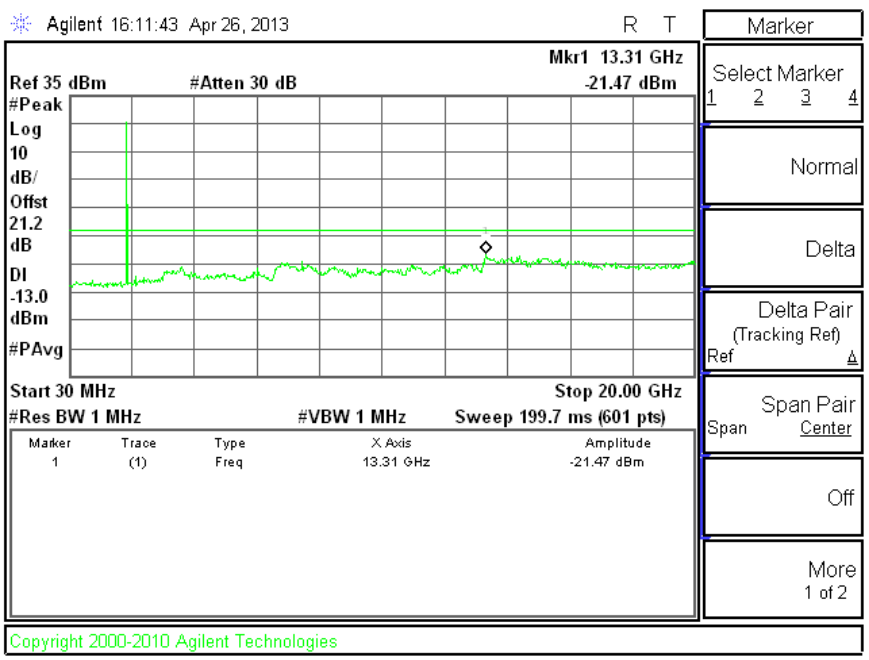
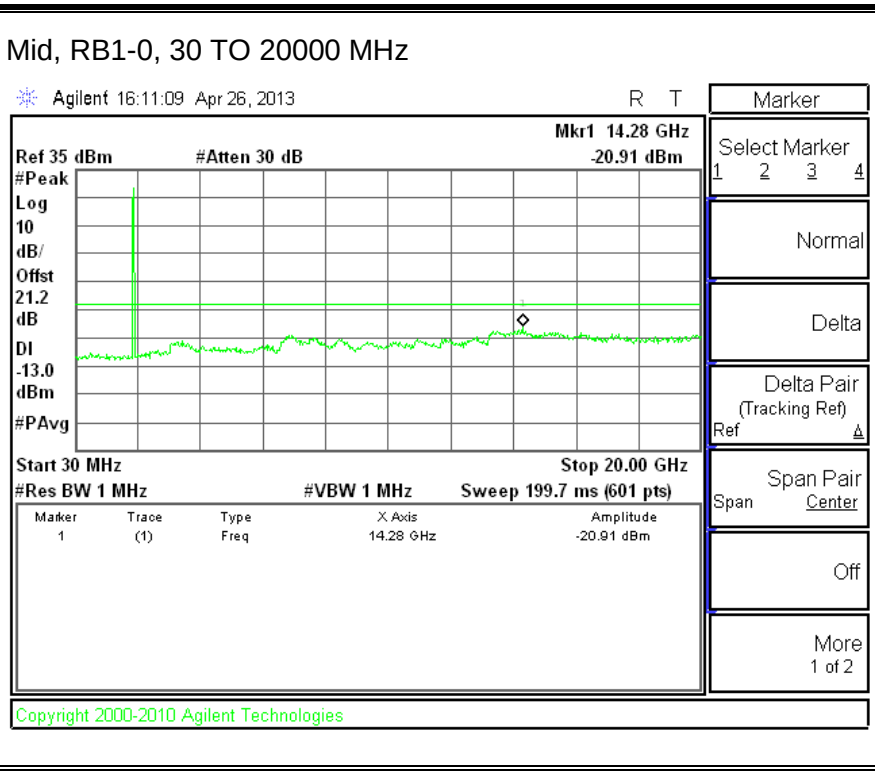
Band 2 (5.0 MHz BAND WIDTH)

LTE QPSK

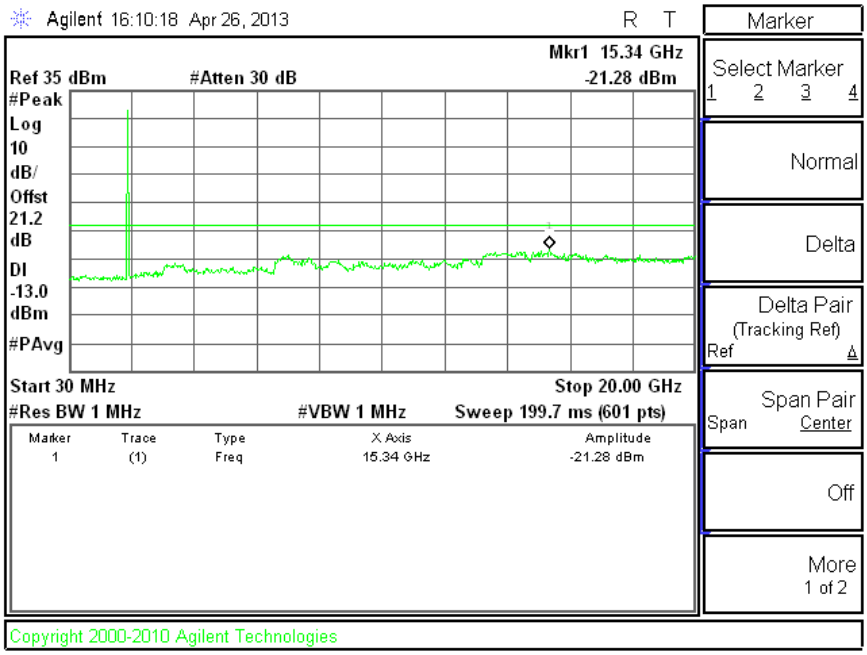
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

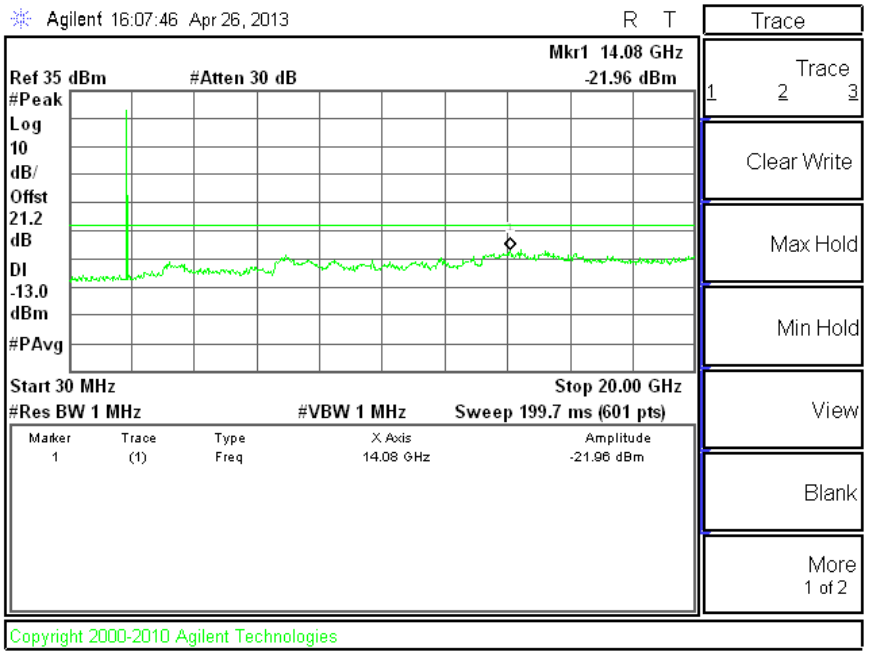


High, RB1-0, 30 TO 20000 MHz

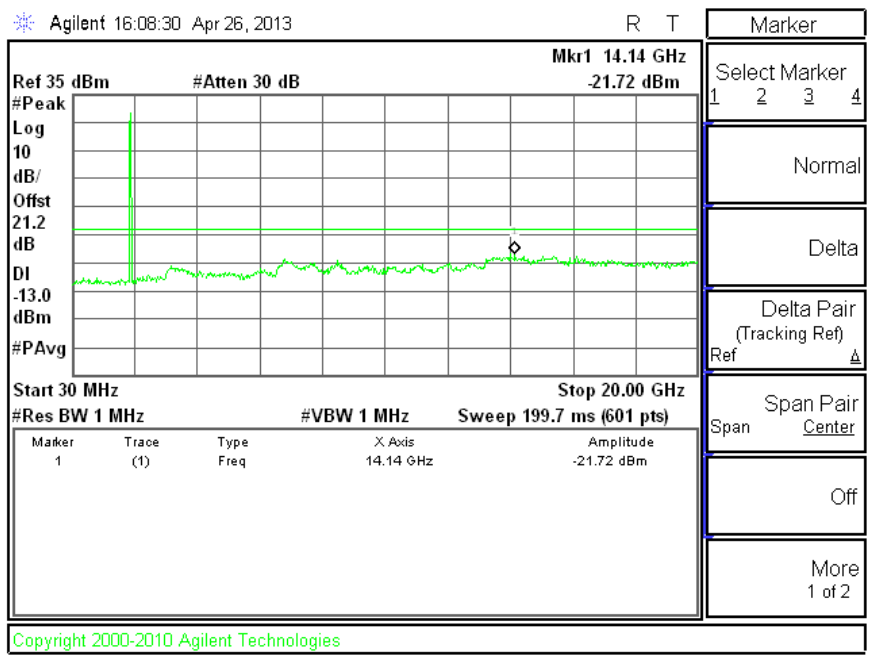


LTE 16QAM

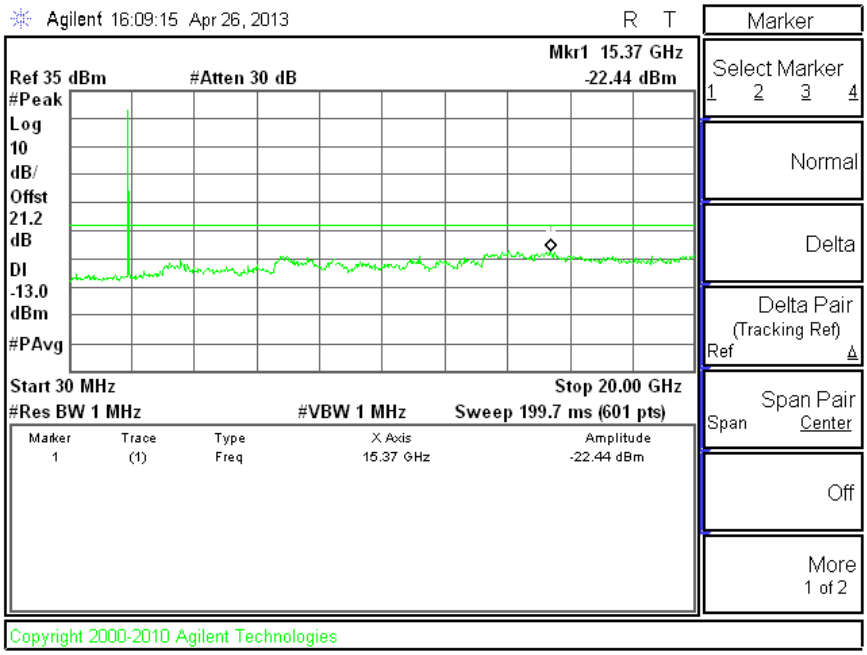
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



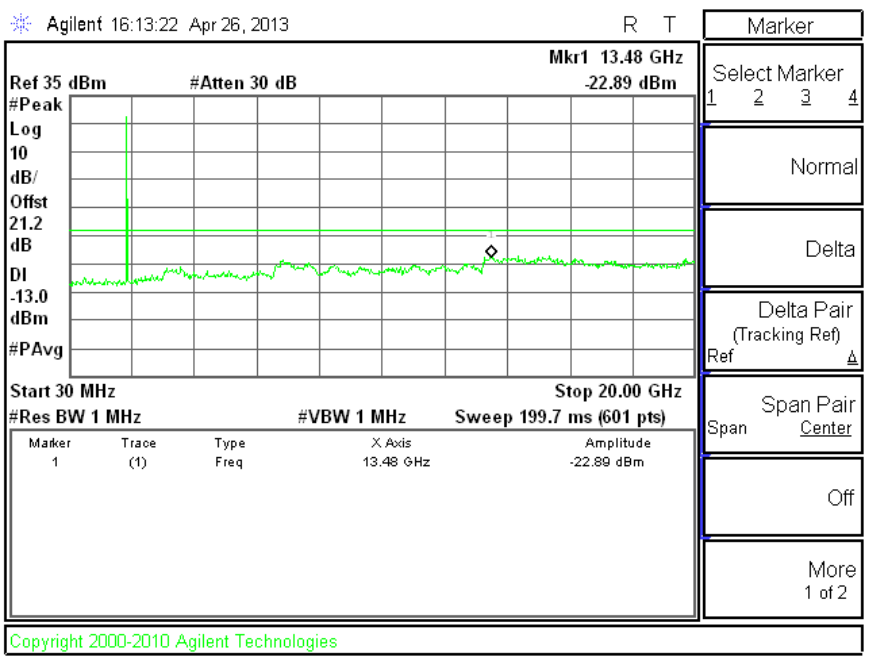
HIGH, RB1-0, 30 TO 20000 MHz



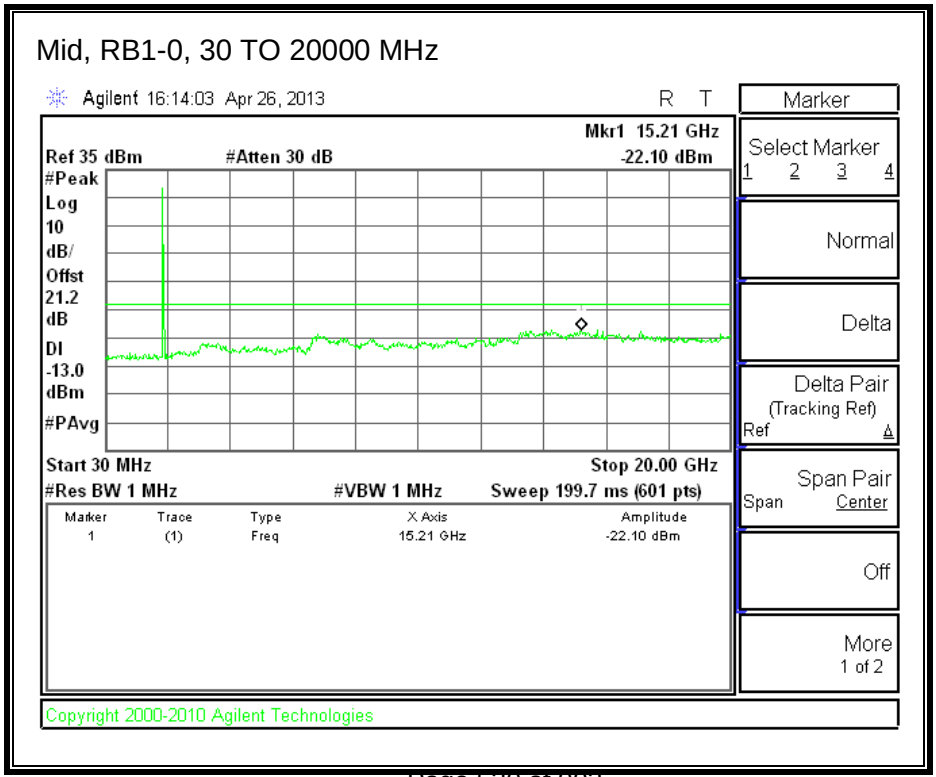
Band 2 (10.0 MHz BAND WIDTH)

LTE QPSK

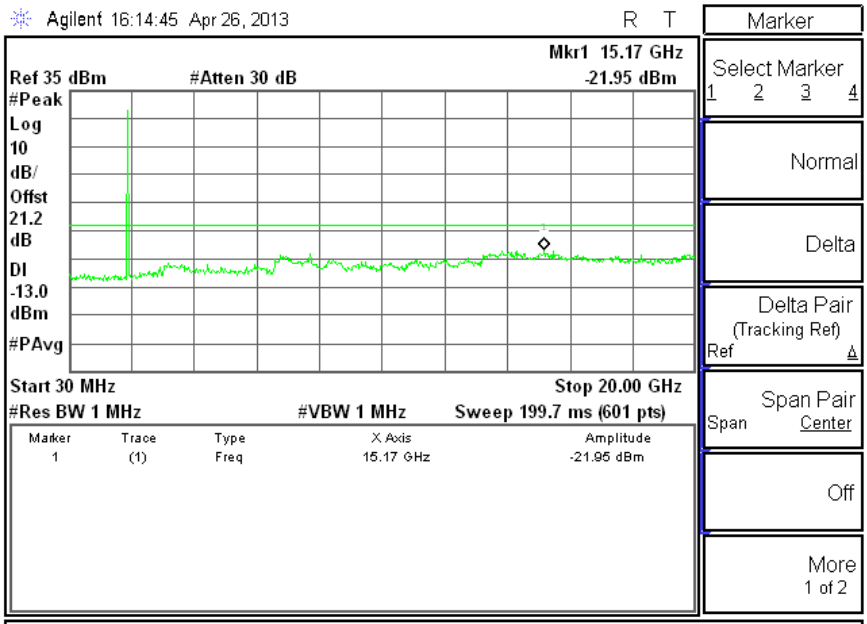
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

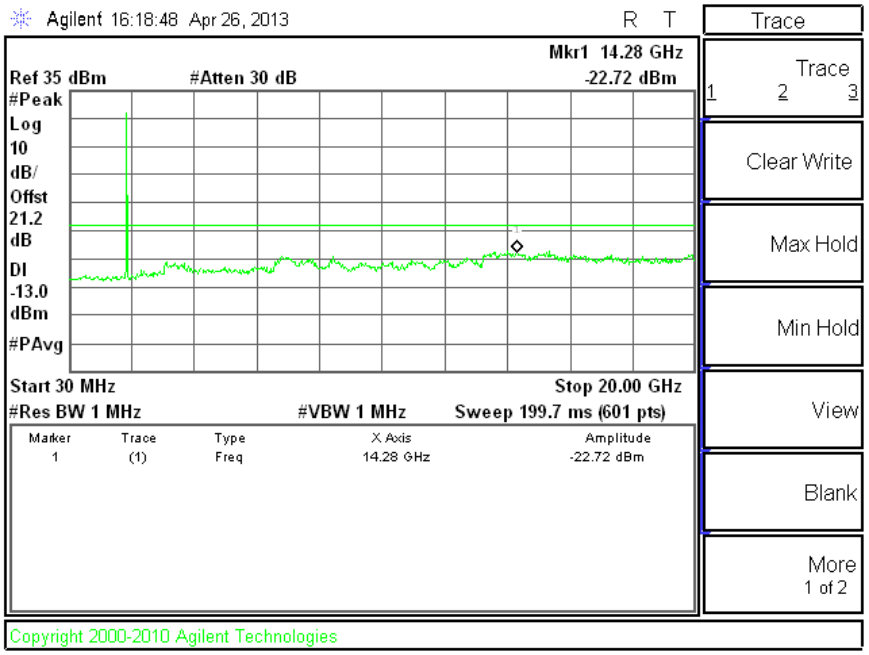


High, RB1-0, 30 TO 20000 MHz

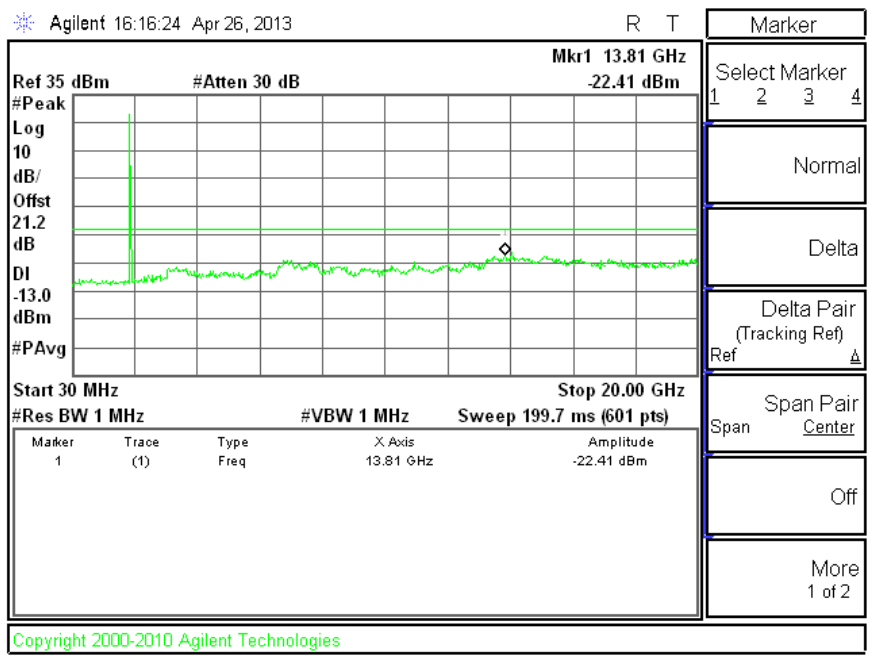


LTE 16QAM

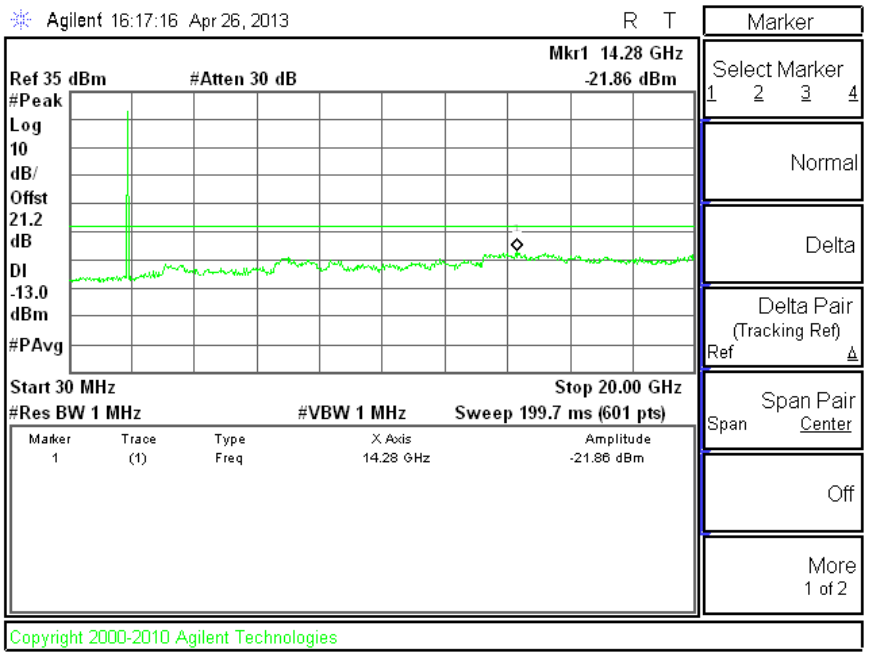
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



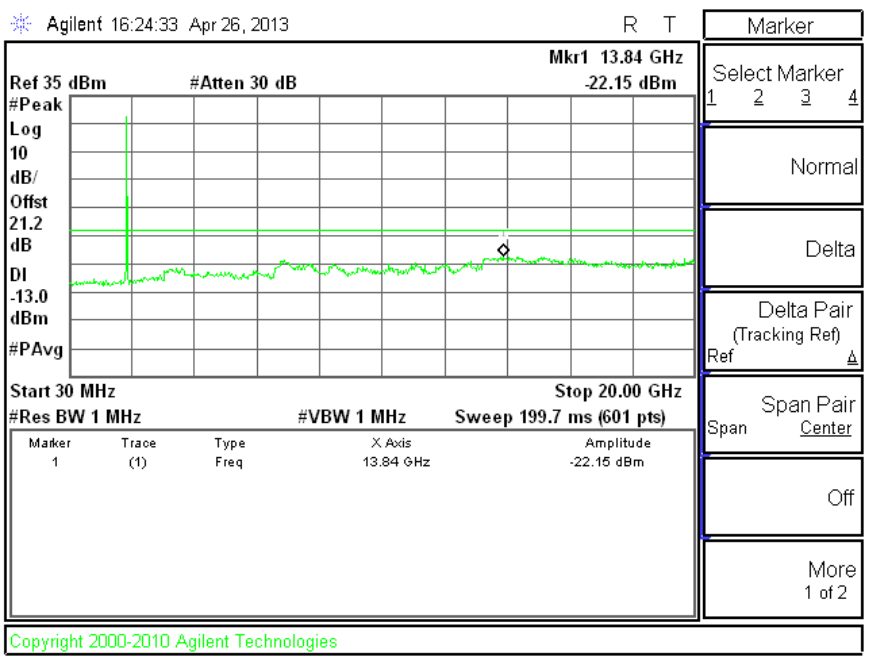
HIGH, RB1-0, 30 TO 20000 MHz



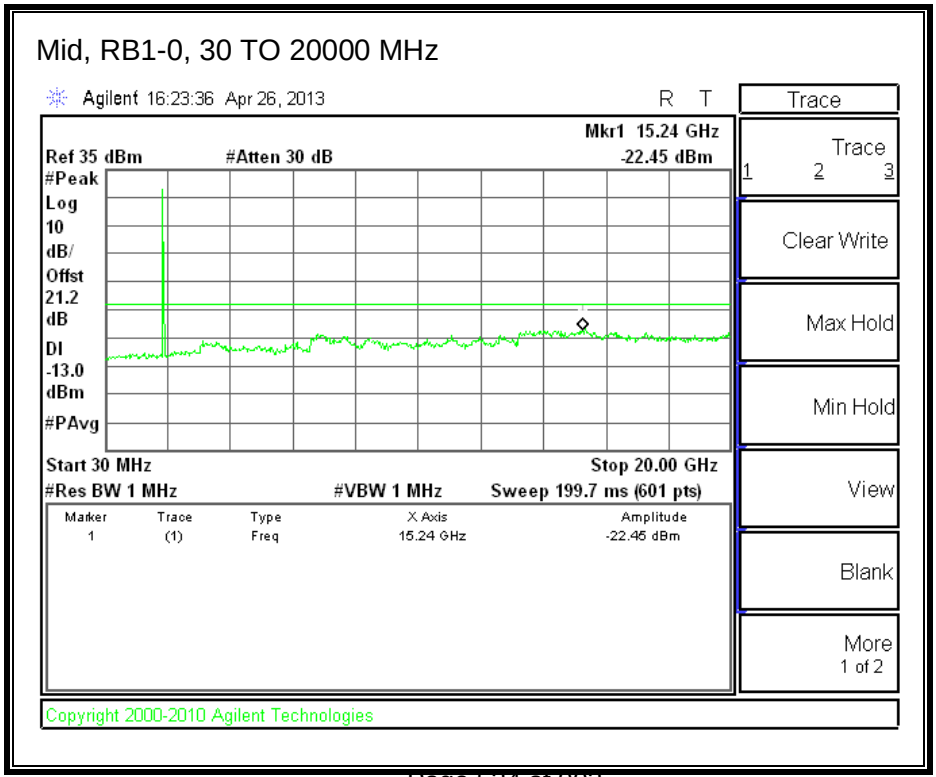
Band 2 (15.0 MHz BAND WIDTH)

LTE QPSK

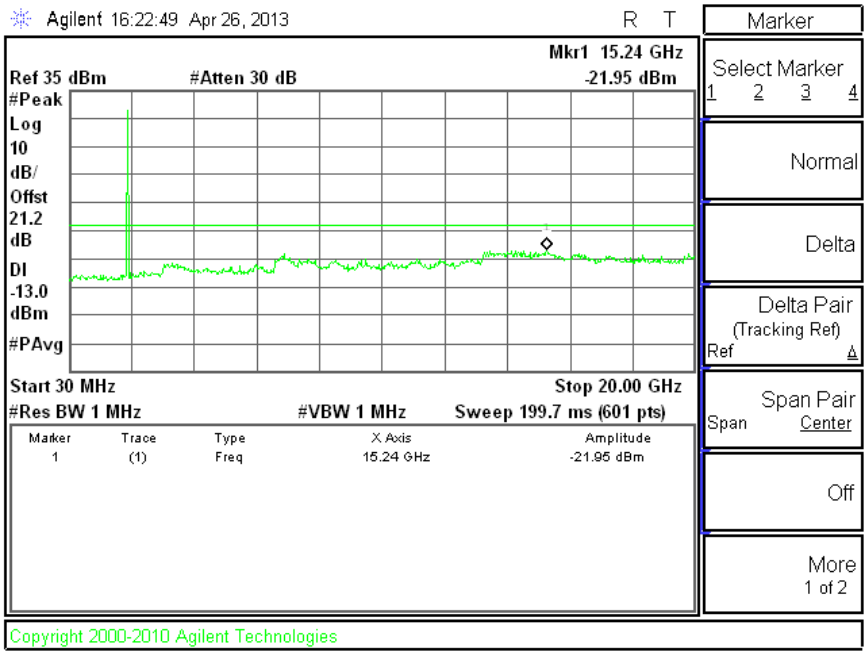
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

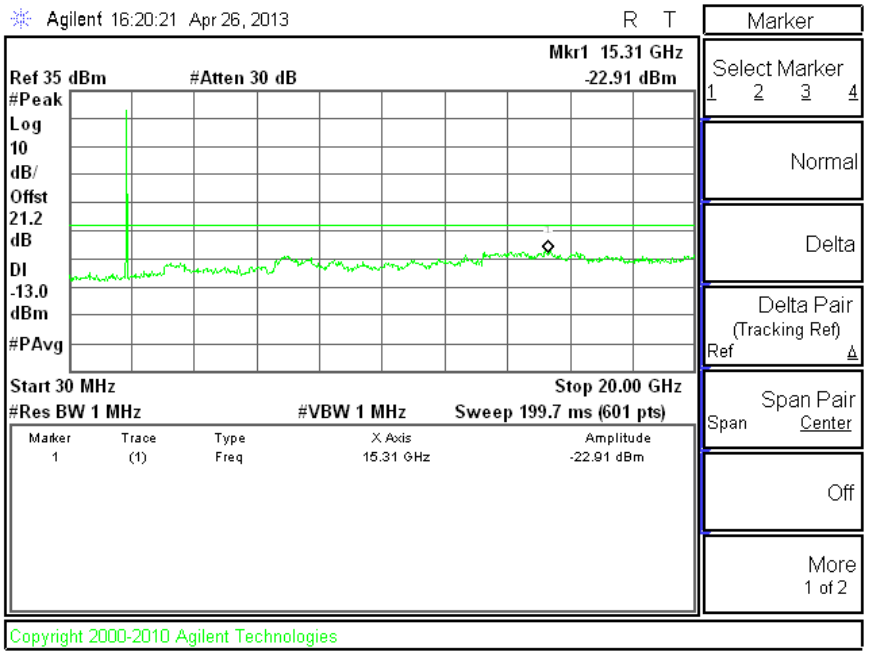


High, RB1-0, 30 TO 20000 MHz

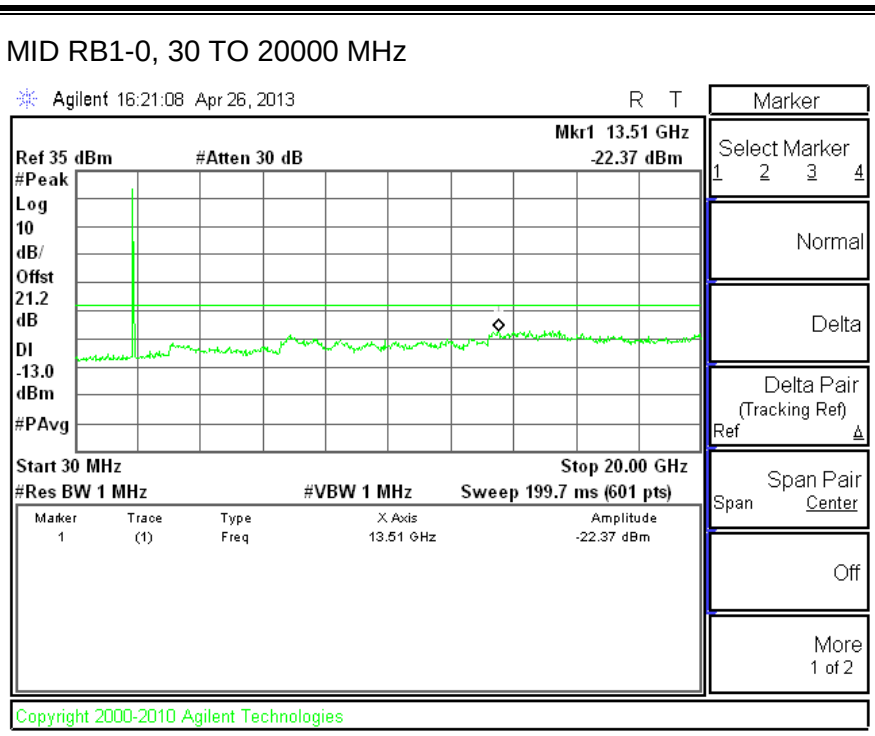


LTE 16QAM

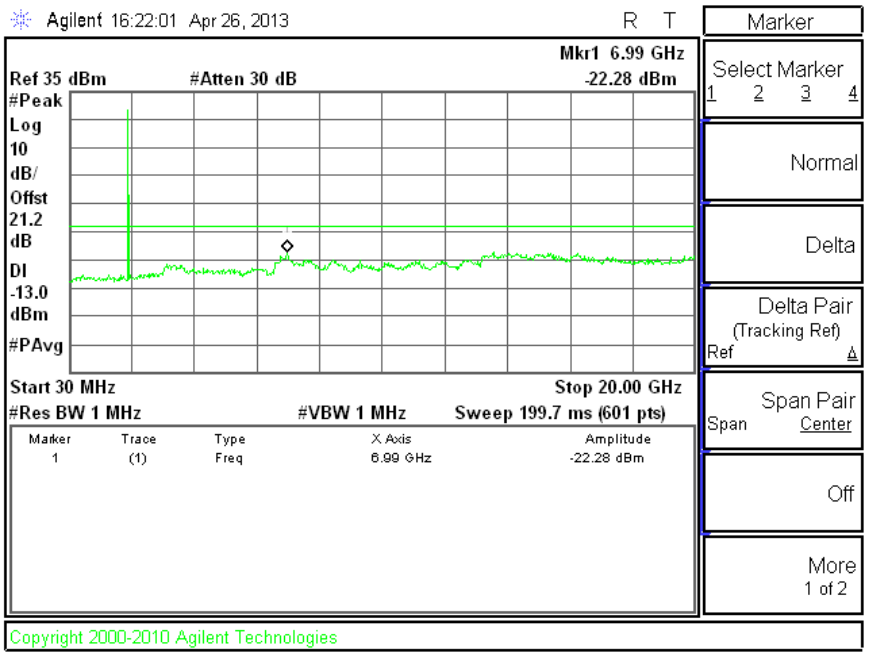
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



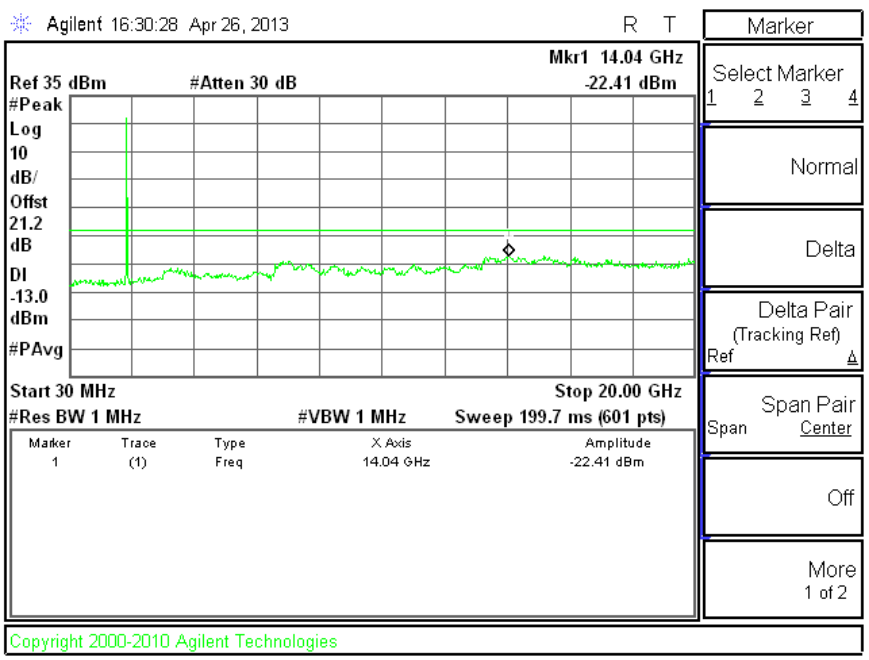
HIGH, RB1-0, 30 TO 20000 MHz



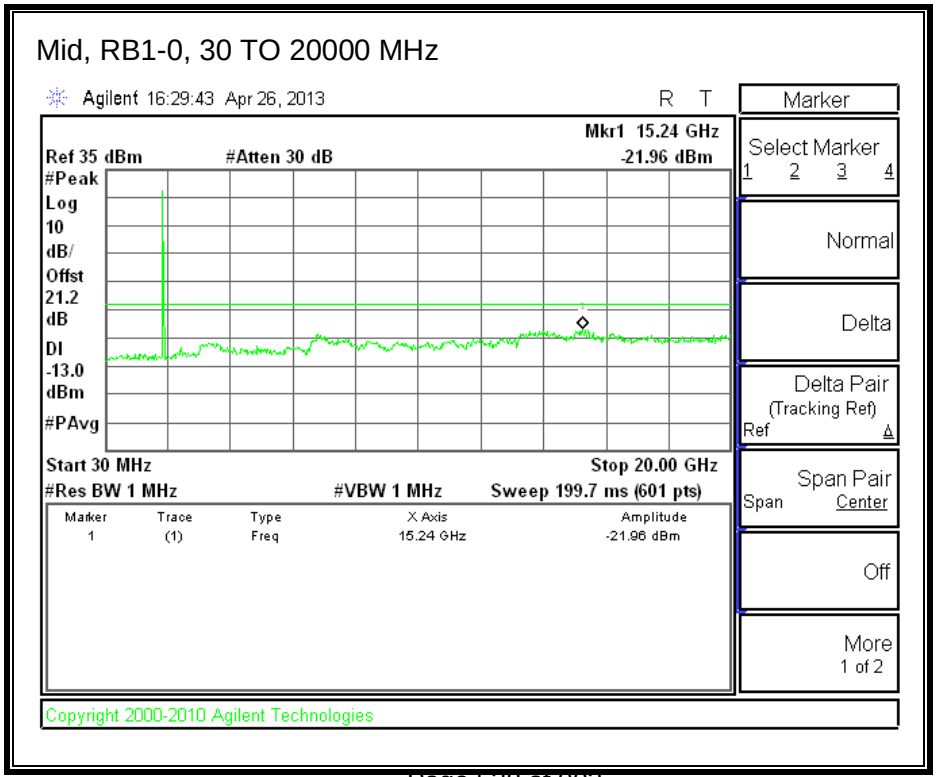
Band 2 (20.0 MHz BAND WIDTH)

LTE QPSK

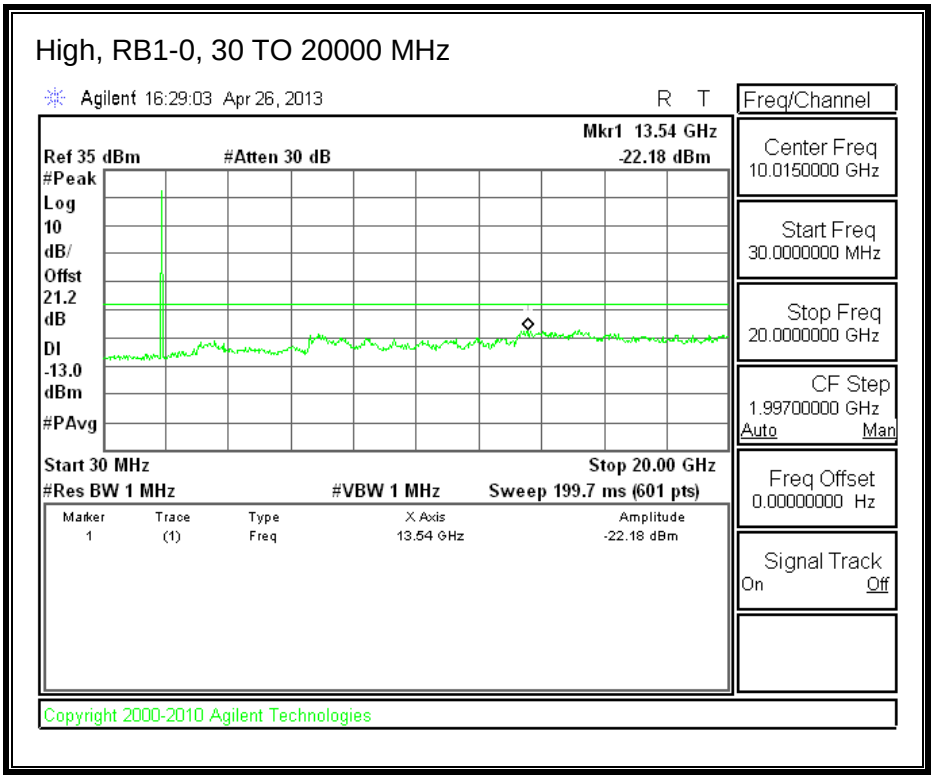
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

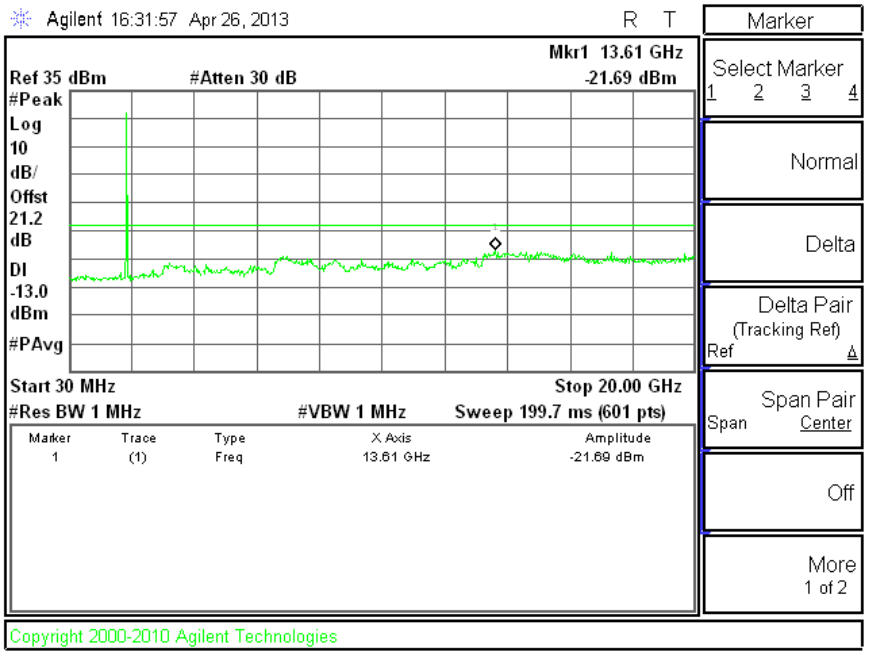


High, RB1-0, 30 TO 20000 MHz

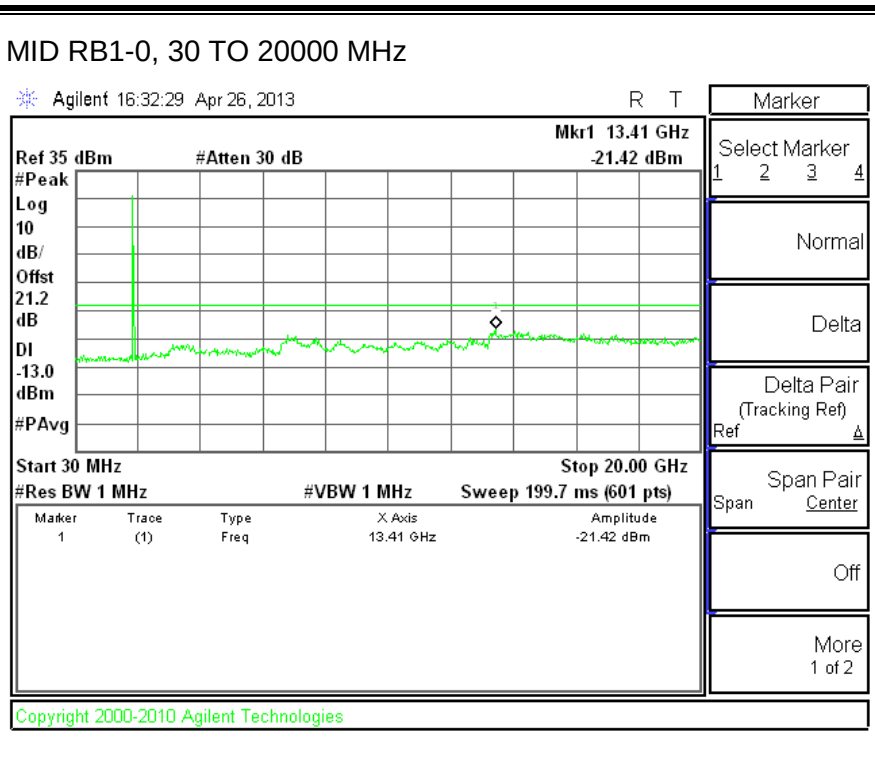


LTE 16QAM

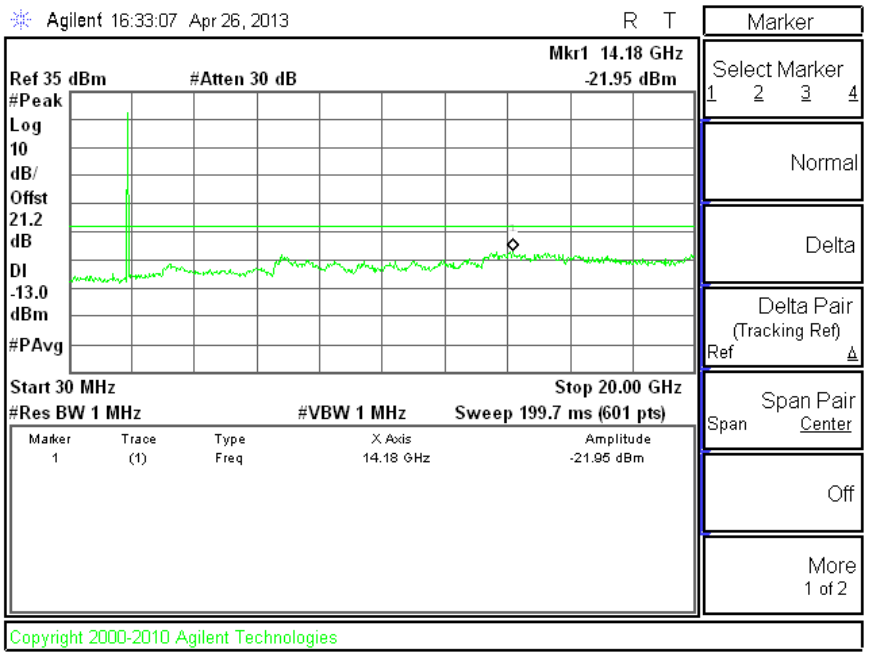
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



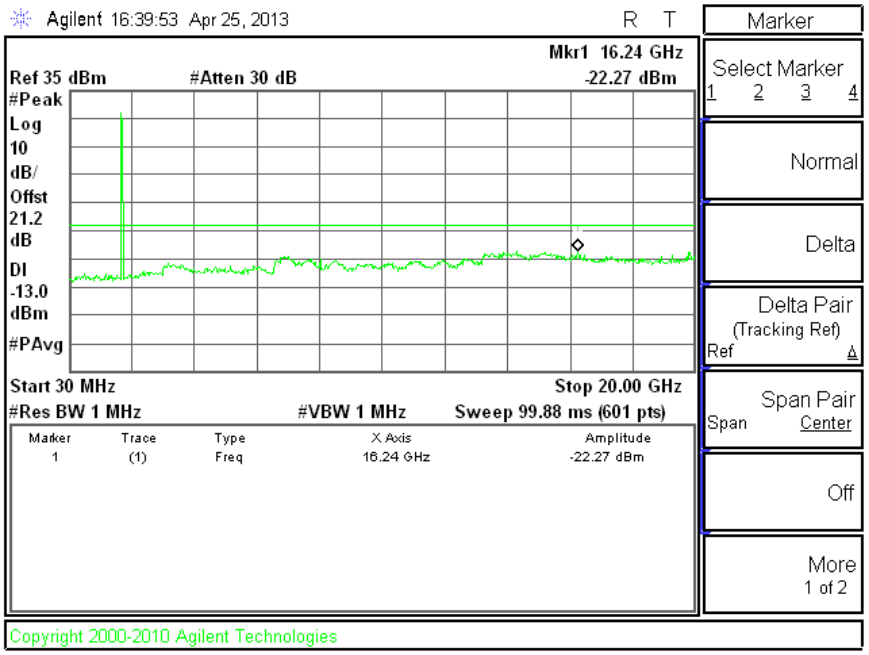
HIGH, RB1-0, 30 TO 20000 MHz



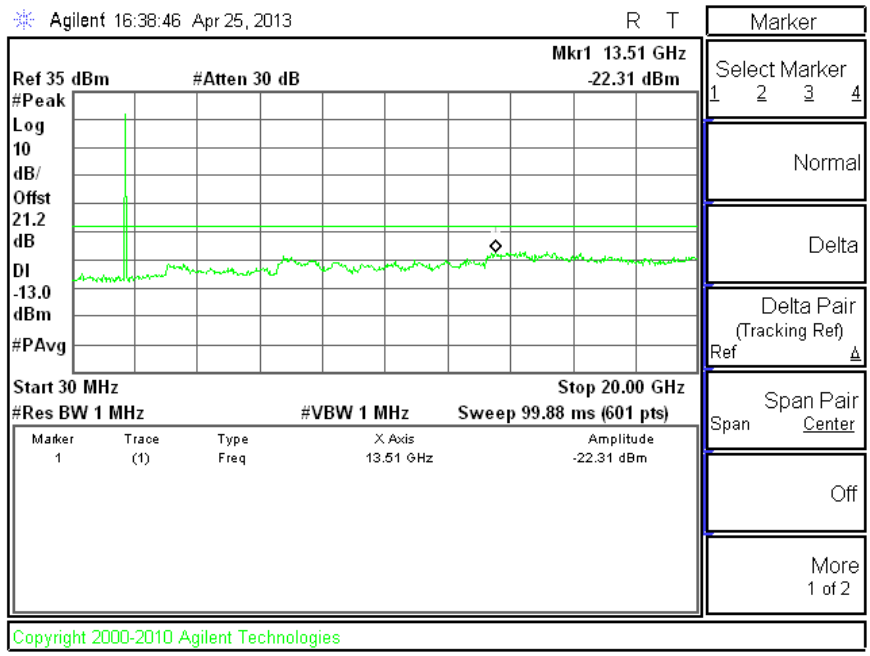
8.3.2. LTE BAND 4

LTE QPSK (1.4 MHz BAND WIDTH)

