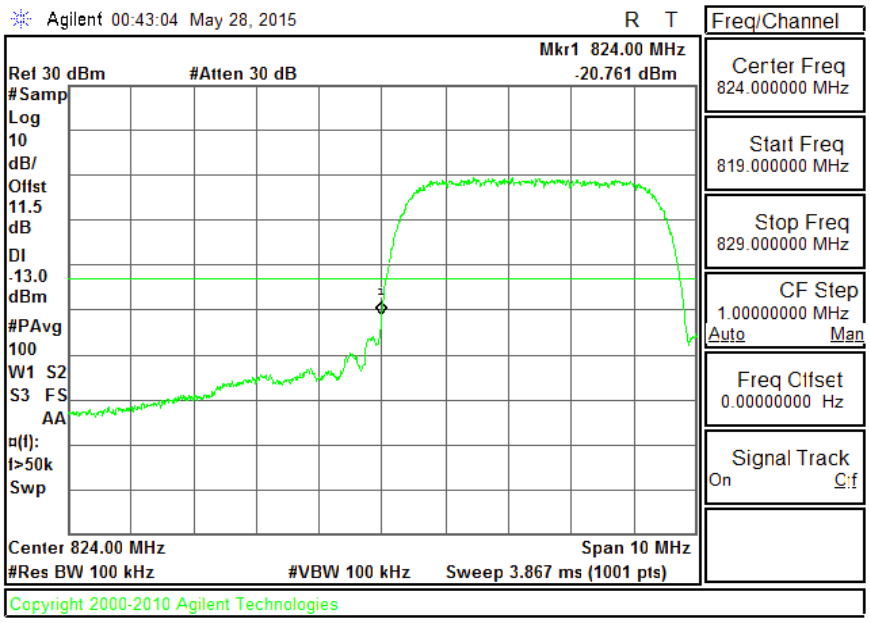
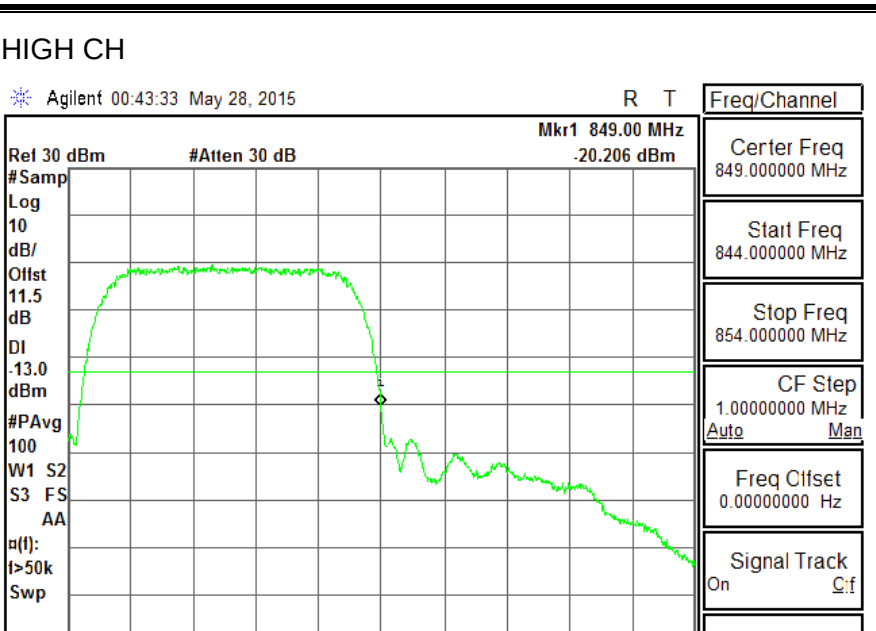
8.4.8. UMTS HSDPA

850MHz BAND

LOW CH



HIGH CH



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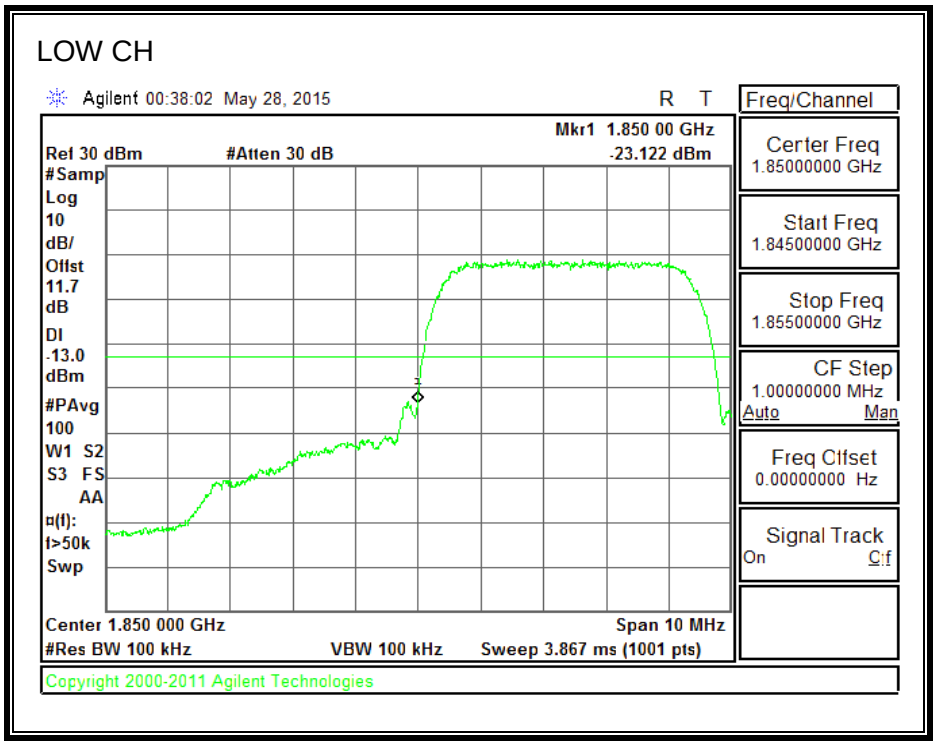
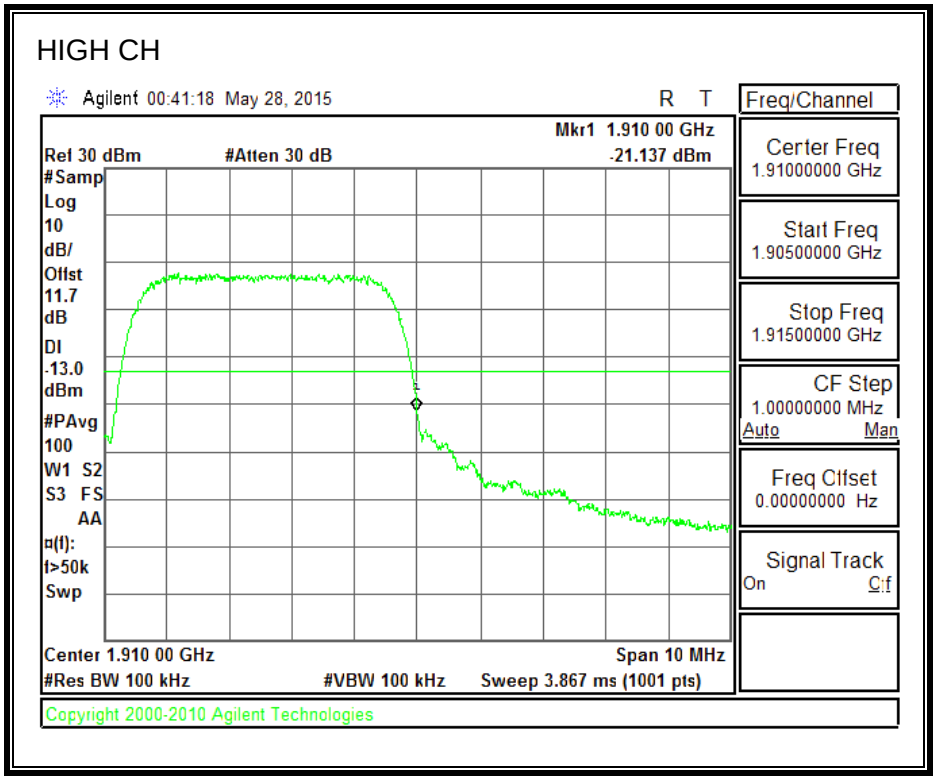
1900MHz BAND

