50.2	-13.0	-37.2	
5.715	-22.9	V	3.0	28.2	1.0	-50.1	-13.0	-37.1	
3.810	-21.9	H	3.0	30.1	1.0	-51.0	-13.0	-38.0	
5.715	-22.0	H	3.0	28.2	1.0	-49.2	-13.0	-36.2	
Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (15.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 15MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1857.5MHz)									
3.715	-20.8	V	3.0	30.2	1.0	-50.0	-13.0	-37.0	
5.573	-23.1	V	3.0	28.3	1.0	-50.5	-13.0	-37.5	
3.715	-21.9	H	3.0	30.2	1.0	-51.0	-13.0	-38.0	
5.573	-21.9	H	3.0	28.3	1.0	-49.2	-13.0	-36.2	
Mid Ch, (1880MHz)									
3.760	-20.7	V	3.0	30.1	1.0	-49.8	-13.0	-36.8	
5.640	-22.7	V	3.0	28.3	1.0	-50.0	-13.0	-37.0	
3.760	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.640	-22.3	H	3.0	28.3	1.0	-49.6	-13.0	-36.6	
High Ch, (1902.5MHz)									
3.805	-21.2	V	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.708	-23.1	V	3.0	28.2	1.0	-50.3	-13.0	-37.3	
3.805	-21.3	H	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.708	-22.0	H	3.0	28.2	1.0	-49.2	-13.0	-36.2	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (15.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 15MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1857.5MHz)									
3.715	-21.0	V	3.0	30.2	1.0	-50.2	-13.0	-37.2	
5.573	-23.6	V	3.0	28.3	1.0	-51.0	-13.0	-38.0	
3.715	-21.9	H	3.0	30.2	1.0	-51.0	-13.0	-38.0	
5.573	-22.0	H	3.0	28.3	1.0	-49.3	-13.0	-36.3	
Mid Ch, (1880MHz)									
3.760	-21.1	V	3.0	30.1	1.0	-50.2	-13.0	-37.2	
5.640	-23.1	V	3.0	28.3	1.0	-50.4	-13.0	-37.4	
3.760	-21.8	H	3.0	30.1	1.0	-50.9	-13.0	-37.9	
5.640	-22.3	H	3.0	28.3	1.0	-49.6	-13.0	-36.6	
High Ch, (1902.5MHz)									
3.805	-21.6	V	3.0	30.1	1.0	-50.7	-13.0	-37.7	
5.708	-23.1	V	3.0	28.2	1.0	-50.3	-13.0	-37.3	
3.805	-21.6	H	3.0	30.1	1.0	-50.7	-13.0	-37.7	
5.708	-22.0	H	3.0	28.2	1.0	-49.2	-13.0	-36.2	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 2 (20.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company: Apple									
Project #: 13U15637									
Date: 07/23/13									
Test Engineer: Lieu Nguyen									
Configuration: EUT									
Mode: TX, LTE B2 20MHz har QPFK									
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860MHz)									
3.720	-21.4	V	3.0	30.2	1.0	-50.6	-13.0	-37.6	
5.580	-23.2	V	3.0	28.3	1.0	-50.5	-13.0	-37.5	
3.720	-21.5	H	3.0	30.2	1.0	-50.6	-13.0	-37.6	
5.580	-22.4	H	3.0	28.3	1.0	-49.7	-13.0	-36.7	
Mid Ch, (1880MHz)									
3.760	-21.5	V	3.0	30.1	1.0	-50.6	-13.0	-37.6	
5.640	-23.2	V	3.0	28.3	1.0	-50.5	-13.0	-37.5	
3.760	-21.8	H	3.0	30.1	1.0	-50.9	-13.0	-37.9	
5.640	-21.7	H	3.0	28.3	1.0	-49.0	-13.0	-36.0	
High Ch, (1900MHz)									
3.800	-21.3	V	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.700	-22.6	V	3.0	28.2	1.0	-49.9	-13.0	-36.9	
3.800	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.700	-21.5	H	3.0	28.2	1.0	-48.7	-13.0	-35.7	
Rev. 03.03.09 Note: No other emissions were detected above the system noise floor.									