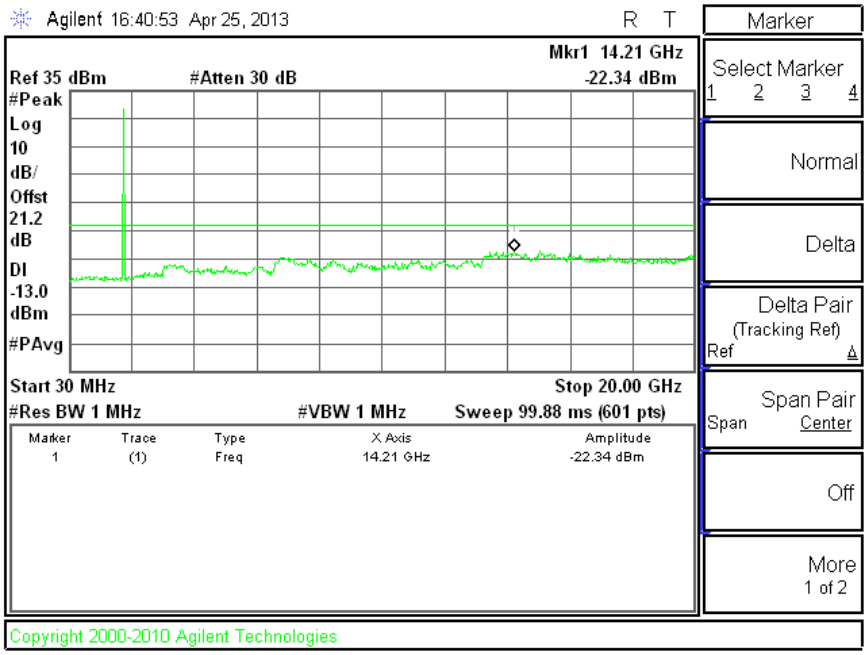
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

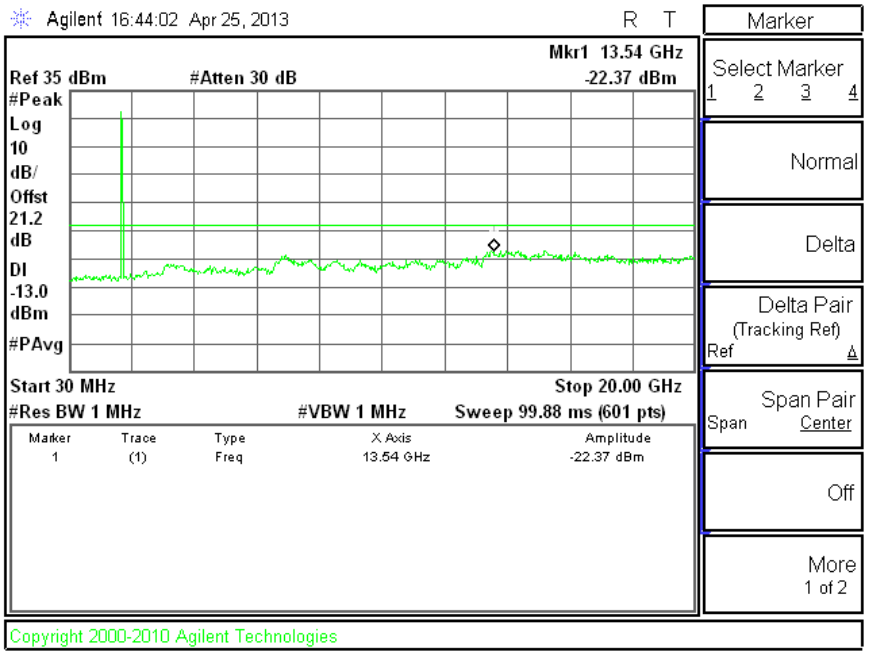


High, RB1-0, 30 TO 20000 MHz

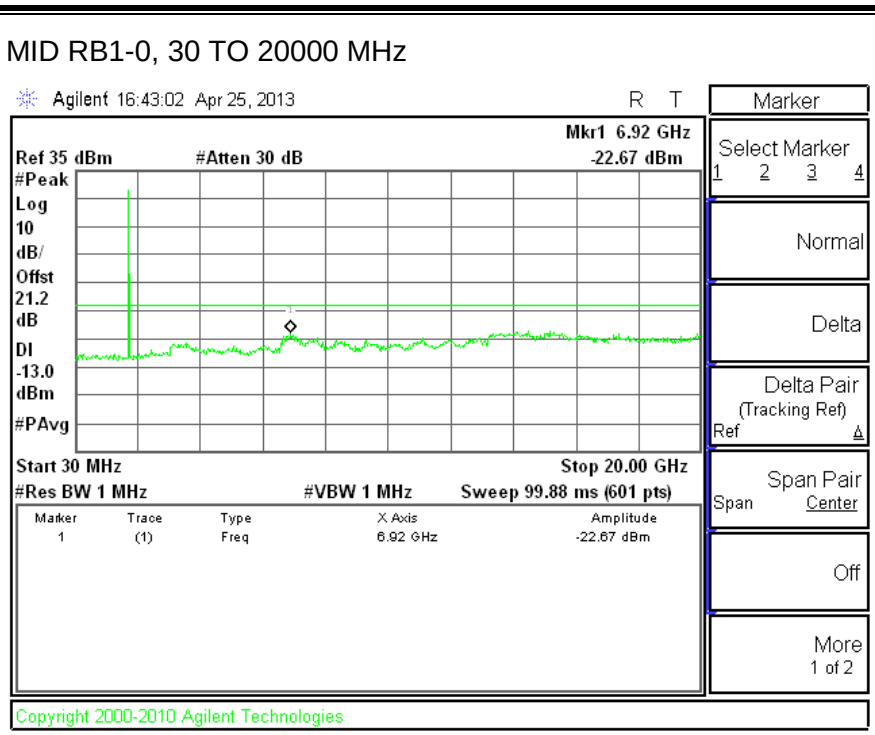


LTE 16QAM

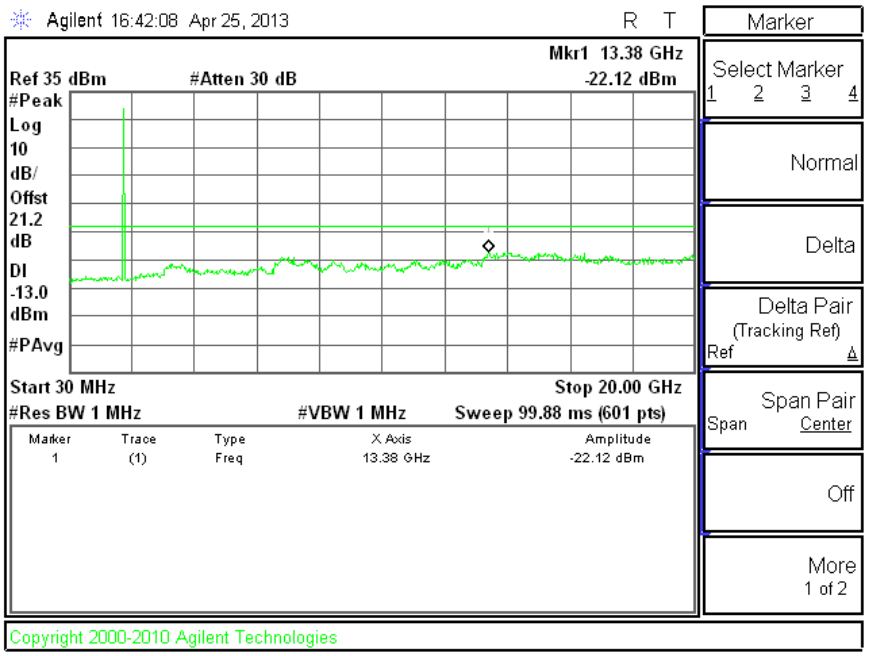
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



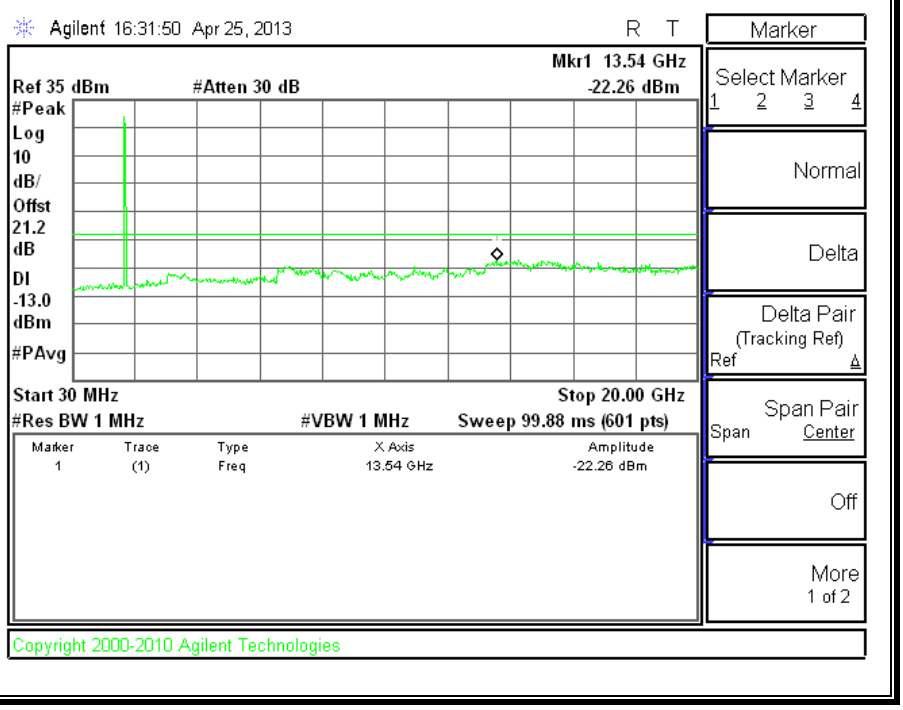
HIGH, RB1-0, 30 TO 20000 MHz



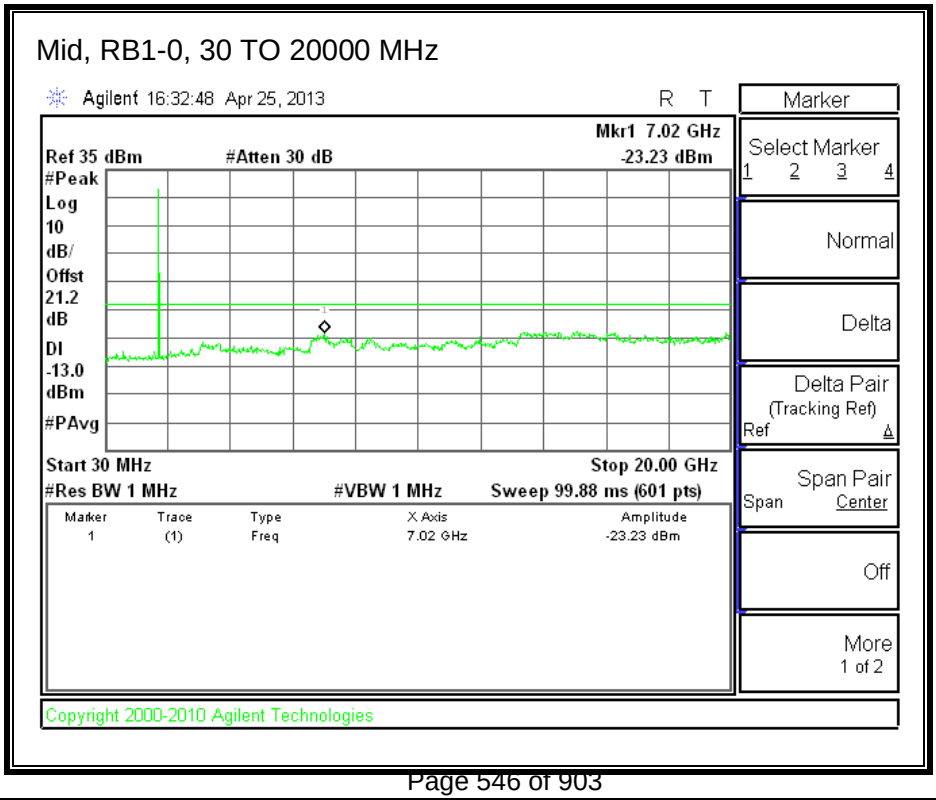
Band 4 (3.0 MHz BAND WIDTH)

LTE QPSK

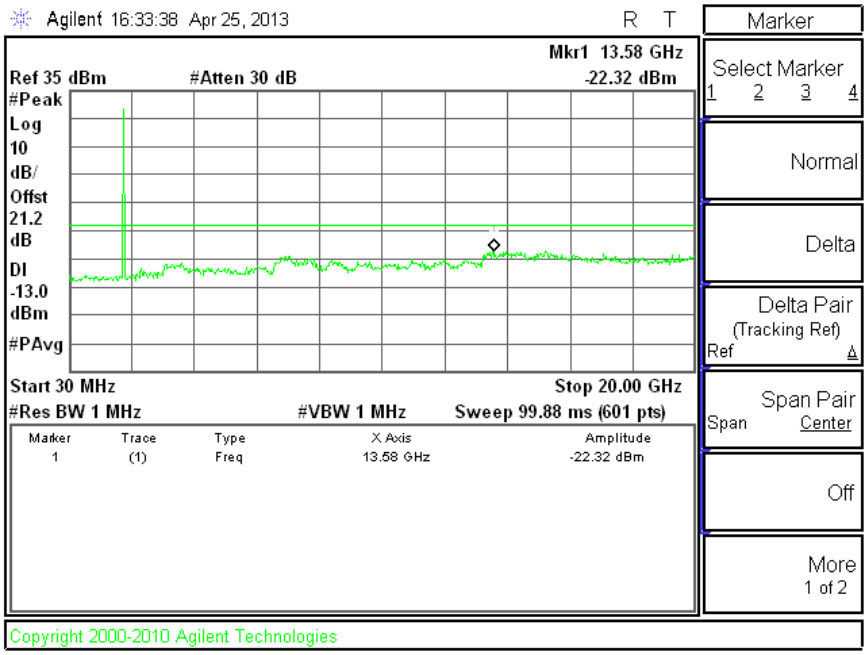
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

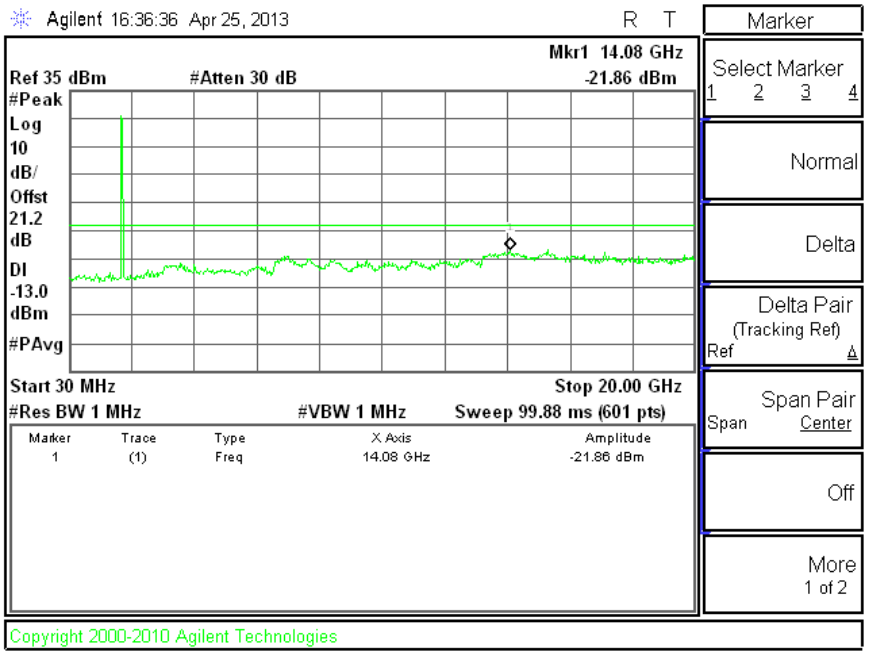


High, RB1-0, 30 TO 20000 MHz

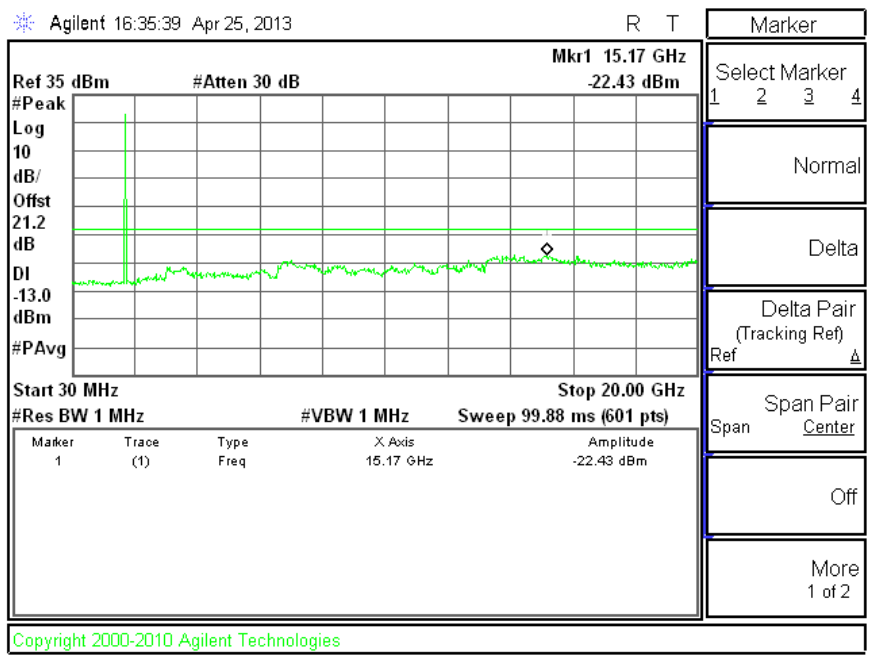


LTE 16QAM

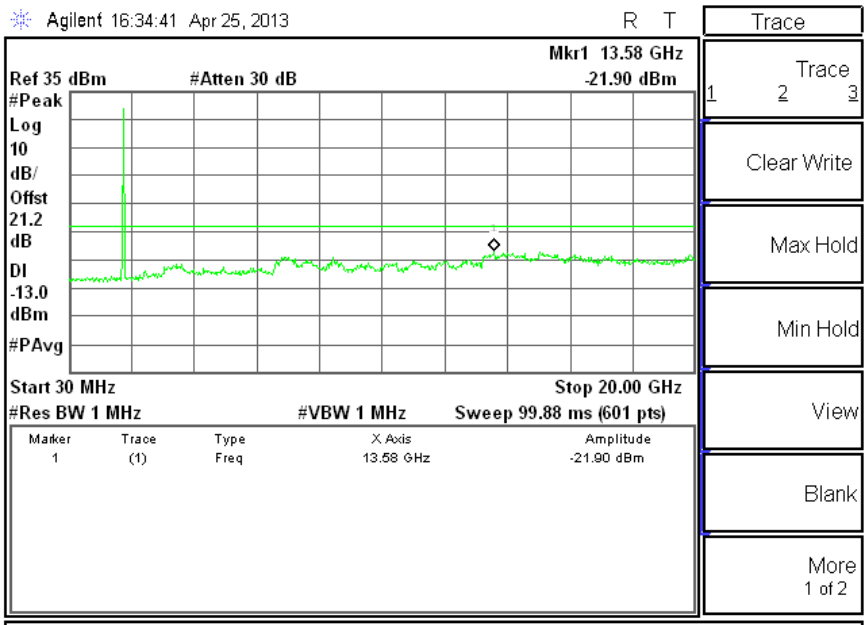
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



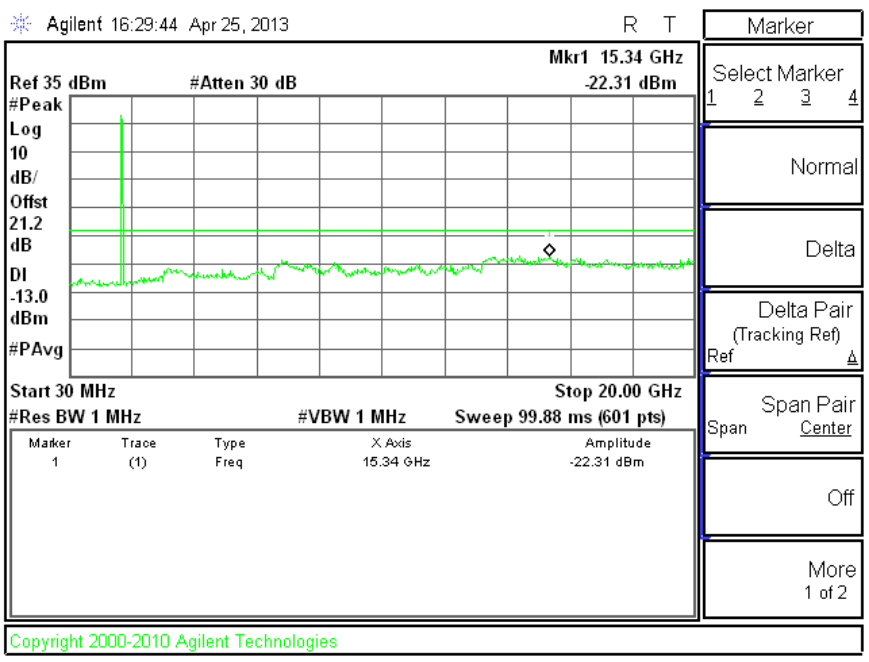
HIGH, RB1-0, 30 TO 20000 MHz



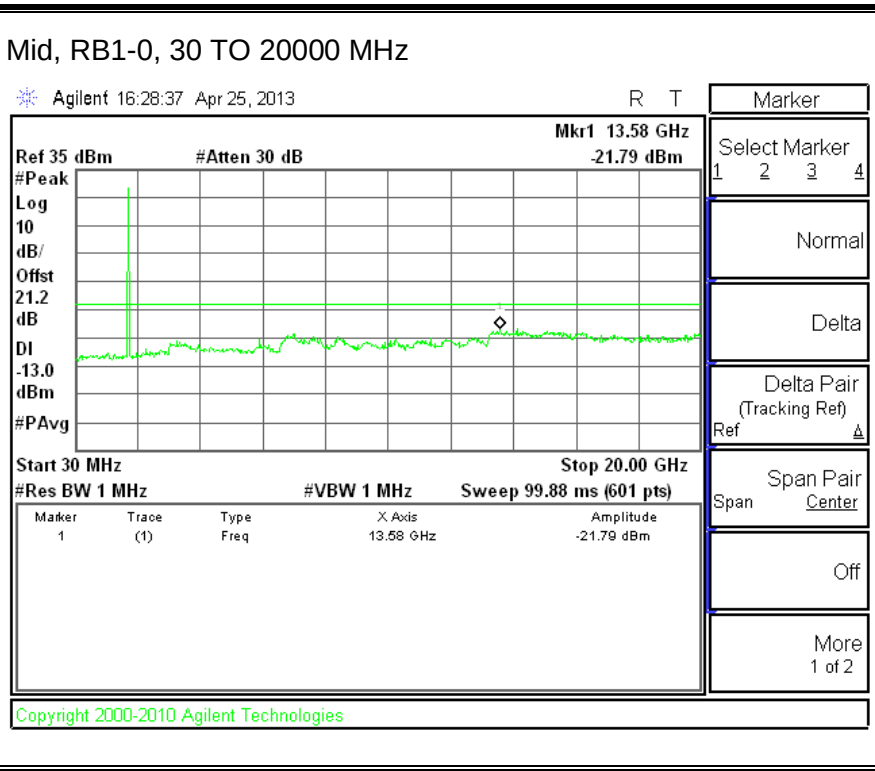
Band 4 (5.0 MHz BAND WIDTH)

LTE QPSK

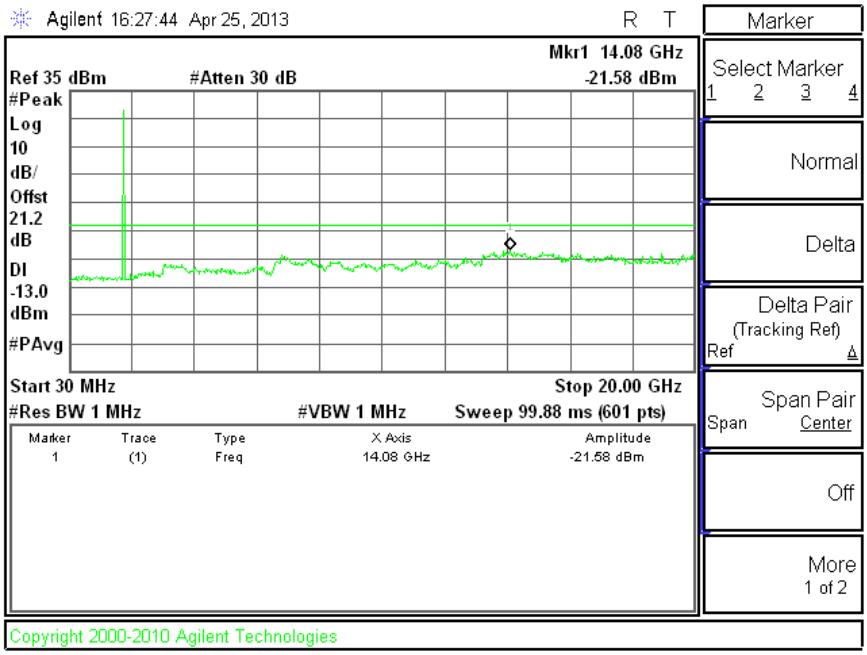
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

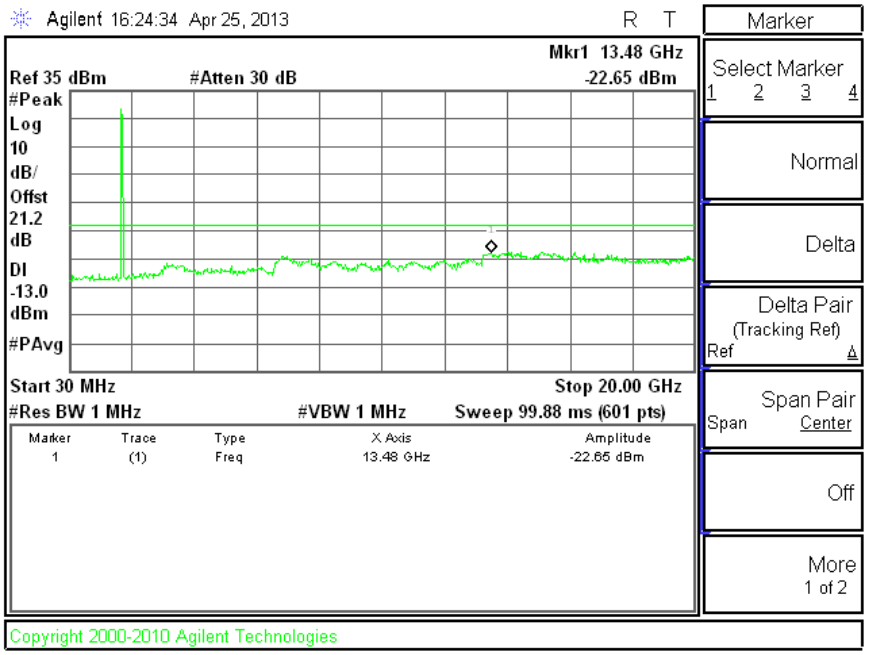


High, RB1-0, 30 TO 20000 MHz

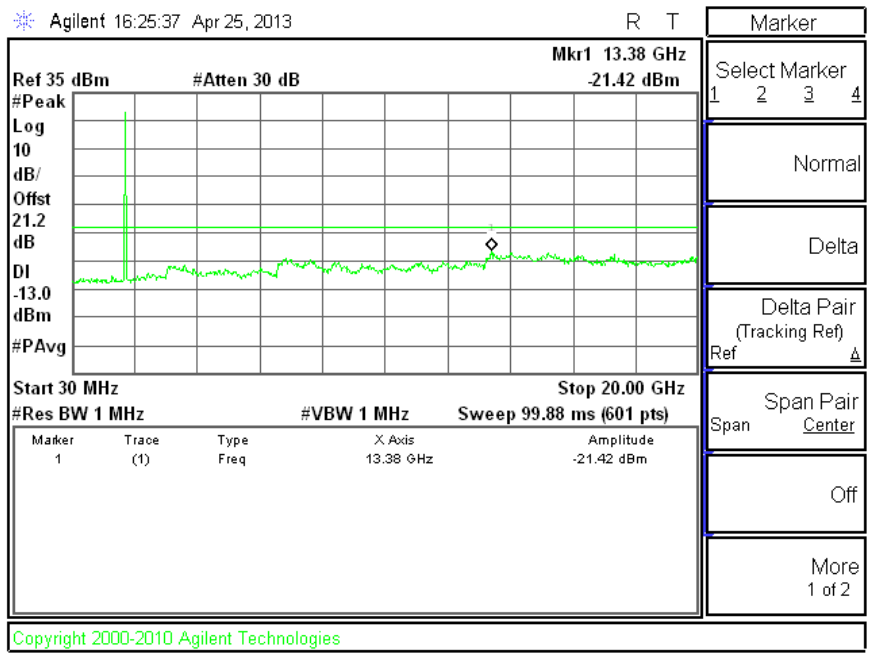


LTE 16QAM

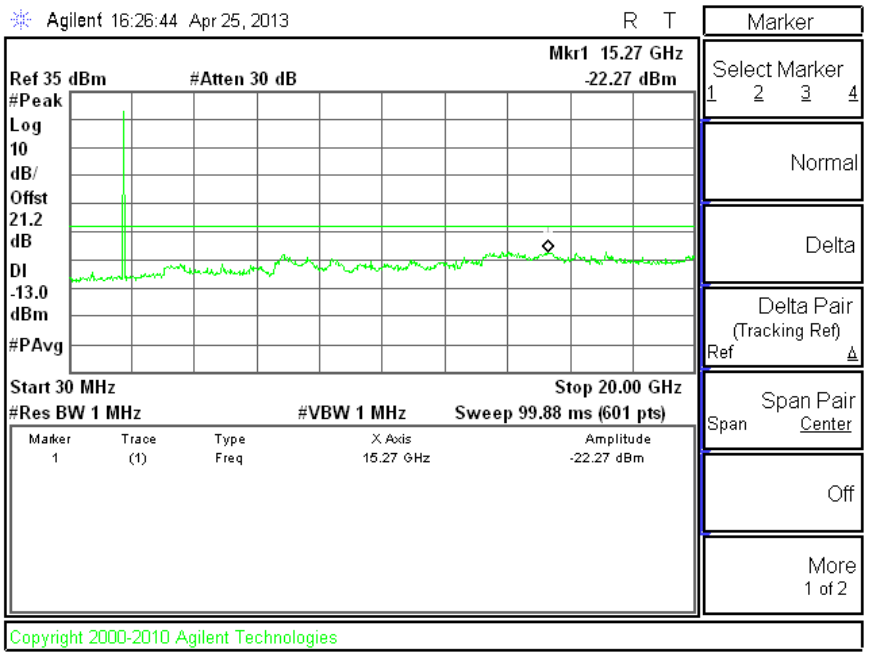
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



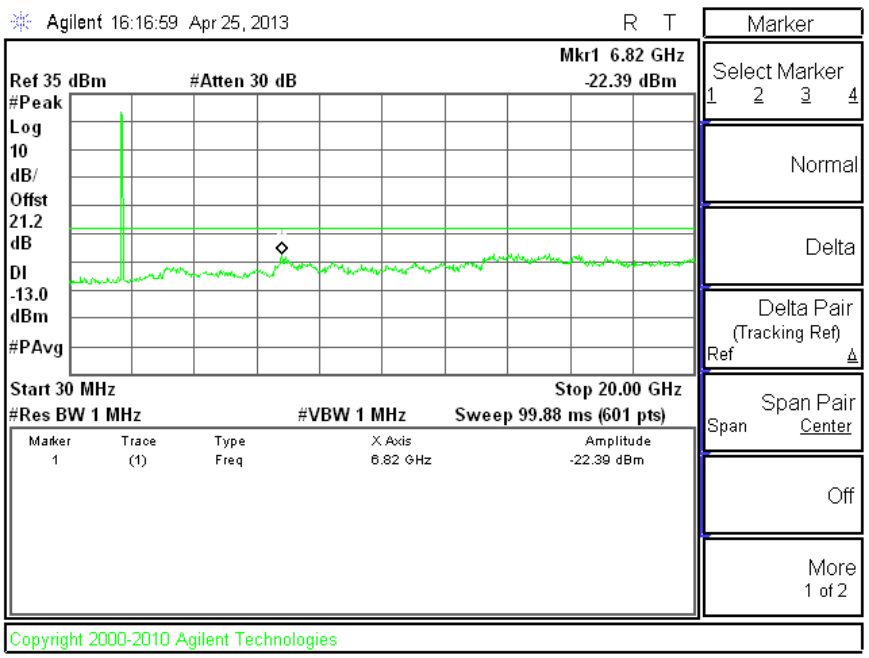
HIGH, RB1-0, 30 TO 20000 MHz



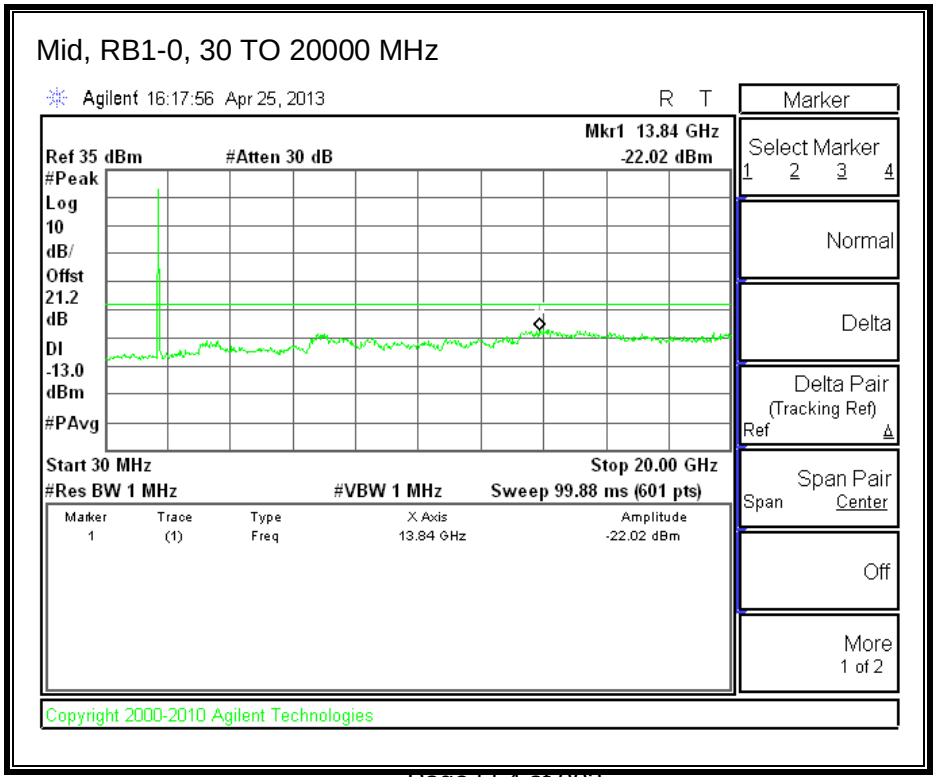
Band 4 (10.0 MHz BAND WIDTH)

LTE QPSK

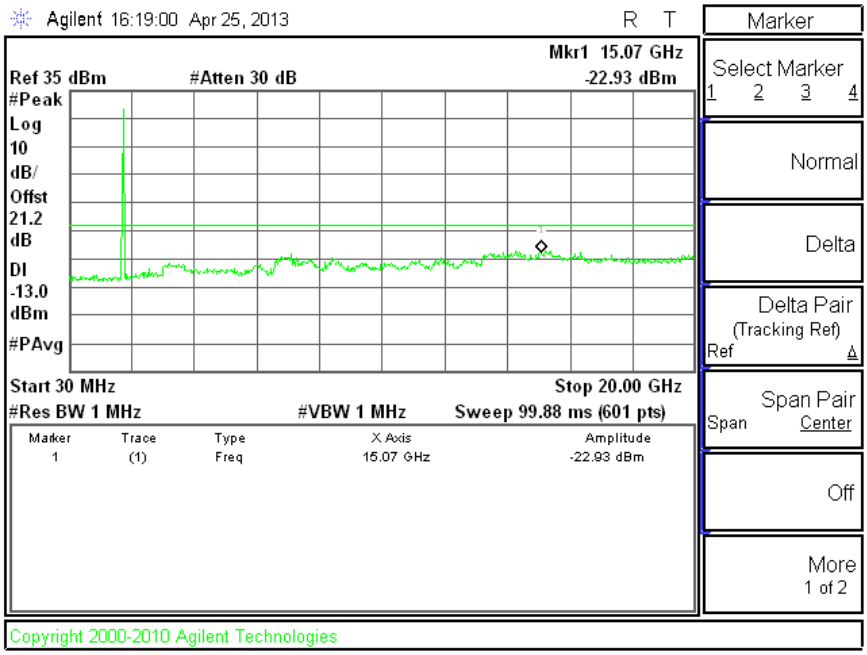
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

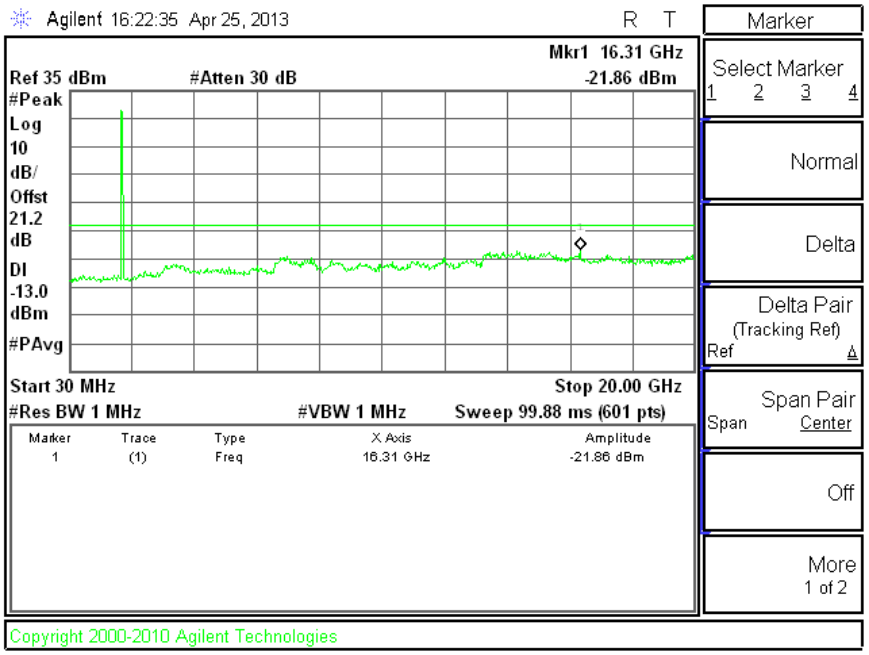


High, RB1-0, 30 TO 20000 MHz

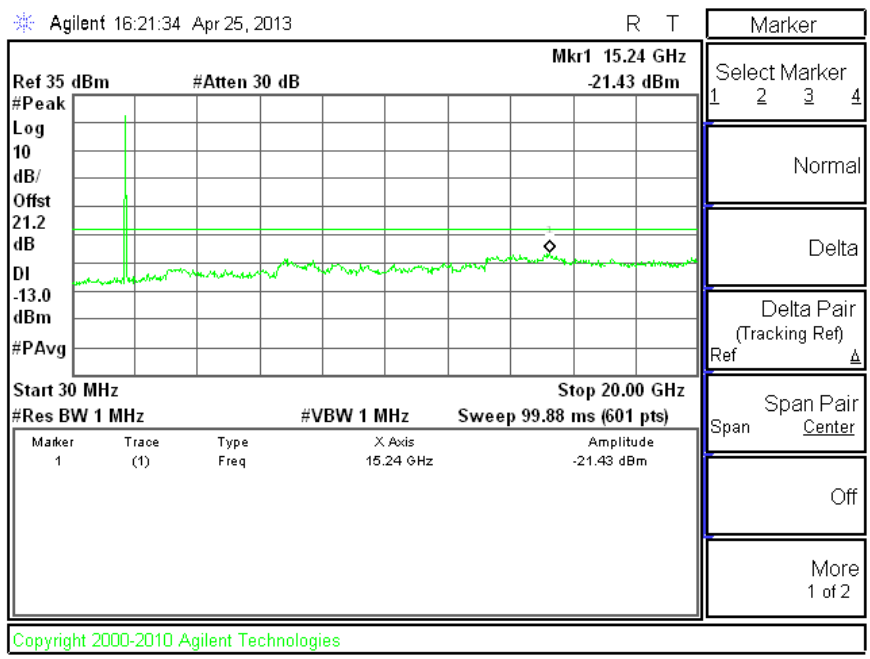


LTE 16QAM

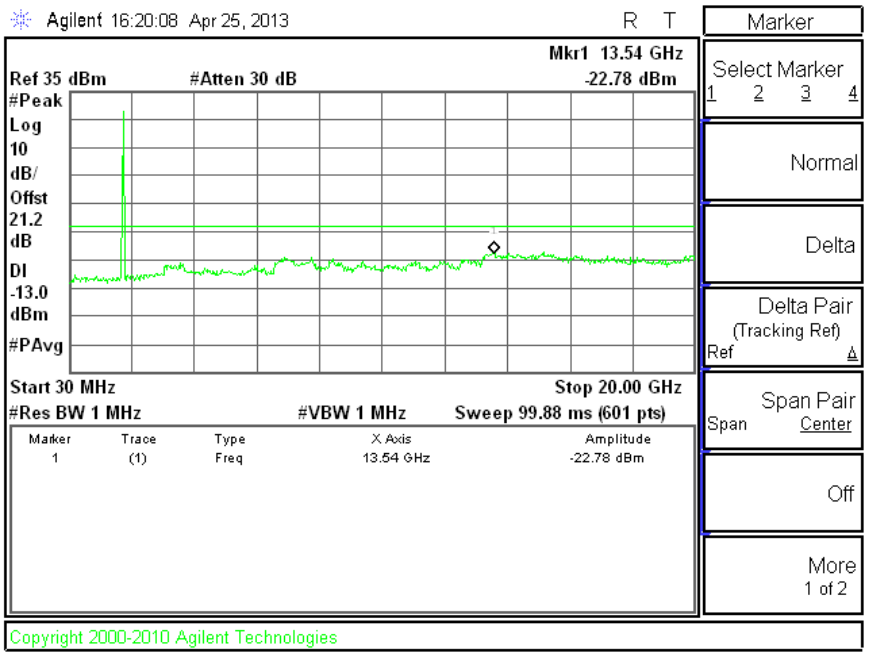
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



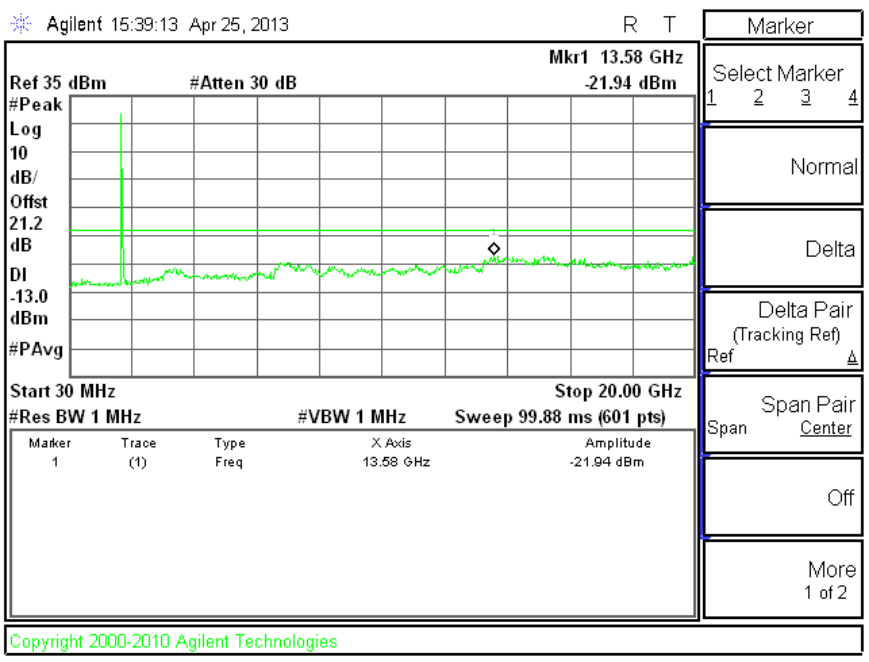
HIGH, RB1-0, 30 TO 20000 MHz



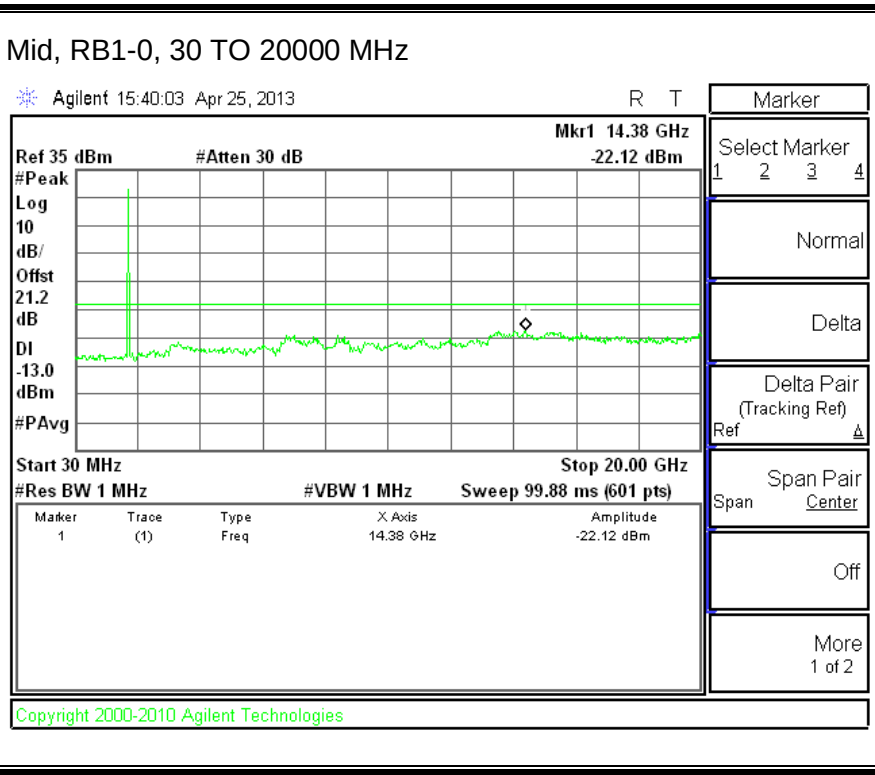
Band 4 (15.0 MHz BAND WIDTH)