LOW CH



HIGH CH



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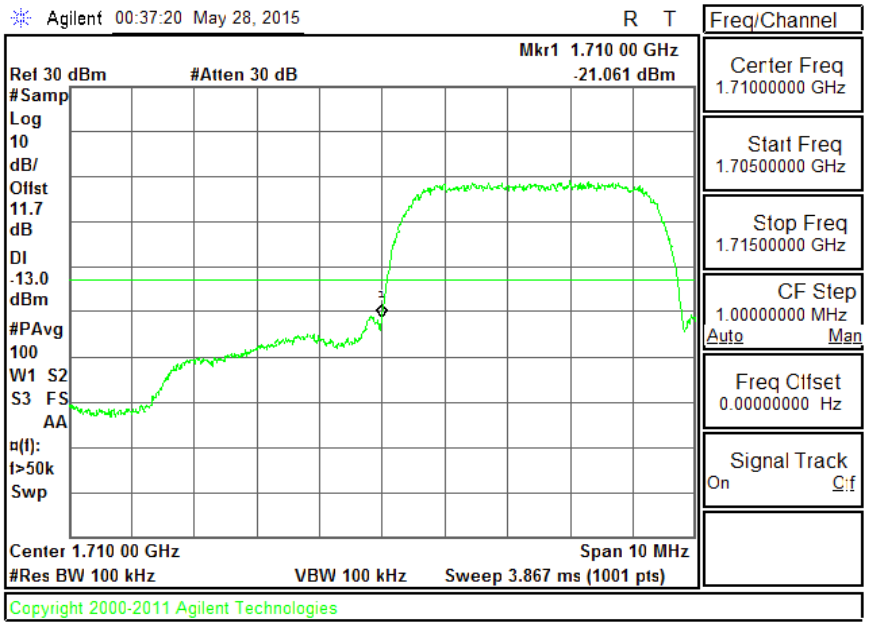
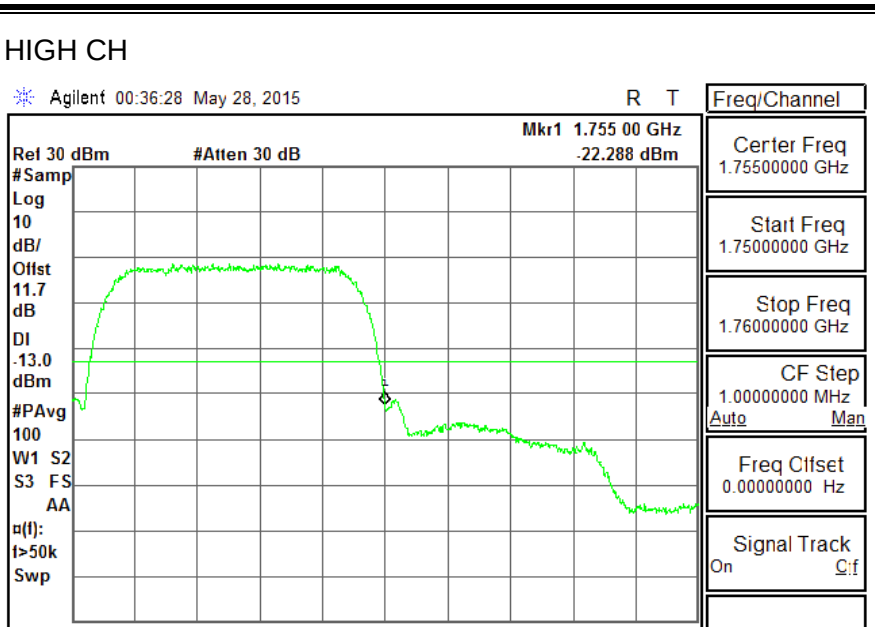
1700MHz BAND

LOW CH



HIGH CH



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8.5. OUT OF BAND EMISSIONS (MODEL: A1633)

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §90.691

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

RESULTS

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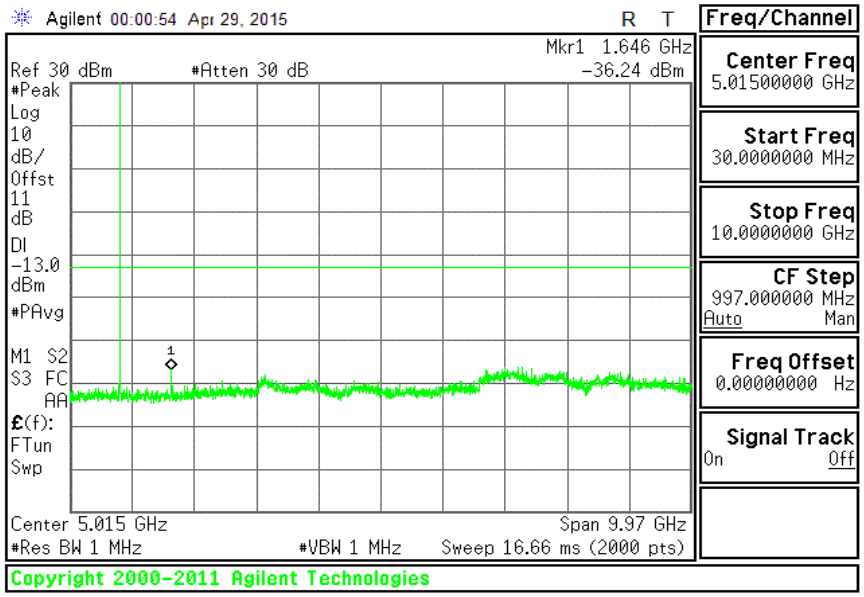
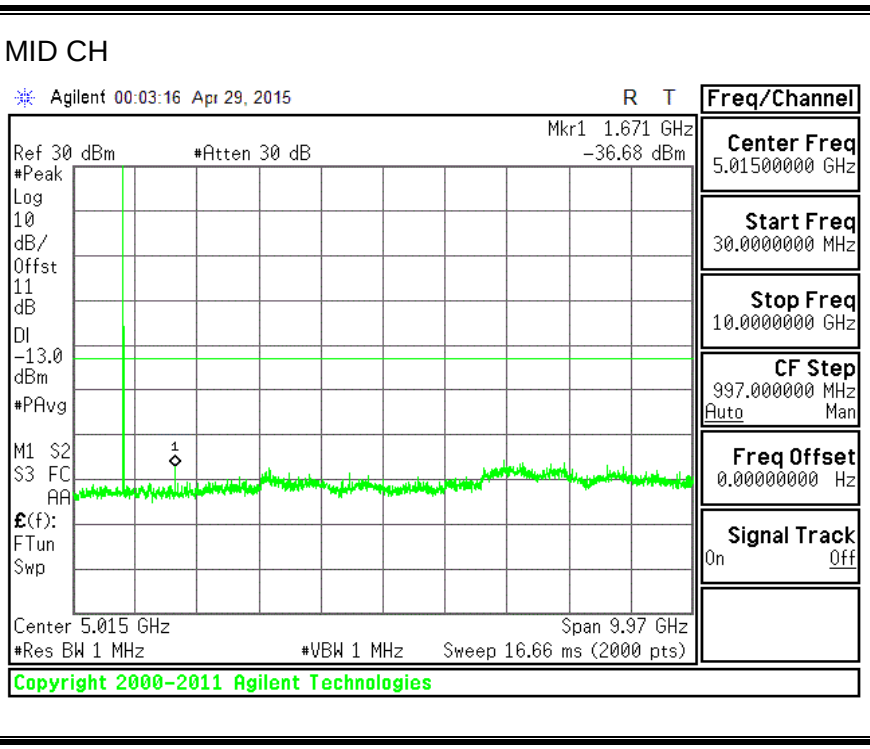
8.5.1. GSM-GPRS