16QAM Band 2 (20.0 MHz BANDWIDTH)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/23/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B2 20MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 24			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	EIRP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (1860MHz)									
3.720	-21.6	V	3.0	30.2	1.0	-50.8	-13.0	-37.8	
5.580	-23.3	V	3.0	28.3	1.0	-50.6	-13.0	-37.6	
3.720	-21.8	H	3.0	30.2	1.0	-50.9	-13.0	-37.9	
5.580	-21.8	H	3.0	28.3	1.0	-49.1	-13.0	-36.1	
Mid Ch, (1880MHz)									
3.760	-21.3	V	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.640	-23.0	V	3.0	28.3	1.0	-50.3	-13.0	-37.3	
3.760	-21.9	H	3.0	30.1	1.0	-51.0	-13.0	-38.0	
5.640	-21.7	H	3.0	28.3	1.0	-49.0	-13.0	-36.0	
High Ch, (1900MHz)									
3.800	-21.3	V	3.0	30.1	1.0	-50.4	-13.0	-37.4	
5.700	-23.1	V	3.0	28.2	1.0	-50.4	-13.0	-37.4	
3.800	-21.2	H	3.0	30.1	1.0	-50.3	-13.0	-37.3	
5.700	-21.8	H	3.0	28.2	1.0	-49.0	-13.0	-36.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