LTE QPSK

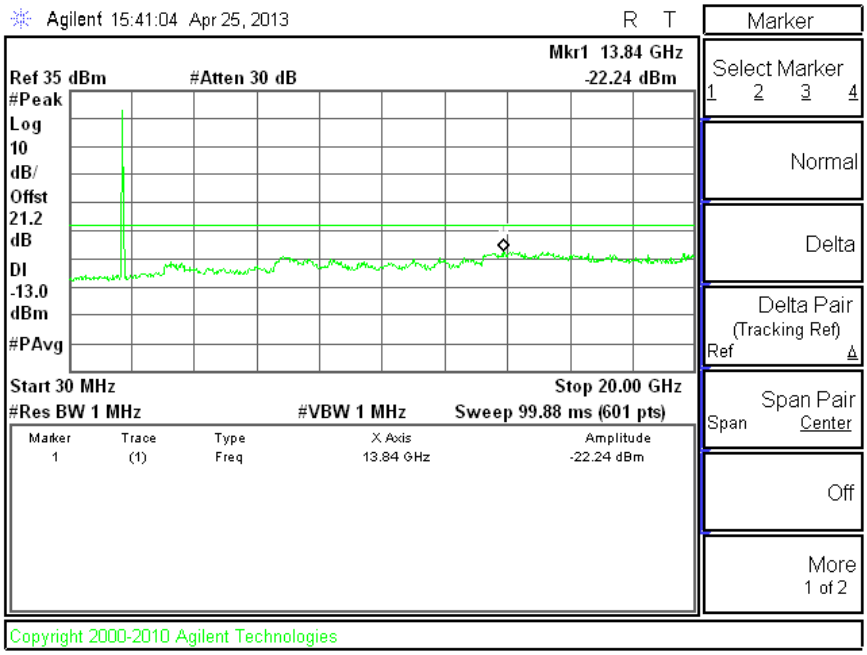
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

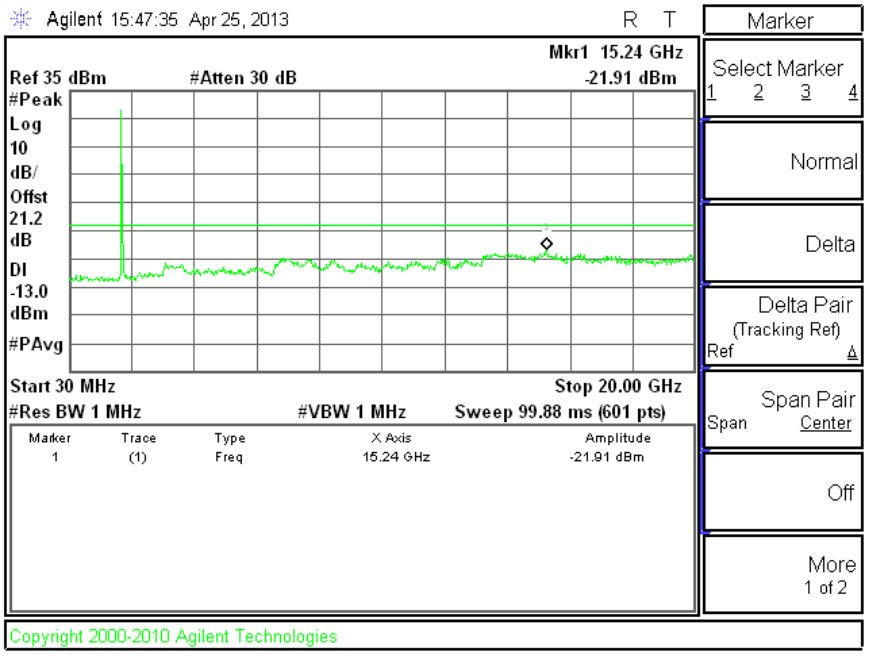


High, RB1-0, 30 TO 20000 MHz

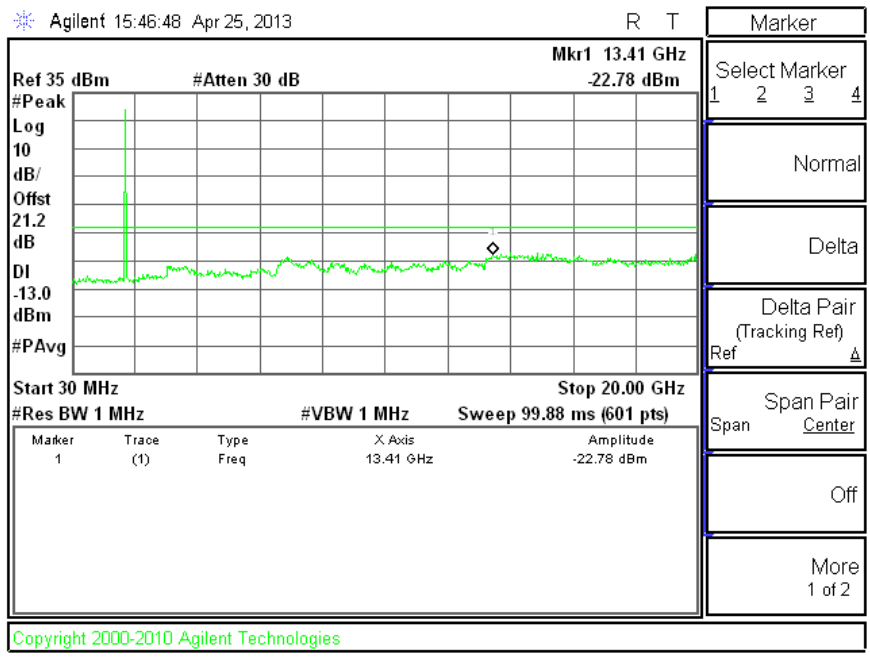


LTE 16QAM

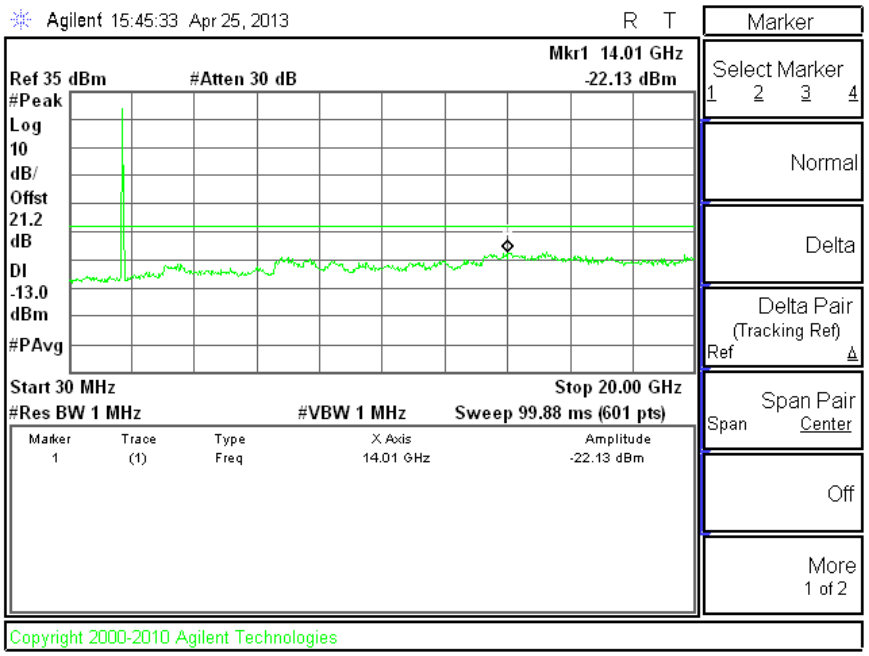
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



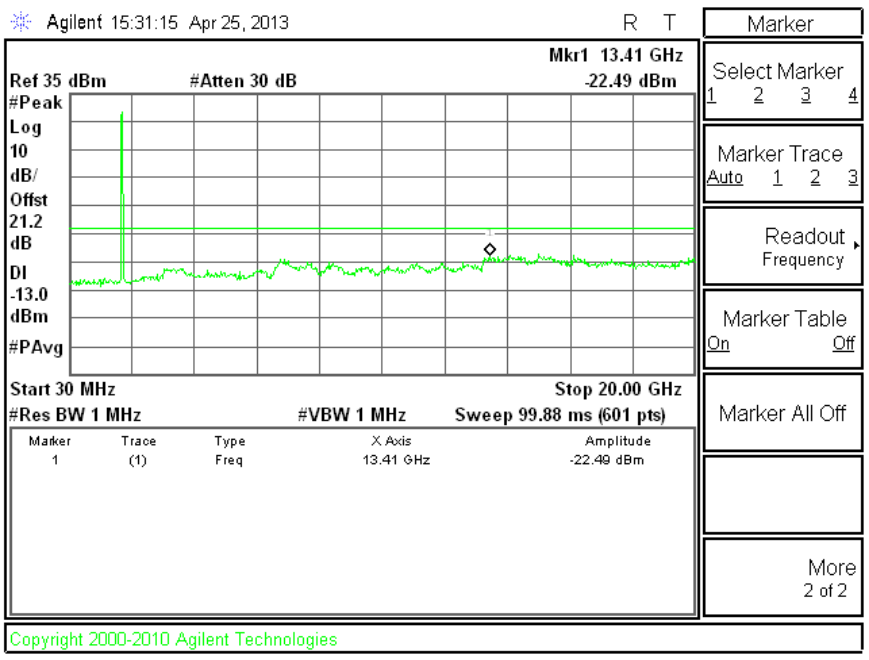
HIGH, RB1-0, 30 TO 20000 MHz



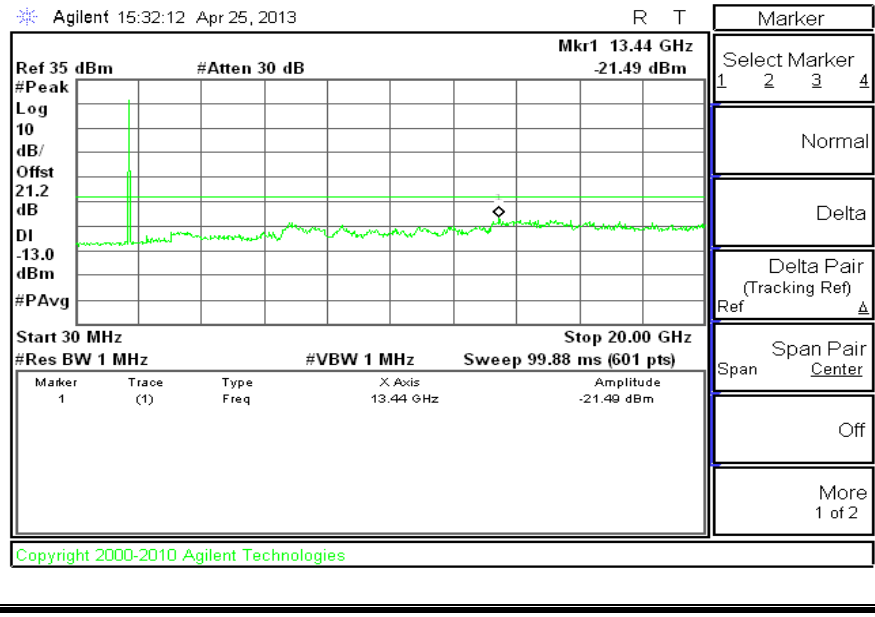
Band 4 (20.0 MHz BAND WIDTH)

LTE QPSK

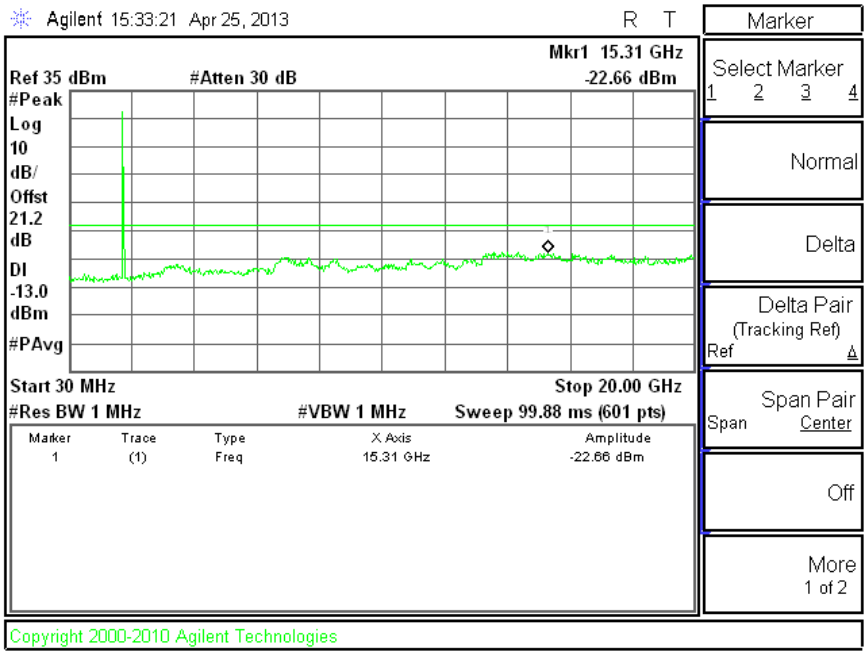
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

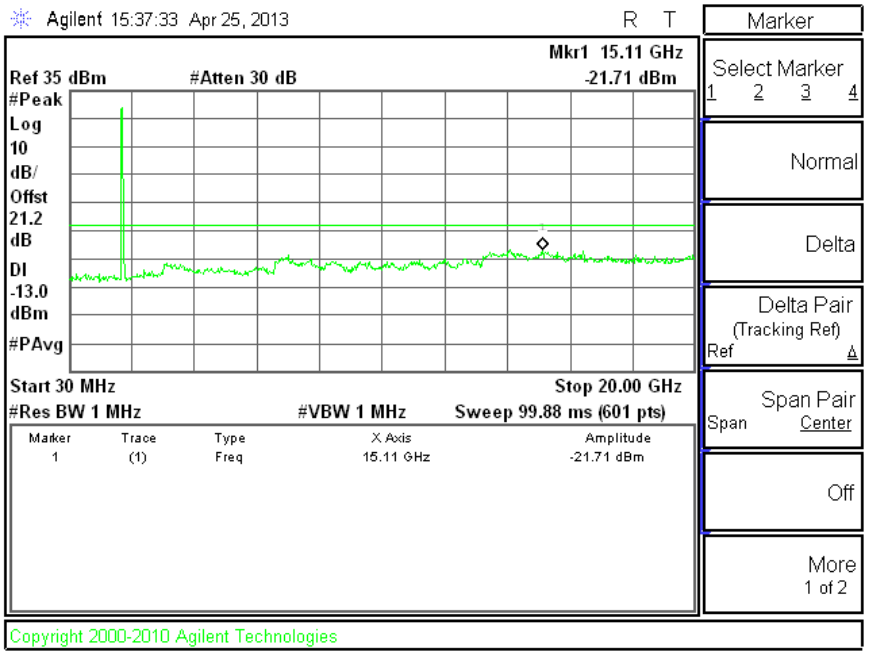


High, RB1-0, 30 TO 20000 MHz

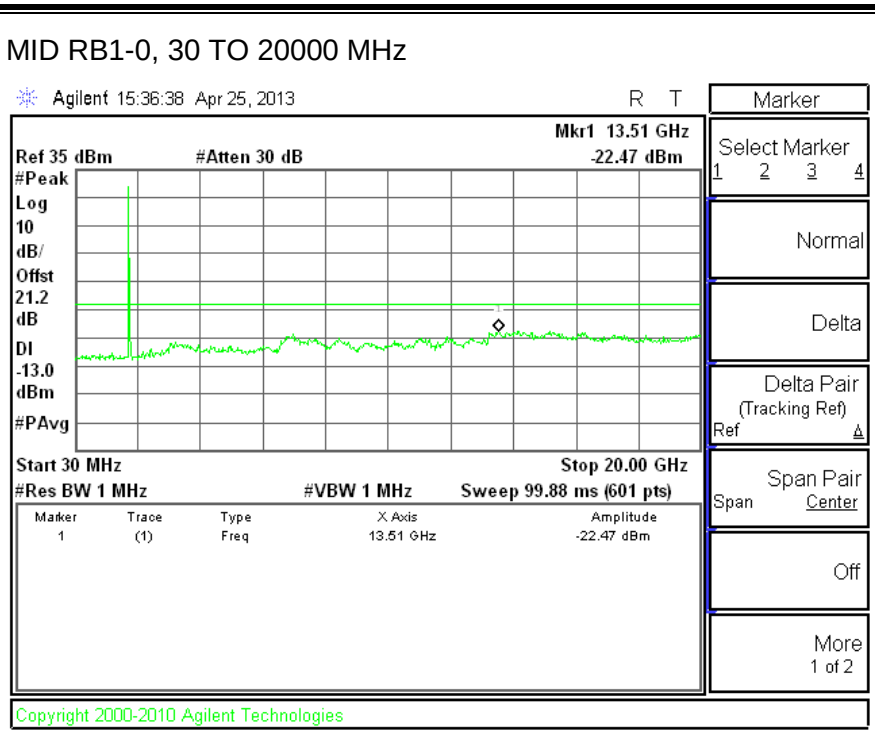


LTE 16QAM

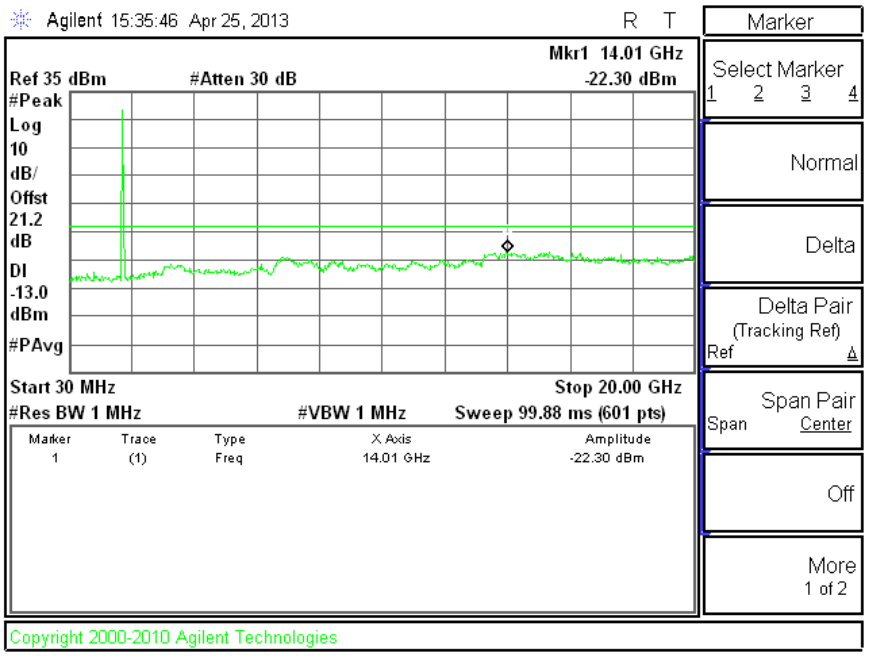
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



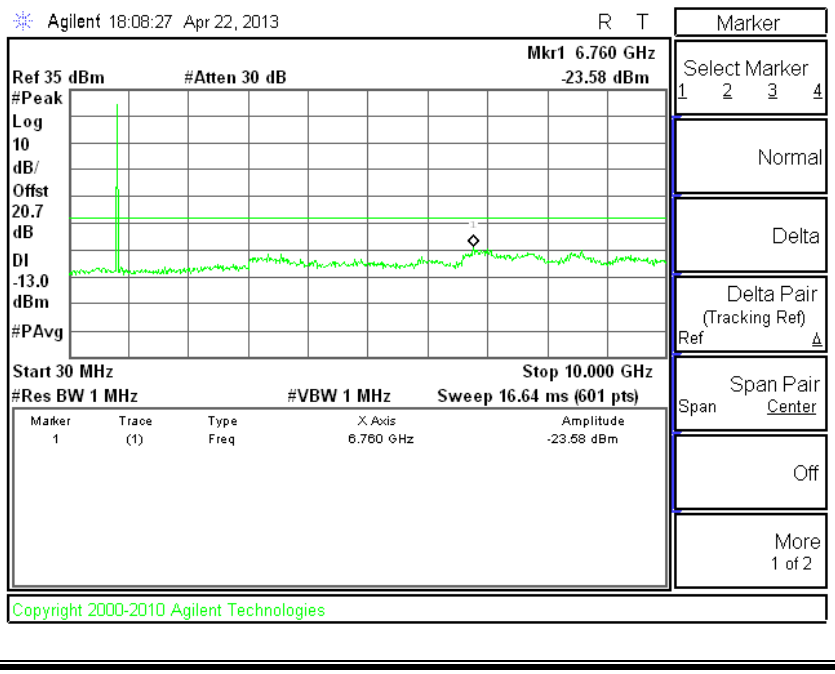
HIGH, RB1-0, 30 TO 20000 MHz



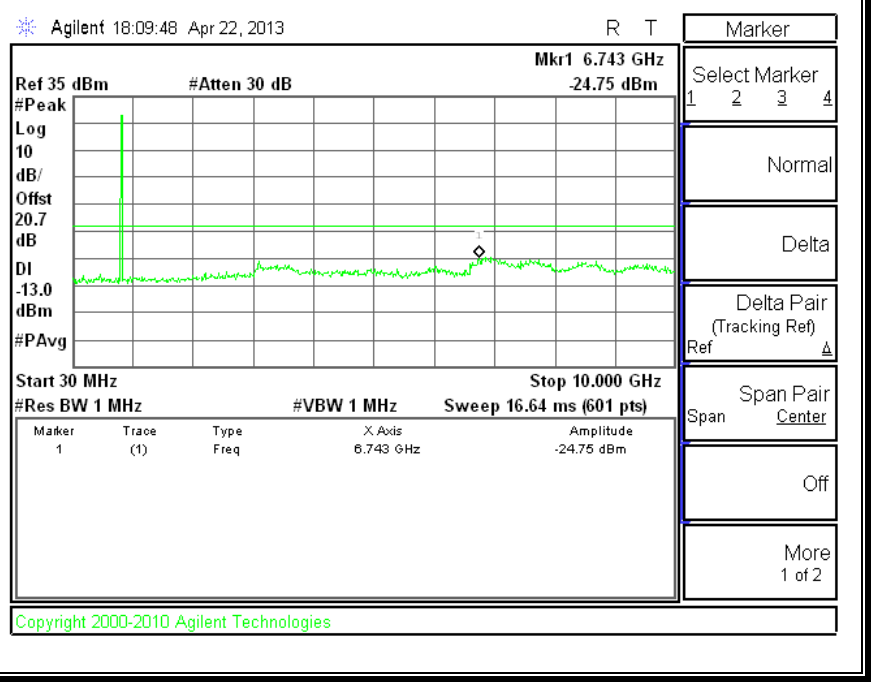
8.3.3. LTE BAND 5

LTE QPSK (1.4 MHz BAND WIDTH)

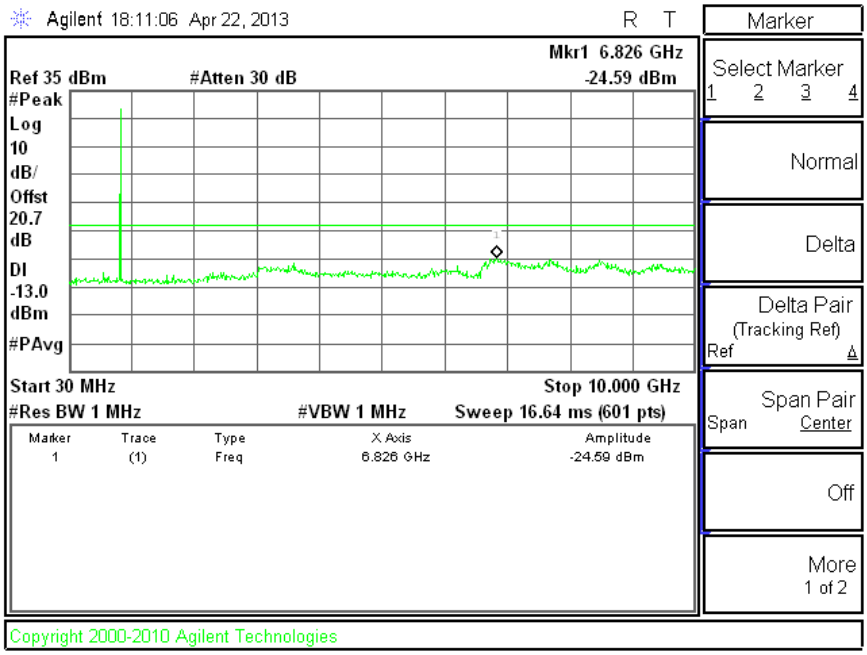
LOW, RB1-0, 30 TO 10000 MHz



Mid, RB1-0, 30 TO 10000 MHz

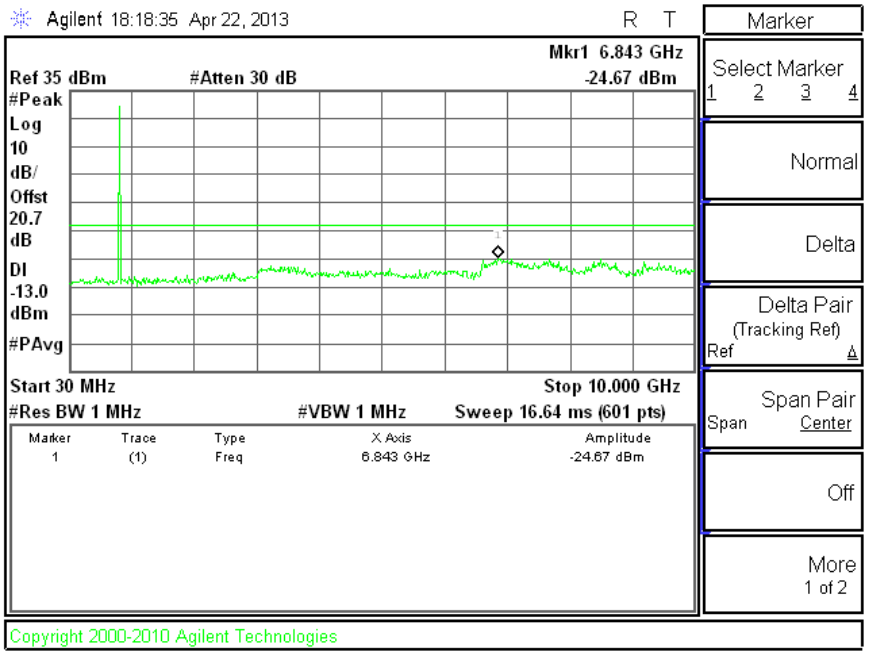


High, RB1-0, 30 TO 10000 MHz

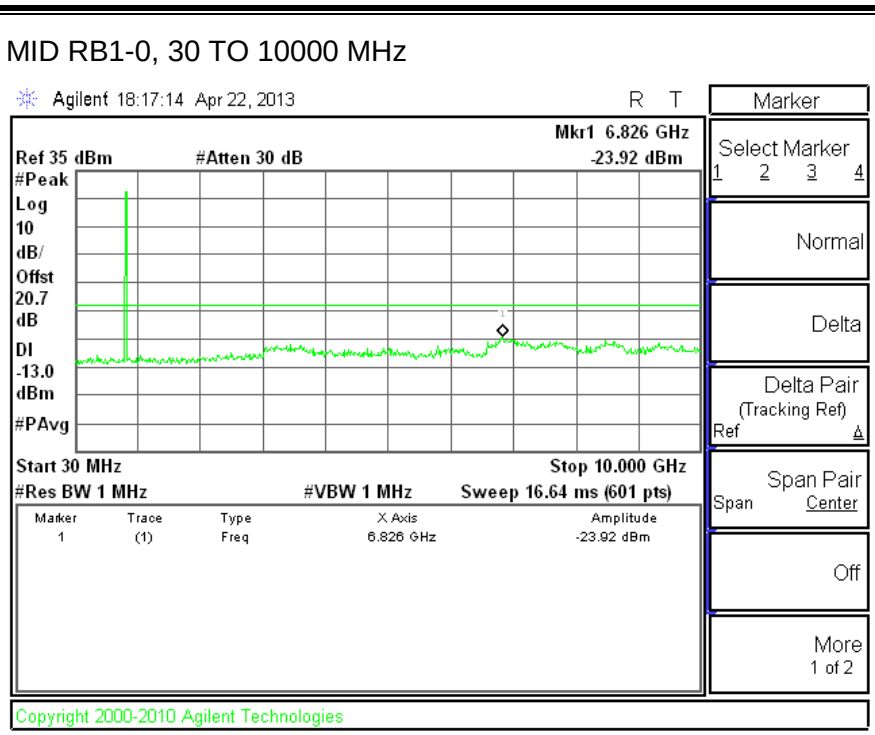


LTE 16QAM

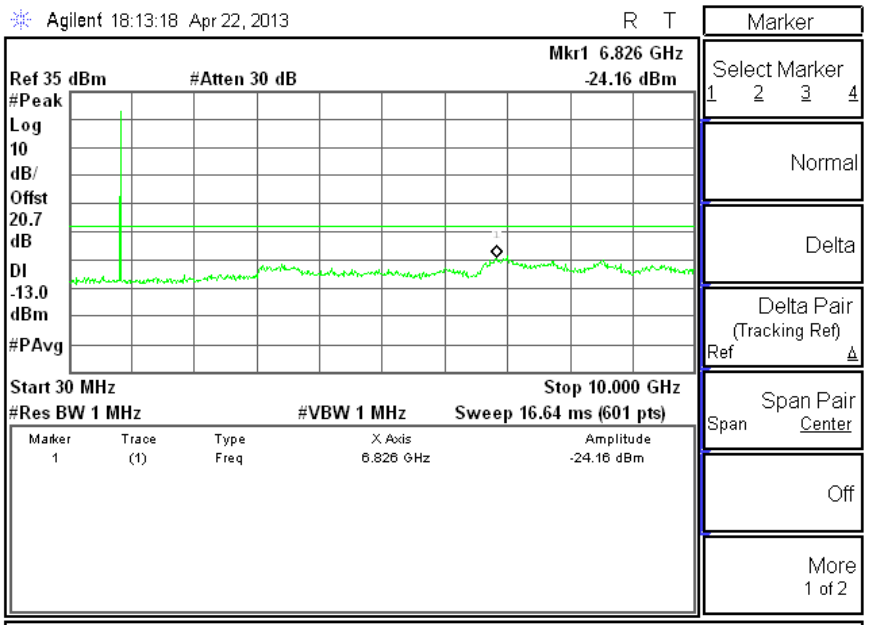
LOW, RB1-0, 30 TO 10000 MHz



MID RB1-0, 30 TO 10000 MHz



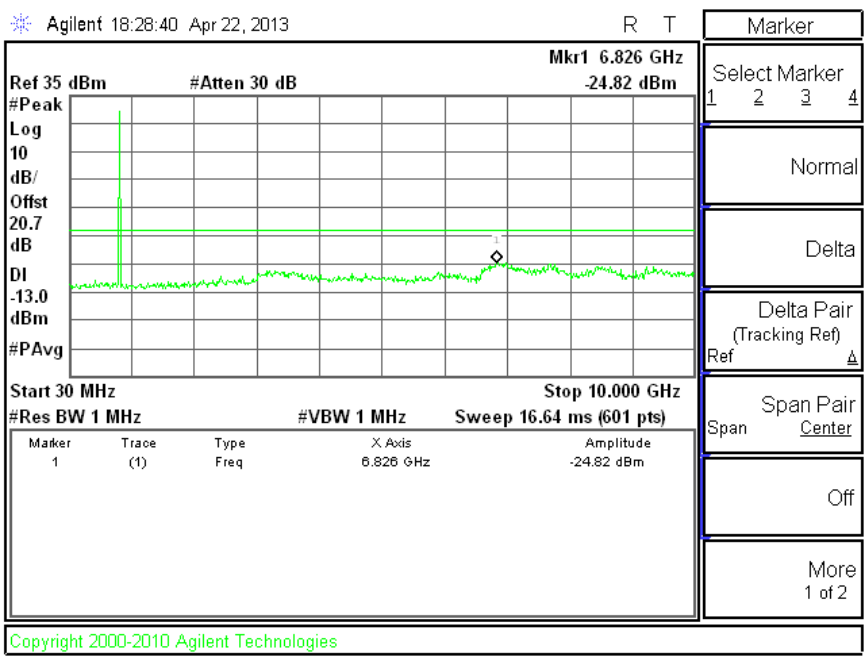
HIGH, RB1-0, 30 TO 10000 MHz



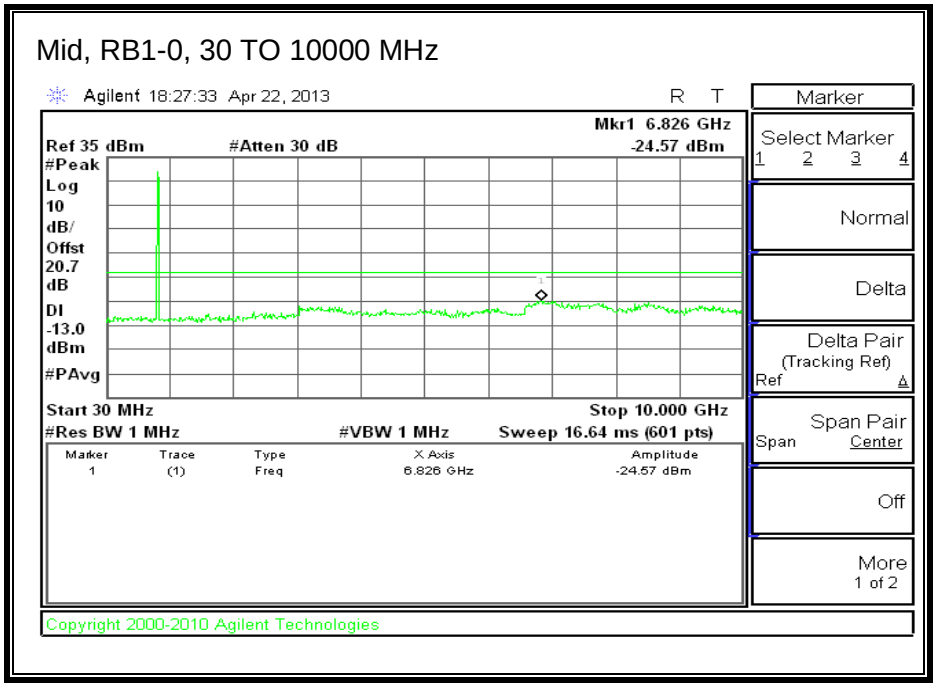
Band 5 (3.0 MHz BAND WIDTH)

LTE QPSK

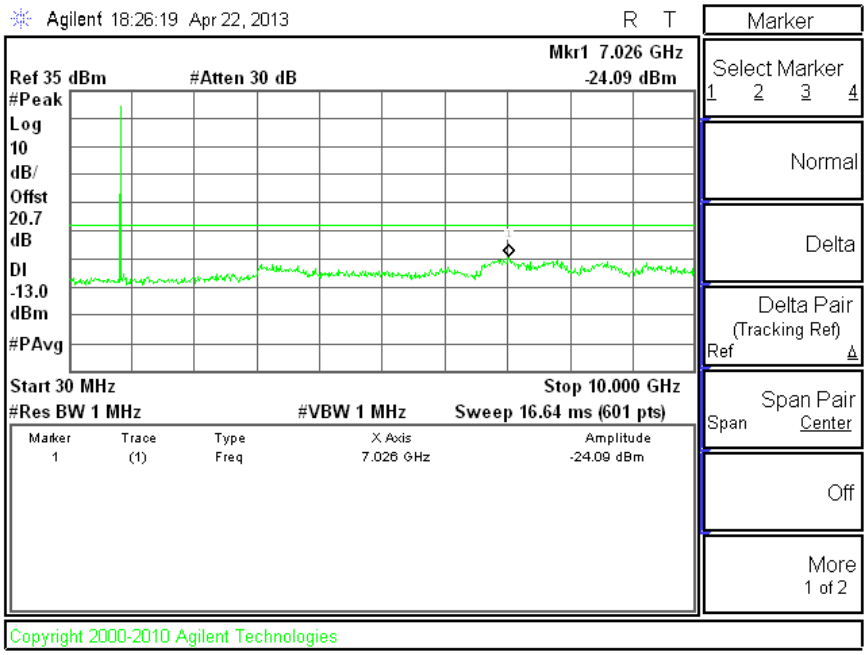
LOW, RB1-0, 30 TO 10000 MHz



Mid, RB1-0, 30 TO 10000 MHz

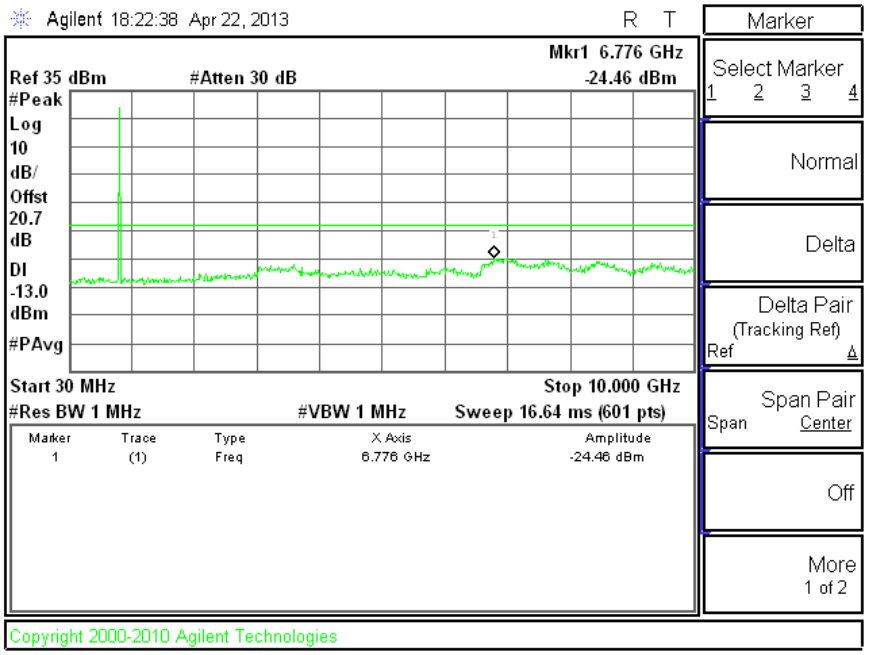


High, RB1-0, 30 TO 10000 MHz

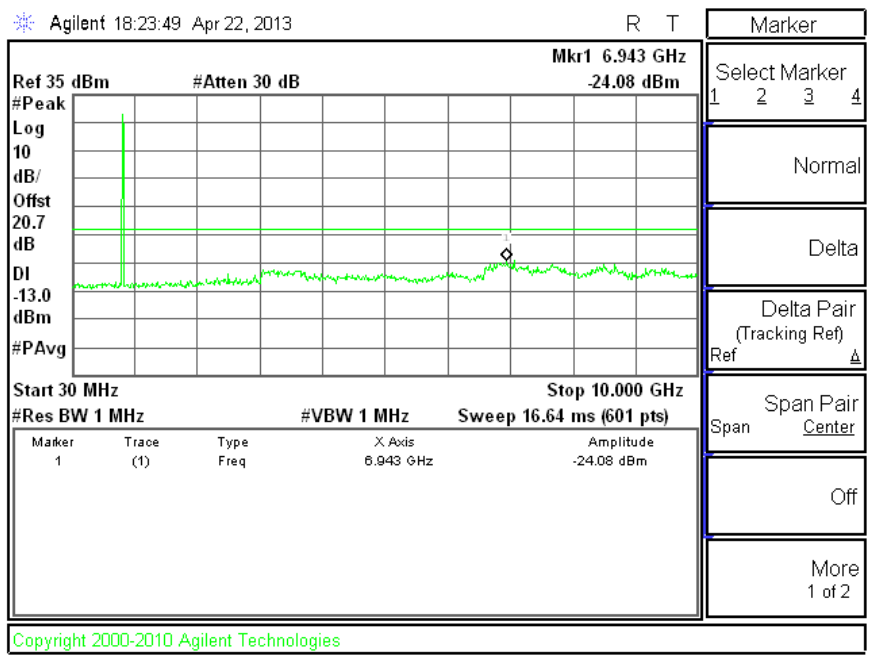


LTE 16QAM

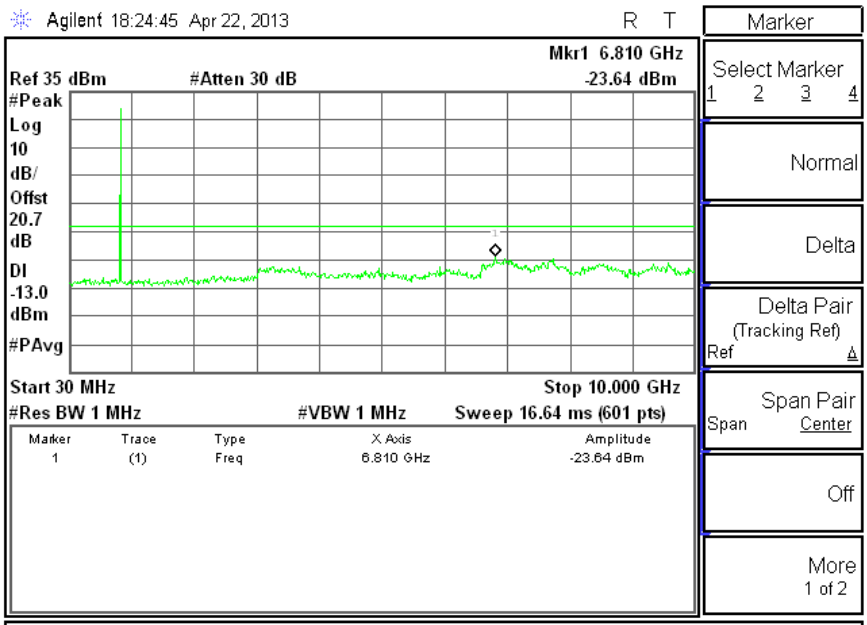
LOW, RB1-0, 30 TO 10000 MHz



MID RB1-0, 30 TO 10000 MHz



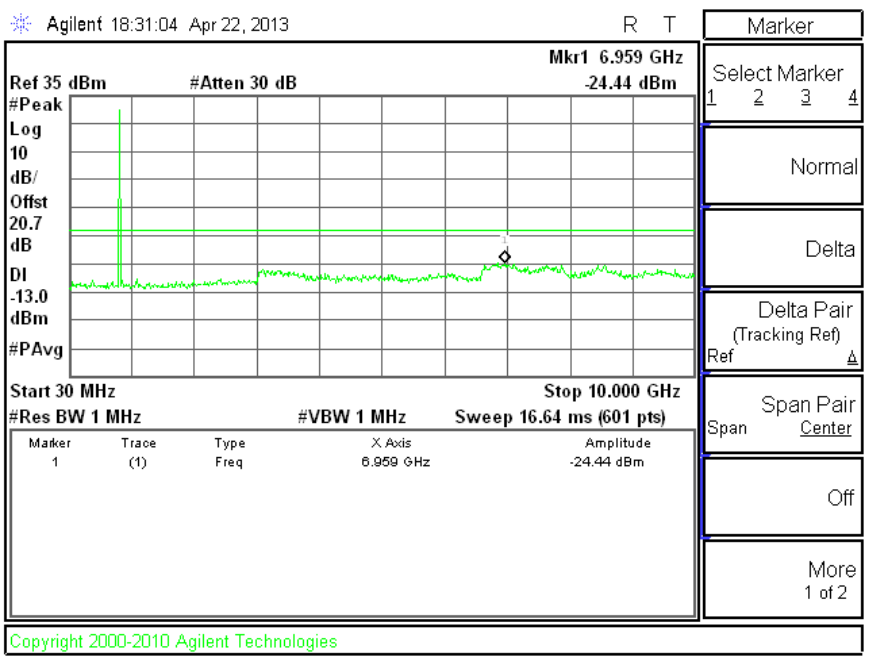
HIGH, RB1-0, 30 TO 10000 MHz



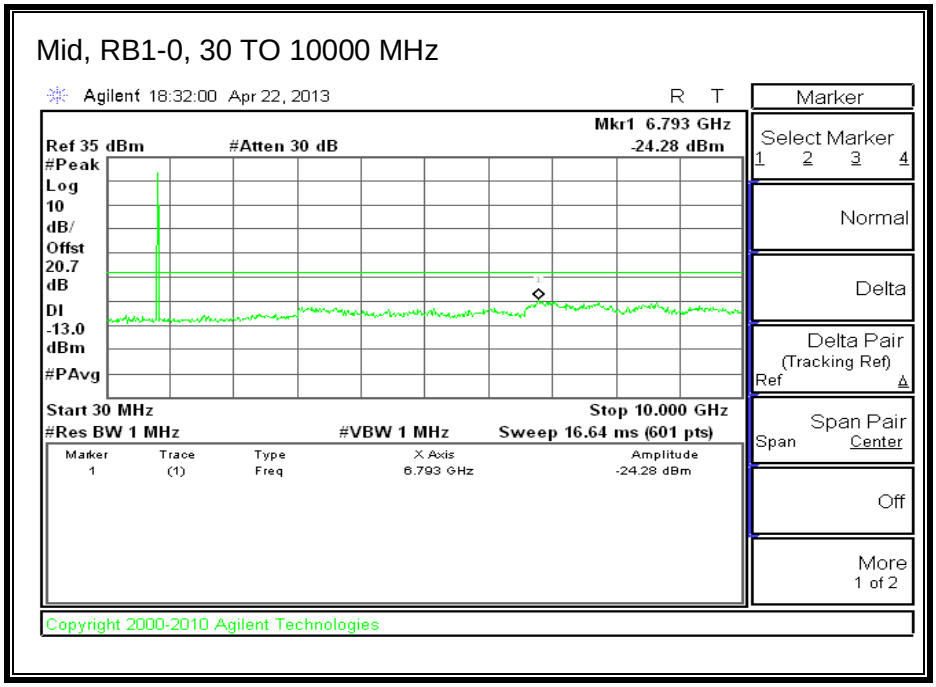
Band 5 (5.0 MHz BAND WIDTH)