850MHz BAND

LOW CH



MID CH



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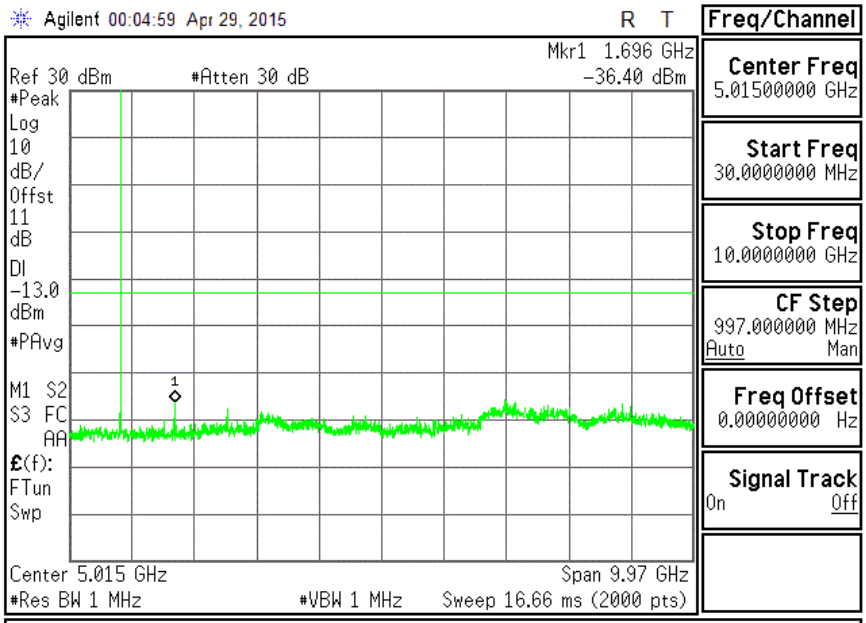
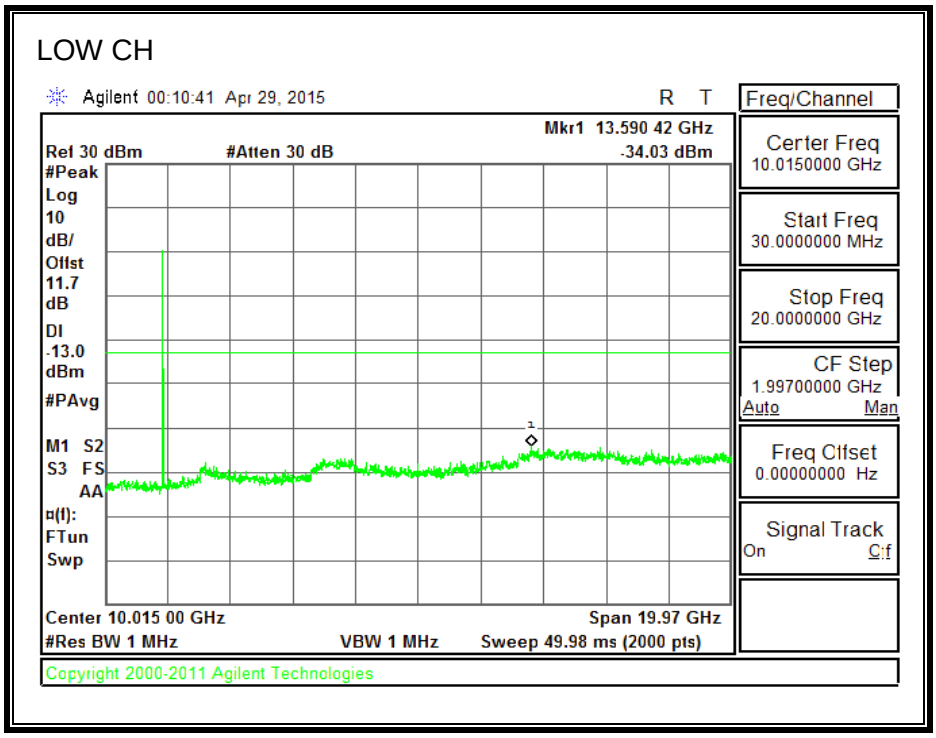
HIGH CH