UAT BAND 5

QPSK Band 5 (1.4 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 1.4MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-26.4	V	3.0	32.7	1.0	-58.1	-13.0	-45.1	
2.477	-24.1	V	3.0	31.4	1.0	-54.5	-13.0	-41.5	
1.651	-27.5	H	3.0	32.7	1.0	-59.2	-13.0	-46.2	
2.477	-25.7	H	3.0	31.4	1.0	-56.1	-13.0	-43.1	
Mid Ch, (836.5MHz)									
1.670	-25.2	V	3.0	32.6	1.0	-56.8	-13.0	-43.8	
2.510	-23.9	V	3.0	31.5	1.0	-54.4	-13.0	-41.4	
1.670	-27.6	H	3.0	32.6	1.0	-59.3	-13.0	-46.3	
2.510	-26.1	H	3.0	31.5	1.0	-56.6	-13.0	-43.6	
High Ch, (847.5MHz)									
1.695	-25.6	V	3.0	32.6	1.0	-57.1	-13.0	-44.1	
2.542	-23.5	V	3.0	31.4	1.0	-53.9	-13.0	-40.9	
1.695	-28.2	H	3.0	32.6	1.0	-59.7	-13.0	-46.7	
2.542	-25.7	H	3.0	31.4	1.0	-56.1	-13.0	-43.1	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 5 (1.4 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 1.4MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-25.4	V	3.0	32.7	1.0	-57.1	-13.0	-44.1	
2.477	-24.1	V	3.0	31.4	1.0	-54.5	-13.0	-41.5	
1.651	-27.7	H	3.0	32.7	1.0	-59.4	-13.0	-46.4	
2.477	-26.2	H	3.0	31.4	1.0	-56.6	-13.0	-43.6	
Mid Ch, (836.5MHz)									
1.670	-25.3	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.510	-24.1	V	3.0	31.5	1.0	-54.6	-13.0	-41.6	
1.670	-27.7	H	3.0	32.6	1.0	-59.4	-13.0	-46.4	
2.510	-25.8	H	3.0	31.5	1.0	-56.3	-13.0	-43.3	
High Ch, (847.5MHz)									
1.695	-25.9	V	3.0	32.6	1.0	-57.4	-13.0	-44.4	
2.542	-23.5	V	3.0	31.4	1.0	-53.9	-13.0	-40.9	
1.695	-28.2	H	3.0	32.6	1.0	-59.7	-13.0	-46.7	
2.542	-25.4	H	3.0	31.4	1.0	-55.8	-13.0	-42.8	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 5 (3.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 3MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-25.2	V	3.0	32.7	1.0	-56.9	-13.0	-43.9	
2.477	-24.1	V	3.0	31.4	1.0	-54.5	-13.0	-41.5	
1.651	-27.6	H	3.0	32.7	1.0	-59.3	-13.0	-46.3	
2.477	-25.8	H	3.0	31.4	1.0	-56.2	-13.0	-43.2	
Mid Ch, (836.5MHz)									
1.670	-25.4	V	3.0	32.6	1.0	-57.0	-13.0	-44.0	
2.510	-24.2	V	3.0	31.5	1.0	-54.7	-13.0	-41.7	
1.670	-27.5	H	3.0	32.6	1.0	-59.2	-13.0	-46.2	
2.510	-26.0	H	3.0	31.5	1.0	-56.5	-13.0	-43.5	
High Ch, (847.5MHz)									
1.695	-25.7	V	3.0	32.6	1.0	-57.2	-13.0	-44.2	
2.542	-23.6	V	3.0	31.4	1.0	-54.0	-13.0	-41.0	
1.695	-27.9	H	3.0	32.6	1.0	-59.4	-13.0	-46.4	
2.542	-26.2	H	3.0	31.4	1.0	-56.6	-13.0	-43.6	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 5 (3.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 3MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (825.5MHz)									
1.651	-26.4	V	3.0	32.7	1.0	-58.1	-13.0	-45.1	
2.477	-24.1	V	3.0	31.4	1.0	-54.5	-13.0	-41.5	
1.651	-27.8	H	3.0	32.7	1.0	-59.5	-13.0	-46.5	
2.477	-25.7	H	3.0	31.4	1.0	-56.1	-13.0	-43.1	
Mid Ch, (836.5MHz)									
1.670	-25.1	V	3.0	32.6	1.0	-56.7	-13.0	-43.7	
2.510	-24.3	V	3.0	31.5	1.0	-54.8	-13.0	-41.8	
1.670	-27.4	H	3.0	32.6	1.0	-59.1	-13.0	-46.1	
2.510	-25.9	H	3.0	31.5	1.0	-56.4	-13.0	-43.4	
High Ch, (847.5MHz)									
1.695	-25.4	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.542	-23.5	V	3.0	31.4	1.0	-53.9	-13.0	-40.9	
1.695	-28.0	H	3.0	32.6	1.0	-59.5	-13.0	-46.5	
2.542	-25.1	H	3.0	31.4	1.0	-55.5	-13.0	-42.5	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 5 (5.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 5MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (826.5MHz)									
1.653	-26.6	V	3.0	32.7	1.0	-58.3	-13.0	-45.3	
2.480	-23.0	V	3.0	31.4	1.0	-53.4	-13.0	-40.4	
1.653	-28.2	H	3.0	32.7	1.0	-59.8	-13.0	-46.8	
2.480	-26.0	H	3.0	31.4	1.0	-56.4	-13.0	-43.4	
Mid Ch, (836.5MHz)									
1.670	-25.5	V	3.0	32.6	1.0	-57.1	-13.0	-44.1	
2.510	-24.2	V	3.0	31.5	1.0	-54.7	-13.0	-41.7	
1.670	-27.1	H	3.0	32.6	1.0	-58.8	-13.0	-45.8	
2.510	-26.2	H	3.0	31.5	1.0	-56.7	-13.0	-43.7	
High Ch, (846.5MHz)									
1.693	-25.4	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.539	-23.8	V	3.0	31.4	1.0	-54.2	-13.0	-41.2	
1.640	-27.7	H	3.0	32.7	1.0	-59.4	-13.0	-46.4	
2.539	-25.9	H	3.0	31.4	1.0	-56.4	-13.0	-43.4	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 5 (5.0 MHz BANDWIDTH)