LTE QPSK

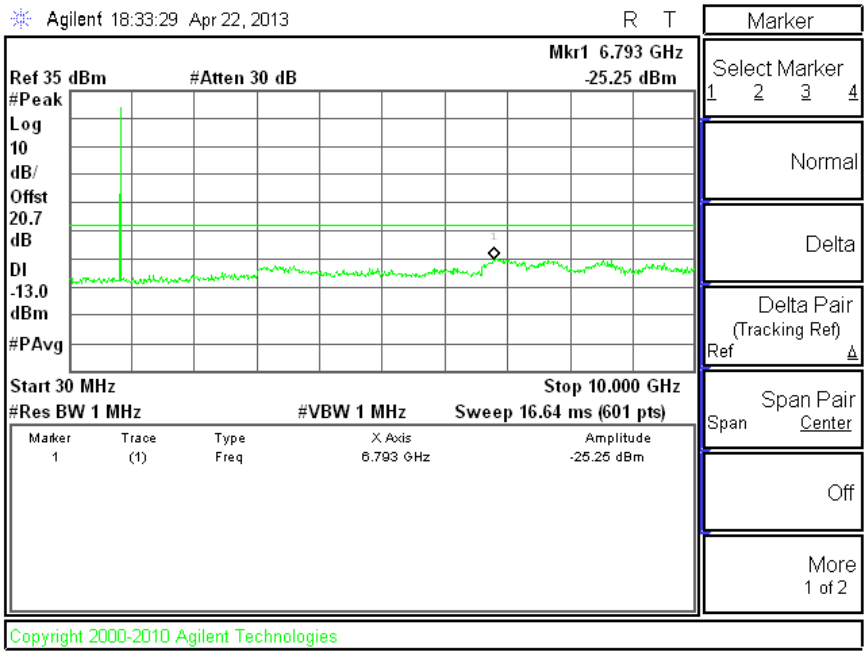
LOW, RB1-0, 30 TO 10000 MHz



Mid, RB1-0, 30 TO 10000 MHz

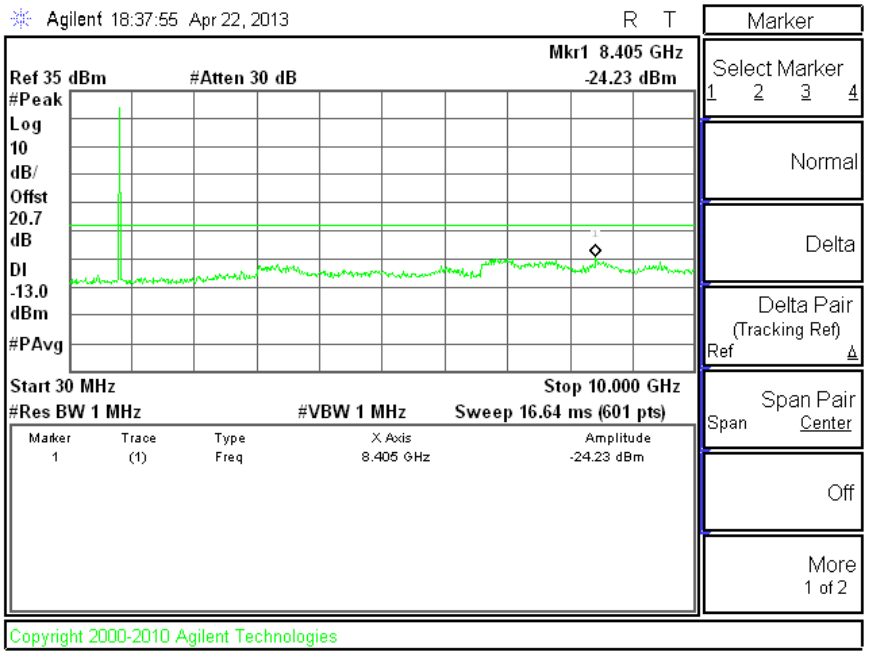


High, RB1-0, 30 TO 10000 MHz

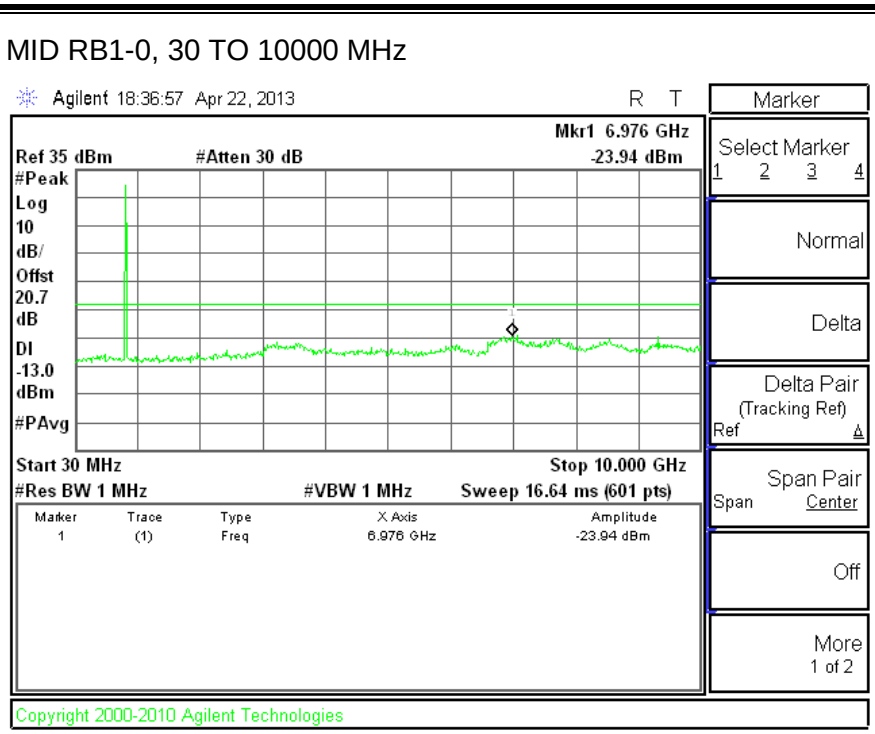


LTE 16QAM

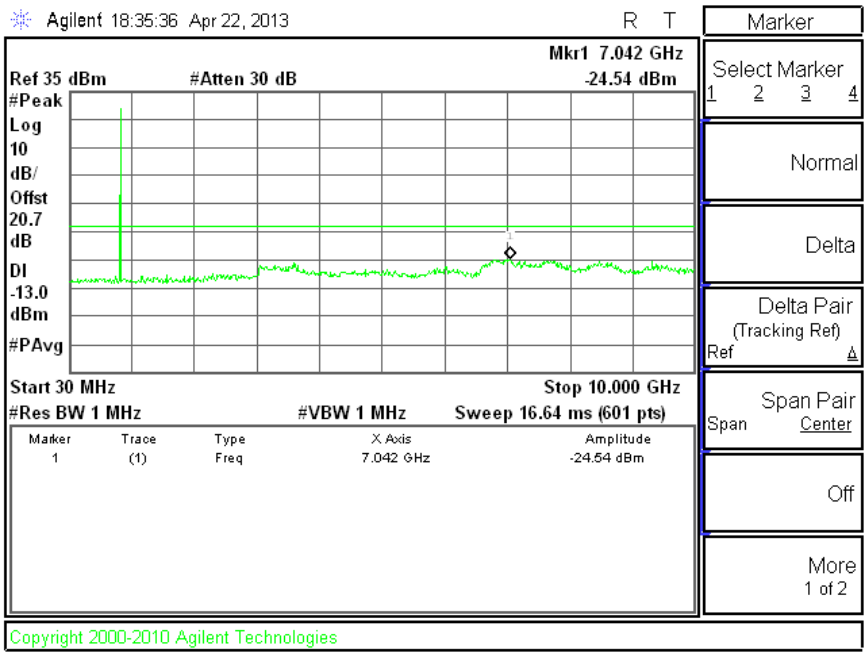
LOW, RB1-0, 30 TO 10000 MHz



MID RB1-0, 30 TO 10000 MHz



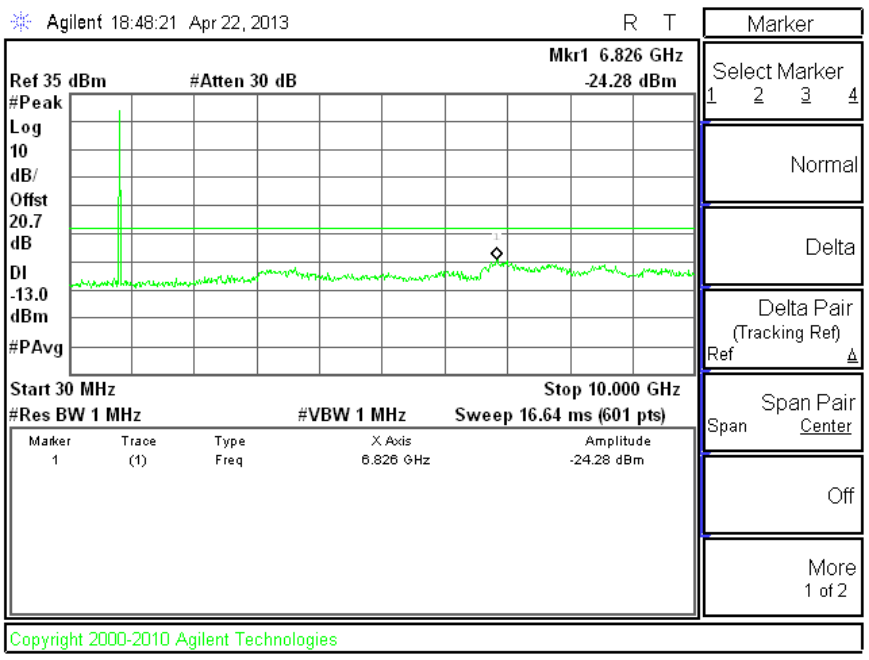
HIGH, RB1-0, 30 TO 10000 MHz



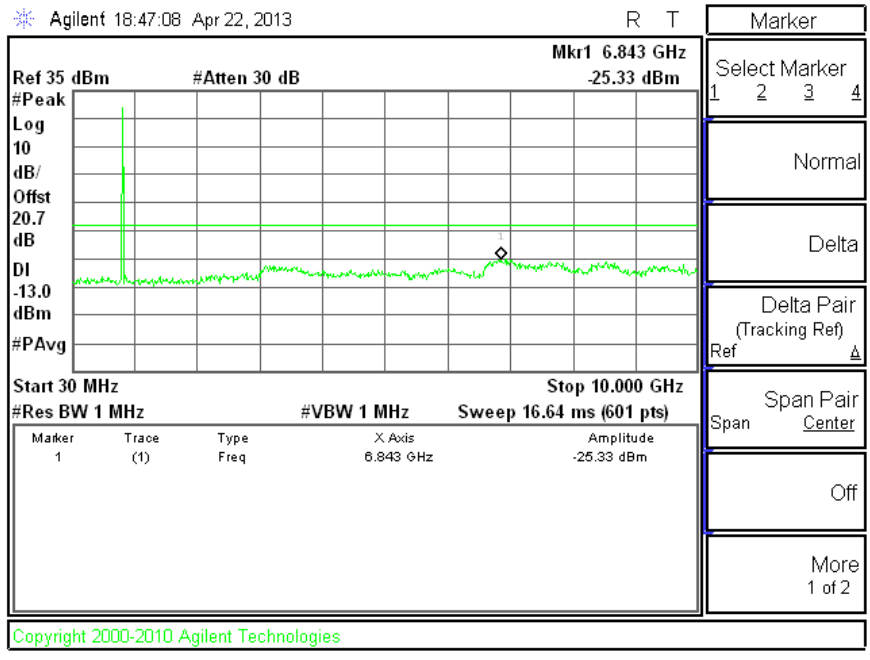
Band 5 (10.0 MHz BAND WIDTH)

LTE QPSK

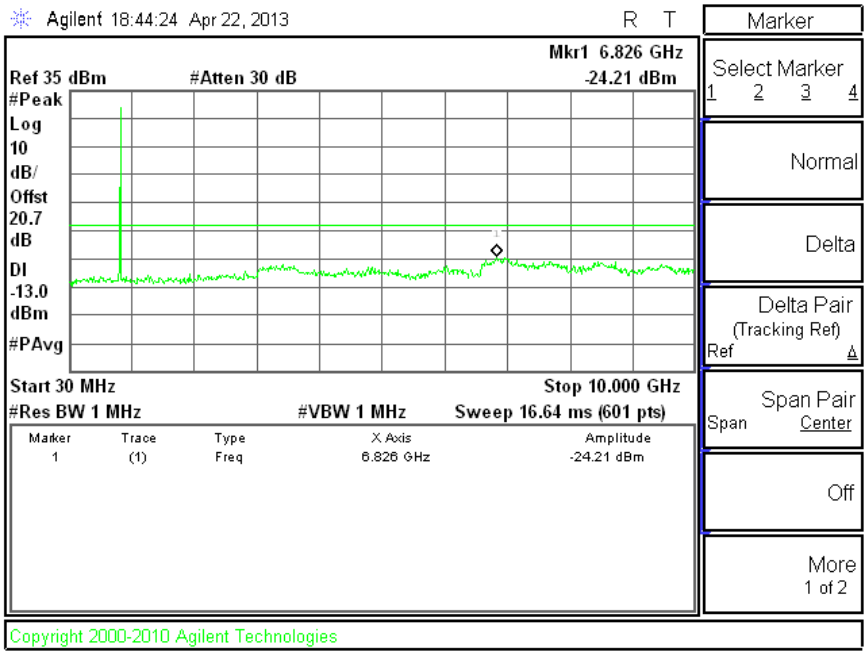
LOW, RB1-0, 30 TO 10000 MHz



Mid, RB1-0, 30 TO 10000 MHz

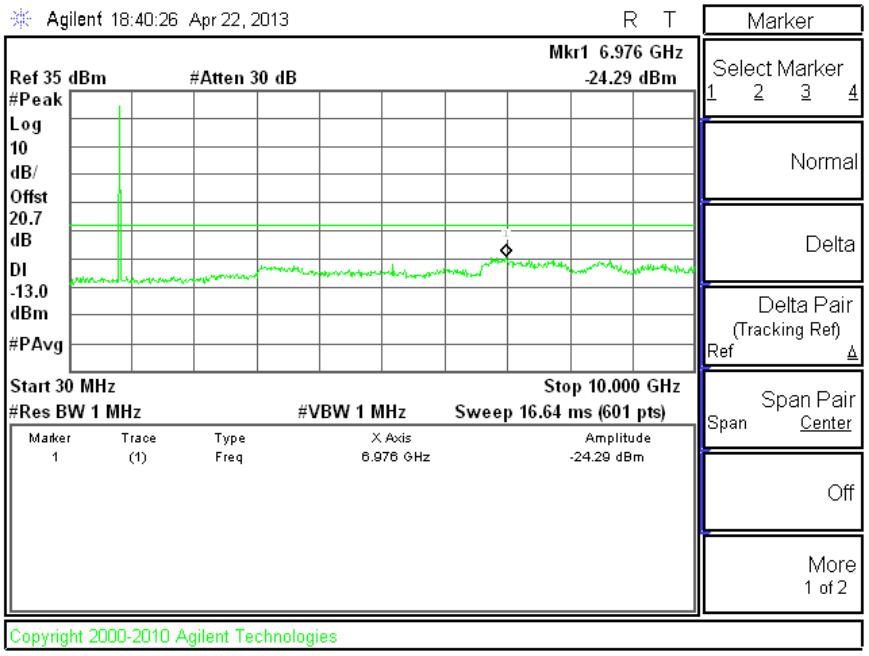


High, RB1-0, 30 TO 10000 MHz

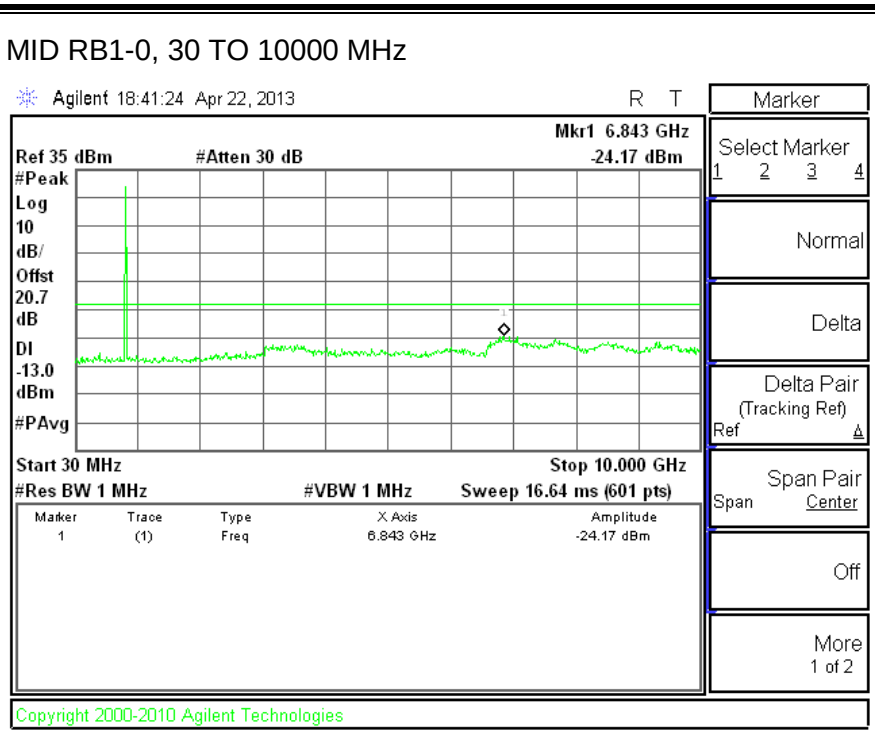


LTE 16QAM

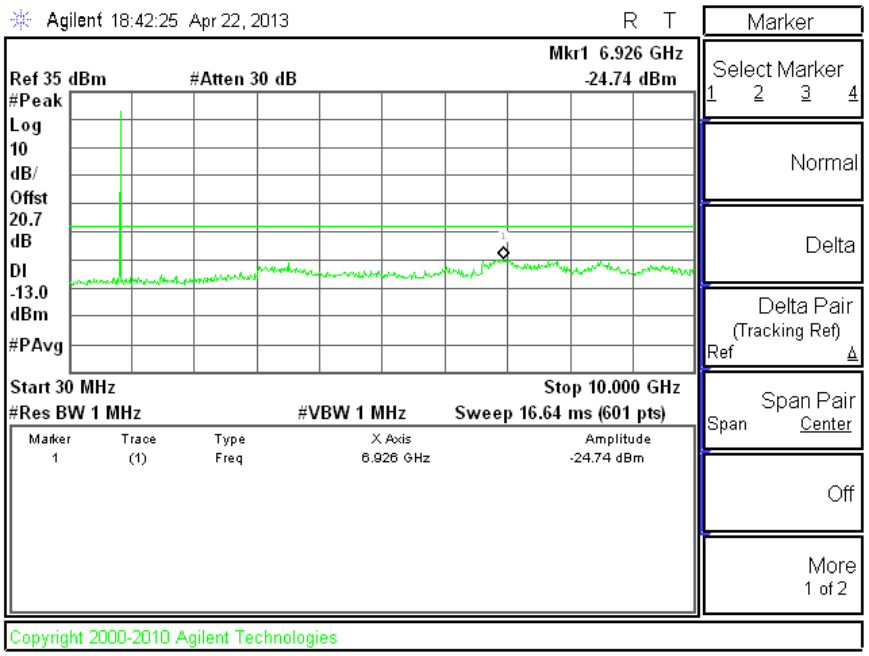
LOW, RB1-0, 30 TO 10000 MHz



MID RB1-0, 30 TO 10000 MHz

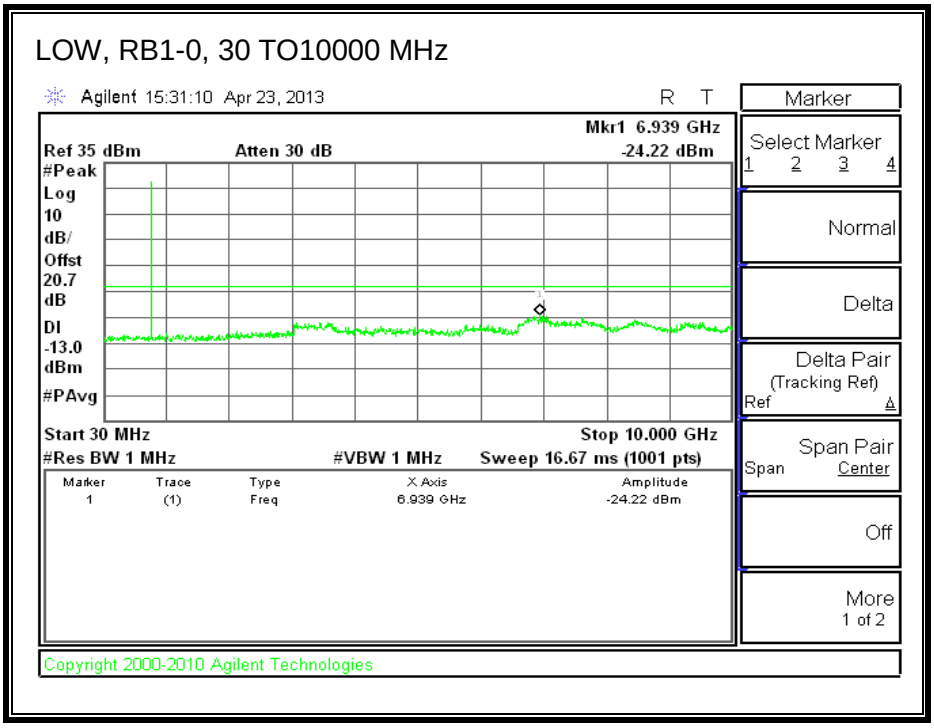


HIGH, RB1-0, 30 TO 10000 MHz

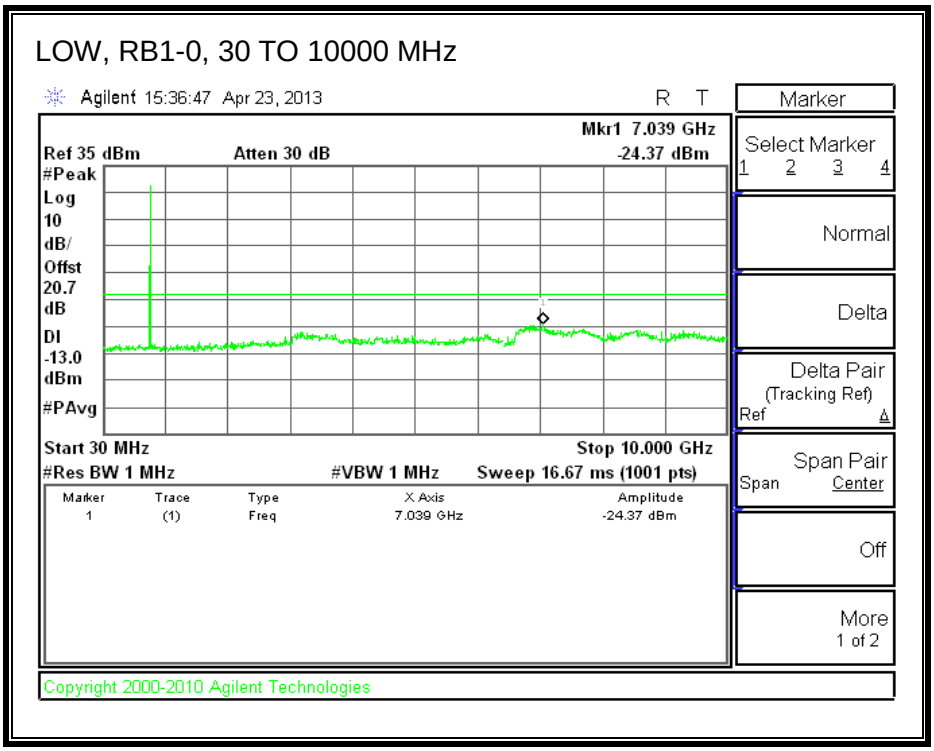


8.3.4. LTE BAND 13

779.5MHz LTE QPSK (5.0 MHz BAND WIDTH)

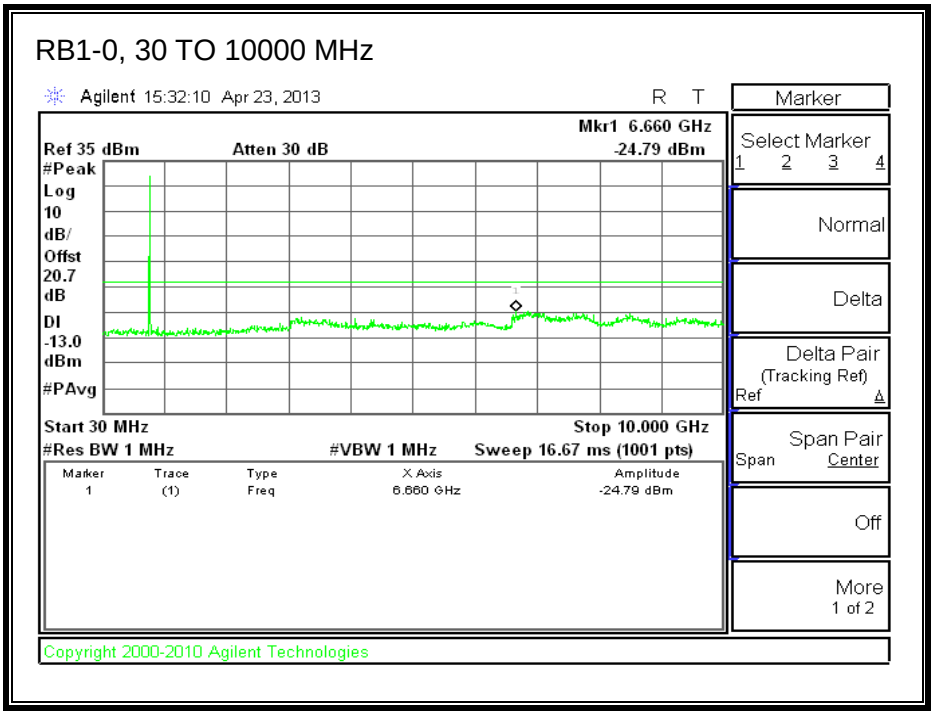


LTE 16QAM

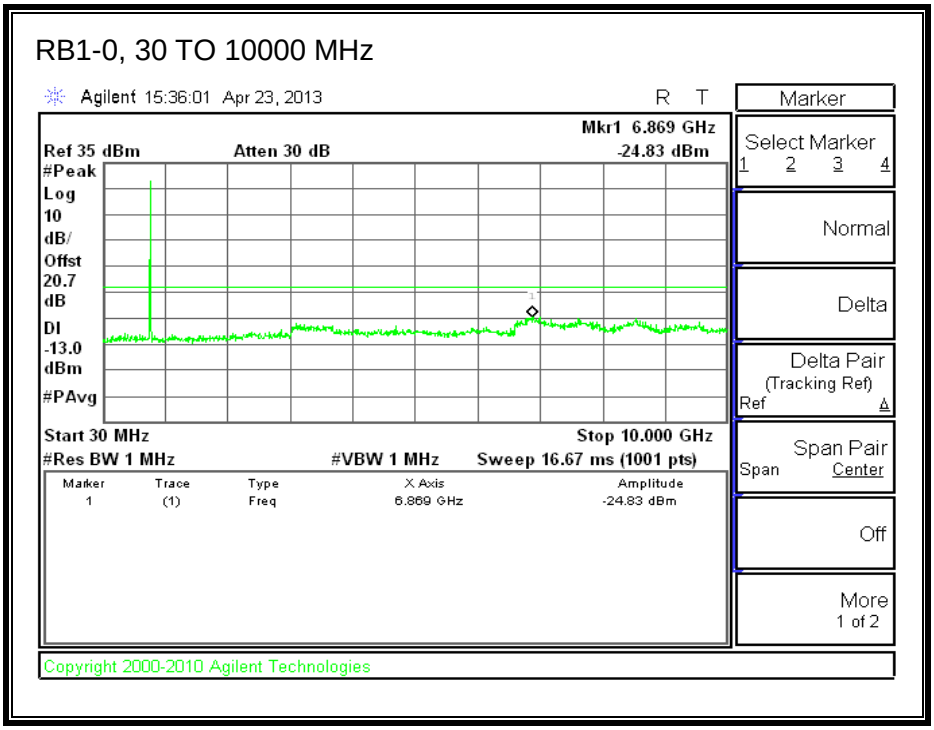


782MHz (5.0 MHz BAND WIDTH)

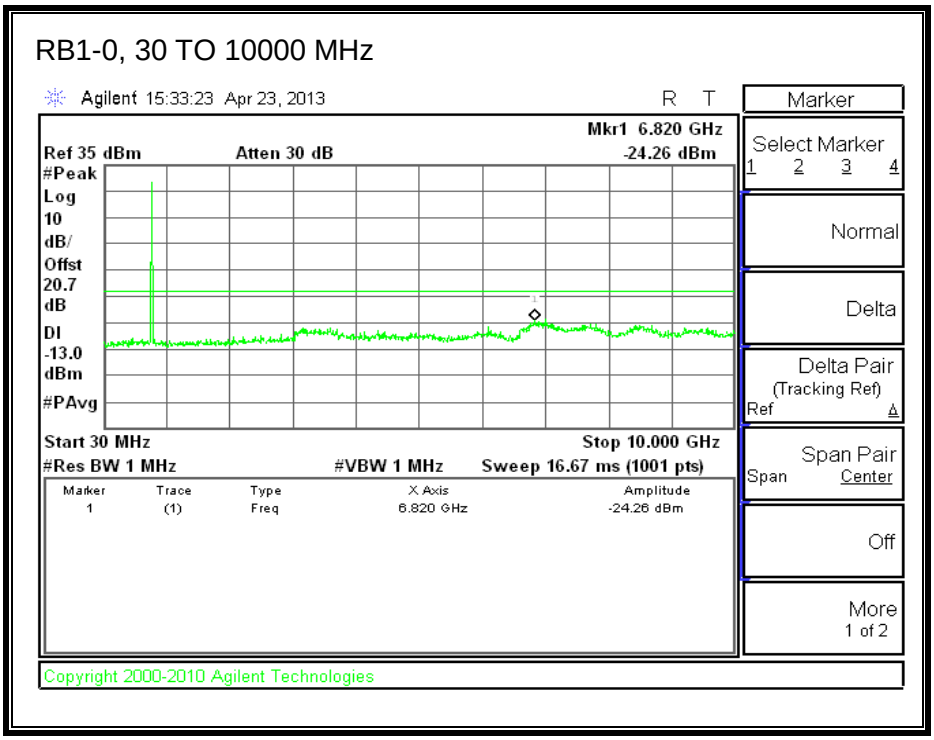
LTE QPSK



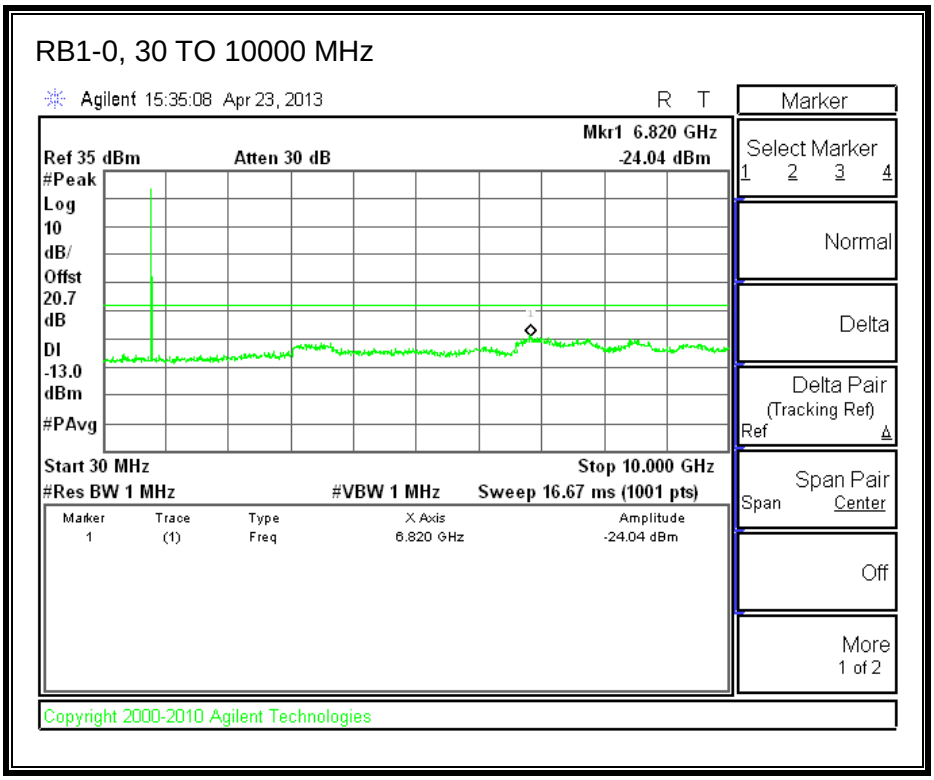
LTE 16QAM



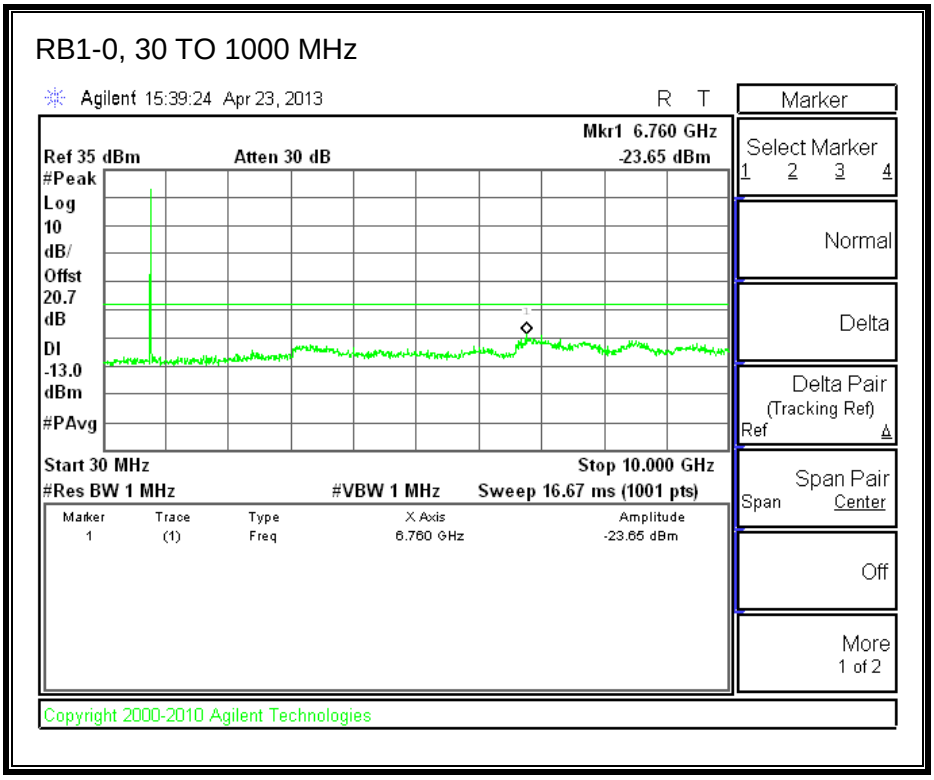
LTE QPSK Band 13, 784.5MHz (5MHz Bandwidth)



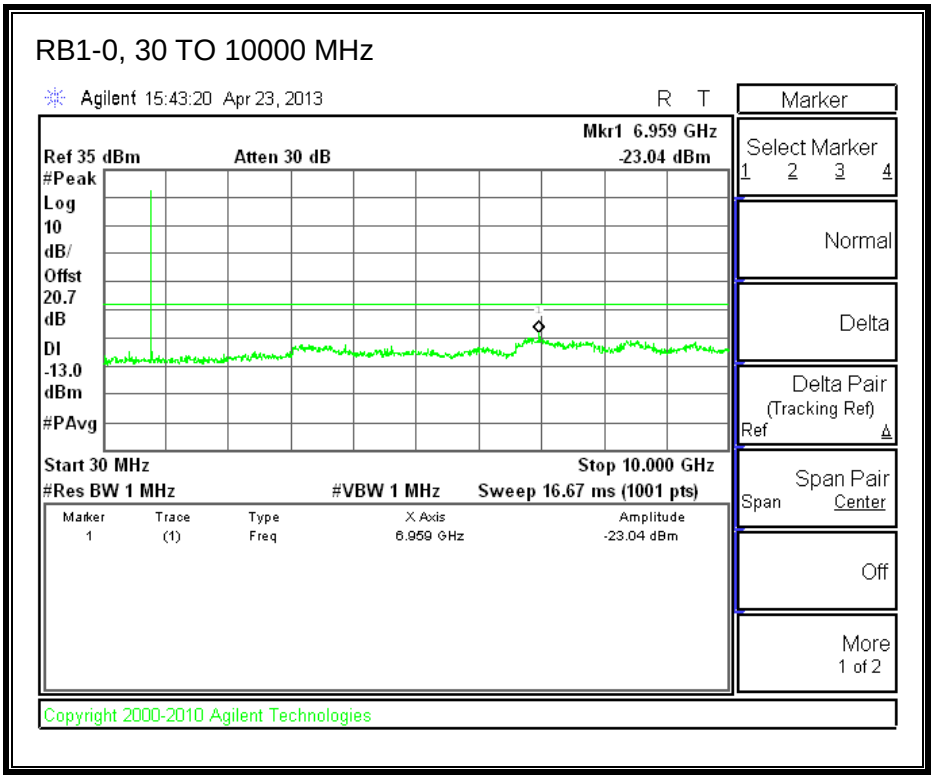
LTE 16QAM Band 13, 784.5MHz (5MHz Bandwidth)



LTE QPSK Band 13, 782MHz(10MHz Bandwidth)



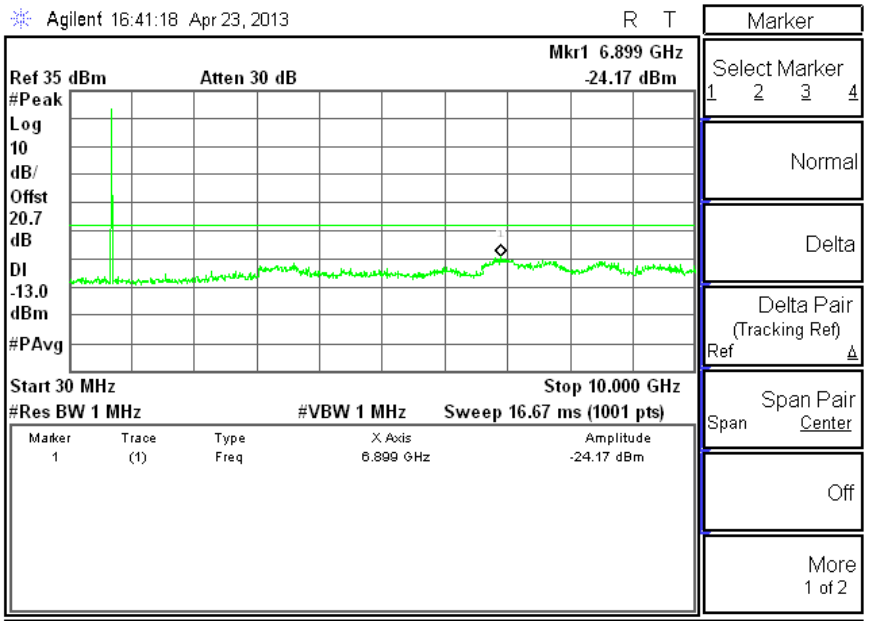
LTE 16QAM Band 13, 782MHz (10MHz Bandwidth)



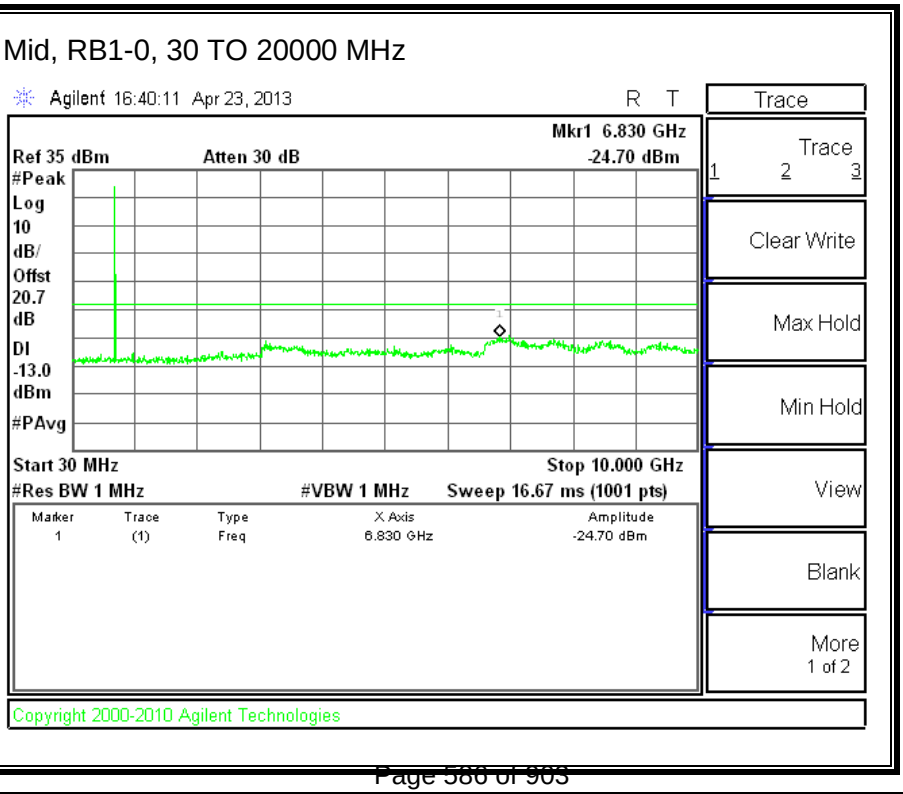
8.3.5. LTE BAND 17

LTE QPSK (5.0 MHz BAND WIDTH)

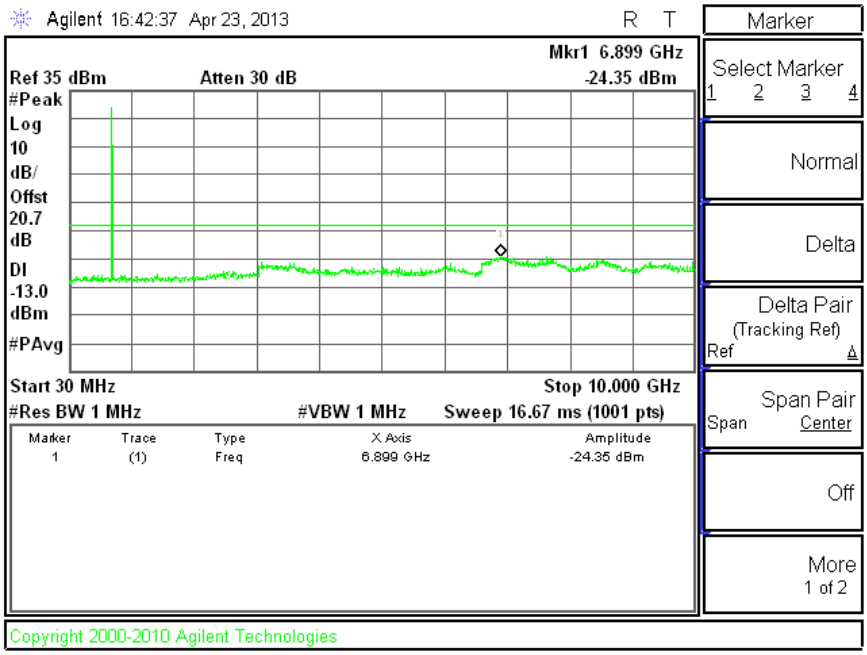
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

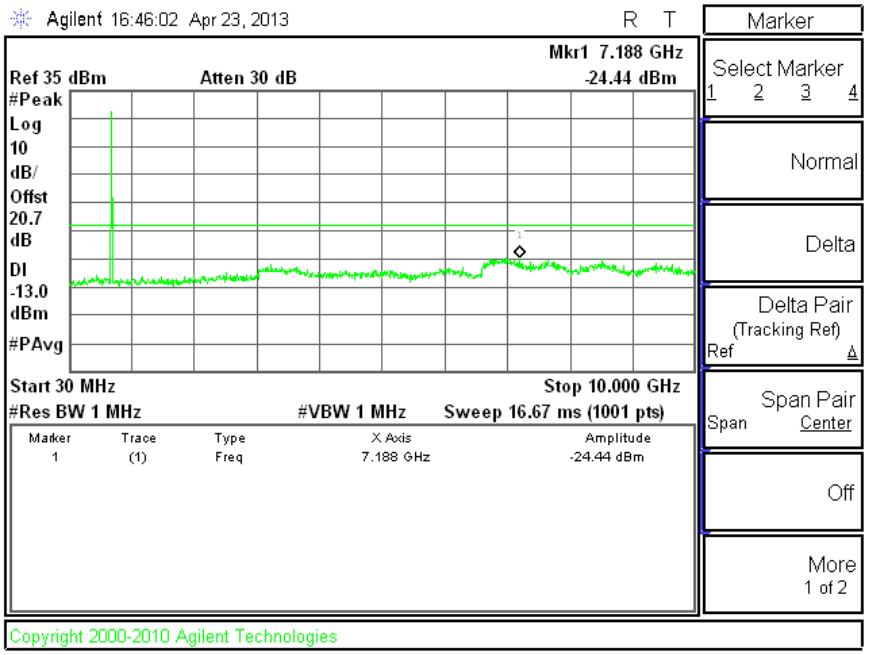


High, RB1-0, 30 TO 20000 MHz

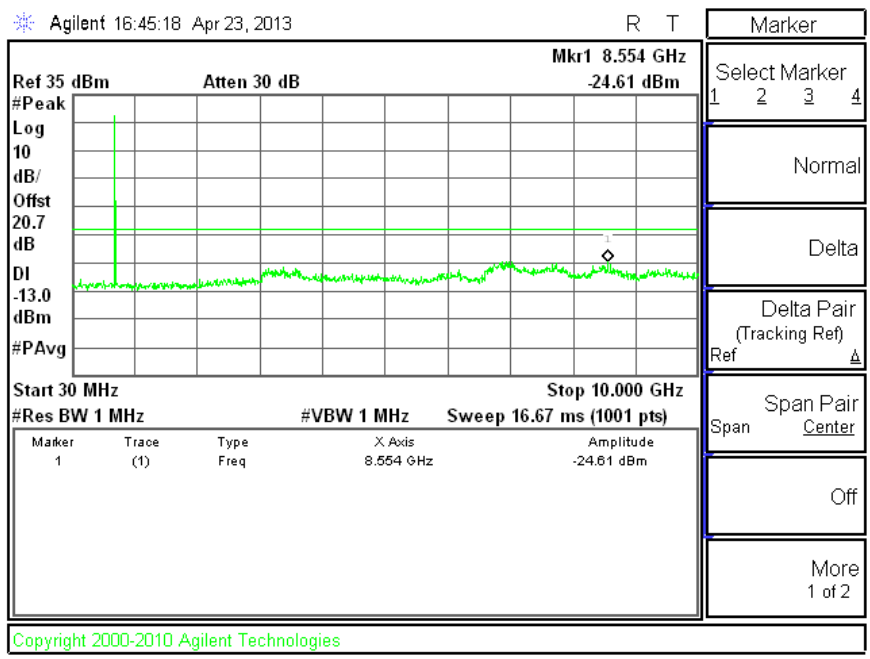


LTE 16QAM

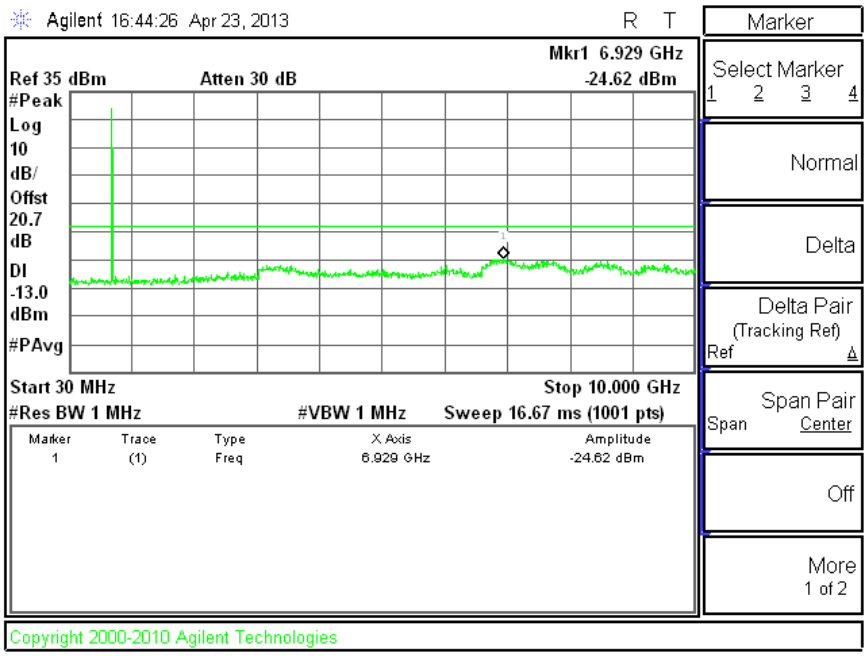
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



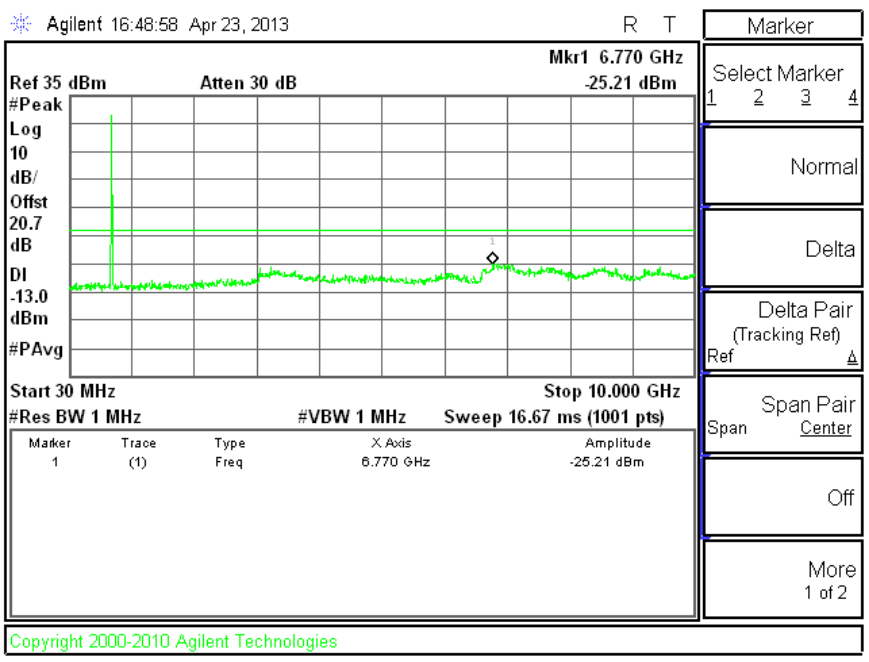
HIGH, RB1-0, 30 TO 20000 MHz



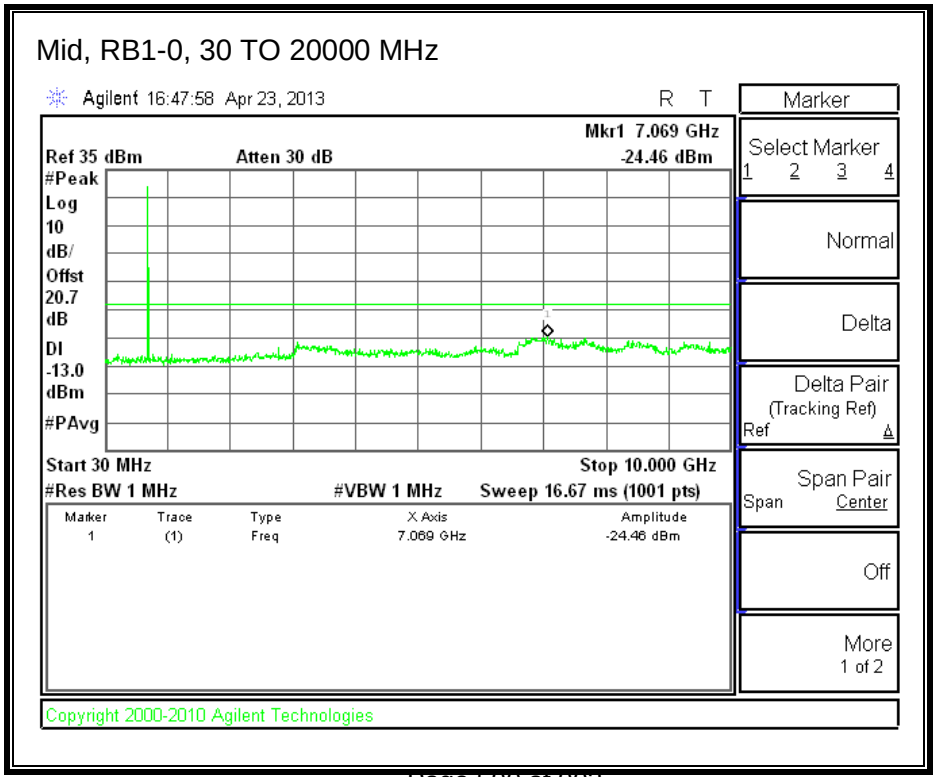
Band 17 (10.0 MHz BAND WIDTH)