1900MHz BAND

LOW CH



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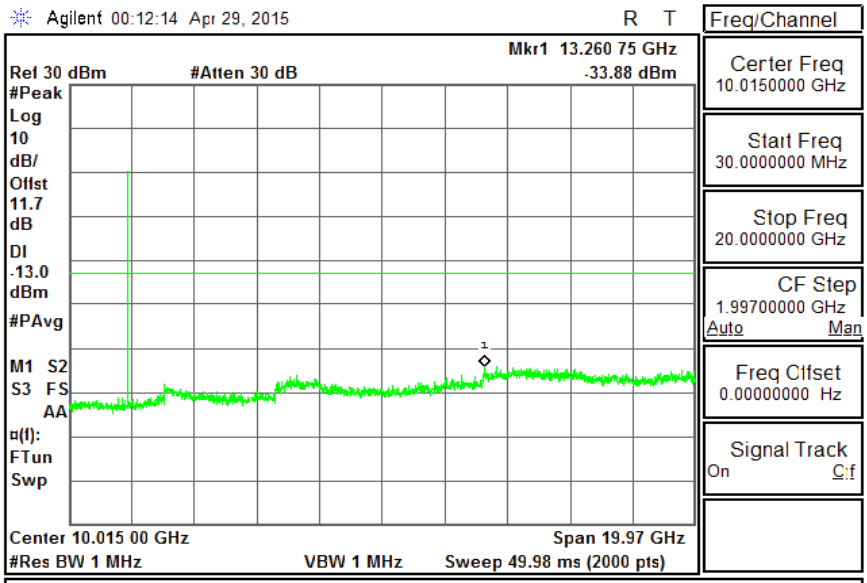
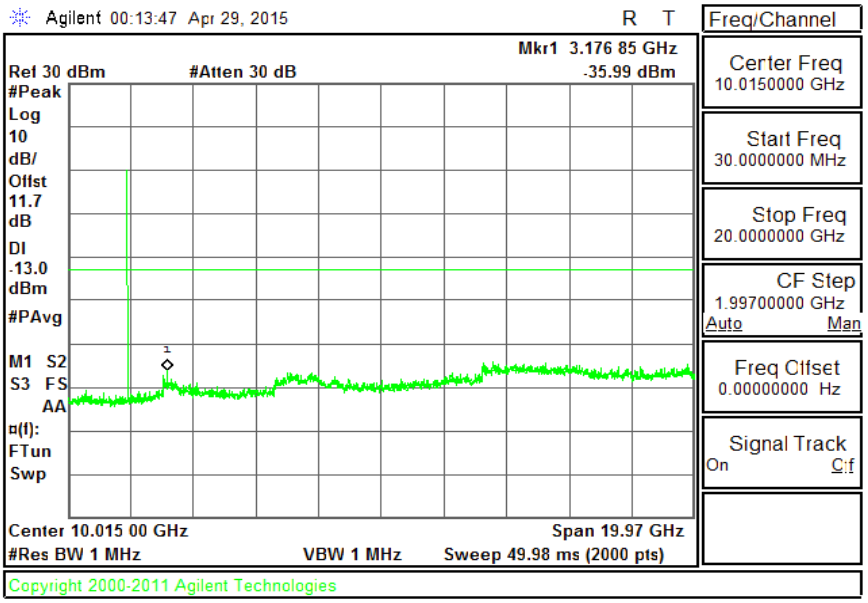
MID CH



HIGH CH



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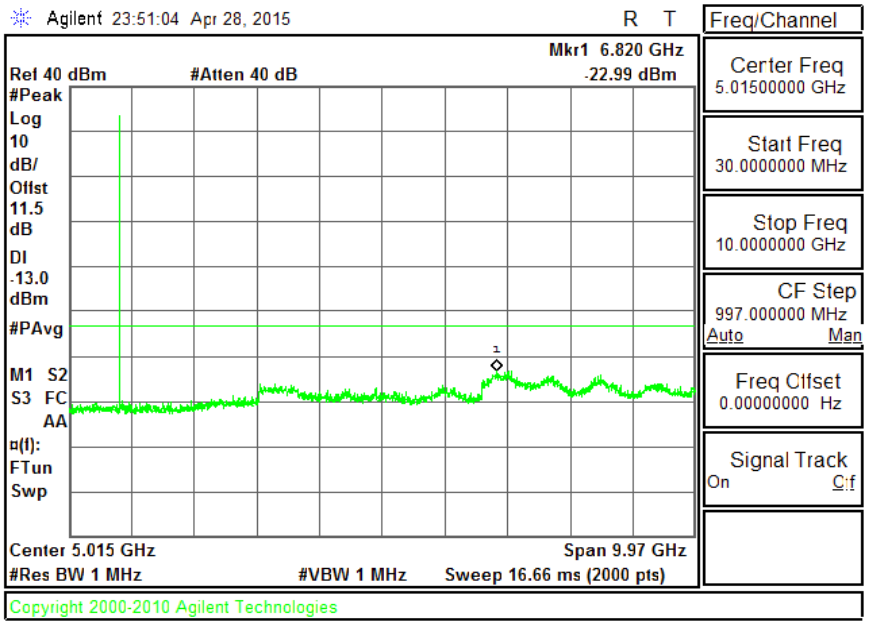
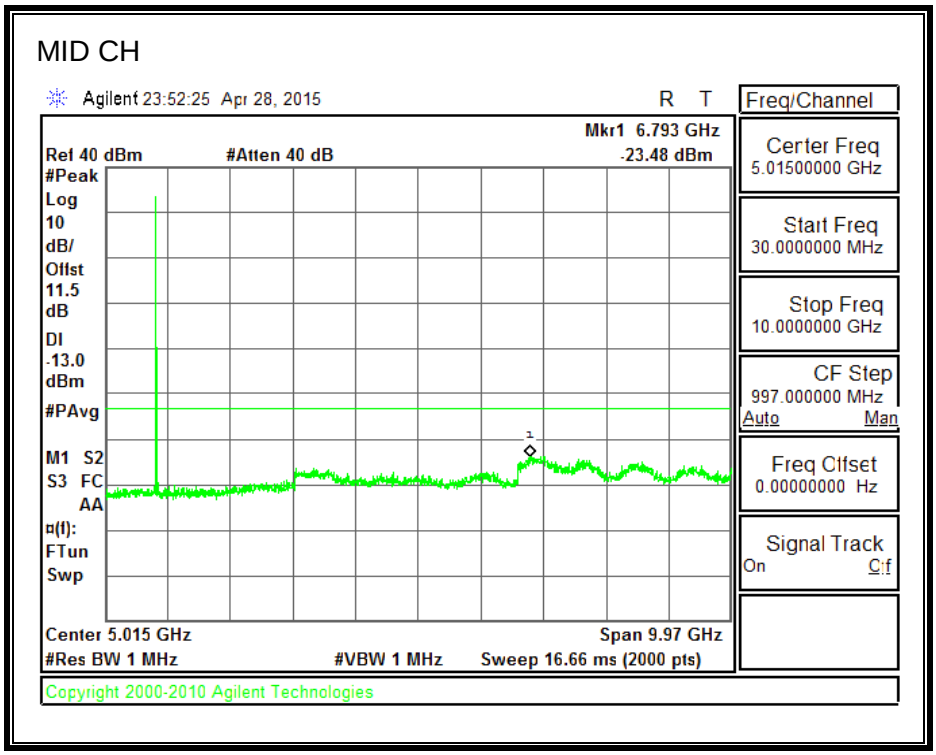
8.5.2. GSM-EGPRS