Compliance Certification Services Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 5MHz har 16QAM							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (826.5MHz)									
1.653	-25.6	V	3.0	32.7	1.0	-57.3	-13.0	-44.3	
2.480	-24.1	V	3.0	31.4	1.0	-54.5	-13.0	-41.5	
1.653	-28.5	H	3.0	32.7	1.0	-60.1	-13.0	-47.1	
2.480	-26.3	H	3.0	31.4	1.0	-56.7	-13.0	-43.7	
Mid Ch, (836.5MHz)									
1.670	-25.2	V	3.0	32.6	1.0	-56.8	-13.0	-43.8	
2.510	-24.3	V	3.0	31.5	1.0	-54.8	-13.0	-41.8	
1.670	-27.4	H	3.0	32.6	1.0	-59.1	-13.0	-46.1	
2.510	-26.4	H	3.0	31.5	1.0	-56.9	-13.0	-43.9	
High Ch, (846.5MHz)									
1.693	-25.4	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.539	-23.7	V	3.0	31.4	1.0	-54.1	-13.0	-41.1	
1.640	-28.2	H	3.0	32.7	1.0	-59.9	-13.0	-46.9	
2.539	-26.2	H	3.0	31.4	1.0	-56.7	-13.0	-43.7	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

QPSK Band 5 (10.0 MHz BANDWIDTH)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 10MHz har QPSK							
Chamber		Pre-amplifier		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-26.3	V	3.0	32.6	1.0	-58.0	-13.0	-45.0	
2.487	-23.0	V	3.0	31.4	1.0	-53.4	-13.0	-40.4	
1.658	-27.6	H	3.0	32.6	1.0	-59.2	-13.0	-46.2	
2.487	-26.1	H	3.0	31.4	1.0	-56.6	-13.0	-43.6	
Mid Ch, (836.5MHz)									
1.670	-25.6	V	3.0	32.6	1.0	-57.2	-13.0	-44.2	
2.510	-23.9	V	3.0	31.5	1.0	-54.4	-13.0	-41.4	
1.670	-27.8	H	3.0	32.6	1.0	-59.5	-13.0	-46.5	
2.510	-25.6	H	3.0	31.5	1.0	-56.1	-13.0	-43.1	
High Ch, (844MHz)									
1.690	-25.4	V	3.0	32.6	1.0	-56.9	-13.0	-43.9	
2.532	-24.2	V	3.0	31.5	1.0	-54.7	-13.0	-41.7	
1.690	-27.5	H	3.0	32.6	1.0	-59.1	-13.0	-46.1	
2.532	-25.5	H	3.0	31.5	1.0	-56.0	-13.0	-43.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									

16QAM Band 5 (10.0 MHz BANDWIDTH)

Compliance Certification Services									
Above 1GHz High Frequency Substitution Measurement									
Company:		Apple							
Project #:		13U15637							
Date:		07/22/13							
Test Engineer:		Lieu Nguyen							
Configuration:		EUT							
Mode:		TX, LTE B5 10MHz har 16QAM							
Chamber		Pre-amplifer		Filter		Limit			
3m Chamber F		T145 8449B		Filter 1		Part 22			
f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Distance (m)	Preamp (dB)	Filter (dB)	ERP (dBm)	Limit (dBm)	Delta (dB)	Notes
Low Ch, (829MHz)									
1.658	-26.4	V	3.0	32.6	1.0	-58.1	-13.0	-45.1	
2.487	-23.4	V	3.0	31.4	1.0	-53.8	-13.0	-40.8	
1.658	-27.7	H	3.0	32.6	1.0	-59.3	-13.0	-46.3	
2.487	-25.9	H	3.0	31.4	1.0	-56.4	-13.0	-43.4	
Mid Ch, (836.5MHz)									
1.670	-25.6	V	3.0	32.6	1.0	-57.2	-13.0	-44.2	
2.510	-24.9	V	3.0	31.5	1.0	-55.4	-13.0	-42.4	
1.670	-27.5	H	3.0	32.6	1.0	-59.2	-13.0	-46.2	
2.510	-26.1	H	3.0	31.5	1.0	-56.6	-13.0	-43.6	
High Ch, (844MHz)									
1.690	-25.2	V	3.0	32.6	1.0	-56.7	-13.0	-43.7	
2.532	-24.2	V	3.0	31.5	1.0	-54.7	-13.0	-41.7	
1.690	-28.0	H	3.0	32.6	1.0	-59.6	-13.0	-46.6	
2.532	-25.5	H	3.0	31.5	1.0	-56.0	-13.0	-43.0	
Rev. 03.03.09									
Note: No other emissions were detected above the system noise floor.									