LTE QPSK

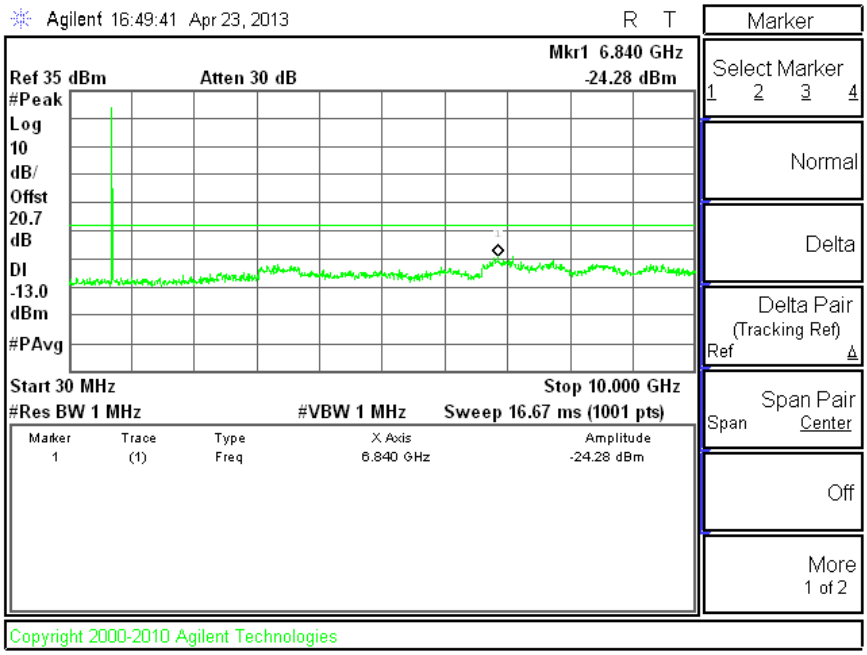
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

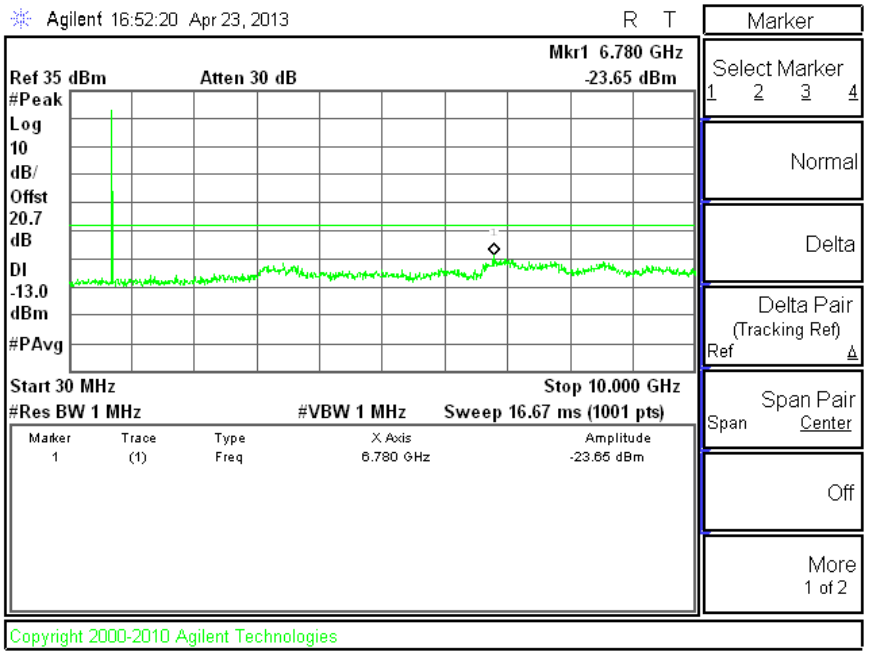


High, RB1-0, 30 TO 20000 MHz

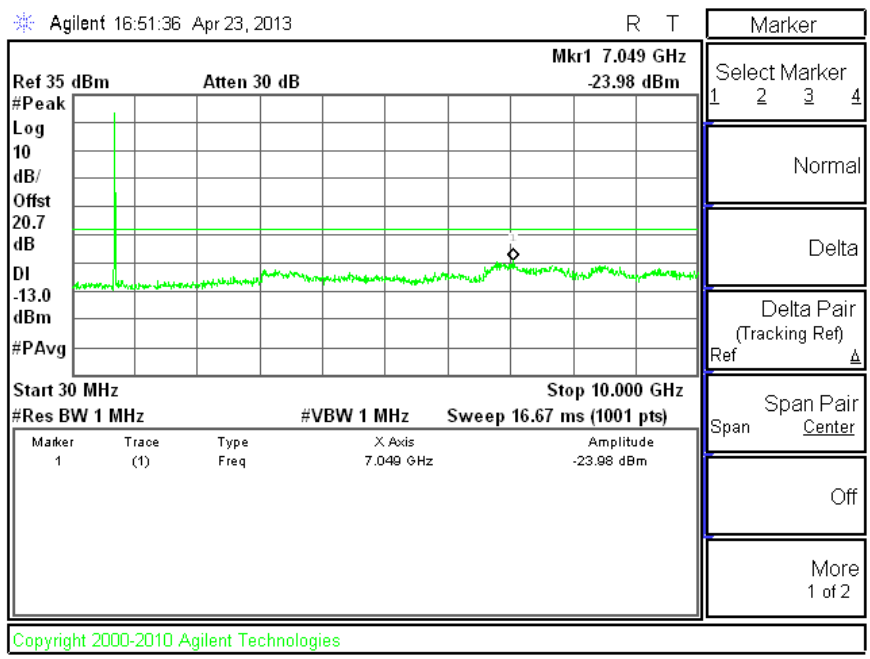


LTE 16QAM

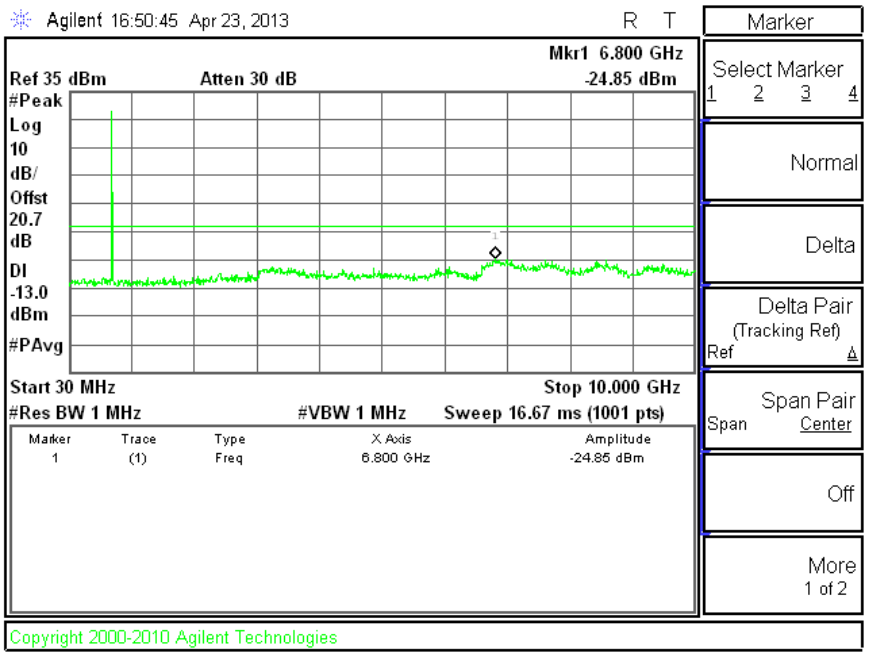
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



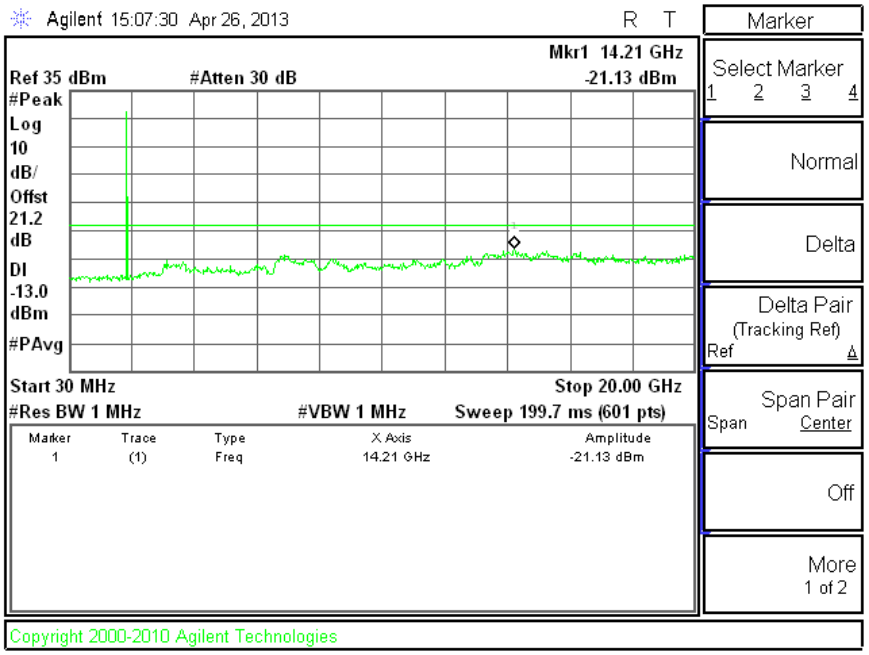
HIGH, RB1-0, 30 TO 20000 MHz



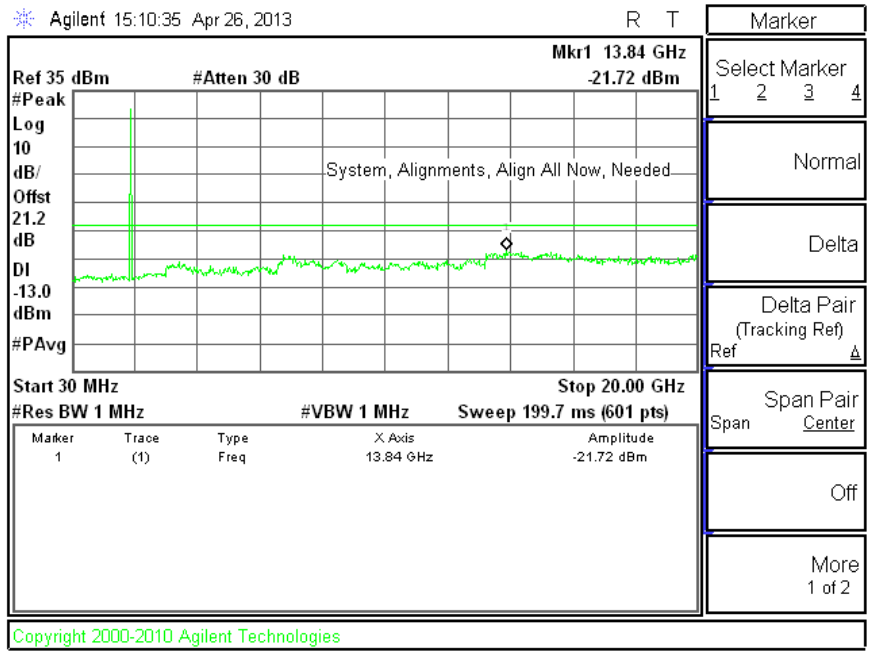
8.3.6. LTE BAND 25

LTE QPSK (1.4 MHz BAND WIDTH)

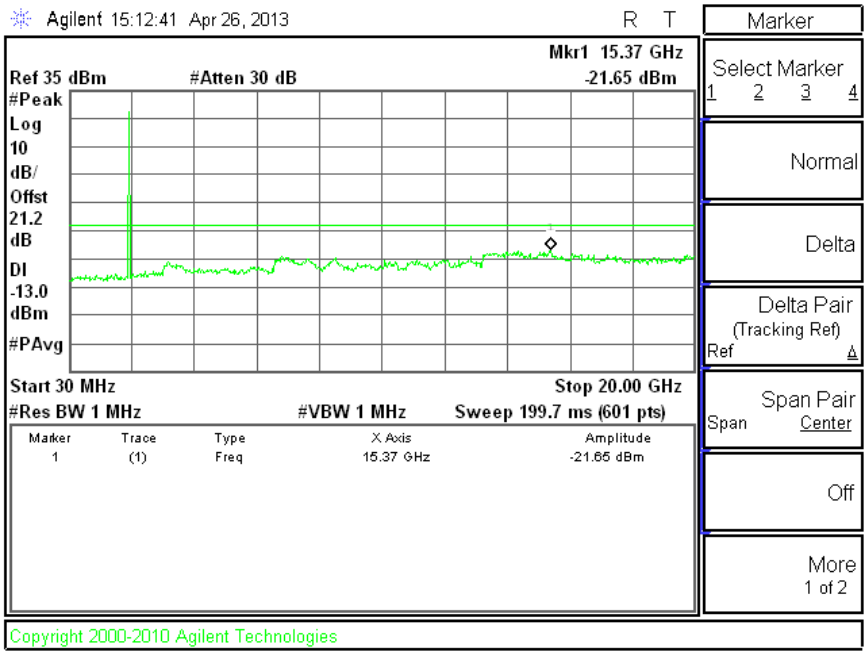
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

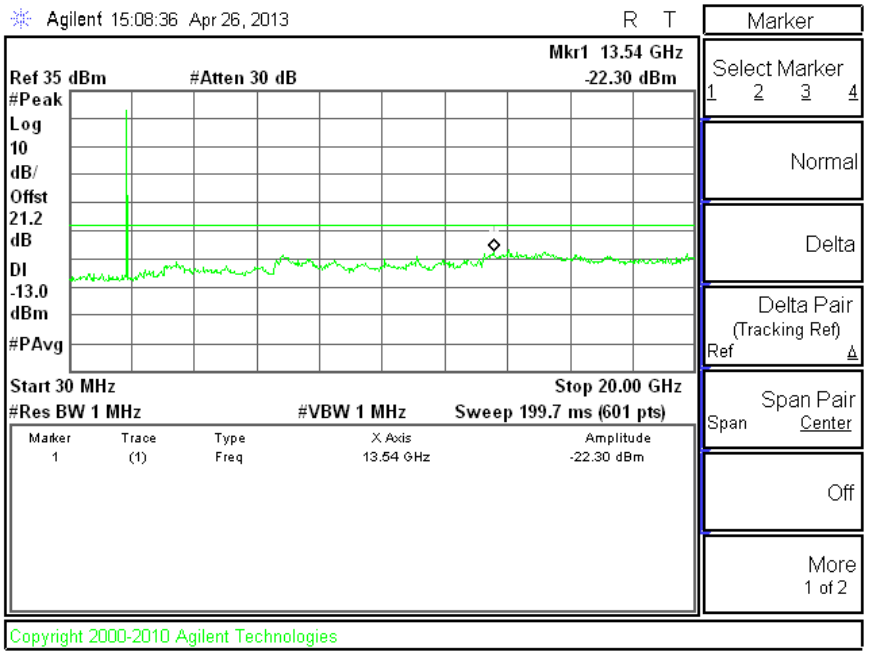


High, RB1-0, 30 TO 20000 MHz

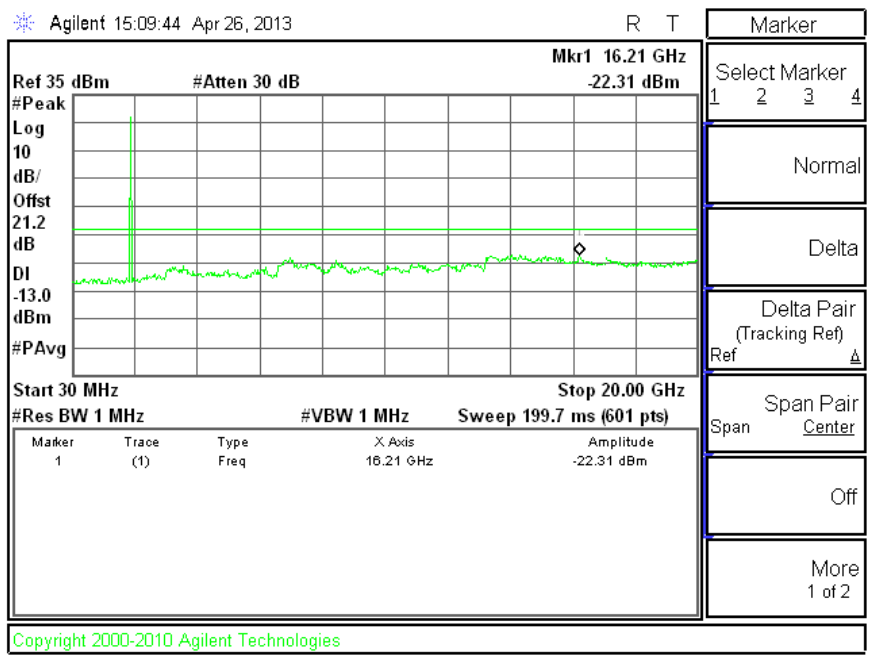


LTE 16QAM

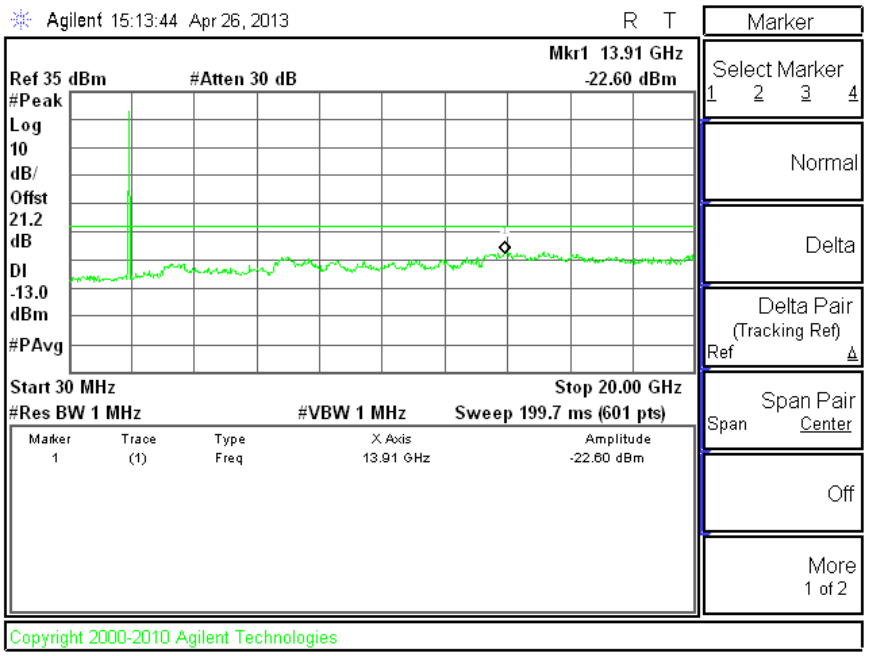
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



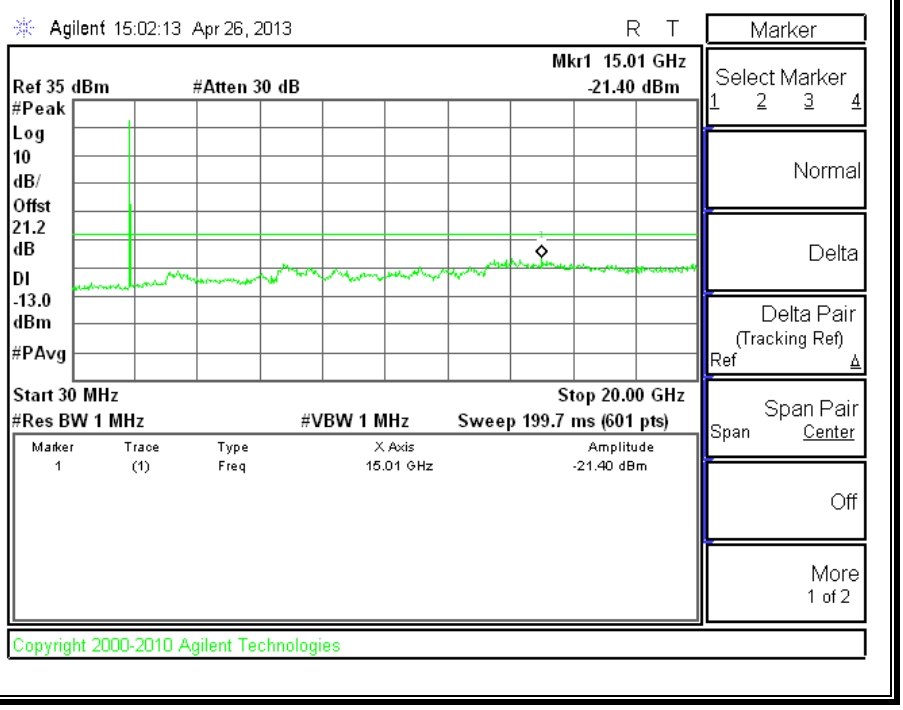
HIGH, RB1-0, 30 TO 20000 MHz



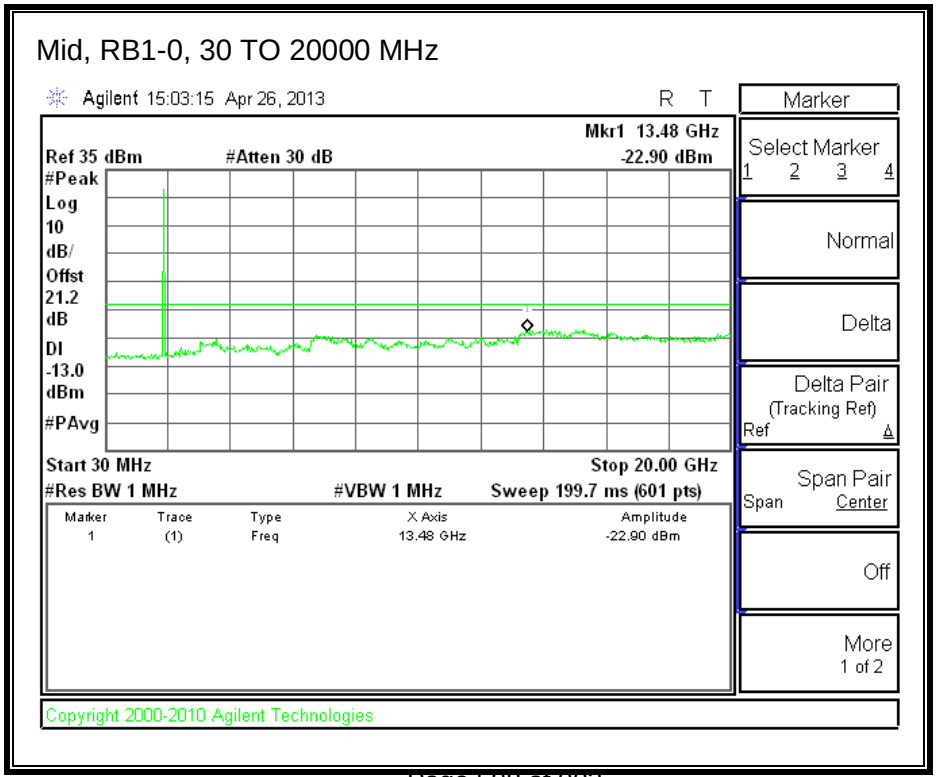
Band 25 (3.0 MHz BAND WIDTH)

LTE QPSK

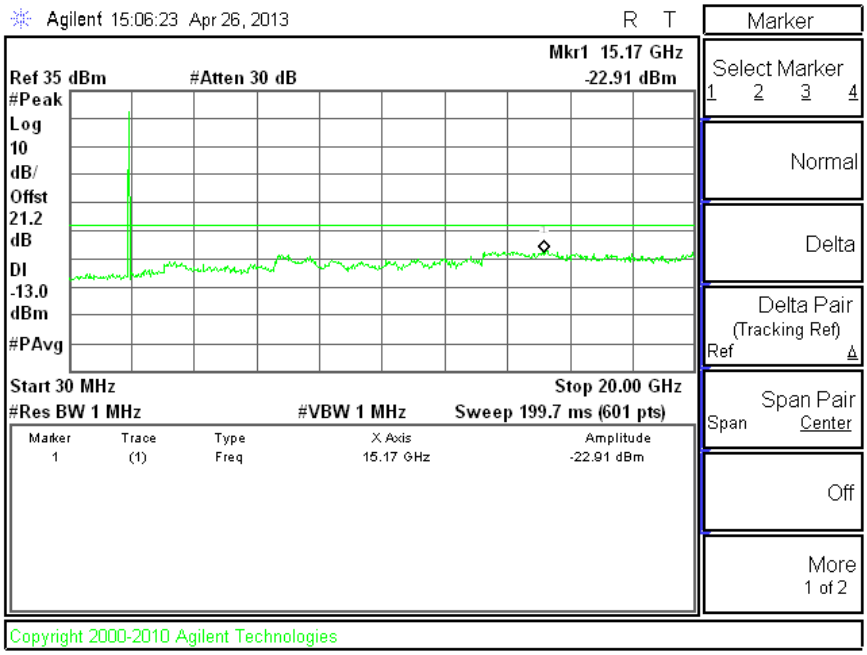
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

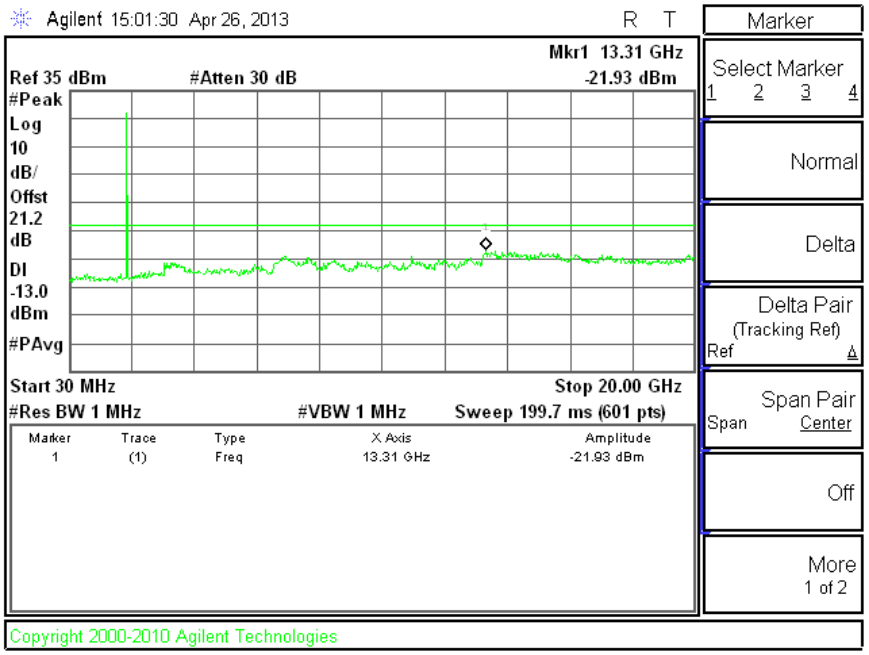


High, RB1-0, 30 TO 20000 MHz

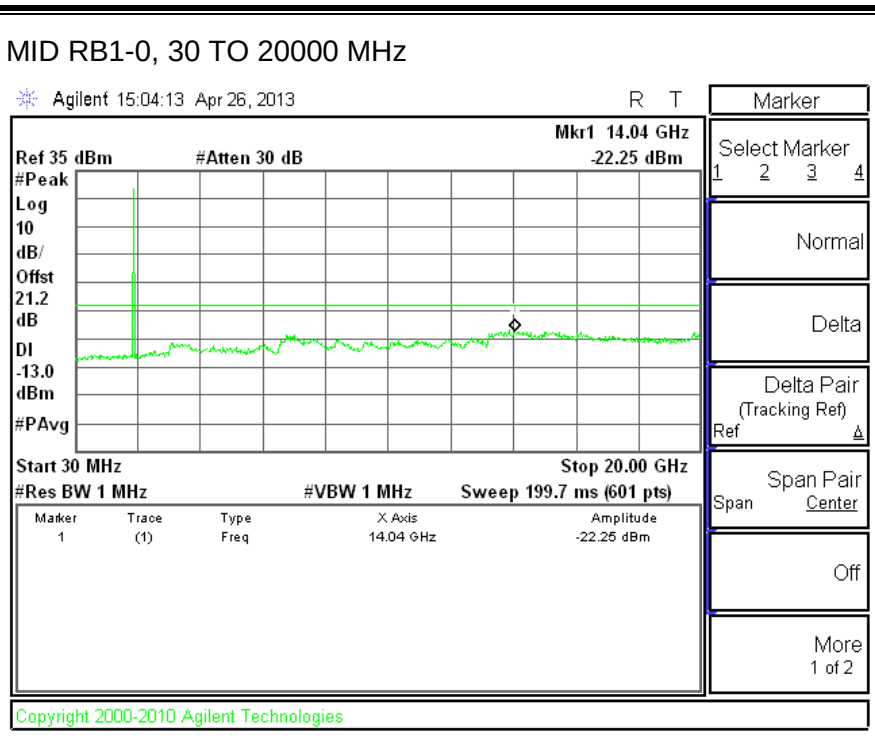


LTE 16QAM

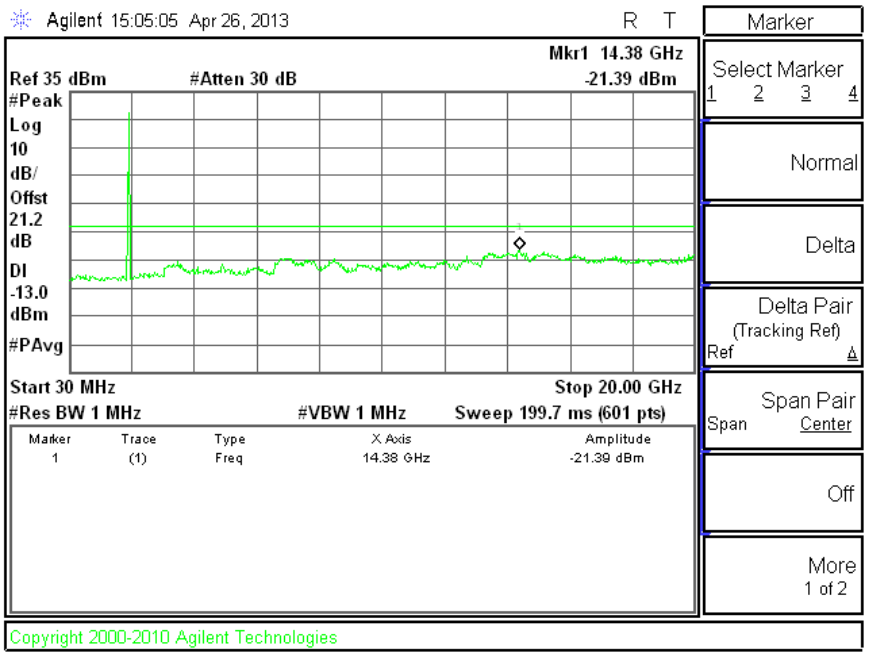
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



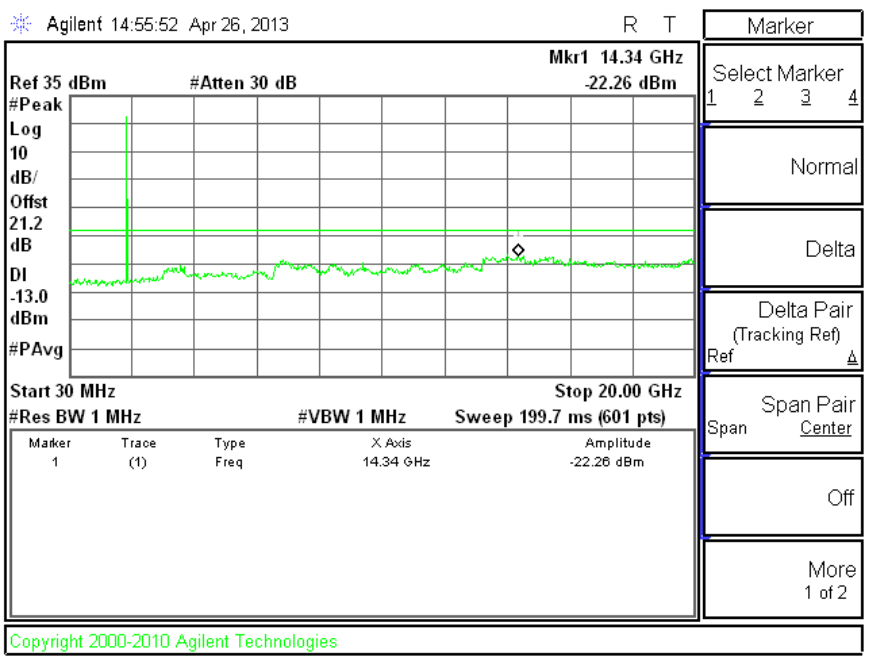
HIGH, RB1-0, 30 TO 20000 MHz



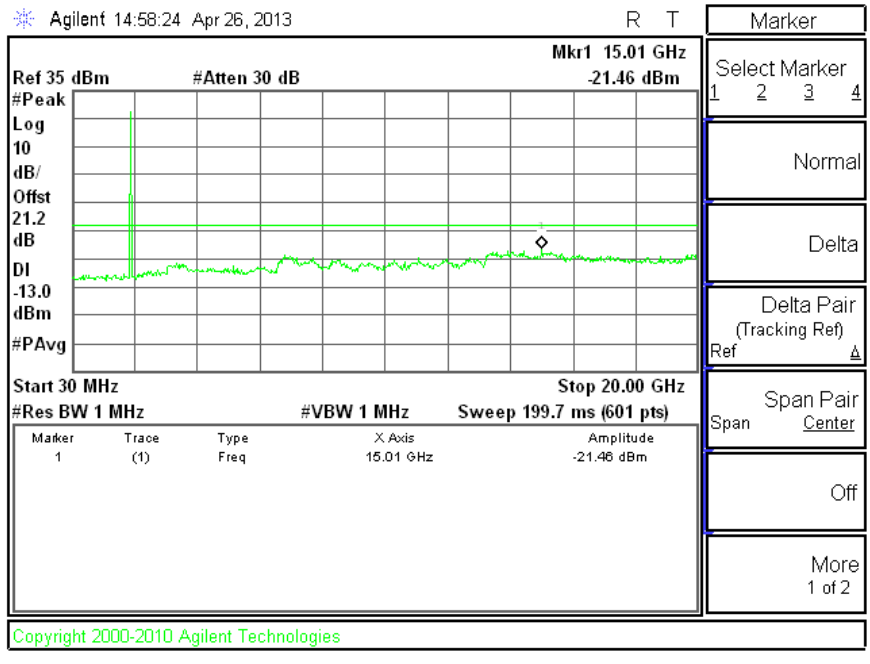
Band 25 (5.0 MHz BAND WIDTH)

LTE QPSK

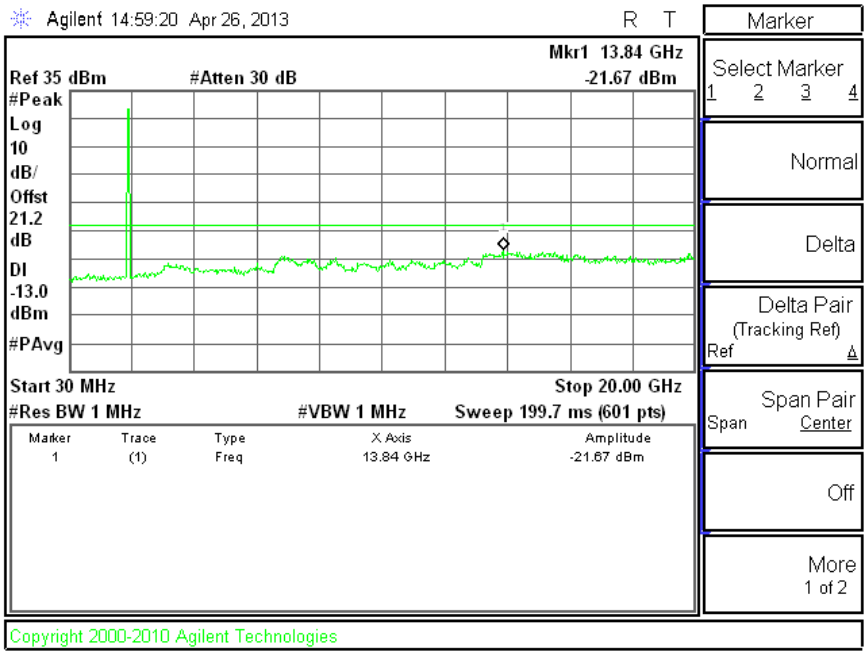
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

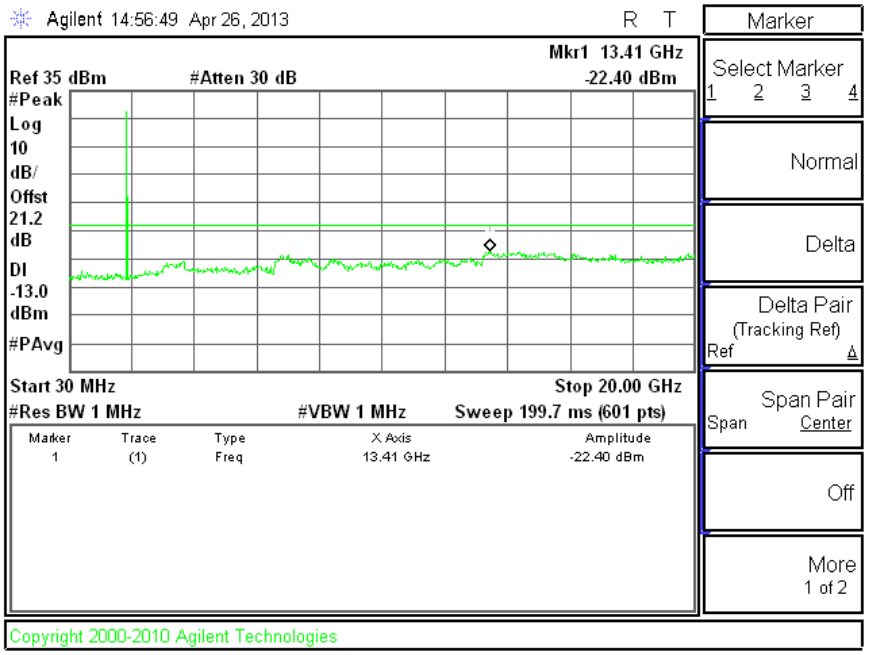


High, RB1-0, 30 TO 20000 MHz

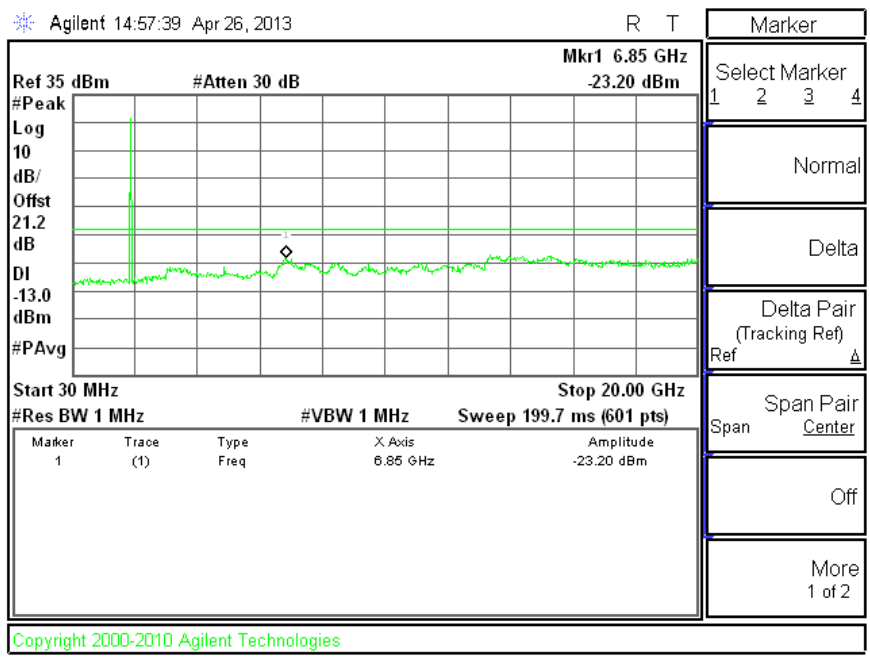


LTE 16QAM

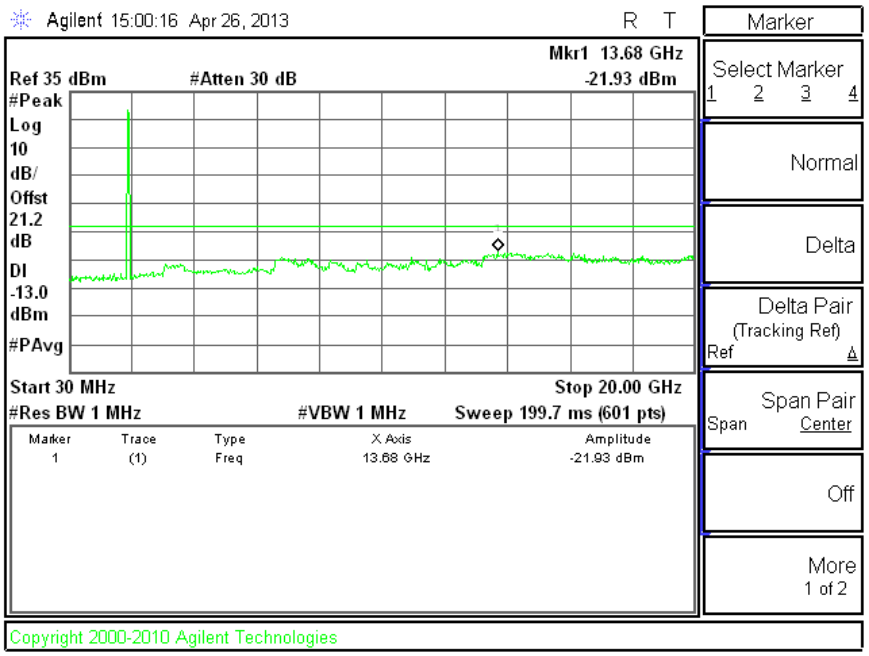
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



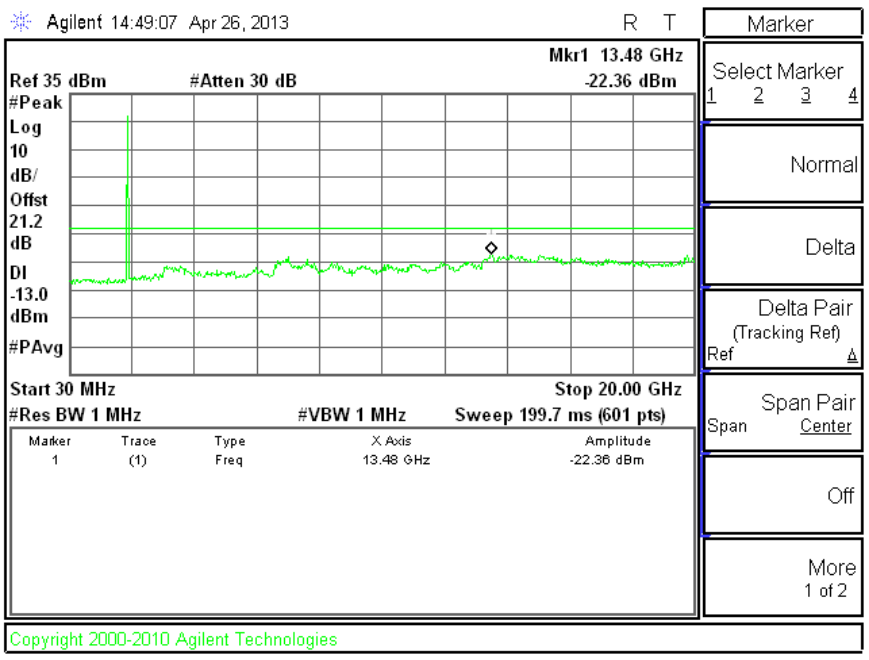
HIGH, RB1-0, 30 TO 20000 MHz



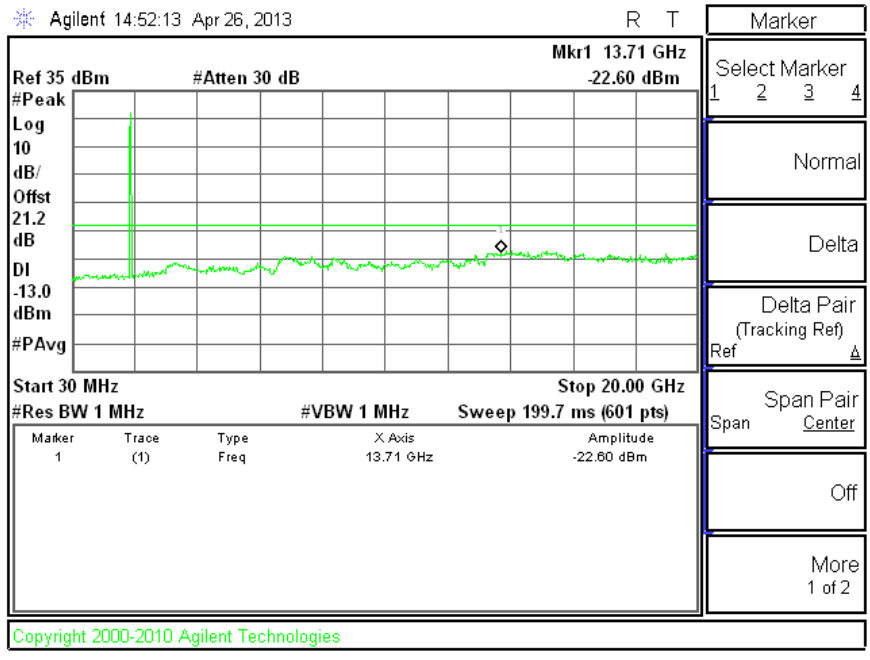
Band 25 (10.0 MHz BAND WIDTH)

LTE QPSK

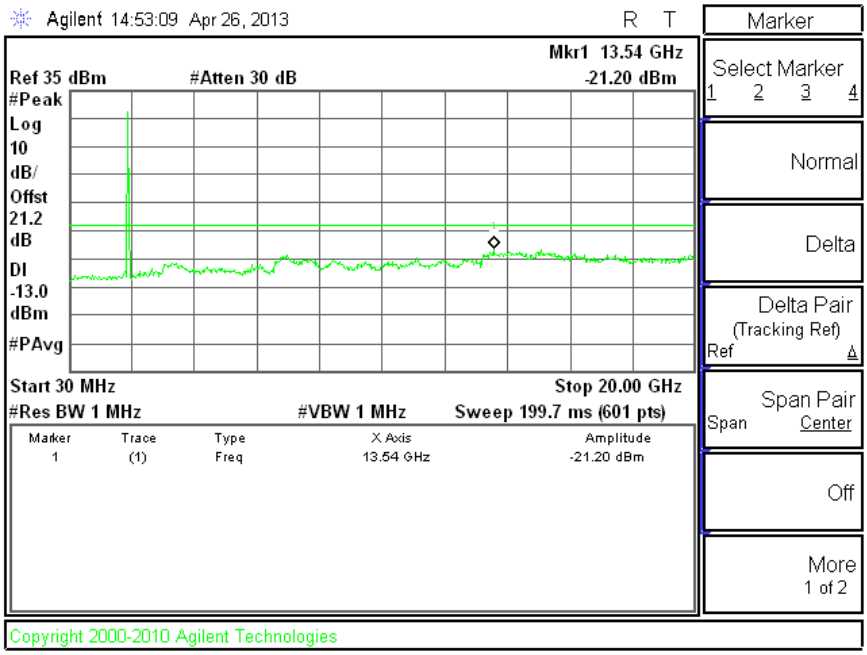
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