850MHz BAND

LOW CH



MID CH



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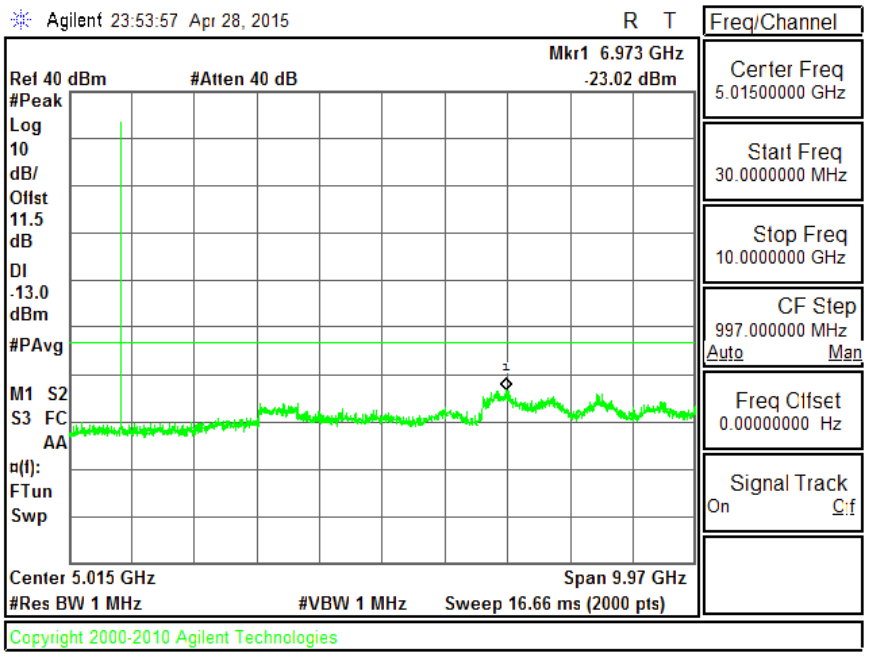
HIGH CH



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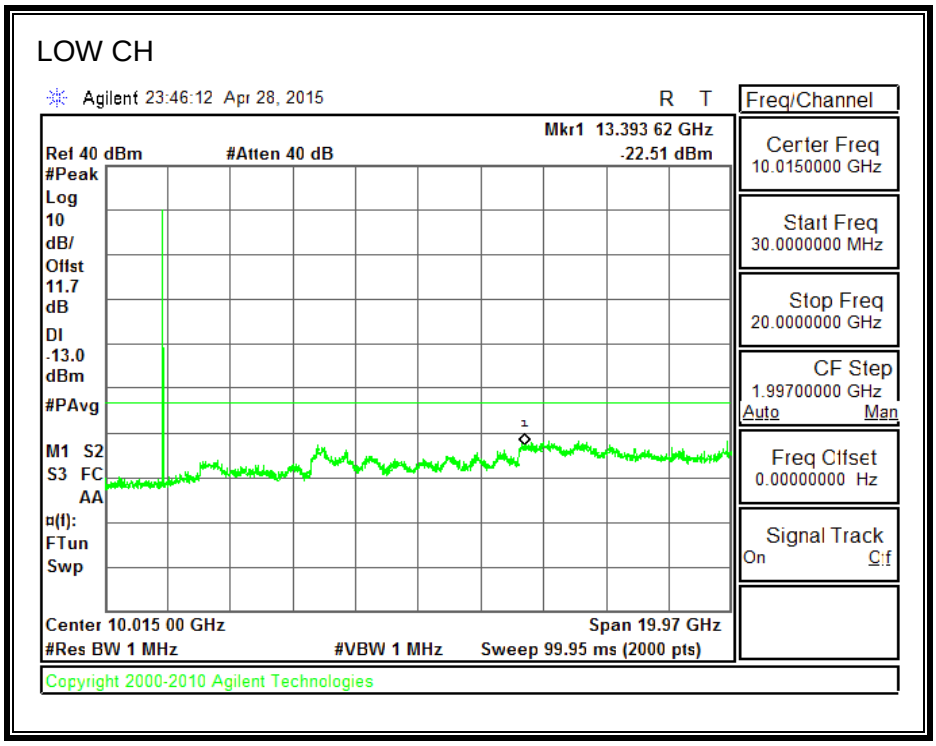
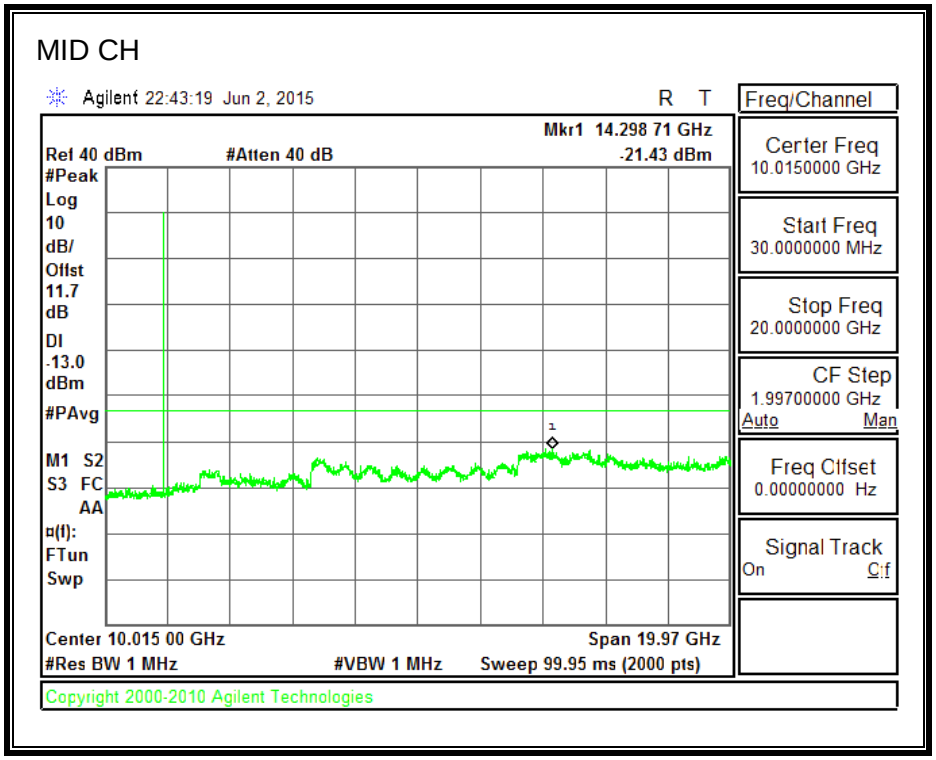
1900MHz BAND

LOW CH



MID CH



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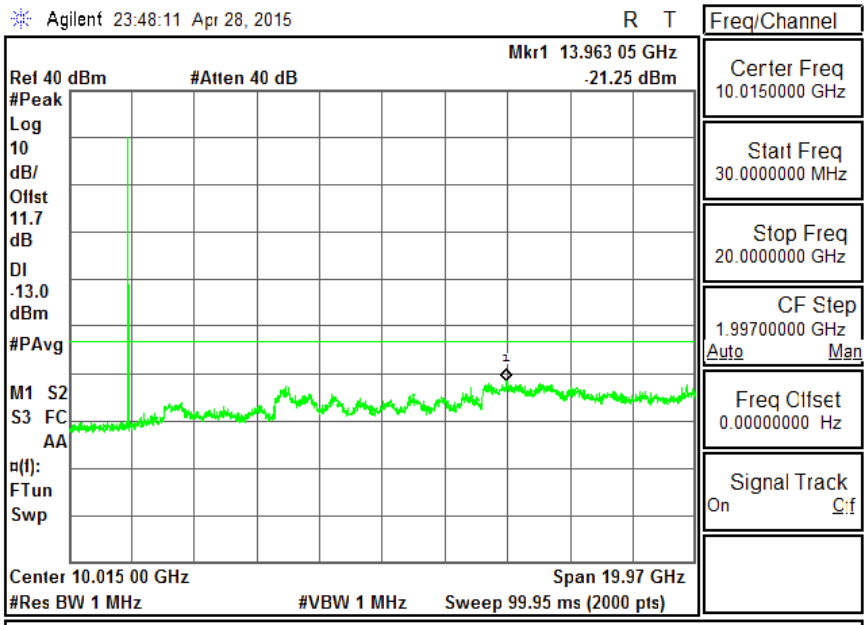
HIGH CH



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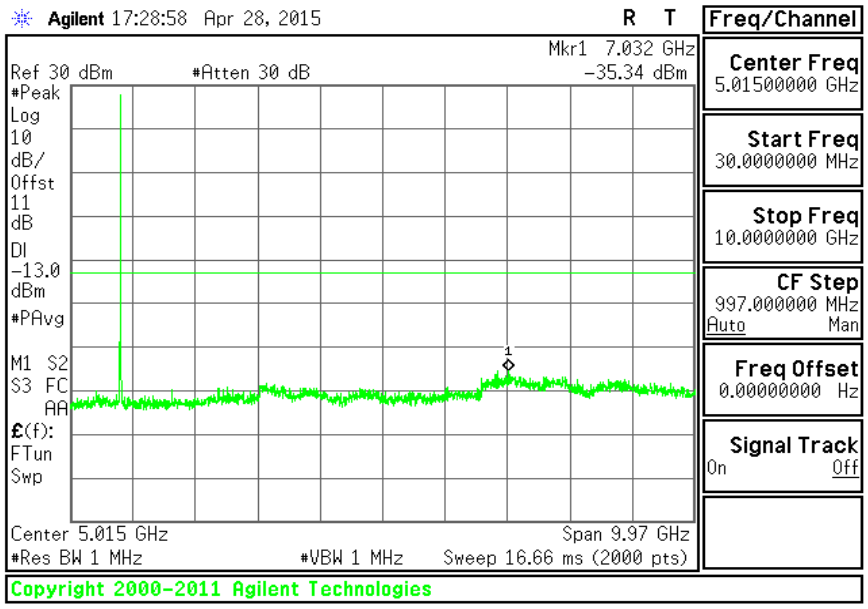
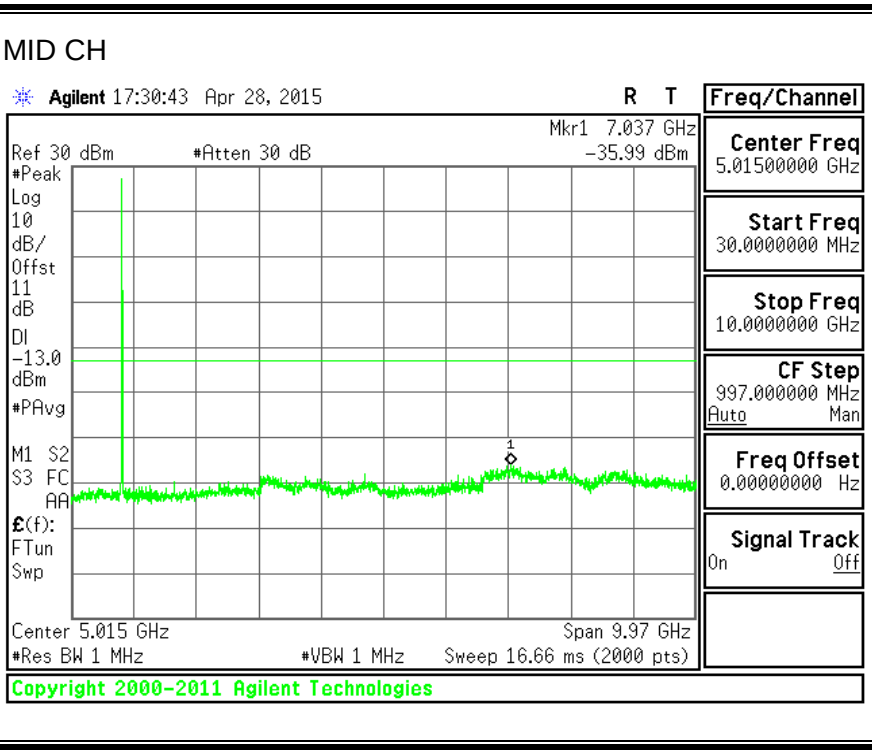
8.5.3. CDMA2000 1xRTT

850MHz BAND

LOW CH



MID CH



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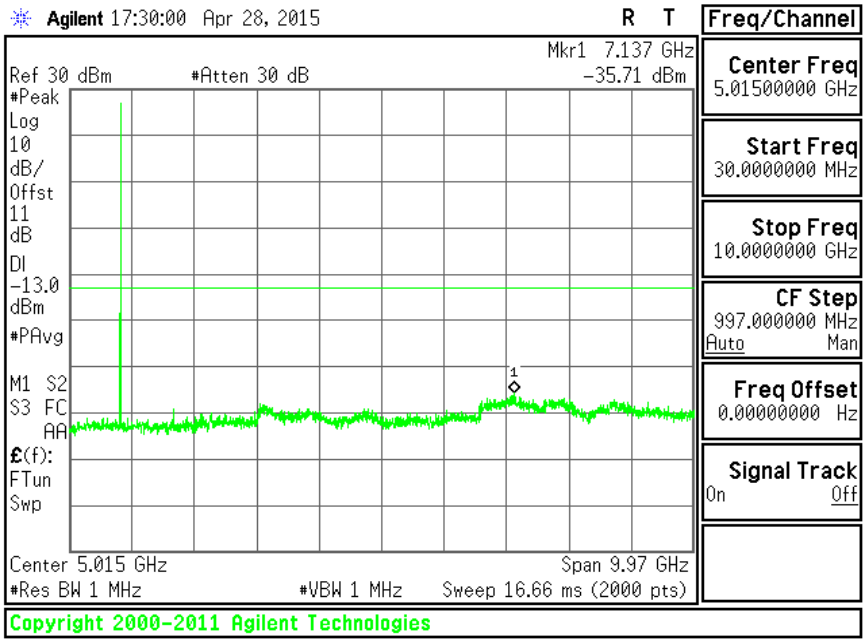
HIGH CH