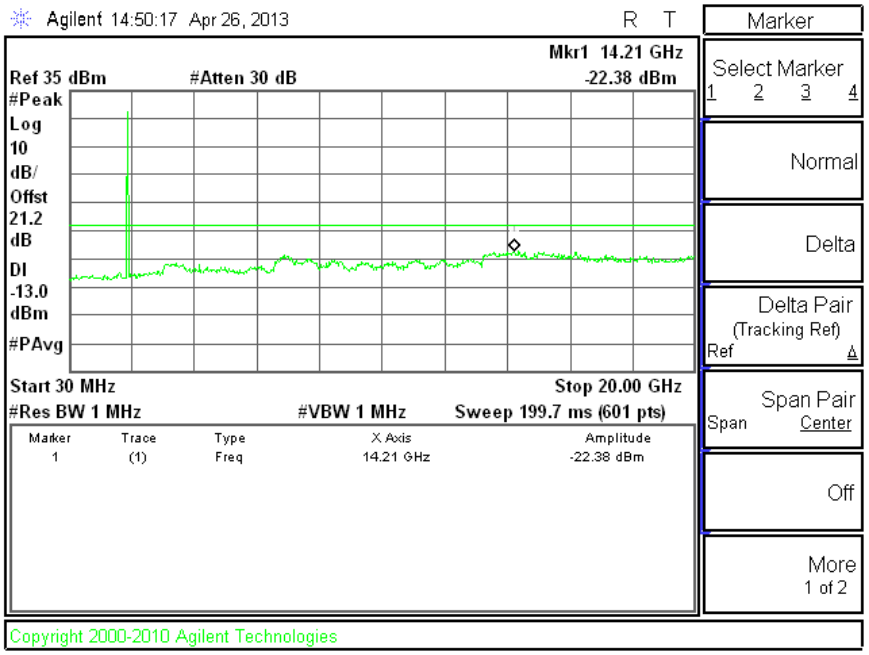


High, RB1-0, 30 TO 20000 MHz

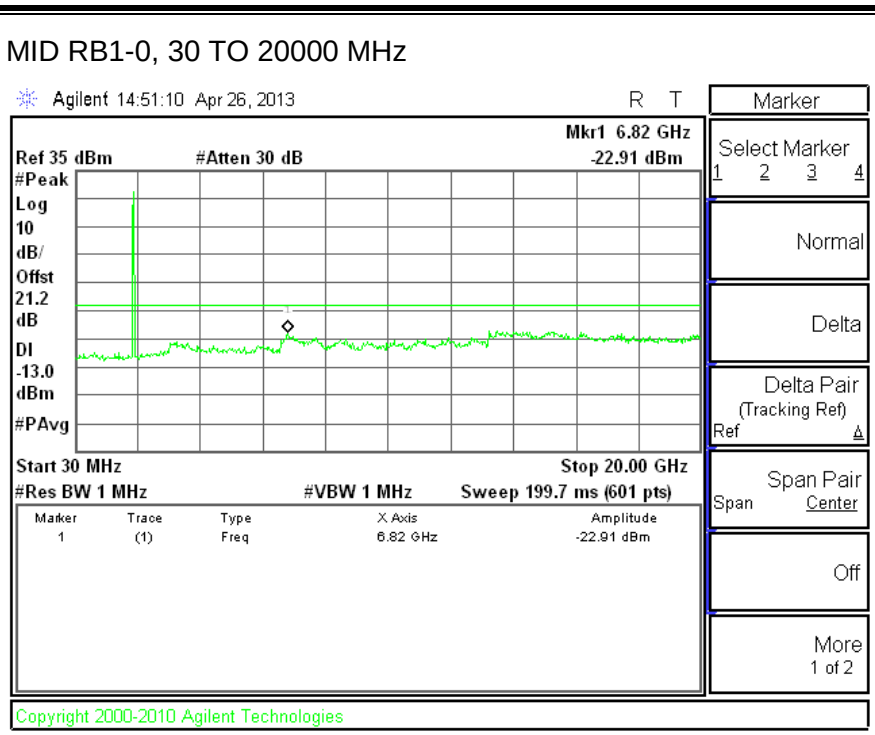


LTE 16QAM

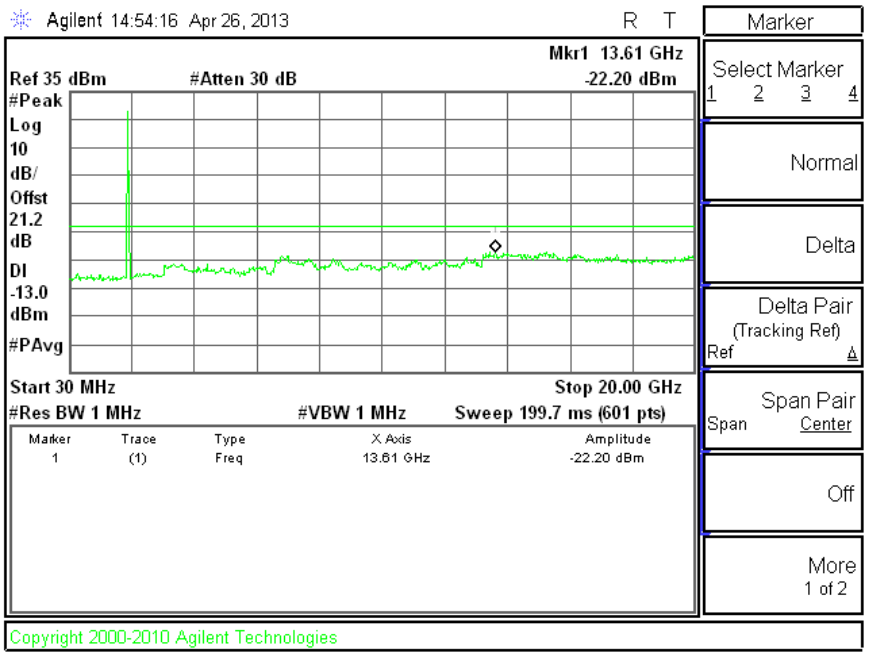
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



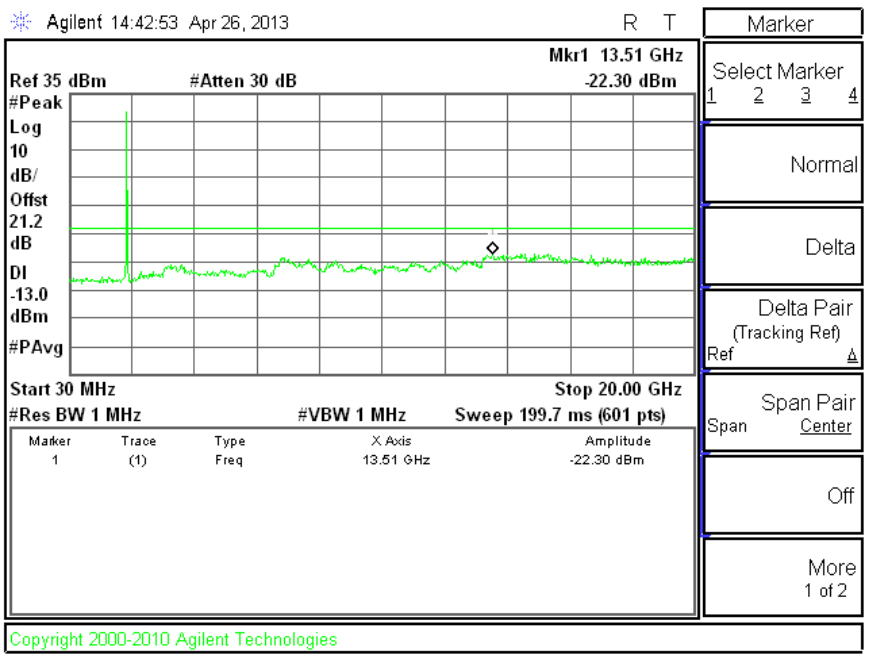
HIGH, RB1-0, 30 TO 20000 MHz



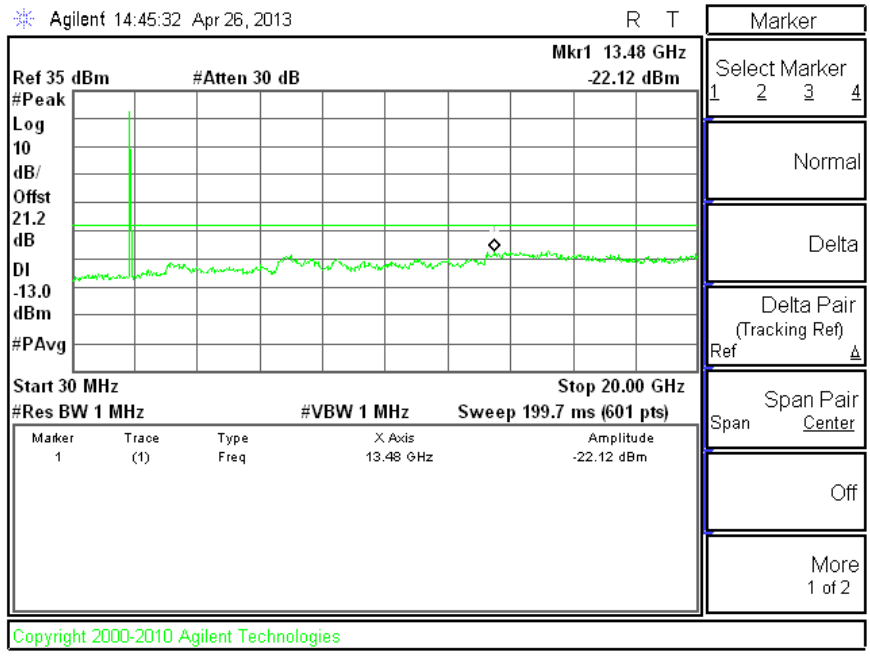
Band 25 (15.0 MHz BAND WIDTH)

LTE QPSK

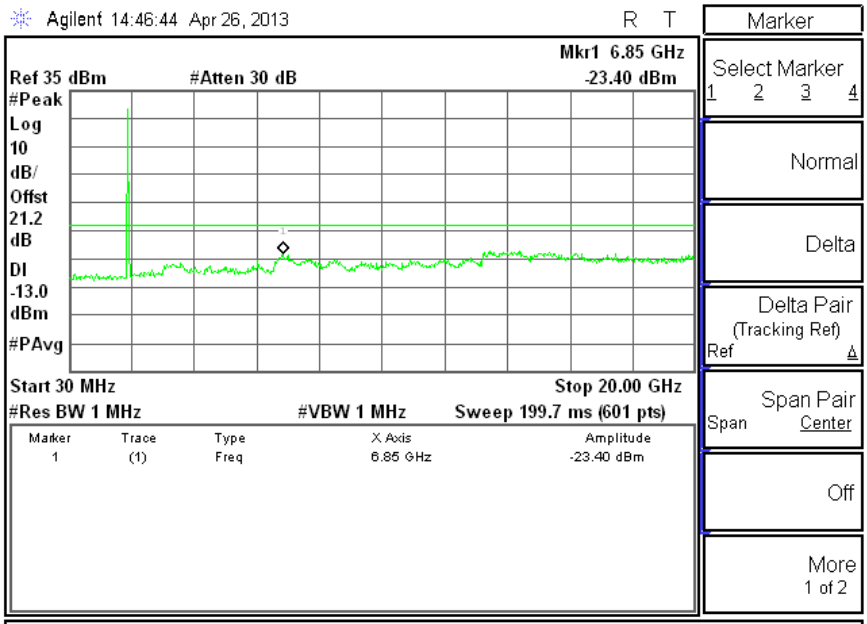
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

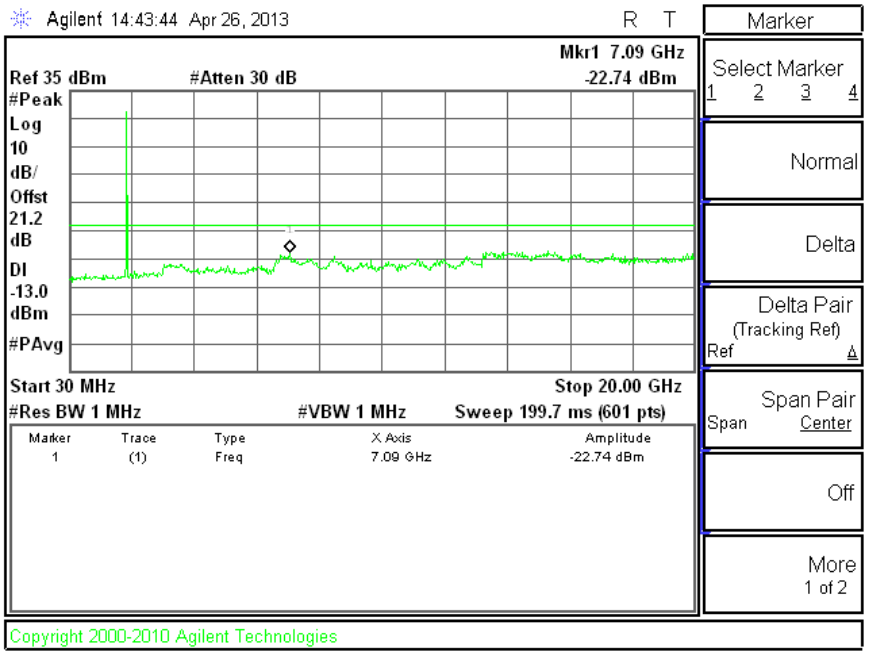


High, RB1-0, 30 TO 20000 MHz

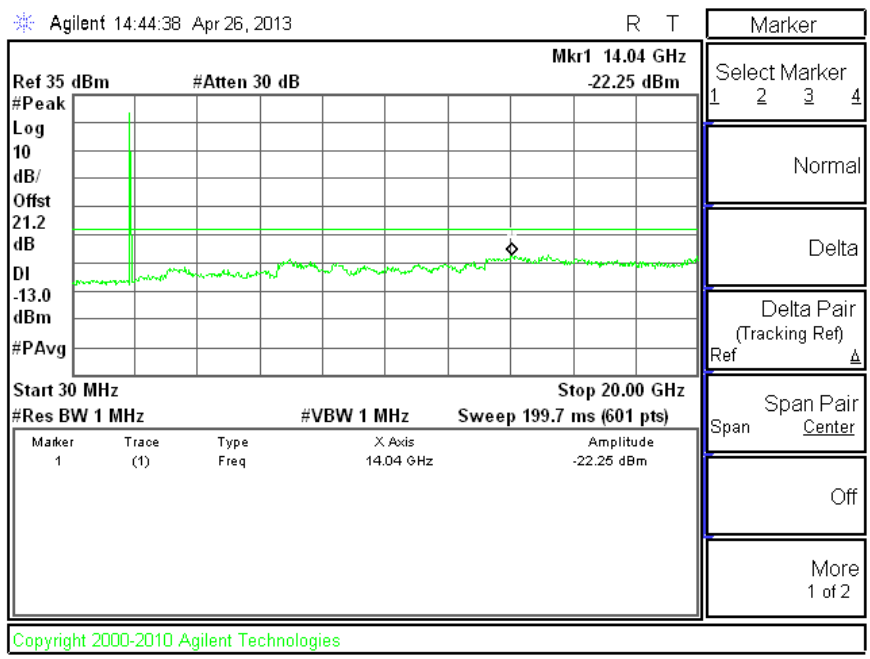


LTE 16QAM

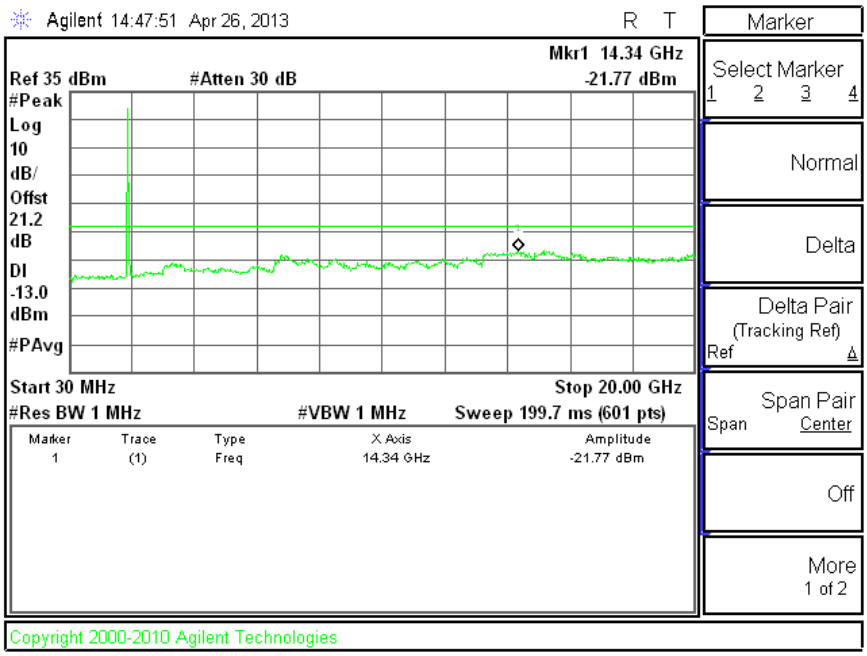
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



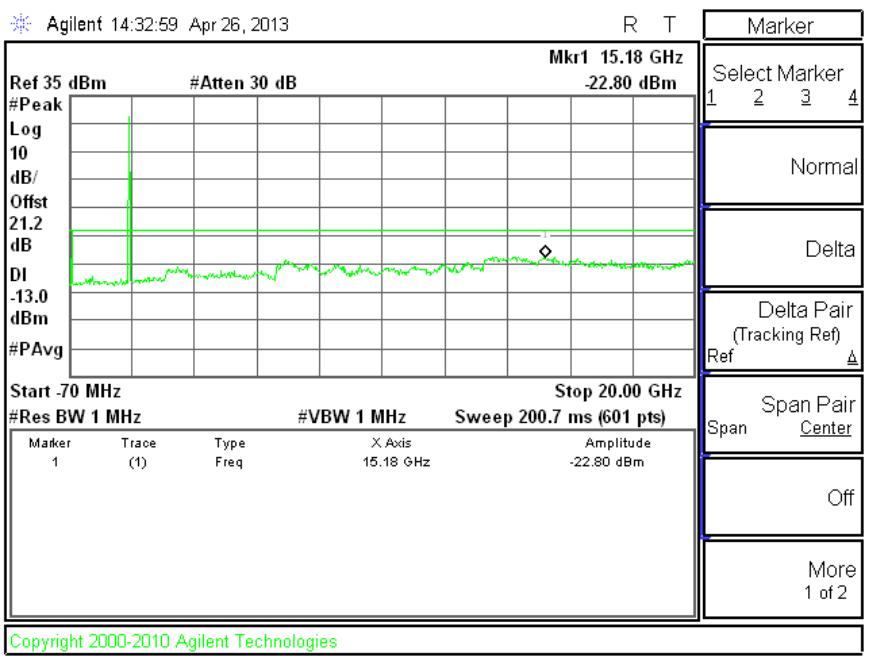
HIGH, RB1-0, 30 TO 20000 MHz



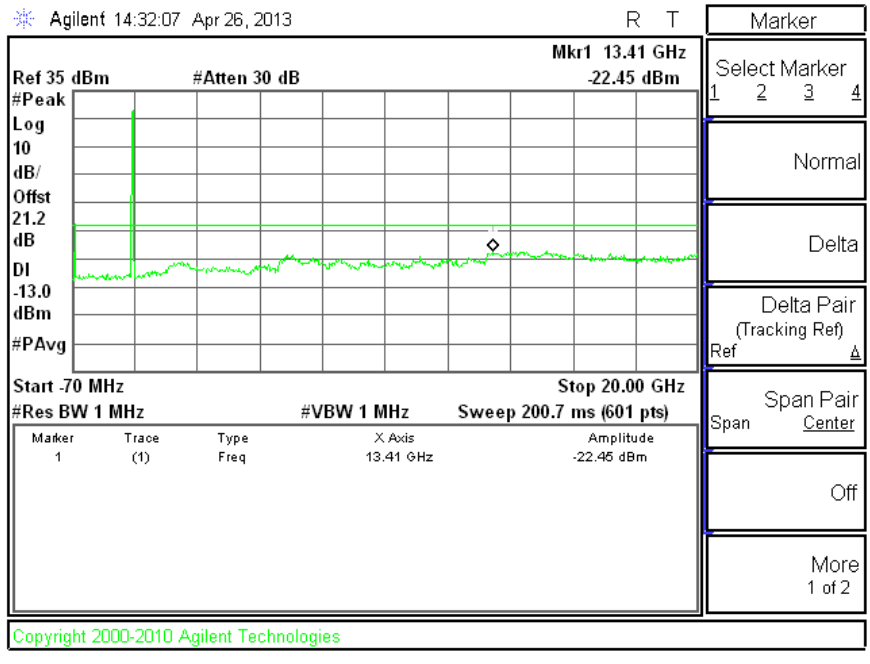
Band 25 (20.0 MHz BAND WIDTH)

LTE QPSK

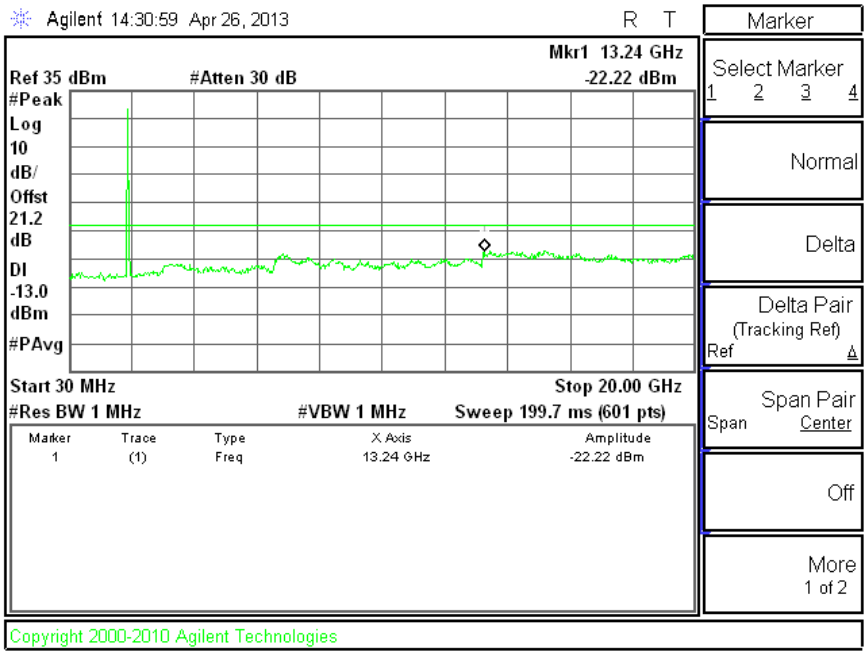
LOW, RB1-0, 30 TO 20000 MHz



Mid, RB1-0, 30 TO 20000 MHz

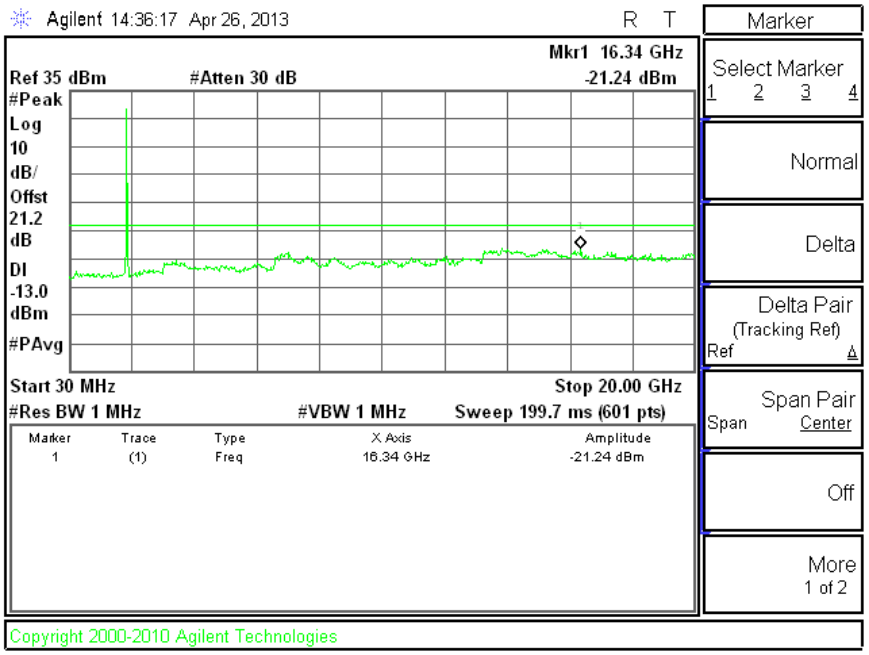


High, RB1-0, 30 TO 20000 MHz

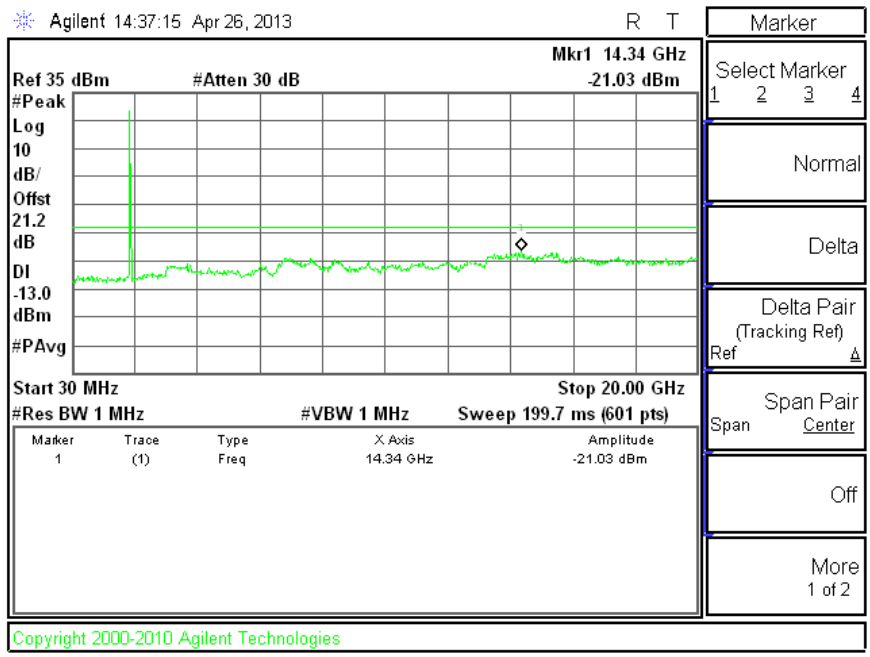


LTE 16QAM

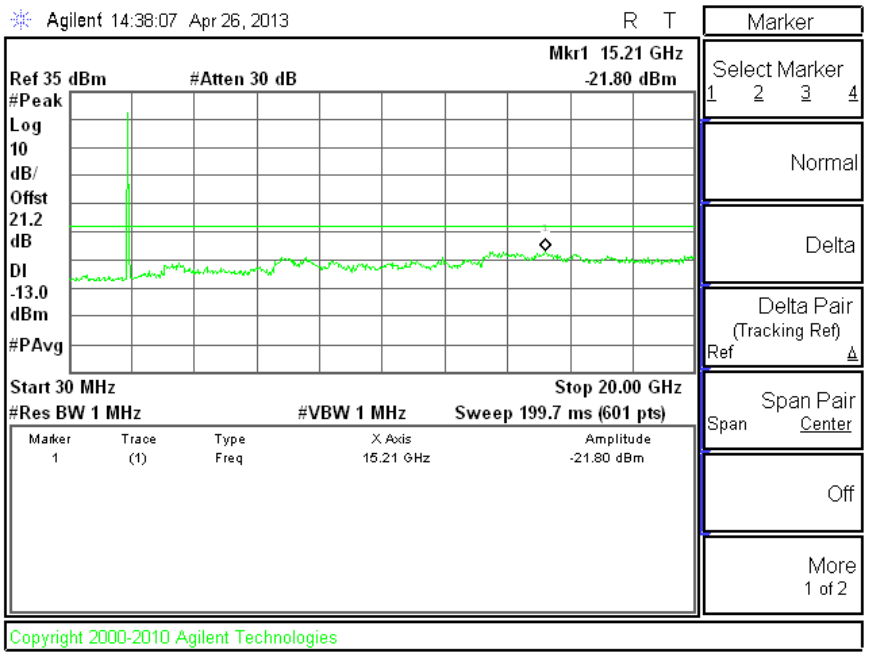
LOW, RB1-0, 30 TO 20000 MHz



MID RB1-0, 30 TO 20000 MHz



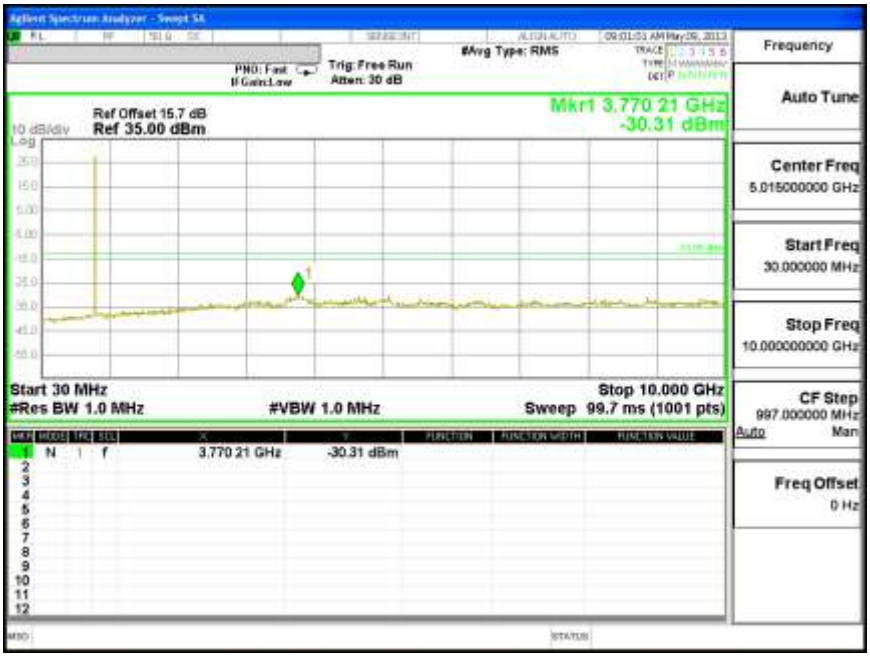
HIGH, RB1-0, 30 TO 20000 MHz



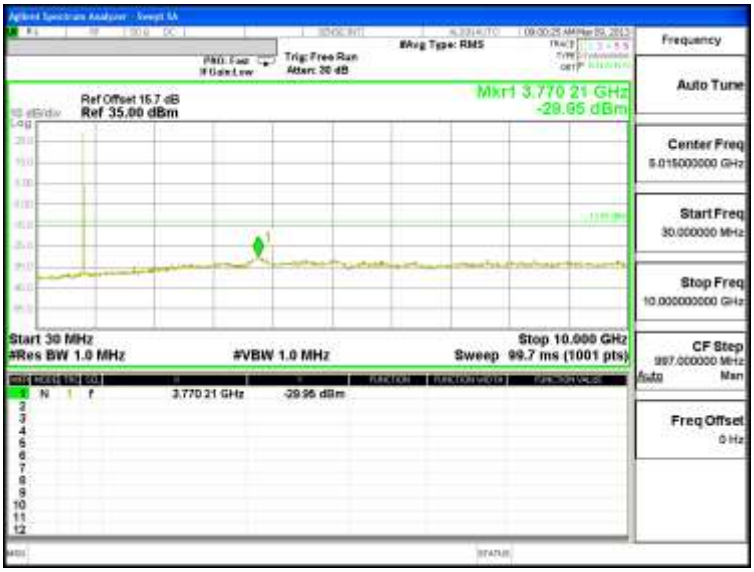
8.3.7. LTE BAND 26

LTE BAND 26 QPSK (1.4 MHz BAND WIDTH)

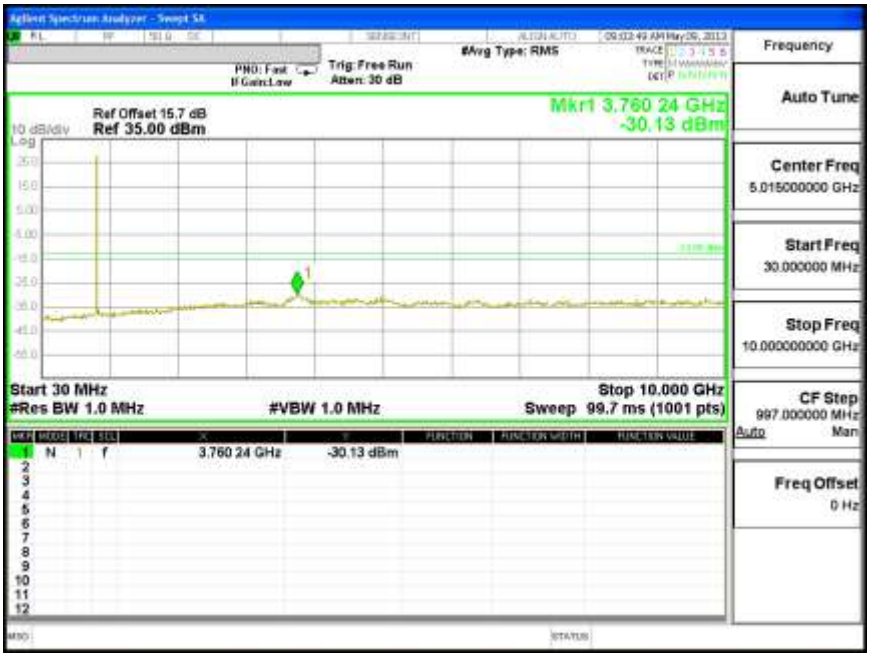
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

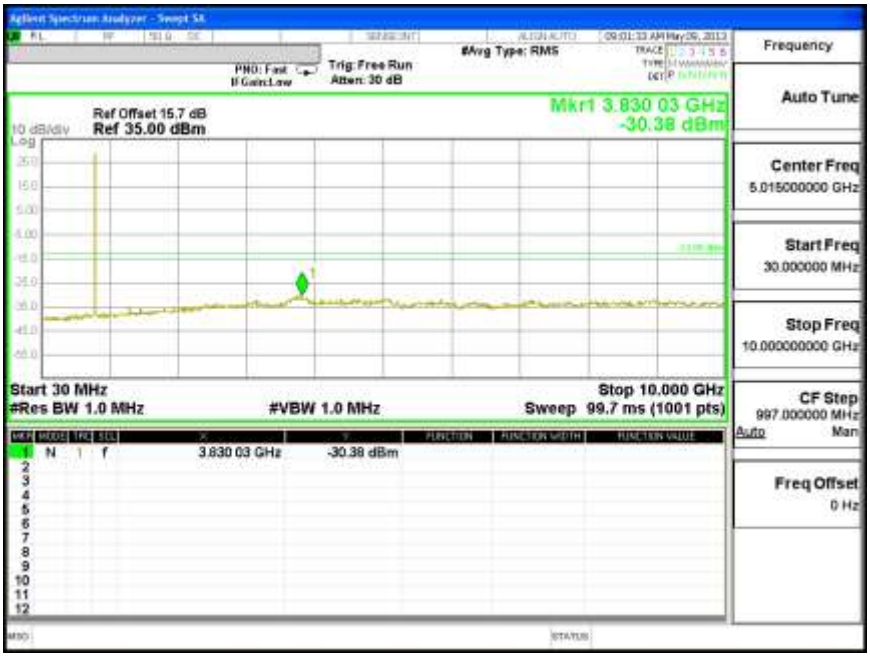


HIGH, RB1-0, 30 TO 10000 MHz

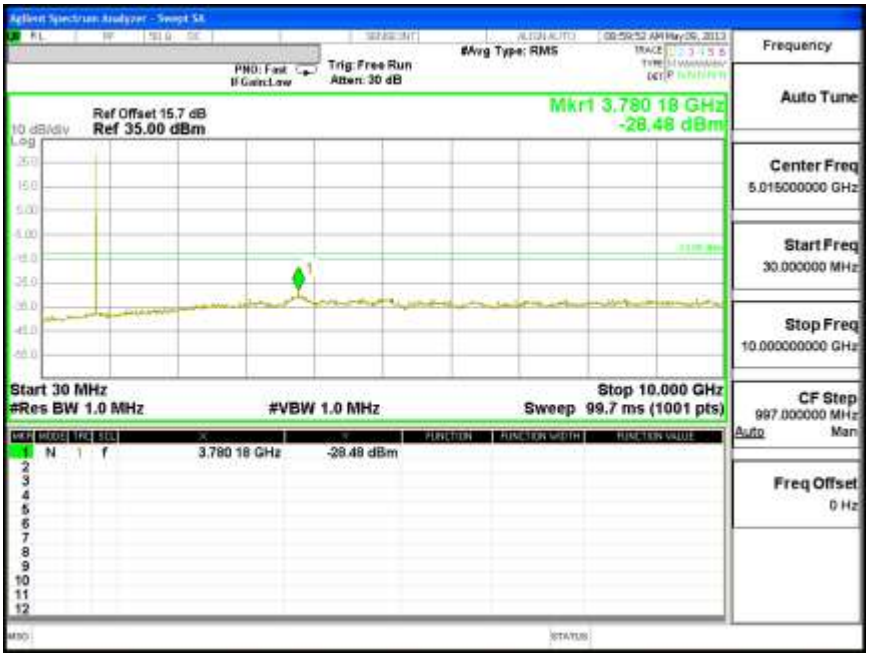


LTE 16QAM

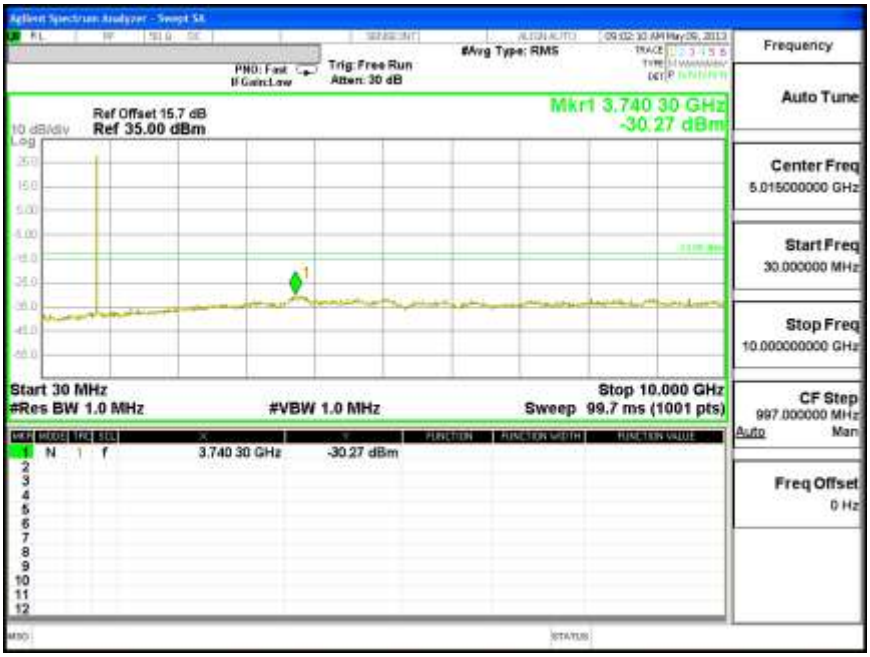
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



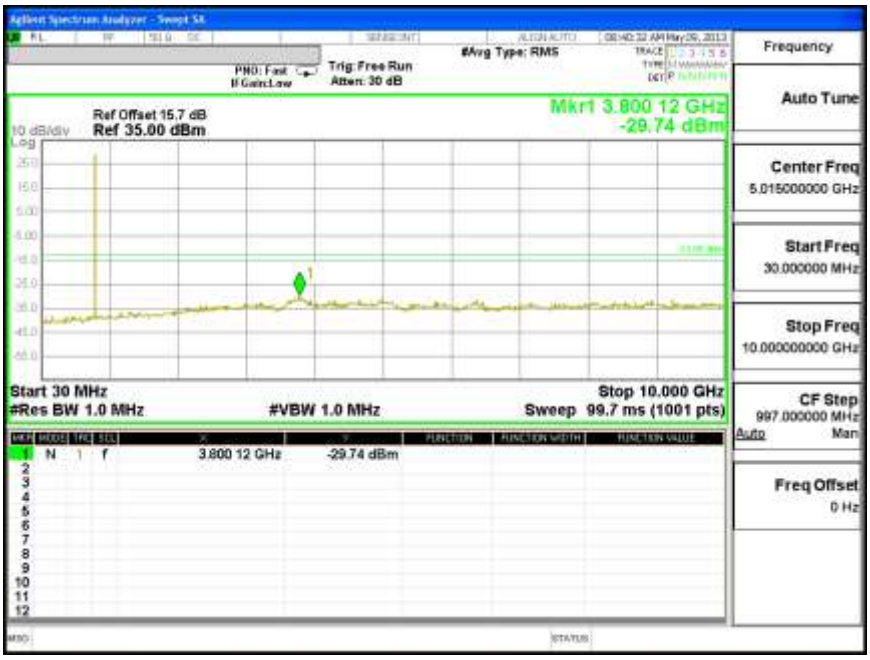
HIGH, RB1-0, 30 TO 10000 MHz



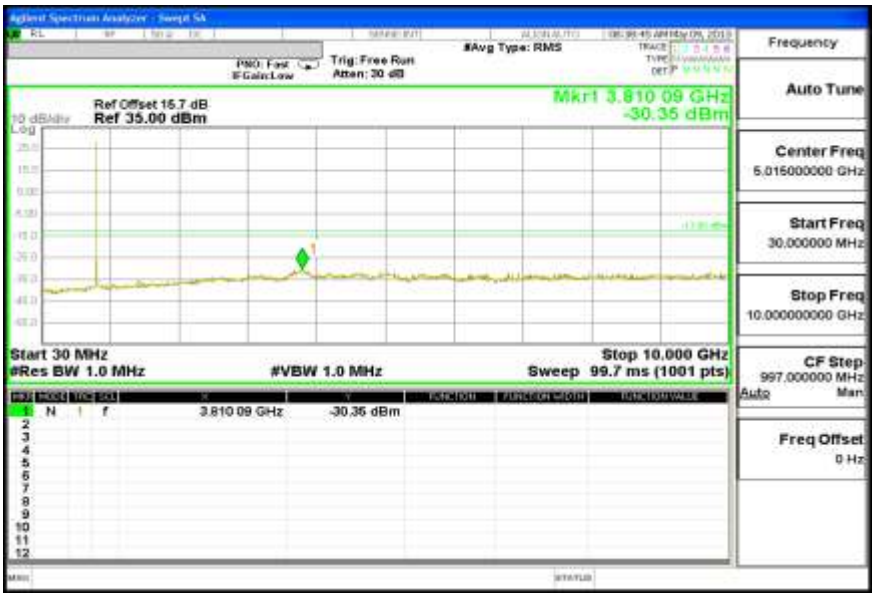
Band 26 (3.0 MHz BAND WIDTH)

LTE QPSK

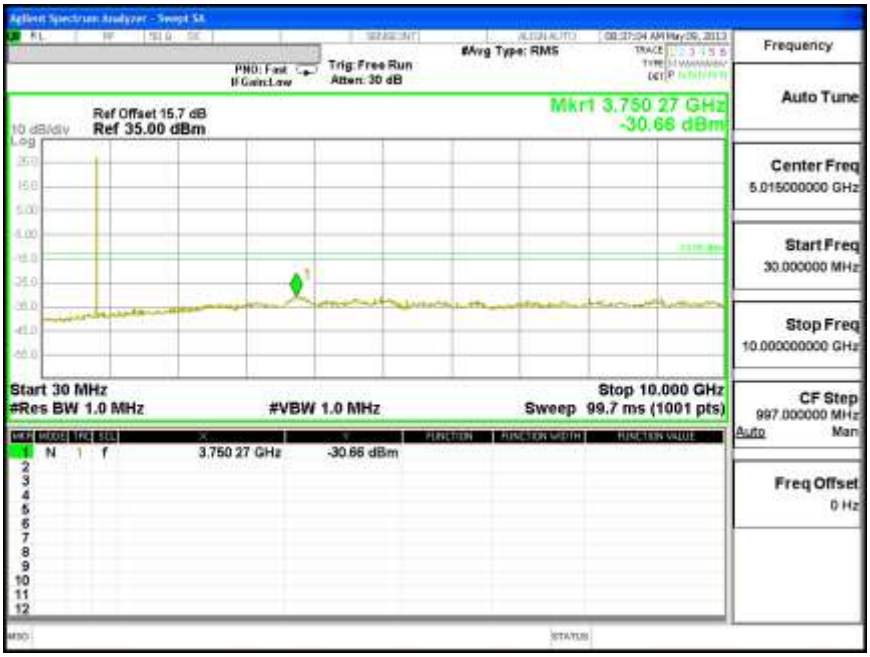
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

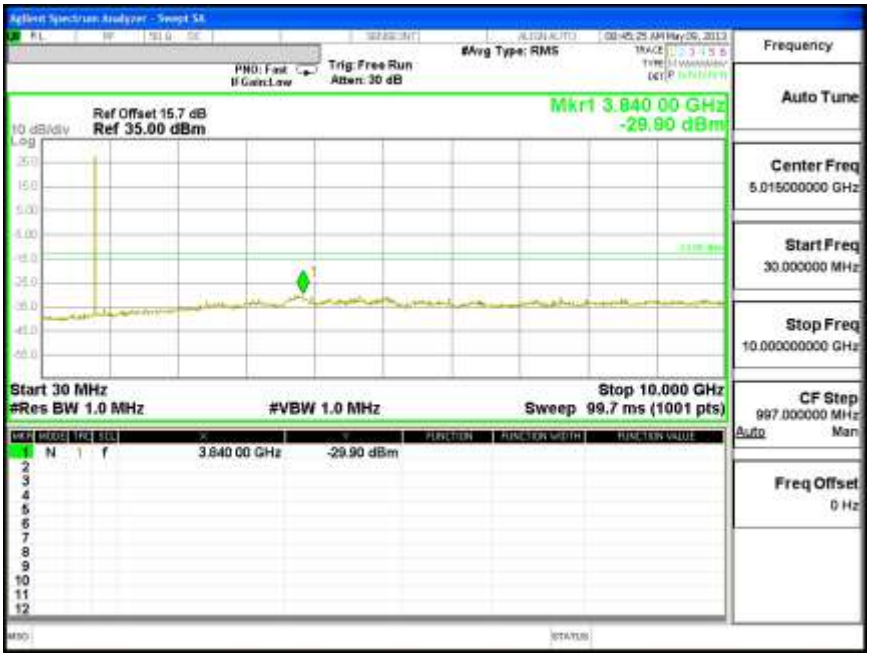


HIGH, RB1-0, 30 TO 10000 MHz

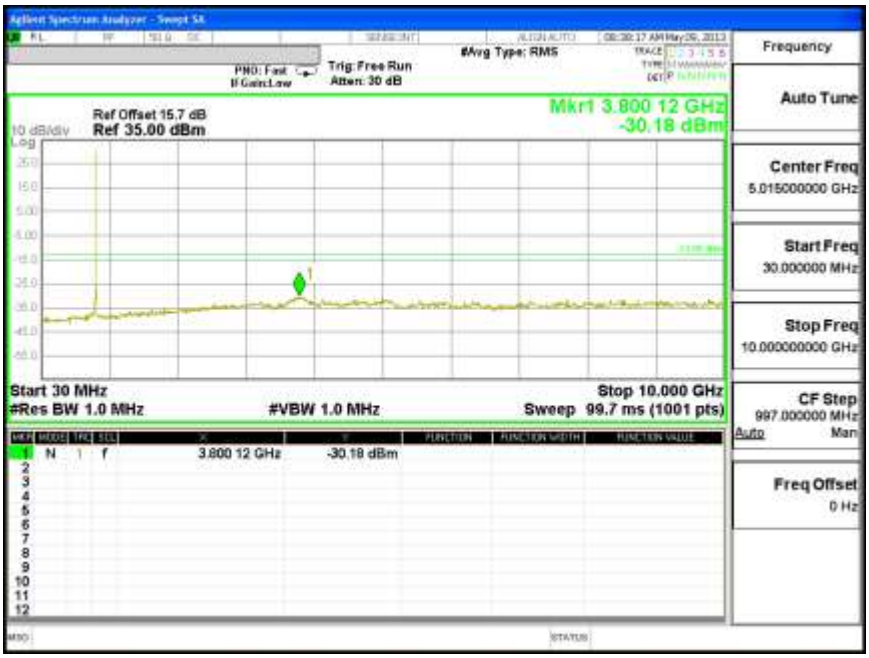


LTE 16QAM

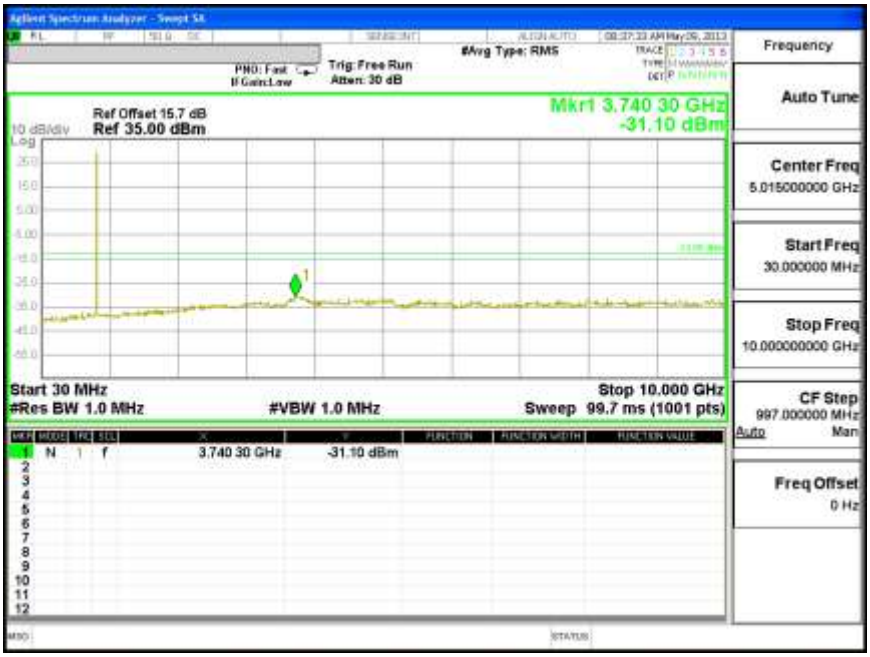
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