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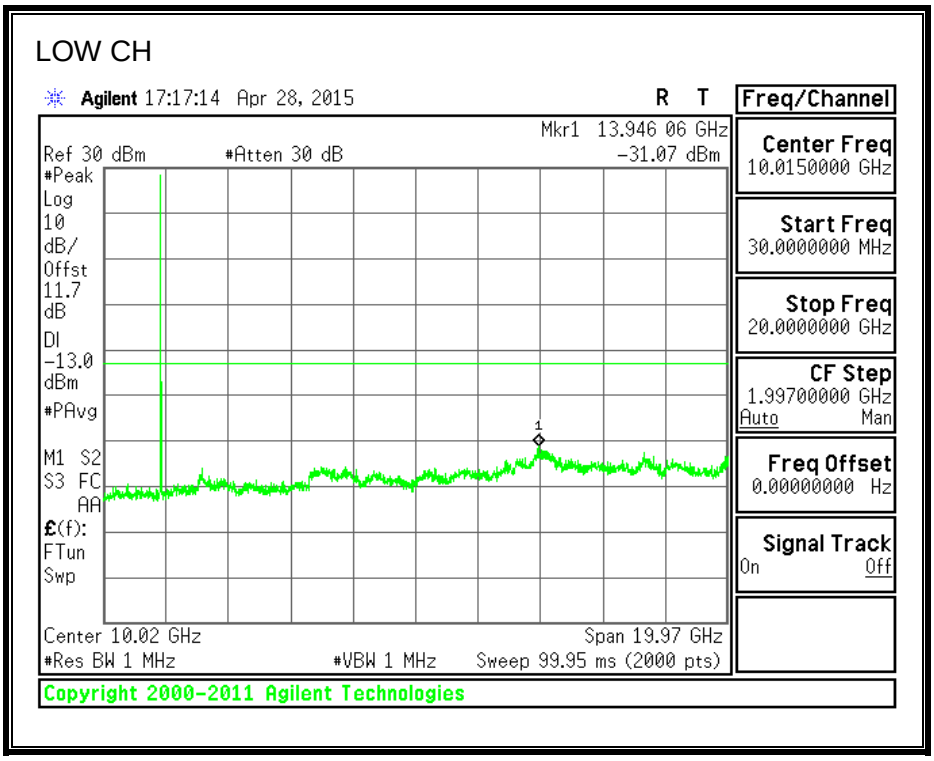
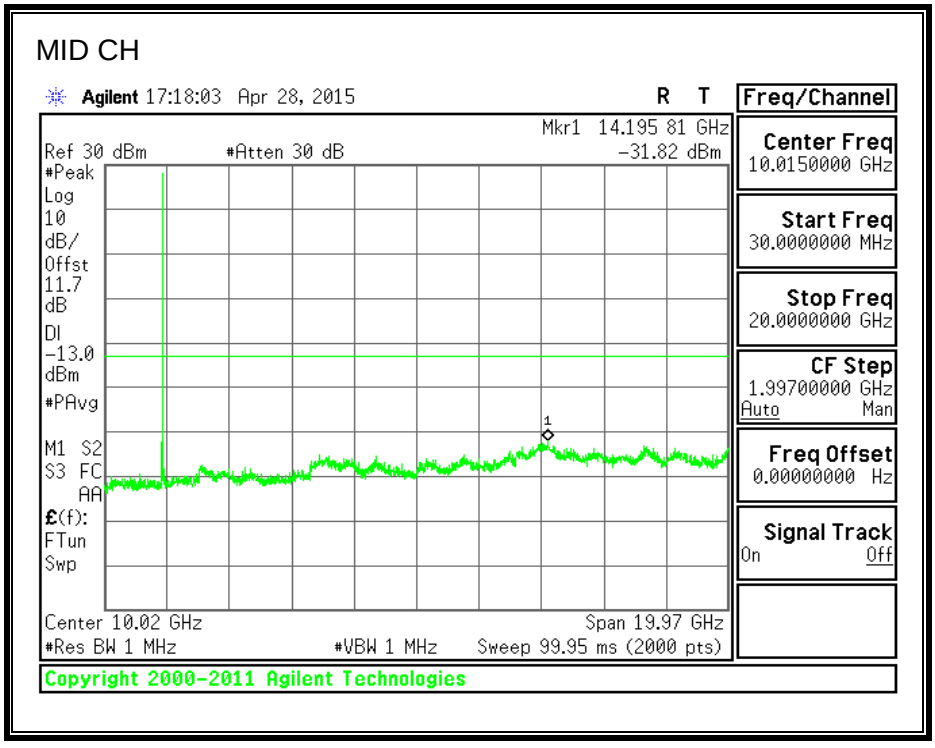
1900MHz BAND

LOW CH



MID CH



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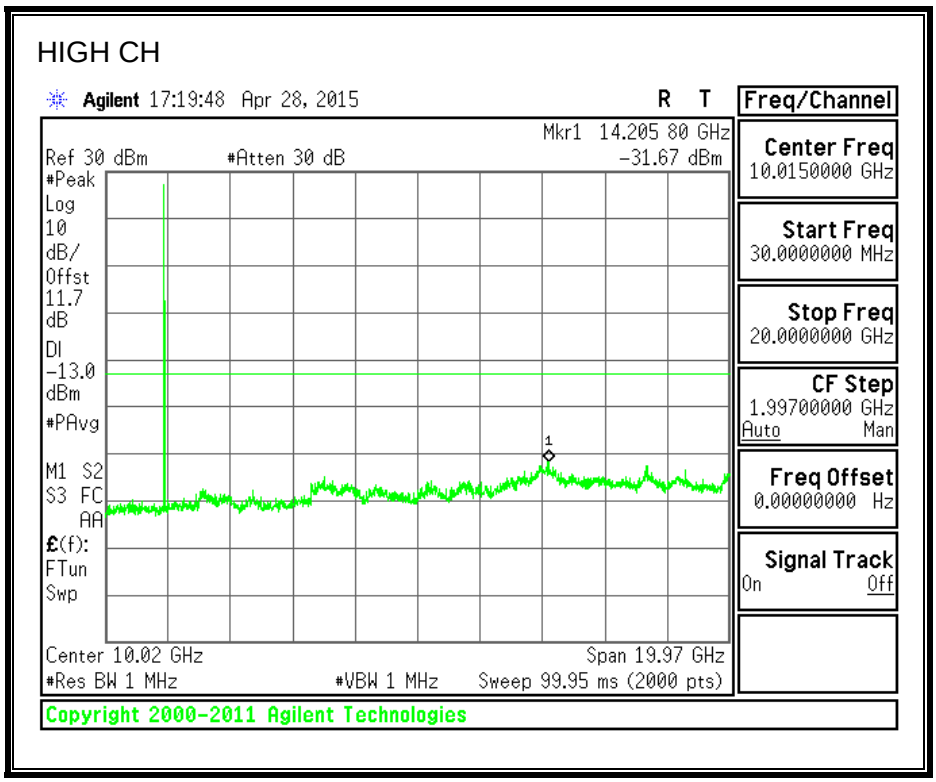
HIGH CH