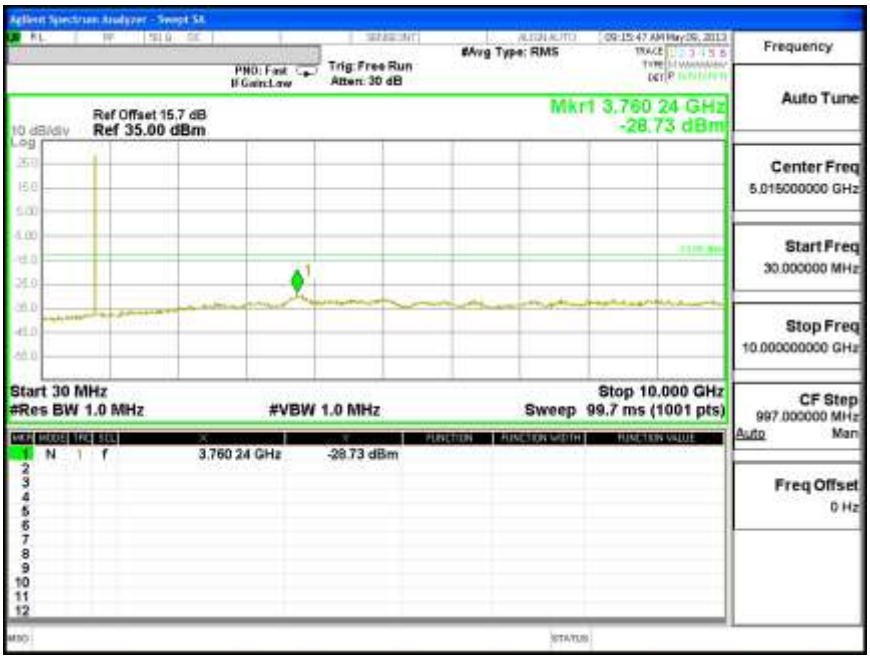
HIGH, RB1-0, 30 TO 10000 MHz



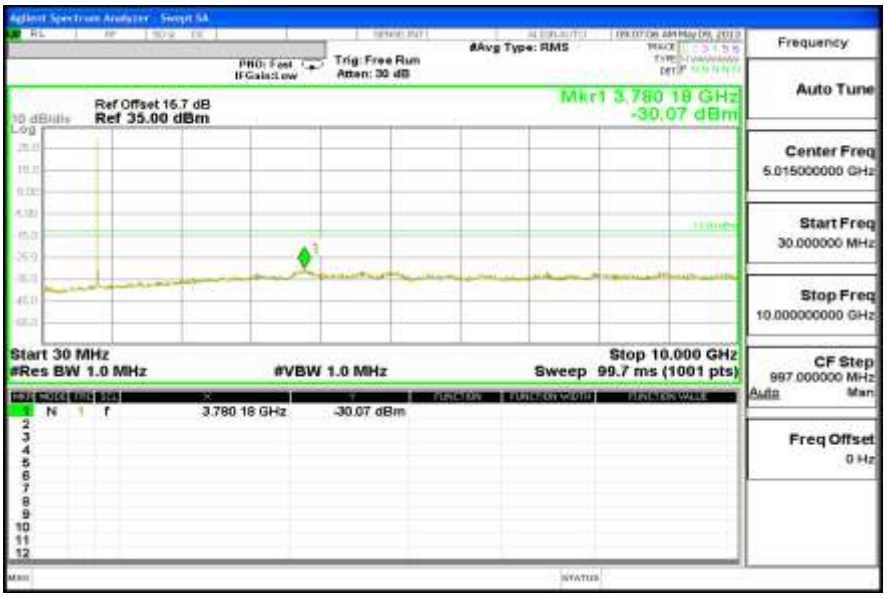
Band 26 (5.0 MHz BAND WIDTH)

LTE QPSK

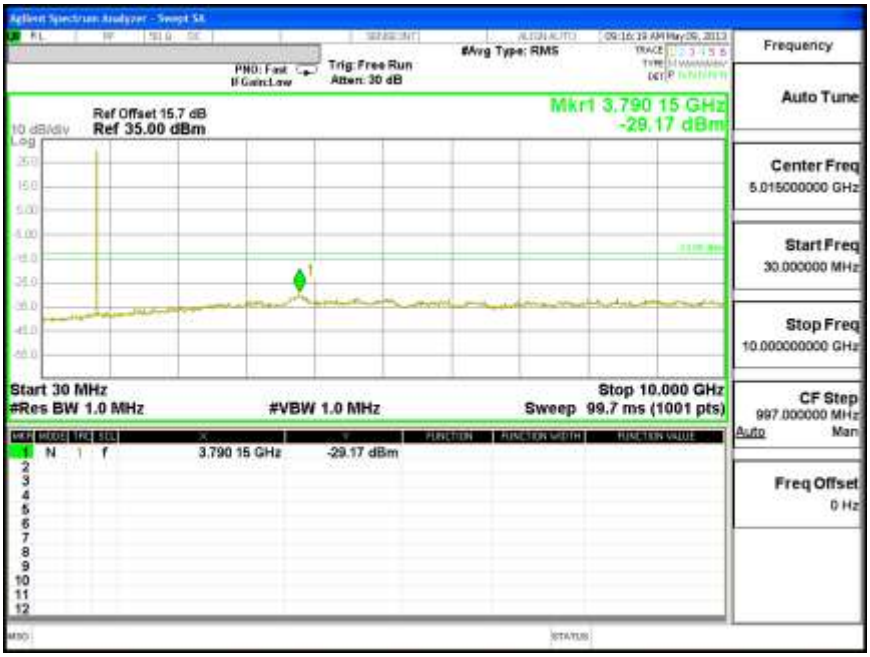
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

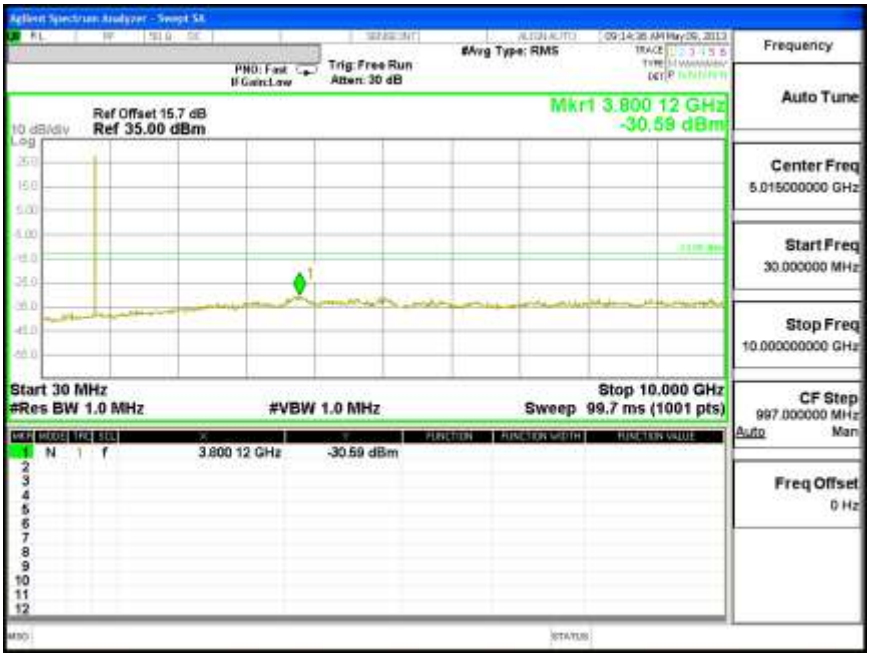


HIGH, RB1-0, 30 TO 10000 MHz

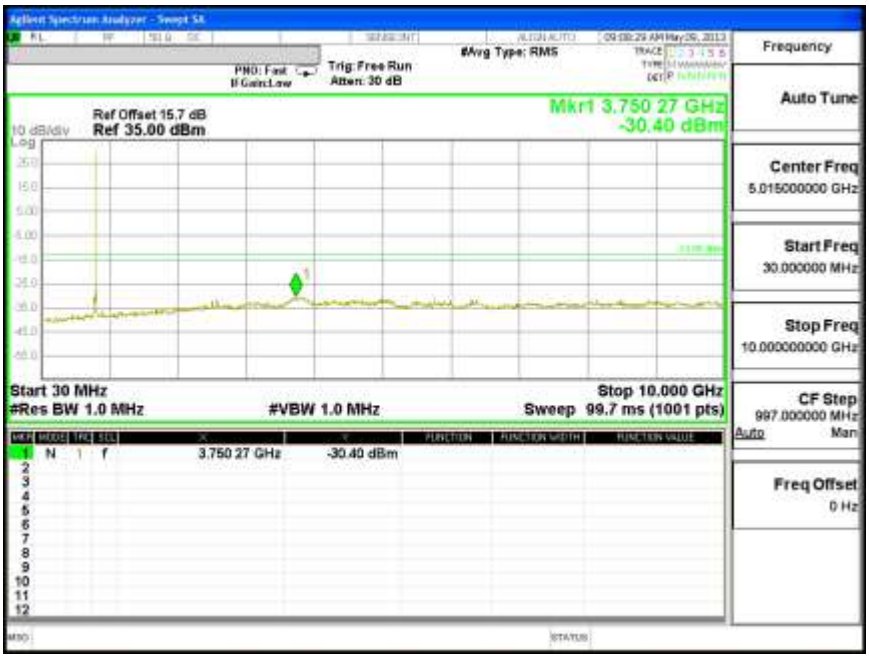


LTE 16QAM

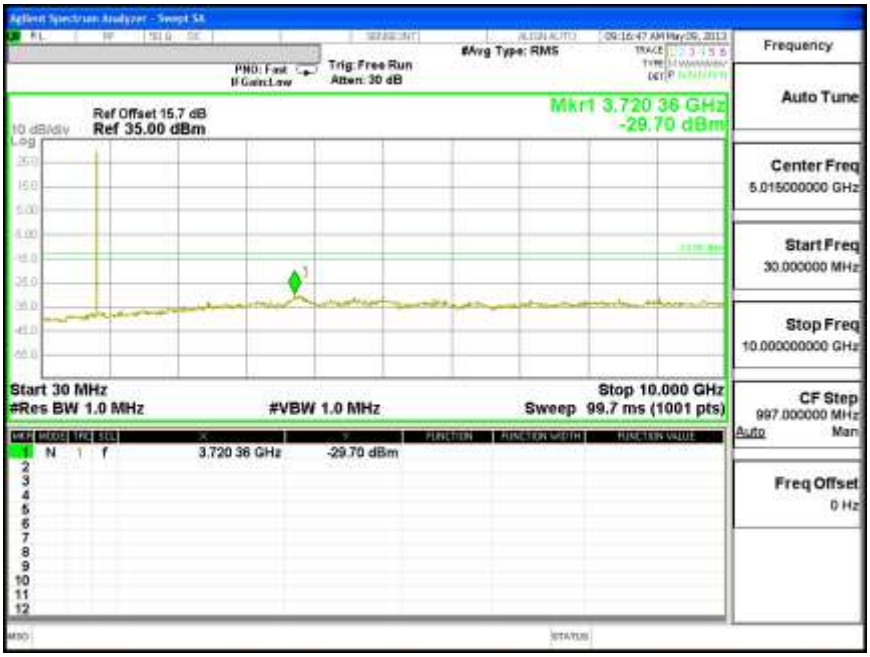
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



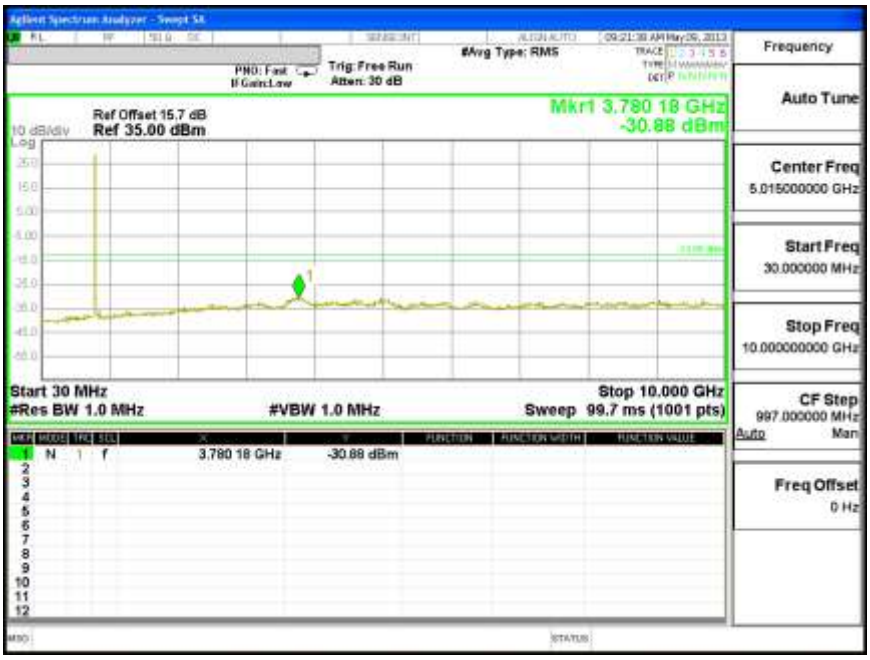
HIGH, RB1-0, 30 TO 10000 MHz



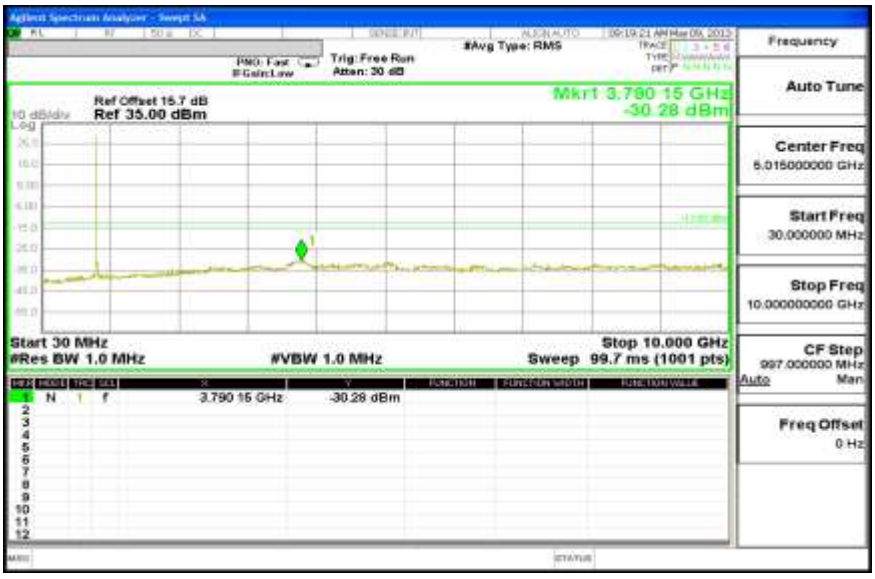
Band 26 (10.0 MHz BAND WIDTH)

LTE QPSK

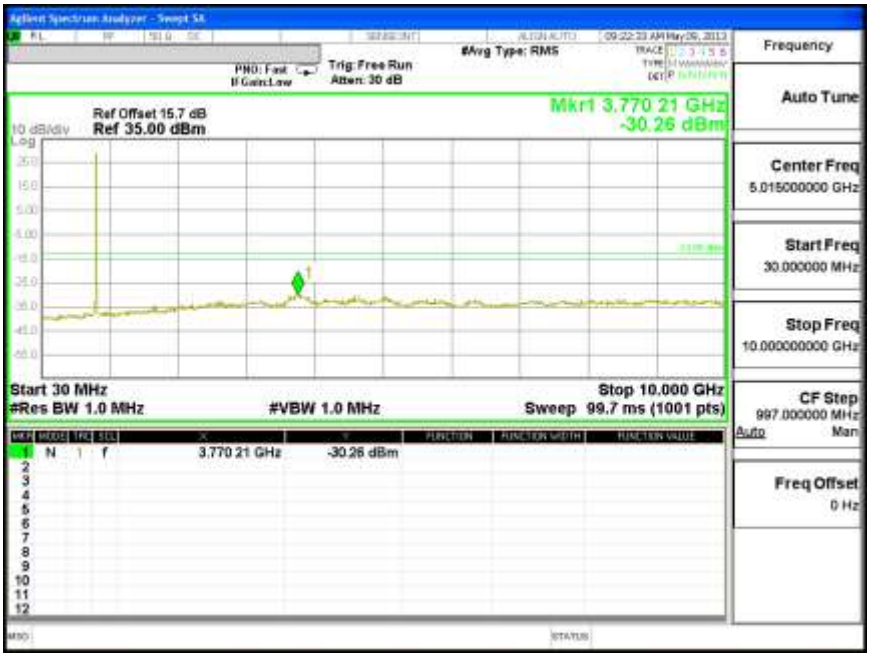
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

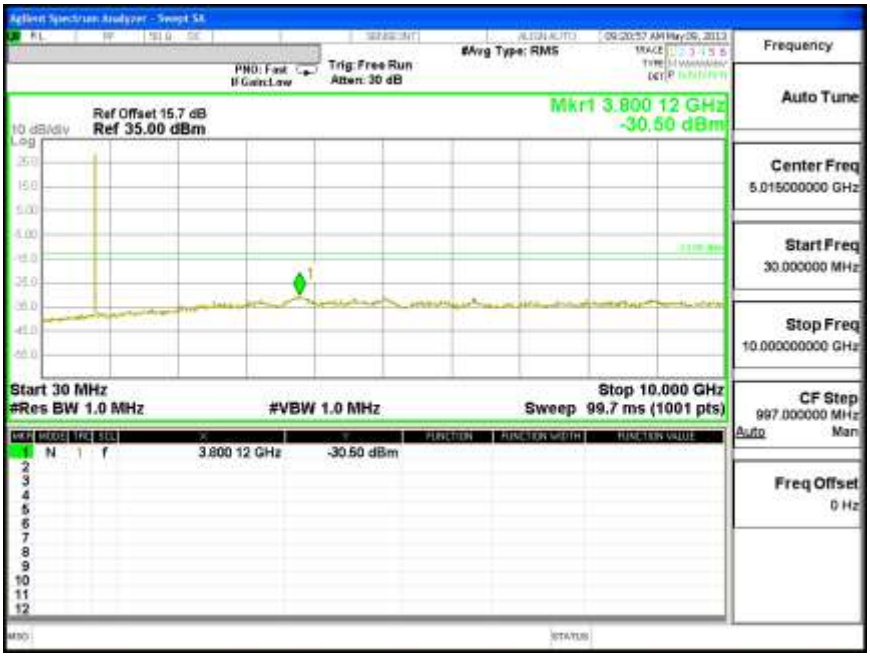


HIGH, RB1-0, 30 TO 10000 MHz

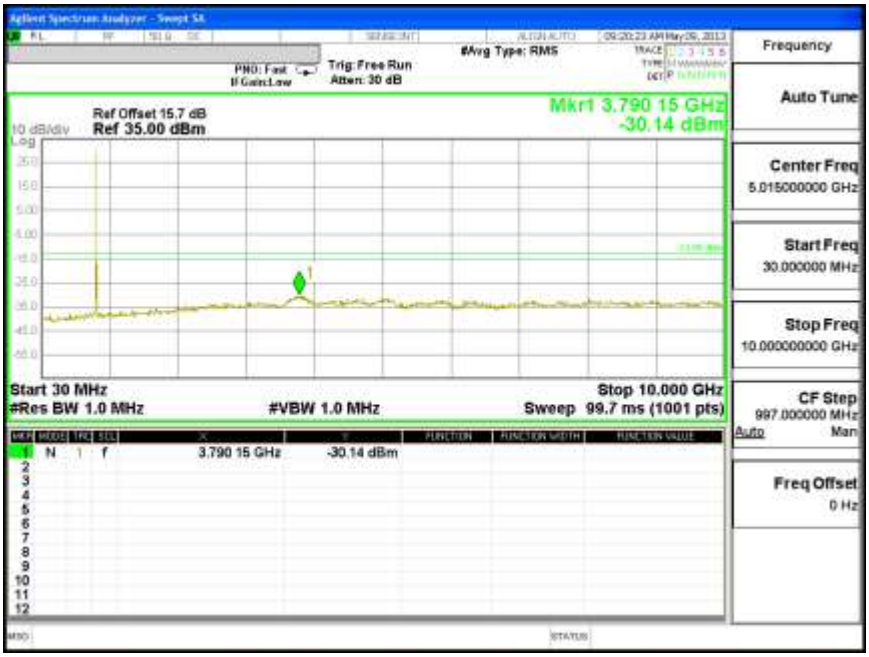


LTE 16QAM

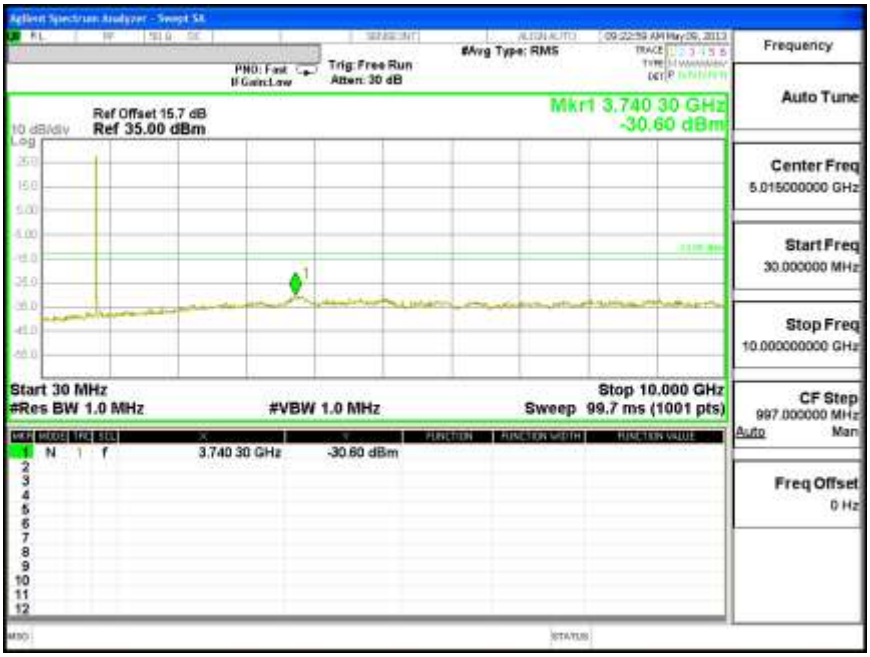
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



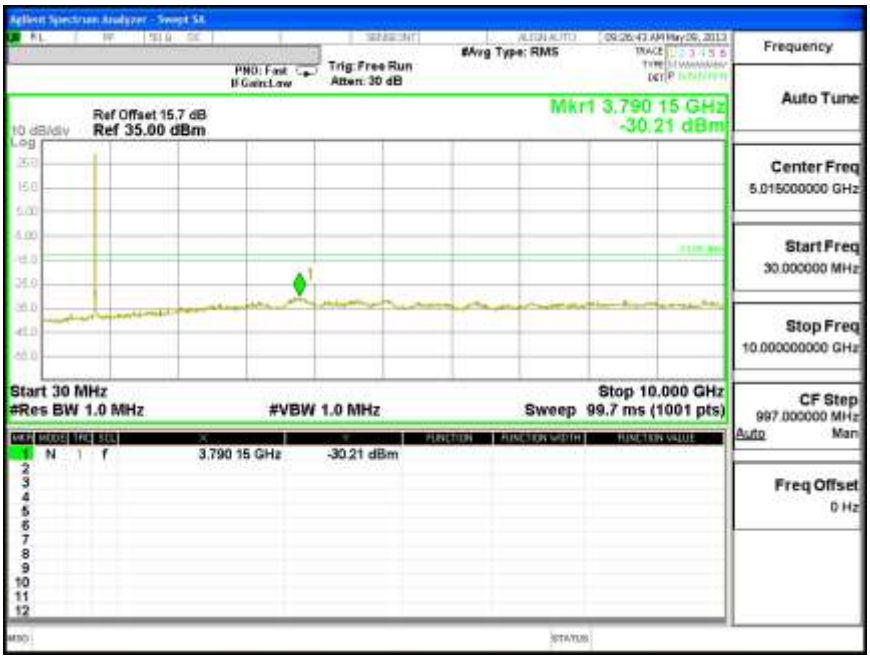
HIGH, RB1-0, 30 TO 10000 MHz



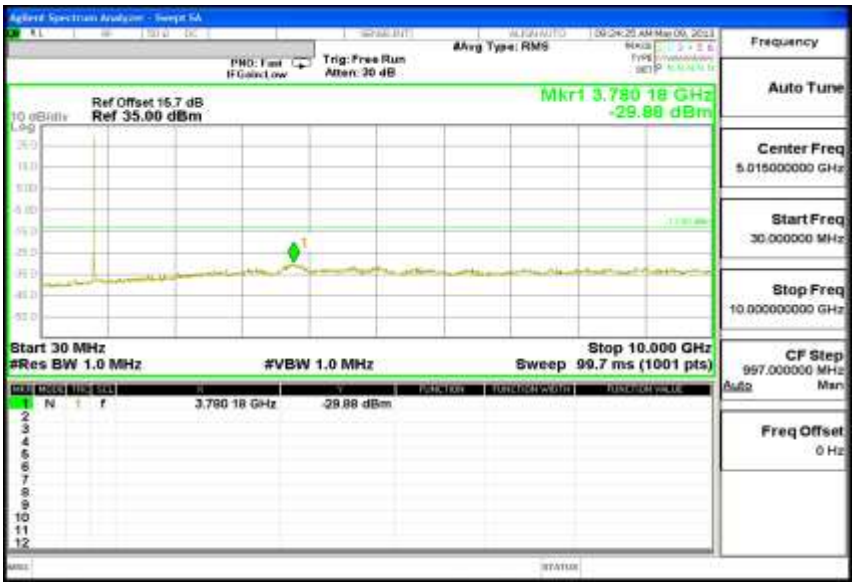
Band 26 (15.0 MHz BAND WIDTH)

LTE QPSK

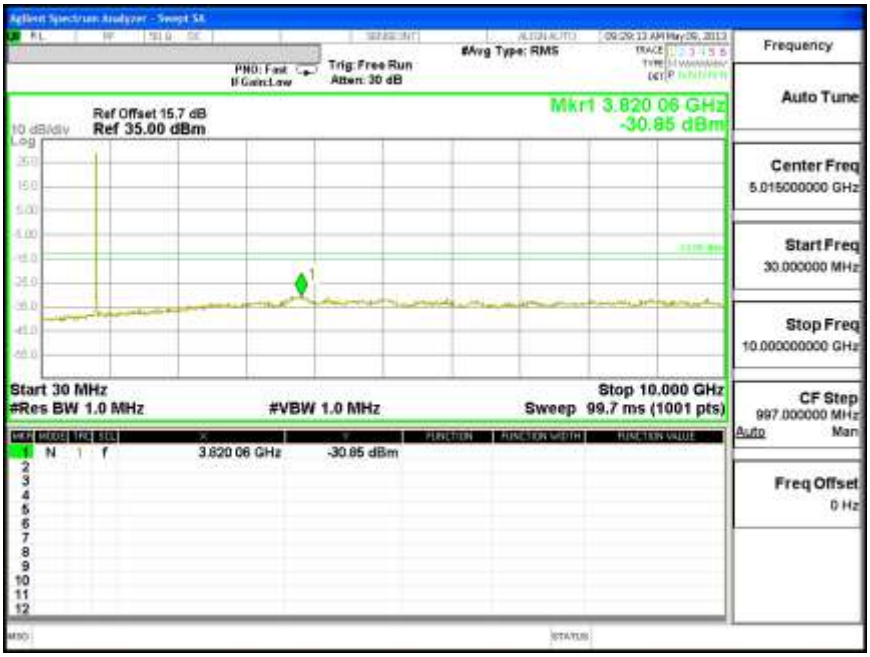
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz

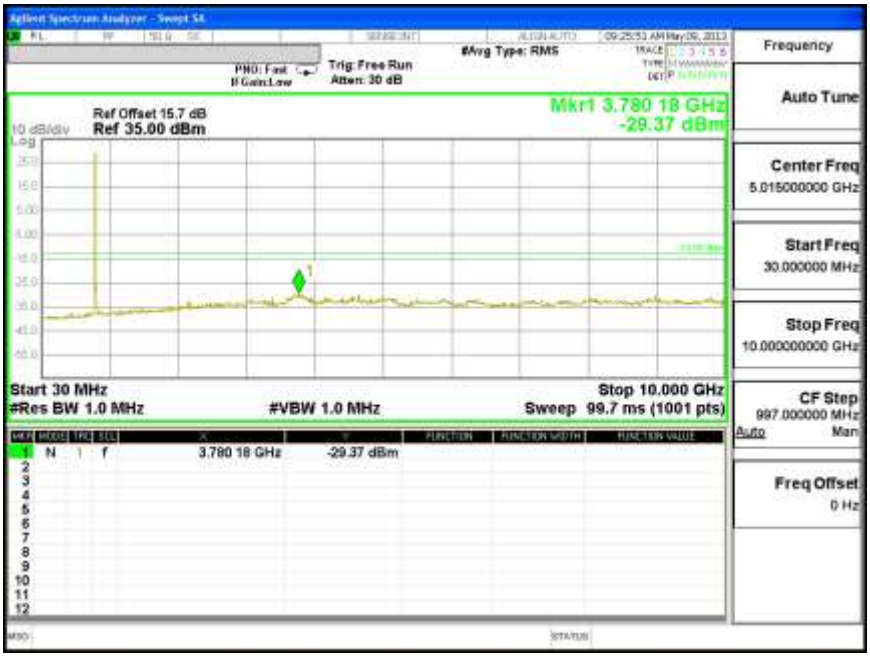


HIGH, RB1-0, 30 TO 10000 MHz

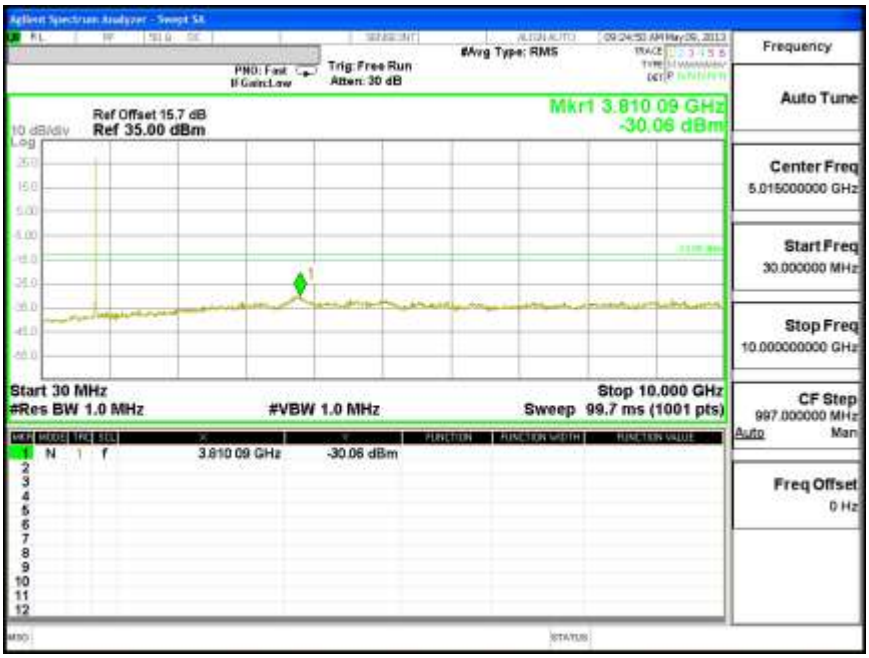


LTE 16QAM

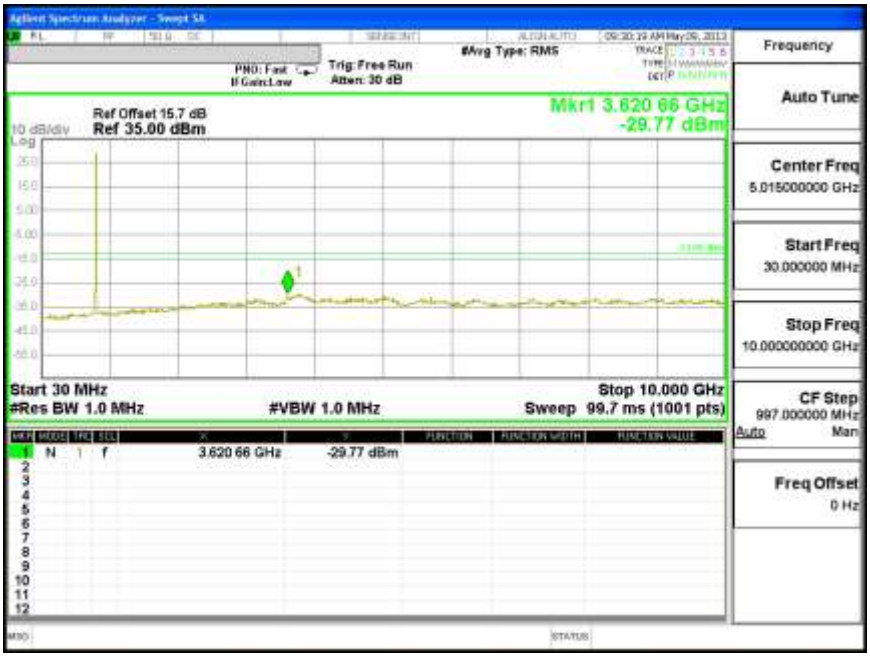
LOW, RB1-0, 30 TO 10000 MHz



MID, RB1-0, 30 TO 10000 MHz



HIGH, RB1-0, 30 TO 10000 MHz



8.4. FREQUENCY STABILITY

RULE PART(S)

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

LIMITS

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

RSS-133 6.3 - The carrier frequency shall not depart from the reference frequency in excess of ±2.5 ppm for mobile stations.

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

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

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

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

MODES TESTED

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

RESULTS

See the following pages.

LTE BAND 2, QPSK – 1880.0 MHz

Reference Frequency: LTE Band 2_1879.999983 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1879.999962	0.011	2.5
3.80	40	1879.999963	0.011	2.5
3.80	30	1879.999964	0.010	2.5
3.80	***20***	***1879.999983***	***0***	2.5
3.80	10	1879.999964	0.010	2.5
3.80	0	1879.999962	0.011	2.5
3.80	-10	1879.999971	0.006	2.5
3.80	-20	1879.999969	0.007	2.5
3.80	-30	1879.999964	0.010	2.5

Reference Frequency: LTE Band 2_ Mid Channel 1880.000009 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1879.999983***	***0***	***2.5***
4.20	20	1879.999965	*0.010*	2.5
3.40	20	1879.999968	*0.008*	2.5
End Voltage(3.3)	20	1879.999978	*0.003*	2.5

LTE BAND 2, 16QAM – 1880.0 MHz

Reference Frequency: LTE Band 2_1879.999984 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1879.999965	0.010	2.5
3.80	40	1879.999966	0.010	2.5
3.80	30	1879.999967	0.009	2.5
3.80	***20***	***1879.999984***	***0***	2.5
3.80	10	1879.999964	0.011	2.5
3.80	0	1879.999965	0.010	2.5
3.80	-10	1879.999970	0.007	2.5
3.80	-20	1879.999971	0.007	2.5
3.80	-30	1879.999967	0.009	2.5

Reference Frequency: LTE Band 2_Mid Channel 1879.999984 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4700.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1879.999984***	***0***	***2.5***
4.20	20	1879.999968	*0.009*	2.5
3.40	20	1879.999978	*0.003*	2.5
End Voltage(3.2)	20	1879.999974	*0.005*	2.5

LTE BAND 4 – 1732.5 MHz QPSK

Reference Frequency: LTE Band 4_Mid Channel 1732.500011 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1732.500018	-0.0040	2.5
3.80	40	1732.500019	-0.0046	2.5
3.80	30	1732.500018	-0.0040	2.5
3.80	***20***	***1732.500011***	***0***	2.5
3.80	10	*1732.500018*	-0.0040	2.5
3.80	0	*1732.500017*	-0.0035	2.5
3.80	-10	1732.500021	-0.0058	2.5
3.80	-20	*1732.500021*	-0.0058	2.5
3.80	-30	1732.500020	-0.0052	2.5

Reference Frequency: LTE Band 4_Mid Channel 1732.500011 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1732.500011***	***0***	***2.5***
4.20	20	1732.500019	*-0.0046*	2.5
3.40	20	1732.500002	*0.0054*	2.5
End Volt(3.2)	20	1732.500001	*0.0058*	2.5

LTE BAND 4 – 1732.5 MHZ, 16QAM

Reference Frequency: LTE Band 4_Mid Channle 1732.500009 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1732.500015	-0.0035	2.5
3.80	40	1732.500016	-0.0040	2.5
3.80	30	1732.500017	-0.0046	2.5
3.80	***20***	***1732.500009***	***0***	2.5
3.80	10	1732.500016	-0.0040	2.5
3.80	0	1732.500014	-0.0029	2.5
3.80	-10	1732.500018	-0.0052	2.5
3.80	-20	1732.500017	-0.0046	2.5
3.80	-30	1732.500019	-0.0058	2.5

Reference Frequency: LTE Band 4_Mid Channel 1732.500009MHz @ 20°C Limit: to stay +- 2.5 ppm = 4331.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1732.500009***	***0***	***2.5***
4.20	20	1732.500018	*-0.0052*	2.5
3.40	20	1732.500016	*-0.0040*	2.5
End Volt(3.2)	20	1732.500015	*-0.0035*	2.5

LTE BAND 13, QPSK – 782.000 MHz

Reference Frequency: LTE Band 13_781.999995MHz @ 20°C Limit: to stay +- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	781.999989	0.008	2.5
3.80	40	781.999989	0.008	2.5
3.80	30	781.999990	0.006	2.5
3.80	***20***	***781.999995***	***0***	2.5
3.80	10	781.999990	0.006	2.5
3.80	0	781.999991	0.005	2.5
3.80	-10	781.999999	-0.005	2.5
3.80	-20	781.999992	0.004	2.5
3.80	-30	781.999999	-0.005	2.5

Reference Frequency: LTE Band 13_Mid Channel 781.999995MHz @ 20°C Limit: to stay +- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***781.999995***	***0***	***2.5***
4.20	20	781.999990	*0.006*	2.5
3.40	20	781.999993	*0.003*	2.5
End Voltage(3.3)	20	781.999994	*0.001*	2.5

LTE BAND 13, 16QAM– 782.000 MHz

Reference Frequency: LTE Band 13_781.999996 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	781.999991	0.006	2.5
3.80	40	781.999992	0.005	2.5
3.80	30	781.999993	0.004	2.5
3.80	***20***	***781.999996***	***0***	2.5
3.80	10	781.999992	0.005	2.5
3.80	0	781.999992	0.005	2.5
3.80	-10	781.999993	0.004	2.5
3.80	-20	781.999992	0.005	2.5
3.80	-30	781.999992	0.005	2.5

Reference Frequency: LTE Band 13_Mid Channel 782.000028MHz @ 20°C Limit: to stay +- 2.5 ppm = 1955.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***781.999996***	***0***	***2.5***
4.20	20	781.999990	*0.008*	2.5
3.40	20	781.999993	*0.004*	2.5
End Voltage(3.2)	20	781.999991	*0.006*	2.5

LTE BAND 17 – 710 MHz, 5MHz

Reference Frequency: LTE Band 17_Mid Channe 710.000004 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1775.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	710.000008	-0.006	2.5
3.80	40	710.000008	-0.006	2.5
3.80	30	710.000009	-0.007	2.5
3.80	***20***	***710.000004***	***0***	2.5
3.80	10	710.000007	-0.004	2.5
3.80	0	710.000006	-0.003	2.5
3.80	-10	710.000007	-0.004	2.5
3.80	-20	710.000001	0.004	2.5
3.80	-30	710.000007	-0.004	2.5

Reference Frequency: LTE Band 17_Mid channel 710.000004 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1775.000 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***710.000004***	***0***	***2.5***
4.20	20	710.000001	0.004	2.5
3.40	20	710.000003	0.001	2.5
End Volt(3.2)	20	710.000001	0.004	2.5

LTE BAND 17 – 710 MHz, 10MHz

Reference Frequency: LTE Band 17_Mid Channel 710.000005 MHz @ 20°C Limit: to stay +- 2.5 ppm = 1775.000 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	710.000010	-0.007	2.5
3.80	40	710.000009	-0.006	2.5
3.80	30	710.000010	-0.007	2.5
3.80	***20***	***710.000005***	***0***	2.5
3.80	10	710.000009	-0.006	2.5
3.80	0	710.000008	-0.004	2.5
3.80	-10	710.000007	-0.003	2.5
3.80	-20	710.000003	0.003	2.5
3.80	-30	710.000009	-0.006	2.5

Reference Frequency: LTE Band 17_Mid Channel 710.000005MHz @ 20°C Limit: to stay +- 2.5 ppm = 1775.000 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***710.000005***	***0***	***2.5***
4.20	20	710.000002	*0.004*	2.5
3.40	20	710.000003	*0.003*	2.5
End Volt(3.2)	20	710.000002	*0.004*	2.5

LTE BAND 5 – 836.5MHz, QPSK

Reference Frequency: LTE Band 5_Mid Channe 836.500005 MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.500009	-0.005	2.5
3.80	40	836.500009	-0.005	2.5
3.80	30	836.500009	-0.005	2.5
3.80	***20***	***836.500005***	***0***	2.5
3.80	10	836.500009	-0.005	2.5
3.80	0	836.500008	-0.004	2.5
3.80	-10	836.500009	-0.005	2.5
3.80	-20	836.500010	-0.006	2.5
3.80	-30	836.500009	-0.005	2.5

Reference Frequency: LTE Band 5_Mid channel 836.500005 MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***836.500005***	***0***	***2.5***
4.20	20	836.500008	-0.004	2.5
3.40	20	836.500006	-0.001	2.5
End Volt(3.2)	20	836.500003	0.002	2.5

LTE BAND 5 – 836.5 MHz, 16QAM

Reference Frequency: LTE Band 5_Mid Channel 836.500004 MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.250 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	836.500007	-0.004	2.5
3.80	40	836.500007	-0.004	2.5
3.80	30	836.500009	-0.006	2.5
3.80	***20***	***836.500004***	***0***	2.5
3.80	10	836.500009	-0.006	2.5
3.80	0	836.500008	-0.005	2.5
3.80	-10	836.500007	-0.004	2.5
3.80	-20	836.500008	-0.005	2.5
3.80	-30	836.500008	-0.005	2.5

Reference Frequency: LTE Band 5_Mid Channel 36.500004 MHz @ 20°C Limit: to stay +- 2.5 ppm = 2091.250 Hz				
Power Supply (Vac)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***836.500004***	***0***	***2.5***
4.20	20	836.500007	*-0.004*	2.5
3.30	20	836.500004	*0.000*	2.5
End Volt(3.2)	20	836.500002	*0.002*	2.5

LTE BAND 25, QPSK – 1882.500 MHz

Reference Frequency: LTE Band 25_1882.499990 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1882.499975	0.008	2.5
3.80	40	1882.500004	-0.007	2.5
3.80	30	1882.500004	-0.007	2.5
3.80	***20***	***1882.499990***	***0***	2.5
3.80	10	1882.500004	-0.007	2.5
3.80	0	1882.500004	-0.007	2.5
3.80	-10	1882.500002	-0.006	2.5
3.80	-20	1882.500003	-0.007	2.5
3.80	-30	1882.500004	-0.007	2.5

Reference Frequency: LTE Band 25_Mid Channel 1882.499990 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1882.499990***	***0***	***2.5***
4.20	20	1882.500002	*-0.006*	2.5
3.50	20	1882.499994	*-0.002*	2.5
End Voltage(3.3)	20	1882.499991	*-0.001*	2.5

LTE BAND 25, 16QAM– 836.500 MHz

Reference Frequency: LTE Band 25_1882.499987 MHz @ 20°C Limit: to stay +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	50	1882.499973	0.007	2.5
3.80	40	1882.500000	-0.007	2.5
3.80	30	1882.499999	-0.006	2.5
3.80	***20***	***1882.499987***	***0***	2.5
3.80	10	1882.500002	-0.008	2.5
3.80	0	1882.500001	-0.007	2.5
3.80	-10	1882.500000	-0.007	2.5
3.80	-20	1882.500001	-0.007	2.5
3.80	-30	1882.499999	-0.006	2.5

Reference Frequency: LTE Band 25_Mid Channel 1882.499987bMHz @ 20°C Limit: to stay +- 2.5 ppm = 4706.250 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse (MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***1882.499987***	***0***	***2.5***
4.20	20	1882.499998	*-0.006*	2.5
3.40	20	1882.500001	*-0.007*	2.5
End Voltage(3.3)	20	1882.499995	*-0.004*	2.5

LTE BAND 26 – 831.5 MHz, QPSK

Reference Frequency: LTE Band 26_Mid Channel 831.499996 MHz @ 20°C Limit: to stay +- 2.5 ppm = 2078.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	831.499994	0.002	2.5
3.80	40	831.499995	0.001	2.5
3.80	30	831.499995	0.001	2.5
3.80	***20***	***831.499996***	***0***	2.5
3.80	10	831.499995	0.001	2.5
3.80	0	831.499996	0.000	2.5
3.80	-10	831.499996	0.000	2.5
3.80	-20	831.499996	0.000	2.5
3.80	-30	831.499997	-0.001	2.5

Reference Frequency: LTE Band 26_Mid Channel 831.499996 MHz @ 20°C Limit: to stay +- 2.5 ppm = 2078.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***831.499996***	***0***	***2.5***
4.20	20	831.499995	0.001	2.5
3.40	20	831.499997	-0.001	2.5

LTE BAND 26 – 831.5 MHz, 16QAM

Reference Frequency: LTE Band 26_Mid Channel 831.499994 MHz @ 20°C Limit: to stay +- 2.5 ppm = 2078.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	50	831.499994	0.000	2.5
3.80	40	831.499995	-0.001	2.5
3.80	30	831.499995	-0.001	2.5
3.80	***20***	***831.499994***	***0***	2.5
3.80	10	831.499995	-0.001	2.5
3.80	0	831.499996	-0.002	2.5
3.80	-10	831.499996	-0.002	2.5
3.80	-20	831.499996	-0.002	2.5
3.80	-30	831.499997	-0.004	2.5

Reference Frequency: LTE Band 26_Mid Channel 831.499994 MHz @ 20°C Limit: to stay +- 2.5 ppm = 2078.750 Hz				
Power Supply (Vdc)	Environment Temperature (°C)	Frequency Deviation Measureed with Time Elapse		
		(MHz)	Delta (ppm)	Limit (ppm)
3.80	***20***	***831.499995***	***0***	***2.5***
4.20	20	831.499995	0.000	2.5
3.40	20	831.499996	-0.001	2.5

9. RADIATED TEST RESULTS

9.1. RADIATED POWER (ERP & EIRP)

RULE PART(S)

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

LIMITS:

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

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

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

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

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

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

RESULTS

LAT BAND 2

LAT EIRP 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	27.04	505.82
		1880.0	27.16	520.00
		1909.3	26.88	487.53
1.4MHz Band 16QAM	6/0	1850.7	26.94	494.31
		1880.0	26.86	485.29
		1909.3	26.98	498.88

LAT EIRP 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	26.94	494.31
		1880.0	27.36	544.50
		1908.5	26.78	476.43
3.0MHz Band 16QAM	15/0	1851.5	27.04	505.82
		1880.0	27.26	532.11
		1908.5	27.08	510.50

LAT EIRP 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	26.90	489.78
		1880.0	27.18	522.40
		1907.5	26.67	464.52
5.0MHz Band 16QAM	25/0	1852.5	26.70	467.74
		1880.0	26.48	444.63
		1907.5	26.07	404.58

LAT EIRP 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	26.64	461.32
		1880.0	26.96	496.59
		1905.0	26.58	454.99
10.0MHz Band 16QAM	50/0	1855.0	26.24	420.73
		1880.0	26.56	452.90
		1905.0	26.78	476.43

LAT EIRP 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	26.64	461.32
		1880.0	27.16	520.00
		1902.5	26.88	487.53
15MHz Band 16QAM	75/0	1857.5	26.14	411.15
		1880.0	26.66	463.45
		1902.5	26.28	424.62

LAT EIRP 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	26.34	430.53
		1880.0	27.26	532.11
		1900.0	26.98	498.88
20MHz Band 16QAM	100/0	1860.0	25.64	366.44
		1880.0	26.56	452.90
		1900.0	26.28	424.62

LAT BAND 4

LAT EIRP LTE Band 4 (1.4 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
1.4 MHZ BAND QPSK	6/0	1710.7	25.60	363.08
		1732.5	25.83	382.82
		1754.3	26.07	404.58
1.4 MHZ BAND 16QAM	6/0	1710.7	25.20	331.13
		1732.5	25.73	374.11
		1754.3	25.77	377.57

LAT EIRP LTE Band 4 (3.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
3.0 MHZ BAND QPSK	15/0	1711.5	25.40	346.74
		1732.5	26.63	460.26
		1753.5	25.77	377.57
3.0 MHZ BAND 16QAM	15/0	1711.5	25.40	346.74
		1732.5	26.13	410.20
		1753.5	25.37	344.35

LAT EIRP LTE Band 4 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	1712.5	25.80	380.19
		1732.5	26.33	429.54
		1752.5	25.77	377.57
5.0 MHZ BAND 16QAM	25/0	1712.5	25.20	331.13
		1732.5	25.73	374.11
		1752.5	25.26	335.74

LAT EIRP LTE Band 4 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	1715.0	25.27	336.51
		1732.5	26.41	437.52
		1750.0	25.57	360.58
10.0 MHZ BAND 16QAM	50/0	1715.0	25.50	354.81
		1732.5	25.81	381.07
		1750.0	25.07	321.37

LAT EIRP LTE Band 4 (15.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
15.0 MHZ BAND QPSK	75/0	1717.5	25.80	380.19
		1732.5	26.53	449.78
		1747.5	25.46	351.56
15.0 MHZ BAND 16QAM	75/0	1717.5	25.30	338.84
		1732.5	26.03	400.87
		1747.5	24.86	306.20

LAT EIRP LTE Band 4 (20.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
20.0 MHZ BAND QPSK	100/0	1720.0	25.40	346.74
		1732.5	26.53	449.78
		1745.0	25.46	351.56
20.0 MHZ BAND 16QAM	100/0	1720.0	24.90	309.03
		1732.5	25.93	391.74
		1745.0	24.76	299.23

LAT BAND 5

LAT ERP 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	20.70	117.49
		836.5	20.80	120.23
		848.3	19.94	98.63
1.4MHz Band 16QAM	1/0	824.7	19.80	95.50
		836.5	19.70	93.33
		848.3	19.04	80.17

LAT ERP 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	21.20	131.83
		836.5	20.40	109.65
		847.5	20.14	103.28
3.0 MHZ BAND 16QAM	1/0	825.5	19.30	85.11
		836.5	19.50	89.13
		847.5	19.24	83.95

LAT ERP 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	20.90	123.03
		836.5	20.50	112.20
		846.5	20.04	100.93
5MHz Band 16QAM	1/0	826.5	19.80	95.50
		836.5	19.60	91.20
		846.5	19.14	82.04

LAT ERP 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	20.90	123.03
		836.5	20.20	104.71
		844.0	20.14	103.28
10.0 MHZ BAND 16QAM	1/0	829.0	19.80	95.50
		836.5	19.50	89.13
		844.0	19.04	80.17

LAT BAND 13

LAT ERP LTE Band 13 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	779.5	17.60	57.54
		782.0	17.50	56.23
		784.5	18.00	63.10
5.0 MHZ BAND 16QAM	1/0	779.5	16.80	47.86
		782.0	16.40	43.65
		784.5	17.10	51.29

LTE ERP BAND 13 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10 MHZ BAND QPSK	1/0	782.0	18.40	69.18
10 MHz BAND 16QAM	1/0		17.30	53.70

LAT BAND 17

LAT ERP LTE Band 17 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	706.5	16.70	46.77
		710.0	16.70	46.77
		713.5	16.90	48.98
5MHz Band 16QAM	1/0	706.5	16.10	40.74
		710.0	16.70	46.77
		713.5	16.10	40.74

LAT ERP LTE Band 17 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	709.0	17.30	53.70
		710.0	16.70	46.77
		711.0	17.30	53.70
10.0 MHZ BAND 16QAM	1/0	709.0	16.60	45.71
		710.0	16.70	46.77
		711.0	16.50	44.67

LAT BAND 25

LAT EIRP LTE Band 25 (1.4MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
1.4 MHZ BAND QPSK	6/0	1850.7	25.74	374.97
		1880.0	26.85	484.17
		1914.3	25.78	378.44
1.4 MHZ BAND 16QAM	6/0	1850.7	25.14	326.59
		1880.0	26.35	431.52
		1914.3	25.28	337.29

LAT EIRP LTE Band 25 (3.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
3.0 MHZ BAND QPSK	15/0	1851.5	26.44	440.55
		1880.0	26.75	473.15
		1913.5	25.77	377.57
3.0 MHZ BAND 16QAM	15/0	1851.5	25.64	366.44
		1880.0	26.15	412.10
		1913.5	26.37	433.51

LAT EIRP LTE Band 25 (5.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	1852.5	25.34	341.98
		1880.0	27.15	518.80
		1912.5	26.27	423.64
5.0 MHZ BAND 16QAM	25/0	1852.5	24.44	277.97
		1880.0	26.45	441.57
		1912.5	25.57	360.58

LAT EIRP LTE Band 25 (10.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	1855.0	28.04	636.80
		1880.0	28.25	668.34
		1910.0	28.07	641.21
10.0 MHZ BAND 16QAM	50/0	1855.0	27.04	505.82
		1880.0	27.35	543.25
		1910.0	26.97	497.74

LAT EIRP LTE Band 25 (15.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
15.0 MHZ BAND QPSK	75/0	1857.5	28.24	666.81
		1880.0	27.96	625.17
		1907.5	27.57	571.48
15.0 MHZ BAND 16QAM	75/0	1857.5	27.24	529.66
		1880.0	26.96	496.59
		1907.5	26.57	453.94

LAT EIRP LTE Band 25 (20.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
20.0 MHZ BAND QPSK	100/0	1860.0	28.04	636.80
		1880.0	27.96	625.17
		1905.0	27.47	558.47
20.0 MHZ BAND 16QAM	100/0	1860.0	27.04	505.82
		1880.0	26.96	496.59
		1905.0	26.67	464.52

LAT BAND 26

LAT ERP LTE Band 26 (3.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	820.3	23.07	202.77
		821.3	23.50	223.87
		822.3	23.08	203.24
3.0 MHZ BAND 16QAM	1/0	820.3	22.06	160.69
		821.3	22.50	177.83
		822.3	22.10	162.18

LAT ERP LTE Band 26 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	821.3	24.40	275.42
5.0 MHZ BAND 16QAM	1/0	821.3	23.40	218.78

UAT BAND 2

UAT EIRP 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	23.74	236.59
		1880.0	22.36	172.19
		1909.3	23.28	212.81
1.4MHz Band 16QAM	6/0	1850.7	22.84	192.31
		1880.0	21.56	143.22
		1909.3	22.38	172.98

UAT EIRP 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	23.94	247.74
		1880.0	22.56	180.30
		1908.5	23.18	207.97
3.0MHz Band 16QAM	15/0	1851.5	23.04	201.37
		1880.0	21.76	149.97
		1908.5	22.38	172.98

UAT EIRP 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	24.14	259.42
		1880.0	22.76	188.80
		1907.5	23.18	207.97
5.0MHz Band 16QAM	25/0	1852.5	22.34	171.40
		1880.0	21.96	157.04
		1907.5	22.28	169.04

UAT EIRP 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	24.24	265.46
		1880.0	22.96	197.70
		1905.0	22.98	198.61
10.0MHz Band 16QAM	50/0	1855.0	22.84	192.31
		1880.0	22.06	160.69
		1905.0	22.08	161.44

UAT EIRP 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	24.64	291.07
		1880.0	23.26	211.84
		1902.5	24.48	280.54
15MHz Band 16QAM	75/0	1857.5	23.74	236.59
		1880.0	22.36	172.19
		1902.5	23.48	222.84

UAT EIRP 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	24.74	297.85
		1880.0	23.56	226.99
		1900.0	24.58	287.08
20MHz Band 16QAM	100/0	1860.0	23.84	242.10
		1880.0	22.56	180.30
		1900.0	23.68	233.35

UAT BAND 4

UAT EIRP LTE Band 4 (1.4 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
1.4 MHZ BAND QPSK	6/0	1710.7	21.40	138.04
		1732.5	22.03	159.59
		1754.3	22.67	184.93
1.4 MHZ BAND 16QAM	6/0	1710.7	20.70	117.49
		1732.5	21.13	129.72
		1754.3	21.87	153.82

UAT EIRP LTE Band 4 (3.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
3.0 MHZ BAND QPSK	15/0	1711.5	19.40	87.10
		1732.5	22.13	163.31
		1753.5	21.97	157.40
3.0 MHZ BAND 16QAM	15/0	1711.5	18.70	74.13
		1732.5	21.43	139.00
		1753.5	21.27	133.97

UAT EIRP LTE Band 4 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	1712.5	20.90	123.03
		1732.5	21.33	135.83
		1752.5	22.67	184.93
5.0 MHZ BAND 16QAM	25/0	1712.5	20.00	100.00
		1732.5	20.63	115.61
		1752.5	21.97	157.40

UAT EIRP LTE Band 4 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	1715.0	22.00	158.49
		1732.5	22.93	196.34
		1750.0	25.87	386.37
10.0 MHZ BAND 16QAM	50/0	1715.0	21.10	128.82
		1732.5	22.03	159.59
		1750.0	24.97	314.05

UAT EIRP LTE Band 4 (15.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
15.0 MHZ BAND QPSK	75/0	1717.5	22.10	162.18
		1732.5	23.13	205.59
		1747.5	23.97	249.46
15.0 MHZ BAND 16QAM	75/0	1717.5	21.20	131.83
		1732.5	22.23	167.11
		1747.5	23.07	202.77

UAT EIRP LTE Band 4 (20.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
20.0 MHZ BAND QPSK	100/0	1720.0	22.40	173.78
		1732.5	23.53	225.42
		1745.0	23.97	249.46
20.0 MHZ BAND 16QAM	100/0	1720.0	21.50	141.25
		1732.5	22.43	174.98
		1745.0	23.07	202.77

UAT BAND 5

UAT ERP LTE Band 5 (1.4.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
1.4MHz Band QPSK	1/0	824.7	15.20	33.11
		836.5	15.60	36.31
		848.3	15.00	31.62
1.4MHz Band 16QAM	1/0	824.7	14.30	26.92
		836.5	14.70	29.51
		848.3	14.20	26.30

UAT ERP 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	15.00	31.62
		836.5	15.20	33.11
		847.5	15.20	33.11
3.0 MHZ BAND 16QAM	1/0	825.5	14.10	25.70
		836.5	14.40	27.54
		847.5	14.30	26.92

UAT ERP 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	15.00	31.62
		836.5	15.60	36.31
		846.5	15.50	35.48
5MHz Band 16QAM	1/0	826.5	14.10	25.70
		836.5	14.70	29.51
		846.5	14.50	28.18

UAT ERP 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	15.10	32.36
		836.5	15.50	35.48
		844.0	15.50	35.48
10.0 MHZ BAND 16QAM	1/0	829.0	14.30	26.92
		836.5	14.70	29.51
		844.0	14.60	28.84

UAT BAND 13

UAT ERP LTE Band 13 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	779.5	14.60	28.84
		782.0	15.30	33.88
		784.5	14.60	28.84
5.0 MHZ BAND 16QAM	1/0	779.5	13.70	23.44
		782.0	14.60	28.84
		784.5	14.00	25.12

UAT ERP LTE BAND 13 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10 MHZ BAND QPSK	1/0	782.0	15.10	32.36
10 MHz BAND 16QAM	1/0		14.30	26.92

UAT BAND 17

UAT ERP LTE Band 17 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
5MHz Band QPSK	1/0	706.5	12.90	19.50
		710.0	12.80	19.05
		713.5	13.00	19.95
5MHz Band 16QAM	1/0	706.5	12.20	16.60
		710.0	12.30	16.98
		713.5	12.20	16.60

UAT ERP LTE Band 17 (10.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	ERP (Average)	
			dBm	mW
10.0 MHZ BAND QPSK	1/0	709.0	11.70	14.79
		710.0	11.80	15.14
		711.0	11.50	14.13
10.0 MHZ BAND 16QAM	1/0	709.0	11.20	13.18
		710.0	11.30	13.49
		711.0	10.90	12.30

UAT BAND 25

UAT EIRP LTE Band 25 (1.4MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
1.4 MHZ BAND QPSK	6/0	1850.7	23.94	247.74
		1880.0	24.36	272.90
		1914.3	23.28	212.81
1.4 MHZ BAND 16QAM	6/0	1850.7	23.04	201.37
		1880.0	23.46	221.82
		1914.3	22.38	172.98

UAT EIRP LTE Band 25 (3.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
3.0 MHZ BAND QPSK	15/0	1851.5	23.94	247.74
		1880.0	23.36	216.77
		1913.5	23.08	203.24
3.0 MHZ BAND 16QAM	15/0	1851.5	23.04	201.37
		1880.0	22.46	176.20
		1913.5	22.18	165.20

UAT EIRP LTE Band 25 (5.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
5.0 MHZ BAND QPSK	25/0	1852.5	24.84	304.79
		1880.0	24.26	266.69
		1912.5	24.08	255.86
5.0 MHZ BAND 16QAM	25/0	1852.5	23.94	247.74
		1880.0	23.36	216.77
		1912.5	23.18	207.97

UAT EIRP LTE Band 25 (10.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
10.0 MHZ BAND QPSK	50/0	1855.0	25.04	319.15
		1880.0	24.26	266.69
		1910.0	24.27	267.30
10.0 MHZ BAND 16QAM	50/0	1855.0	24.14	259.42
		1880.0	23.36	216.77
		1910.0	23.18	207.97

UAT EIRP LTE Band 25 (15.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
15.0 MHZ BAND QPSK	75/0	1857.5	25.04	319.15
		1880.0	24.36	272.90
		1907.5	23.98	250.03
15.0 MHZ BAND 16QAM	75/0	1857.5	24.14	259.42
		1880.0	23.46	221.82
		1907.5	23.08	203.24

UAT EIRP LTE Band 25 (20.0MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
20.0 MHZ BAND QPSK	100/0	1860.0	25.14	326.59
		1880.0	24.66	292.42
		1905.0	24.18	261.82
20.0 MHZ BAND 16QAM	100/0	1860.0	24.24	265.46
		1880.0	23.76	237.68
		1905.0	23.18	207.97

UAT BAND 26

UAT ERP LTE Band 26 (3.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
3.0 MHZ BAND QPSK	1/0	820.3	17.70	58.88
		821.3	18.18	65.77
		822.3	17.60	57.54
3.0 MHZ BAND 16QAM	1/0	820.3	16.70	46.77
		821.3	17.18	52.24
		822.3	16.50	44.67

UAT ERP LTE Band 26 (5.0 MHz BAND WIDTH)

Mode	RB/RB SIZE	f (MHz)	EIRP(Peak)	
			dBm	mW
5.0 MHZ BAND QPSK	1/0	821.3	19.23	83.75
5.0 MHZ BAND 16QAM	1/0	821.3	18.32	67.92

9.1.1. LAT LTE BAND 2

EIRP LTE QPSK Band 2 (1.4 MHz BAND WIDTH)

PEAK

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: Kiya Kedida
Configuration: EUT Only
Mode: LTE band 2, 1.4MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.850	20.2	V	1.50	7.94	26.64	33.0	-6.4	
1.850	20.4	H	1.50	8.14	27.04	33.0	-6.0	
Mid Ch								
1.880	20.4	V	1.50	7.95	26.85	33.0	-6.2	
1.880	20.4	H	1.50	8.26	27.16	33.0	-5.8	
High Ch								
1.909	20.3	V	1.50	7.97	26.77	33.0	-6.2	
1.909	20.0	H	1.50	8.38	26.88	33.0	-6.1	

Rev. 3.17.11

EIRP LTE 16QAM Band 2 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: Kiya Kedida
Configuration: EUT Only
Mode: LTE band 2, 1.4MHz BW
16-QAM , Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.850	20.2	V	1.50	7.94	26.64	33.0	-6.4	
1.850	20.3	H	1.50	8.14	26.94	33.0	-6.1	
Mid Ch								
1.880	20.3	V	1.50	7.95	26.75	33.0	-6.3	
1.880	20.1	H	1.50	8.26	26.86	33.0	-6.1	
High Ch								
1.909	19.9	V	1.50	7.97	26.37	33.0	-6.6	
1.909	20.1	H	1.50	8.38	26.98	33.0	-6.0	

Rev. 3.17.11

EIRP LTE QPSK Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: Kiya Kedida
Configuration: EUT Only
Mode: LTE band 2, 3 Hz BW
QPSK , Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	17.5	V	1.50	7.94	23.94	33.0	-9.1	
1.852	20.3	H	1.50	8.14	26.94	33.0	-6.1	
Mid Ch								
1.880	19.3	V	1.50	7.95	25.75	33.0	-7.3	
1.880	20.6	H	1.50	8.26	27.36	33.0	-5.6	
High Ch								
1.909	19.0	V	1.50	7.97	25.47	33.0	-7.5	
1.909	19.9	H	1.50	8.38	26.78	33.0	-6.2	

Rev. 3.17.11

EIRP LTE 16QAM Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: Kiya Kedida
Configuration: EUT Only
Mode: LTE band 2, 3 Hz BW
16-QAM , Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	20.6	V	1.50	7.94	27.04	33.0	-6.0	
1.852	20.2	H	1.50	8.14	26.84	33.0	-6.2	
Mid Ch								
1.880	20.5	V	1.50	7.95	26.95	33.0	-6.1	
1.880	20.5	H	1.50	8.26	27.26	33.0	-5.7	
High Ch								
1.909	20.5	V	1.50	7.97	26.97	33.0	-6.0	
1.909	20.2	H	1.50	8.38	27.08	33.0	-5.9	

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EIRP LTE QPSK Band 2 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 2, 5MHz
QPSK RB15/0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (20895502) 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	19.3	V	1.50	7.94	25.74	33.0	-7.3	
1.852	19.6	H	1.50	8.80	26.90	33.0	-6.1	
Mid Ch								
1.880	19.1	V	1.50	7.95	25.55	33.0	-7.5	
1.880	20.0	H	1.50	8.68	27.18	33.0	-5.8	
High Ch								
1.909	19.2	V	1.50	7.97	25.67	33.0	-7.3	
1.909	19.6	H	1.50	8.57	26.67	33.0	-6.3	

Rev. 3.17.11

EIRP LTE 16QAM Band 2 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 2, 5MHz
16QAM RB15/0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (20895502) 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	19.9	V	1.50	7.94	26.34	33.0	-6.7	
1.852	19.4	H	1.50	8.80	26.70	33.0	-6.3	
X								
1.880	19.1	V	1.50	7.95	25.55	33.0	-7.5	
1.880	19.3	H	1.50	8.68	26.48	33.0	-6.5	
High Ch								
1.909	19.2	V	1.50	7.97	25.67	33.0	-7.3	
1.909	19.0	H	1.50	8.57	26.07	33.0	-6.9	

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EIRP LTE QPSK Band 2 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 2, 10MHz
QPSK RB50/0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	19.4	V	1.50	7.94	25.84	33.0	-7.2	
1.855	20.0	H	1.50	8.14	26.64	33.0	-6.4	
Mid Ch								
1.880	19.5	V	1.50	7.95	25.95	33.0	-7.1	
1.880	20.2	H	1.50	8.26	26.96	33.0	-6.0	
High Ch								
1.905	19.2	V	1.50	7.97	25.67	33.0	-7.3	
1.905	19.7	H	1.50	8.38	26.58	33.0	-6.4	

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EIRP LTE 16QAM Band 2 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 2, 10MHz
16QAM RB50/0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	18.5	V	1.50	7.94	24.94	33.0	-8.1	
1.855	19.6	H	1.50	8.14	26.24	33.0	-6.8	
Mid Ch								
1.880	19.2	V	1.50	7.95	25.65	33.0	-7.4	
1.880	19.8	H	1.50	8.26	26.56	33.0	-6.4	
High Ch								
1.905	18.4	V	1.50	7.97	24.87	33.0	-8.1	
1.905	19.9	H	1.50	8.38	26.78	33.0	-6.2	

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EIRP LTE QPSK Band 2 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 2, 15MHz
QPSK RB75/0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	18.8	V	1.50	7.94	25.24	33.0	-7.8	
1.858	20.0	H	1.50	8.14	26.64	33.0	-6.4	
Mid Ch								
1.880	18.8	V	1.50	7.95	25.25	33.0	-7.8	
1.880	20.4	H	1.50	8.26	27.16	33.0	-5.8	
High Ch								
1.903	18.6	V	1.50	7.97	25.07	33.0	-7.9	
1.903	20.0	H	1.50	8.38	26.88	33.0	-6.1	

Rev. 3.17.11

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

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/29/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 2, 15MHz
16QAM RB75/0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	18.2	V	1.50	7.94	24.64	33.0	-8.4	
1.858	19.5	H	1.50	8.14	26.14	33.0	-6.9	
Mid Ch								
1.880	18.3	V	1.50	7.95	24.75	33.0	-8.3	
1.880	19.9	H	1.50	8.26	26.66	33.0	-6.3	
High Ch								
1.903	18.0	V	1.50	7.97	24.47	33.0	-8.5	
1.903	19.4	H	1.50	8.38	26.28	33.0	-6.7	

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EIRP LTE QPSK Band 2 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 2, 20MHz
QPSK RB100/0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	18.1	V	1.50	7.94	24.54	33.0	-8.5	
1.860	19.7	H	1.50	8.14	26.34	33.0	-6.7	
Mid Ch								
1.880	18.8	V	1.50	7.95	25.25	33.0	-7.8	
1.880	20.5	H	1.50	8.26	27.26	33.0	-5.7	
High Ch								
1.900	18.8	V	1.50	7.97	25.27	33.0	-7.7	
1.900	20.1	H	1.50	8.38	26.98	33.0	-6.0	

Rev. 3.17.11

EIRP LTE 16QAM Band 2 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 2, 20MHz
16QAM RB100/0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	17.3	V	1.50	7.94	23.74	33.0	-9.3	
1.860	19.0	H	1.50	8.14	25.64	33.0	-7.4	
Mid Ch								
1.880	18.4	V	1.50	7.95	24.85	33.0	-8.2	
1.880	19.8	H	1.50	8.26	26.56	33.0	-6.4	
High Ch								
1.900	18.1	V	1.50	7.97	24.57	33.0	-8.4	
1.900	19.4	H	1.50	8.38	26.28	33.0	-6.7	

Rev. 3.17.11

9.1.2. LAT LTE BAND 4

EIRP LTE QPSK Band 4 (1.4 MHz BAND WIDTH)

PEAK

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 1.4MHz BW
QPSK, Peak, RB6-0

Test Equipment:
Receiving: Horn T120, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.711	18.7	V	1.50	8.17	25.37	33.0	-7.6	
1.711	18.9	H	1.50	8.20	25.60	33.0	-7.4	
Mid Ch								
1.733	18.9	V	1.50	8.11	25.51	33.0	-7.5	
1.733	19.2	H	1.50	8.13	25.83	33.0	-7.2	
High Ch								
1.754	18.6	V	1.50	8.06	25.16	33.0	-7.8	
1.754	19.5	H	1.50	8.07	26.07	33.0	-6.9	

Rev. 3.17.11

EIRP LTE 16QAM Band 4 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 1.4MHz BW
16QAM, Peak, RB6-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.711	18.3	V	1.50	8.17	24.97	33.0	-8.0	
1.711	18.5	H	1.50	8.20	25.20	33.0	-7.8	
Mid Ch								
1.733	18.5	V	1.50	8.11	25.11	33.0	-7.9	
1.733	19.1	H	1.50	8.13	25.73	33.0	-7.3	
High Ch								
1.754	18.4	V	1.50	8.06	24.96	33.0	-8.0	
1.754	19.2	H	1.50	8.07	25.77	33.0	-7.2	

Rev. 3.17.11

EIRP LTE QPSK Band 4 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 3MHz BW
QPSk, Peak, RB15-0

Test Equipment:
Receiving: Horn T120, and Chamber B SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.711	18.5	V	1.50	8.17	25.17	33.0	-7.8	
1.711	18.7	H	1.50	8.20	25.40	33.0	-7.6	
Mid Ch								
1.733	19.9	V	1.50	8.11	26.51	33.0	-6.5	
1.733	20.0	H	1.50	8.13	26.63	33.0	-6.4	
High Ch								
1.754	18.8	V	1.50	8.06	25.36	33.0	-7.6	
1.754	19.2	H	1.50	8.07	25.77	33.0	-7.2	

Rev. 3.17.11

EIRP LTE 16QAM Band 4 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 3MHz BW
16QAM, Peak, RB15-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.711	18.3	V	1.50	8.17	24.97	33.0	-8.0	
1.711	18.7	H	1.50	8.20	25.40	33.0	-7.6	
Mid Ch								
1.733	19.5	V	1.50	8.11	26.11	33.0	-6.9	
1.733	19.5	H	1.50	8.13	26.13	33.0	-6.9	
High Ch								
1.754	18.5	V	1.50	8.06	25.06	33.0	-7.9	
1.754	18.8	H	1.50	8.07	25.37	33.0	-7.6	

Rev. 3.17.11

EIRP LTE QPSK Band 4 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 5MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.713	18.6	V	1.50	8.17	25.27	33.0	-7.7	
1.713	19.1	H	1.50	8.20	25.80	33.0	-7.2	
Mid Ch								
1.733	19.6	V	1.50	8.11	26.21	33.0	-6.8	
1.733	19.7	H	1.50	8.13	26.33	33.0	-6.7	
High Ch								
1.753	18.9	V	1.50	8.06	25.46	33.0	-7.5	
1.753	19.2	H	1.50	8.07	25.77	33.0	-7.2	

Rev. 3.17.11

EIRP LTE 16QAM Band 4 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 5MHz BW
16QAM, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.713	18.1	V	1.50	8.17	24.77	33.0	-8.2	
1.713	18.5	H	1.50	8.20	25.20	33.0	-7.8	
Mid Ch								
1.733	18.8	V	1.50	8.11	25.41	33.0	-7.6	
1.733	19.1	H	1.50	8.13	25.73	33.0	-7.3	
High Ch								
1.753	18.7	V	1.50	8.06	25.26	33.0	-7.7	
1.753	18.5	H	1.50	8.07	25.07	33.0	-7.9	

Rev. 3.17.11

EIRP LTE QPSK Band 4 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 10MHz BW
QPSK, Peak, RB50-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.715	18.6	V	1.50	8.17	25.27	33.0	-7.7	
1.715	18.4	H	1.50	8.20	25.10	33.0	-7.9	
Mid Ch								
1.733	19.8	V	1.50	8.11	26.41	33.0	-6.6	
1.733	19.5	H	1.50	8.13	26.13	33.0	-6.9	
High Ch								
1.750	18.7	V	1.50	8.06	25.26	33.0	-7.7	
1.750	19.0	H	1.50	8.07	25.57	33.0	-7.4	

Rev. 3.17.11

EIRP LTE 16QAM Band 4 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 10MHz BW
16QAM, Peak, RB50-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.715	18.4	V	1.50	8.17	25.07	33.0	-7.9	
1.715	18.8	H	1.50	8.20	25.50	33.0	-7.5	
Mid Ch								
1.733	19.2	V	1.50	8.11	25.81	33.0	-7.2	
1.733	19.0	H	1.50	8.13	25.63	33.0	-7.4	
High Ch								
1.750	18.3	V	1.50	8.06	24.86	33.0	-8.1	
1.750	18.5	H	1.50	8.07	25.07	33.0	-7.9	

Rev. 3.17.11

EIRP LTE QPSK Band 4 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 15MHz BW
QPSK, Peak, RB75-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.718	18.6	V	1.50	8.17	25.27	33.0	-7.7	
1.718	19.1	H	1.50	8.20	25.80	33.0	-7.2	
Mid Ch								
1.733	19.6	V	1.50	8.11	26.21	33.0	-6.8	
1.733	19.9	H	1.50	8.13	26.53	33.0	-6.5	
High Ch								
1.748	18.9	V	1.50	8.06	25.46	33.0	-7.5	
1.748	18.6	H	1.50	8.07	25.17	33.0	-7.8	

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EIRP LTE 16QAM Band 4 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 15MHz BW
16QAM, Peak, RB75-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.718	18.2	V	1.50	8.17	24.87	33.0	-8.1	
1.718	18.6	H	1.50	8.20	25.30	33.0	-7.7	
Mid Ch								
1.733	19.1	V	1.50	8.11	25.71	33.0	-7.3	
1.733	19.4	H	1.50	8.13	26.03	33.0	-7.0	
High Ch								
1.748	18.3	V	1.50	8.06	24.86	33.0	-8.1	
1.748	18.1	H	1.50	8.07	24.67	33.0	-8.3	

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EIRP LTE QPSK Band 4 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 20MHz BW
QPSK, Peak, RB100-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.720	18.4	V	1.50	8.17	25.07	33.0	-7.9	
1.720	18.7	H	1.50	8.20	25.40	33.0	-7.6	
Mid Ch								
1.733	19.7	V	1.50	8.11	26.31	33.0	-6.7	
1.733	19.9	H	1.50	8.13	26.53	33.0	-6.5	
High Ch								
1.745	18.9	V	1.50	8.06	25.46	33.0	-7.5	
1.745	18.8	H	1.50	8.07	25.37	33.0	-7.6	

Rev. 3.17.11

EIRP LTE 16QAM Band 4 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE band 4, 20MHz BW
16QAM, Peak, RB100-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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								
1.720	17.8	V	1.50	8.17	24.47	33.0	-8.5	
1.720	18.2	H	1.50	8.20	24.90	33.0	-8.1	
Mid Ch								
1.733	19.2	V	1.50	8.11	25.81	33.0	-7.2	
1.733	19.3	H	1.50	8.13	25.93	33.0	-7.1	
High Ch								
1.745	18.2	V	1.50	8.06	24.76	33.0	-8.2	
1.745	18.1	H	1.50	8.07	24.67	33.0	-8.3	

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9.1.3. LAT LTE BAND 5

ERP LTE QPSK Band 5 (1.4 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedia
Configuration: EUT only
Mode: LTE Band 5 , 1.4MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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	13.20	V	0.9	0.0	12.30	38.5	-26.1	
824.70	21.60	H	0.9	0.0	20.70	38.5	-17.7	
Mid Ch								
836.50	14.30	V	0.9	0.0	13.40	38.5	-25.0	
836.50	21.70	H	0.9	0.0	20.80	38.5	-17.6	
High Ch								
848.30	14.60	V	0.9	0.0	13.70	38.5	-24.7	
848.30	20.84	H	0.9	0.0	19.94	38.5	-18.5	

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ERP LTE 16QAM Band 5 (1.4 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedia
Configuration: EUT only
Mode: LTE Band 5 , 1.4MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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	12.40	V	0.9	0.0	11.50	38.5	-26.9	
824.70	20.70	H	0.9	0.0	19.80	38.5	-18.6	
Mid Ch								
836.50	13.40	V	0.9	0.0	12.50	38.5	-25.9	
836.50	20.60	H	0.9	0.0	19.70	38.5	-18.7	
High Ch								
848.30	13.50	V	0.9	0.0	12.60	38.5	-25.8	
848.30	19.94	H	0.9	0.0	19.04	38.5	-19.4	

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ERP LTE QPSK Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedia
Configuration: EUT only
Mode: LTE Band 5 , 3MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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	12.70	V	0.9	0.0	11.80	38.5	-26.6	
825.50	22.10	H	0.9	0.0	21.20	38.5	-17.2	
Mid Ch								
836.50	12.60	V	0.9	0.0	11.70	38.5	-26.7	
836.50	21.30	H	0.9	0.0	20.40	38.5	-18.0	
High Ch								
847.50	13.90	V	0.9	0.0	13.00	38.5	-25.4	
847.50	21.04	H	0.9	0.0	20.14	38.5	-18.3	

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ERP LTE 16QAM Band 5 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedia
Configuration: EUT only
Mode: LTE Band 5 , 3MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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	11.60	V	0.9	0.0	10.70	38.5	-27.7	
825.50	20.20	H	0.9	0.0	19.30	38.5	-19.1	
Mid Ch								
836.50	11.50	V	0.9	0.0	10.60	38.5	-27.8	
836.50	20.40	H	0.9	0.0	19.50	38.5	-18.9	
High Ch								
847.50	12.80	V	0.9	0.0	11.90	38.5	-26.5	
847.50	20.14	H	0.9	0.0	19.24	38.5	-19.2	

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ERP LTE QPSK Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedia
Configuration: EUT only
Mode: LTE Band 5 , 5MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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	12.30	V	0.9	0.0	11.40	38.5	-27.0	
826.50	21.80	H	0.9	0.0	20.90	38.5	-17.5	
Mid Ch								
836.50	12.40	V	0.9	0.0	11.50	38.5	-26.9	
836.50	21.40	H	0.9	0.0	20.50	38.5	-17.9	
High Ch								
846.50	13.70	V	0.9	0.0	12.80	38.5	-25.6	
846.50	20.94	H	0.9	0.0	20.04	38.5	-18.4	

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ERP LTE 16QAM Band 5 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedia
Configuration: EUT only
Mode: LTE Band 5 , 5MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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	11.50	V	0.9	0.0	10.60	38.5	-27.8	
826.50	20.70	H	0.9	0.0	19.80	38.5	-18.6	
Mid Ch								
836.50	11.70	V	0.9	0.0	10.80	38.5	-27.6	
836.50	20.50	H	0.9	0.0	19.60	38.5	-18.8	
High Ch								
846.50	13.00	V	0.9	0.0	12.10	38.5	-26.3	
846.50	20.04	H	0.9	0.0	19.14	38.5	-19.3	

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ERP LTE QPSK Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedia
Configuration: EUT only
Mode: LTE Band 5 ,10MHz BW
QPSK, Average, RB1-0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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	12.70	V	0.9	0.0	11.80	38.5	-26.6	
829.00	21.80	H	0.9	0.0	20.90	38.5	-17.5	
Mid Ch								
836.50	13.50	V	0.9	0.0	12.60	38.5	-25.8	
836.50	21.10	H	0.9	0.0	20.20	38.5	-18.2	
High Ch								
844.00	14.40	V	0.9	0.0	13.50	38.5	-24.9	
844.00	21.04	H	0.9	0.0	20.14	38.5	-18.3	

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ERP LTE 16QAM Band 5 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber D

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedia
Configuration: EUT only
Mode: LTE Band 5 , 10MHz BW
16QAM, Average, RB1-0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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	11.90	V	0.9	0.0	11.00	38.5	-27.4	
829.00	20.70	H	0.9	0.0	19.80	38.5	-18.6	
Mid Ch								
836.50	12.40	V	0.9	0.0	11.50	38.5	-26.9	
836.50	20.40	H	0.9	0.0	19.50	38.5	-18.9	
High Ch								
844.00	13.50	V	0.9	0.0	12.60	38.5	-25.8	
844.00	19.94	H	0.9	0.0	19.04	38.5	-19.4	

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9.1.4. LAT LTE BAND 13

ERP LTE QPSK, Band 13 (5.0 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: T Wang
Configuration: EUT only
Mode: TX, LTE BAND 13
QPSK, 5MHz BW, Average, RB1-0

Test Equipment:
Receiving: Sunol T122 and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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								
779.50	11.90	V	0.9	0.0	11.00	38.5	-27.4	
779.50	18.50	H	0.9	0.0	17.60	38.5	-20.8	
Mid Ch								
782.00	10.30	V	0.9	0.0	9.40	38.5	-29.0	
782.00	18.40	H	0.9	0.0	17.50	38.5	-20.9	
High Ch								
784.50	11.30	V	0.9	0.0	10.40	38.5	-28.0	
784.50	18.90	H	0.9	0.0	18.00	38.5	-20.4	

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ERP LTE 16QAM Band 13 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: T Wang
Configuration: EUT only
Mode: TX, LTE BAND 13
16QAM, 5MHz BW, Average, RB1-0

Test Equipment:
Receiving: Sunol T122 and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) 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								
779.50	11.10	V	0.9	0.0	10.20	38.5	-28.2	
779.50	17.70	H	0.9	0.0	16.80	38.5	-21.6	
Mid Ch								
782.00	9.60	V	0.9	0.0	8.70	38.5	-29.7	
782.00	17.30	H	0.9	0.0	16.40	38.5	-22.0	
High Ch								
784.50	10.30	V	0.9	0.0	9.40	38.5	-29.0	
784.50	18.00	H	0.9	0.0	17.10	38.5	-21.3	

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ERP LTE QPSK Band 13 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: T Wang
Configuration: EUT only
Mode: TX, LTE BAND 13
QPSK, 10MHz BW, Average, RB1-0

Test Equipment:
Receiving: Sunol T122 and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Mid Ch								
782.00	12.40	V	0.9	0.0	11.50	38.5	-26.9	
782.00	19.30	H	0.9	0.0	18.40	38.5	-20.0	

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ERP LTE 16QAM Band 13 (10.0 MHz BAND WIDTH)

Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: T Wang
Configuration: EUT only
Mode: TX, LTE BAND 13
16QAM, 10MHz BW, Average, RB1-0

Test Equipment:
Receiving: Sunol T122 and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208947003) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Mid Ch								
782.00	11.30	V	0.9	0.0	10.40	38.5	-28.0	
782.00	18.20	H	0.9	0.0	17.30	38.5	-21.1	

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9.1.5. LAT LTE BAND 17

ERP LTE QPSK, Band 17 (5.0 MHz BAND WIDTH)

AVERAGE

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 17, 5MHz BW
QPSK 5MHz AVG RB1/0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) 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								
706.50	8.40	V	0.9	0.0	7.50	34.8	-27.3	
706.50	17.60	H	0.9	0.0	16.70	34.8	-18.1	
Mid Ch								
710.00	9.00	V	0.9	0.0	8.10	34.8	-26.7	
710.00	17.60	H	0.9	0.0	16.70	34.8	-18.1	
High Ch								
713.50	8.30	V	0.9	0.0	7.40	34.8	-27.4	
713.50	17.80	H	0.9	0.0	16.90	34.8	-17.9	

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ERP LTE 16QAM Band 17 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 17, 5MHz BW
16QAM 5MHz AVG RB1/0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) 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								
706.50	7.60	V	0.9	0.0	6.70	34.8	-28.1	
706.50	17.00	H	0.9	0.0	16.10	34.8	-18.7	
Mid Ch								
710.00	8.10	V	0.9	0.0	7.20	34.8	-27.6	
710.00	17.60	H	0.9	0.0	16.70	34.8	-18.1	
High Ch								
713.50	7.70	V	0.9	0.0	6.80	34.8	-28.0	
713.50	17.00	H	0.9	0.0	16.10	34.8	-18.7	

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ERP LTE QPSK Band 17 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 17, 10MHz BW
QPSK 10MHz AVG RB1/0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) 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								
709.00	8.50	V	0.9	0.0	7.60	34.8	-27.2	
709.00	18.20	H	0.9	0.0	17.30	34.8	-17.5	
Mid Ch								
710.00	8.50	V	0.9	0.0	7.60	34.8	-27.2	
710.00	17.60	H	0.9	0.0	16.70	34.8	-18.1	
High Ch								
711.00	8.60	V	0.9	0.0	7.70	34.8	-27.1	
711.00	18.20	H	0.9	0.0	17.30	34.8	-17.5	

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ERP LTE 16QAM Band 17 (10.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: T Wang
Configuration: EUT only
Mode: LTE Band 17, 10MHz BW
16qam 10MHz AVG RB1/0

Test Equipment:
Receiving: Sunol T122, and Chamber F N-type Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) 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								
709.00	7.70	V	0.9	0.0	6.80	34.8	-28.0	
709.00	17.50	H	0.9	0.0	16.60	34.8	-18.2	
Mid Ch								
710.00	7.60	V	0.9	0.0	6.70	34.8	-28.1	
710.00	17.60	H	0.9	0.0	16.70	34.8	-18.1	
High Ch								
711.00	7.80	V	0.9	0.0	6.90	34.8	-27.9	
711.00	17.40	H	0.9	0.0	16.50	34.8	-18.3	

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9.1.6. LAT LTE BAND 25

EIRP LTE QPSK Band 25 (1.4 MHz BAND WIDTH)

PEAK

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T WANG
Configuration: EUT only
Mode: LTE band 25, 1.4MHz BW
QPSK, Peak, RB6-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	19.3	V	1.50	7.94	25.74	33.0	-7.3	
1.851	18.5	H	1.50	8.14	25.14	33.0	-7.9	
Mid Ch								
1.883	20.4	V	1.50	7.95	26.85	33.0	-6.2	
1.883	18.7	H	1.50	8.26	25.46	33.0	-7.5	
High Ch								
1.914	19.1	V	1.50	7.97	25.57	33.0	-7.4	
1.914	18.9	H	1.50	8.38	25.78	33.0	-7.2	

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EIRP LTE 16QAM Band 25 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T WANG
Configuration: EUT only
Mode: LTE band 25, 1.4MHz BW
16QAM, Peak, RB6-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	18.7	V	1.50	7.94	25.14	33.0	-7.9	
1.851	18.0	H	1.50	8.14	24.64	33.0	-8.4	
Mid Ch								
1.883	19.9	V	1.50	7.95	26.35	33.0	-6.7	
1.883	18.4	H	1.50	8.26	25.16	33.0	-7.8	
High Ch								
1.914	18.6	V	1.50	7.97	25.07	33.0	-7.9	
1.914	18.4	H	1.50	8.38	25.28	33.0	-7.7	

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EIRP LTE QPSK Band 25 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T WANG
Configuration: EUT only
Mode: LTE band 25, 3MHz BW
QPSK, Peak, RB15-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	20.0	V	1.50	7.94	26.44	33.0	-6.6	
1.852	18.4	H	1.50	8.14	25.04	33.0	-8.0	
Mid Ch								
1.883	20.3	V	1.50	7.95	26.75	33.0	-6.3	
1.883	19.1	H	1.50	8.26	25.86	33.0	-7.1	
High Ch								
1.914	19.3	V	1.50	7.97	25.77	33.0	-7.2	
1.914	18.5	H	1.50	8.38	25.38	33.0	-7.6	

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EIRP LTE 16QAM Band 25 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T WANG
Configuration: EUT only
Mode: LTE band 25, 3MHz BW
16QAM, Peak, RB15-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	19.2	V	1.50	7.94	25.64	33.0	-7.4	
1.852	17.8	H	1.50	8.14	24.44	33.0	-8.6	
Mid Ch								
1.883	19.7	V	1.50	7.95	26.15	33.0	-6.9	
1.883	18.7	H	1.50	8.26	25.46	33.0	-7.5	
High Ch								
1.914	19.9	V	1.50	7.97	26.37	33.0	-6.6	
1.914	18.1	H	1.50	8.38	24.98	33.0	-8.0	

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EIRP LTE QPSK Band 25 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T WANG
Configuration: EUT only
Mode: LTE band 25, 5MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	18.9	V	1.50	7.94	25.34	33.0	-7.7	
1.851	18.4	H	1.50	8.14	25.04	33.0	-8.0	
Mid Ch								
1.883	20.7	V	1.50	7.95	27.15	33.0	-5.9	
1.883	19.6	H	1.50	8.26	26.36	33.0	-6.6	
High Ch								
1.914	19.8	V	1.50	7.97	26.27	33.0	-6.7	
1.914	19.1	H	1.50	8.38	25.98	33.0	-7.0	

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EIRP LTE 16QAM Band 25 (5.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: T WANG
Configuration: EUT only
Mode: LTE band 25, 5MHz BW
16QAM, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	17.7	V	1.50	7.94	24.14	33.0	-8.9	
1.851	17.8	H	1.50	8.14	24.44	33.0	-8.6	
Mid Ch								
1.883	20.0	V	1.50	7.95	26.45	33.0	-6.6	
1.883	19.0	H	1.50	8.26	25.76	33.0	-7.2	
High Ch								
1.914	19.1	V	1.50	7.97	25.57	33.0	-7.4	
1.914	18.4	H	1.50	8.38	25.28	33.0	-7.7	

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EIRP LTE QPSK Band 25 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 25, 10MHz BW
QPSK, Peak, RB50-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	21.3	V	1.50	7.94	27.74	33.0	-5.3	
1.855	21.4	H	1.50	8.14	28.04	33.0	-5.0	
Mid Ch								
1.883	21.8	V	1.50	7.95	28.25	33.0	-4.8	
1.883	21.2	H	1.50	8.26	27.96	33.0	-5.0	
High Ch								
1.910	21.6	V	1.50	7.97	28.07	33.0	-4.9	
1.910	20.3	H	1.50	8.38	27.18	33.0	-5.8	

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EIRP LTE 16QAM Band 25 (10.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 25, 10MHz BW
16 -QAM, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	20.4	V	1.50	7.94	26.84	33.0	-6.2	
1.855	20.4	H	1.50	8.14	27.04	33.0	-6.0	
Mid Ch								
1.883	20.9	V	1.50	7.95	27.35	33.0	-5.7	
1.883	20.2	H	1.50	8.26	26.96	33.0	-6.0	
High Ch								
1.910	20.5	V	1.50	7.97	26.97	33.0	-6.0	
1.910	19.3	H	1.50	8.38	26.18	33.0	-6.8	

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EIRP LTE QPSK Band 25 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 25, 15MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	21.8	V	1.50	7.94	28.24	33.0	-4.8	
1.858	21.3	H	1.50	8.14	27.94	33.0	-5.1	
Mid Ch								
1.883	21.0	V	1.50	7.95	27.45	33.0	-5.6	
1.883	21.2	H	1.50	8.26	27.96	33.0	-5.0	
High Ch								
1.908	21.1	V	1.50	7.97	27.57	33.0	-5.4	
1.908	20.4	H	1.50	8.38	27.28	33.0	-5.7	

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EIRP LTE 16QAM Band 25 (15.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 25, 15MHz BW
16 -QAM , Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	20.8	V	1.50	7.94	27.24	33.0	-5.8	
1.858	20.3	H	1.50	8.14	26.94	33.0	-6.1	
Mid Ch								
1.883	19.9	V	1.50	7.95	26.35	33.0	-6.7	
1.883	20.2	H	1.50	8.26	26.96	33.0	-6.0	
High Ch								
1.908	20.1	V	1.50	7.97	26.57	33.0	-6.4	
1.908	19.4	H	1.50	8.38	26.28	33.0	-6.7	

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EIRP LTE QPSK Band 25 (20.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 25, 20MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	21.3	V	1.50	7.94	27.74	33.0	-5.3	
1.860	21.4	H	1.50	8.14	28.04	33.0	-5.0	
Mid Ch								
1.883	21.1	V	1.50	7.95	27.55	33.0	-5.5	
1.883	21.2	H	1.50	8.26	27.96	33.0	-5.0	
High Ch								
1.905	21.0	V	1.50	7.97	27.47	33.0	-5.5	
1.905	19.7	H	1.50	8.38	26.58	33.0	-6.4	

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EIRP LTE 16QAM Band 25 (20.0 MHz BAND WIDTH

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/30/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 25, 20MHz BW
16-QAM, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	20.3	V	1.50	7.94	26.74	33.0	-6.3	
1.860	20.4	H	1.50	8.14	27.04	33.0	-6.0	
Mid Ch								
1.883	20.0	V	1.50	7.95	26.45	33.0	-6.6	
1.883	20.2	H	1.50	8.26	26.96	33.0	-6.0	
High Ch								
1.905	20.2	V	1.50	7.97	26.67	33.0	-6.3	
1.905	18.7	H	1.50	8.38	25.58	33.0	-7.4	

Rev. 3.17.11

9.1.7. LAT LTE BAND 26

PEAK

ERP LTE QPSK Band 26 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: Band26 3M
QPSK Pk RB15/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) 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								
820.30	15.69	V	0.9	0.0	14.79	38.5	-23.7	
820.30	23.97	H	0.9	0.0	23.07	38.5	-15.4	
Mid Ch								
821.30	15.48	V	0.9	0.0	14.58	38.5	-23.9	
821.30	24.40	H	0.9	0.0	23.50	38.5	-14.9	
High Ch								
822.30	15.15	V	0.9	0.0	14.25	38.5	-24.2	
822.30	23.98	H	0.9	0.0	23.08	38.5	-15.4	

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ERP LTE 16QAM Band 26 (3.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: Band26 3M
QPSK Pk RB15/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) 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								
820.30	14.72	V	0.9	0.0	13.82	38.5	-24.6	
820.30	22.96	H	0.9	0.0	22.06	38.5	-16.4	
Mid Ch								
821.30	14.47	V	0.9	0.0	13.57	38.5	-24.9	
821.30	23.40	H	0.9	0.0	22.50	38.5	-15.9	
High Ch								
822.30	14.16	V	0.9	0.0	13.26	38.5	-25.2	
822.30	23.00	H	0.9	0.0	22.10	38.5	-16.3	

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ERP LTE QPSK/16QAM Band 26 (5.0 MHz BAND WIDTH)

High Frequency Substitution Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 07/16/13
Test Engineer: R Zheng
Configuration: EUT only
Mode: Band26 5MHz
QPSK /16QAM Pk RB25/0

Test Equipment:
Receiving: Sunol T122, and Chamber F Cable (Setup this one for testing EUT)
Substitution: Dipole S/N: 00022117, 8ft SMA Cable (SN # 208955002) Warehouse.

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
QPSK								
Mid Ch								
821.30	16.00	V	0.9	0.0	15.10	38.5	-23.3	
821.30	25.30	H	0.9	0.0	24.40	38.5	-14.0	
16QAM								
Mid Ch								
821.30	15.10	V	0.9	0.0	14.20	38.5	-24.2	
821.30	24.30	H	0.9	0.0	23.40	38.5	-15.0	

Rev. 3.17.11

9.1.8. UAT LTE BAND 2

EIRP LTE QPSK Band 2 (1.4 MHz BAND WIDTH)

PEAK

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 2, 1.4MHz BW
QPSK, Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	16.3	V	1.50	7.94	22.74	33.0	-10.3	
1.851	17.1	H	1.50	8.14	23.74	33.0	-9.3	
Mid Ch								
1.880	15.1	V	1.50	7.95	21.55	33.0	-11.5	
1.880	15.6	H	1.50	8.26	22.36	33.0	-10.6	
High Ch								
1.909	15.6	V	1.50	7.97	22.07	33.0	-10.9	
1.909	16.4	H	1.50	8.38	23.28	33.0	-9.7	

Rev. 3.17.11

EIRP LTE 16QAM Band 2 (1.4 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 2, 1.4MHz BW
16-QAM , Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	15.5	V	1.50	7.94	21.94	33.0	-11.1	
1.851	16.2	H	1.50	8.14	22.84	33.0	-10.2	
Mid Ch								
1.880	14.2	V	1.50	7.95	20.65	33.0	-12.4	
1.880	14.8	H	1.50	8.26	21.56	33.0	-11.4	
High Ch								
1.909	14.8	V	1.50	7.97	21.27	33.0	-11.7	
1.909	15.5	H	1.50	8.38	22.38	33.0	-10.6	

Rev. 3.17.11

EIRP LTE QPSK Band 2 (3.0 MHz BAND WIDTH)

High Frequency Fundamental Measurement
Compliance Certification Services Chamber F

Company: Apple
Project #: 13U14987
Date: 05/31/13
Test Engineer: Kiya Kedida
Configuration: EUT only
Mode: LTE band 2, 3MHz BW
QPSK , Peak, RB25-0

Test Equipment:
Receiving: Horn T120, and Chamber F SMA Cables
Substitution: Horn T59 Substitution, 8ft SMA Cable (244639001) 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	16.5	V	1.50	7.94	22.94	33.0	-10.1	
1.852	17.3	H	1.50	8.14	23.94	33.0	-9.1	
Mid Ch								
1.880	15.8	V	1.50	7.95	22.25	33.0	-10.8	
1.880	15.8	H	1.50	8.26	22.56	33.0	-10.4	
High Ch								
1.909	15.6	V	1.50	7.97	22.07	33.0	-10.9	
1.909	16.3	H	1.50	8.38	23.18	33.0	-9.8	

Rev. 3.17.11