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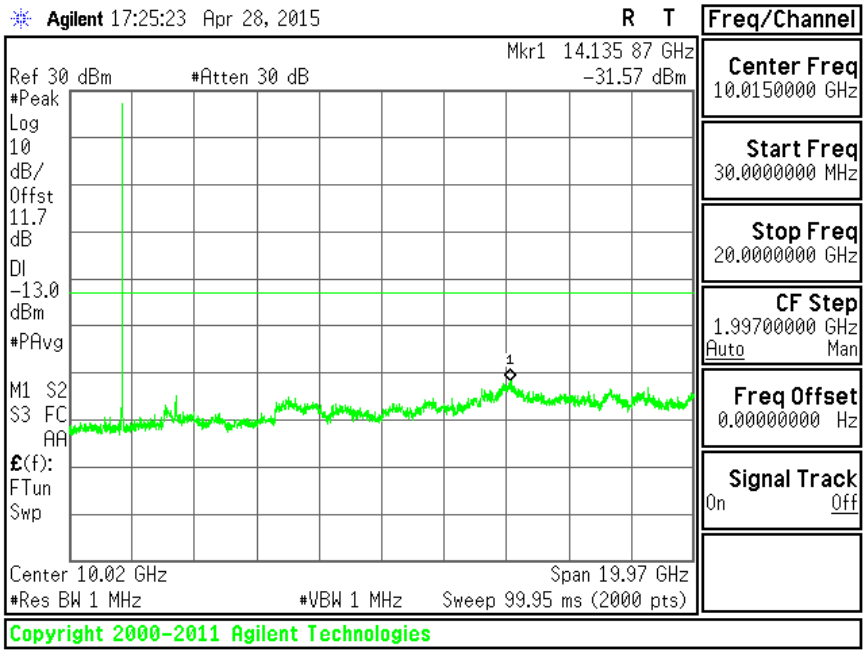
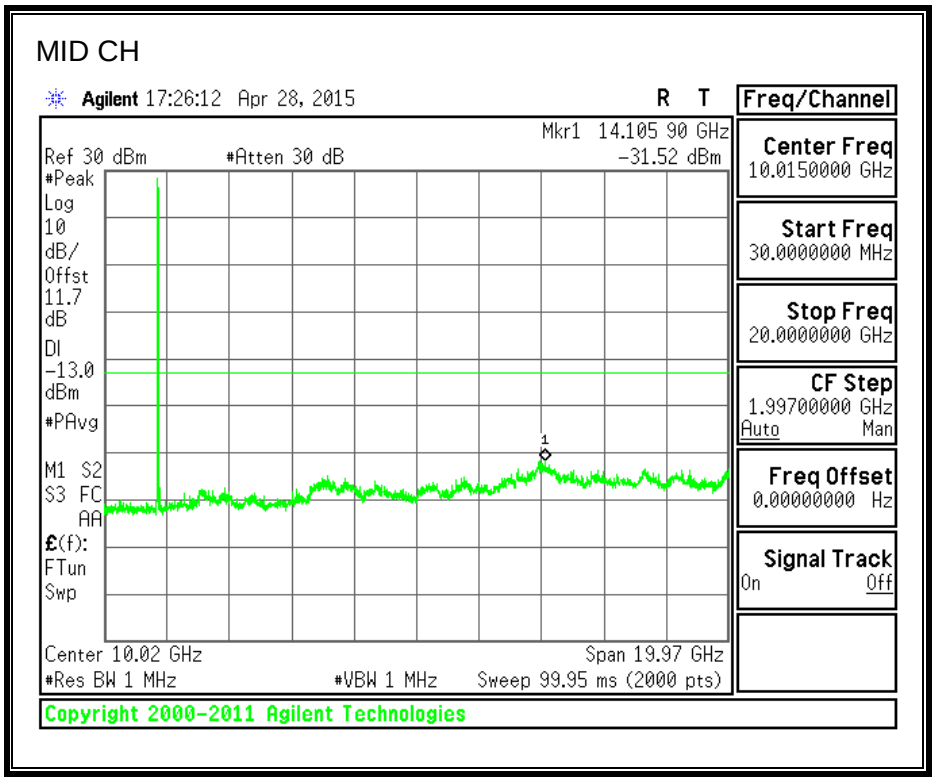
1700MHz BAND

LOW CH



MID CH



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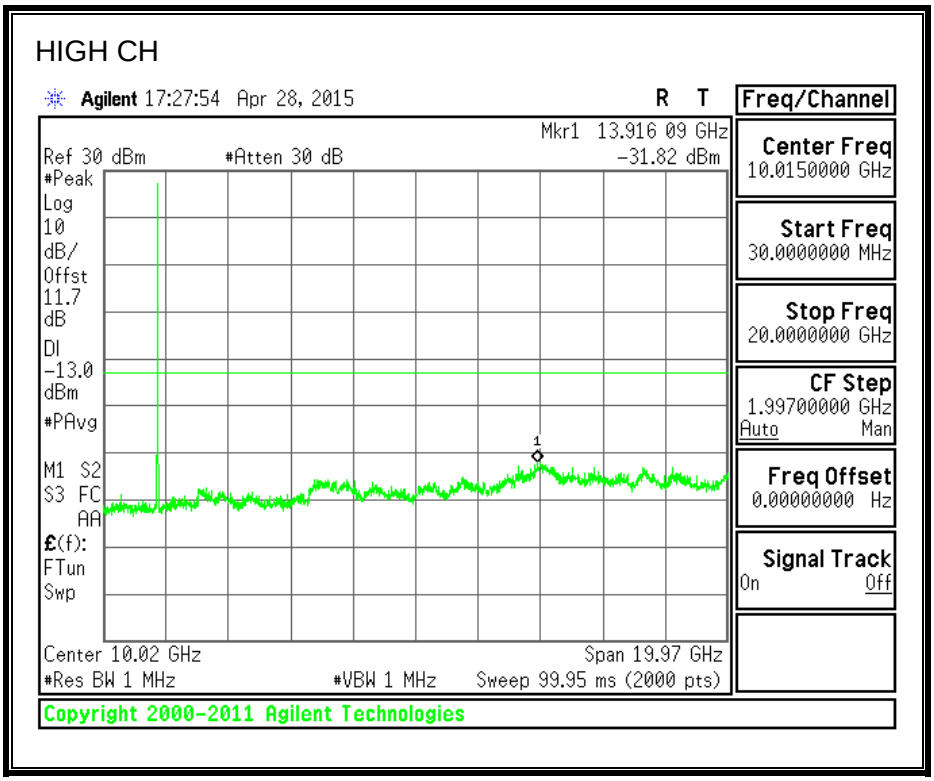
HIGH CH



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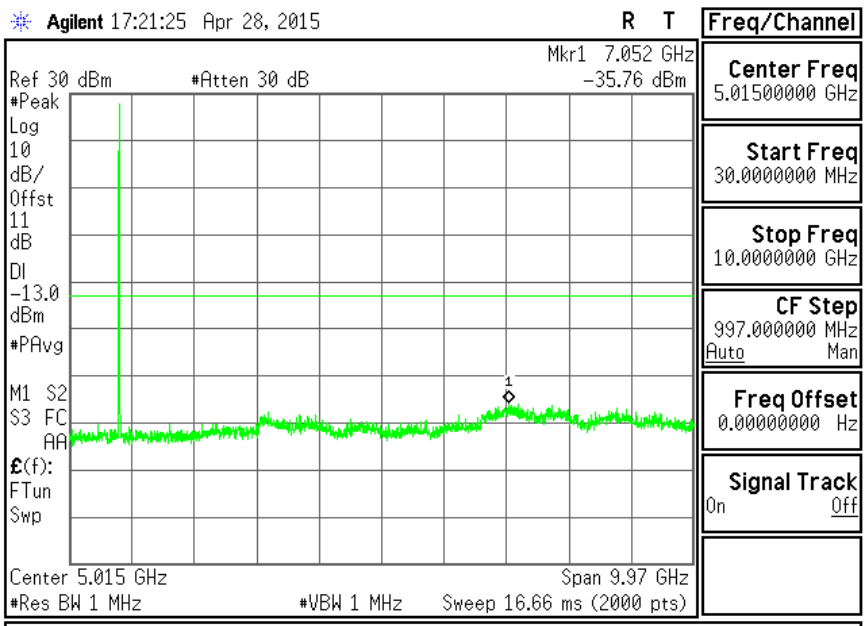
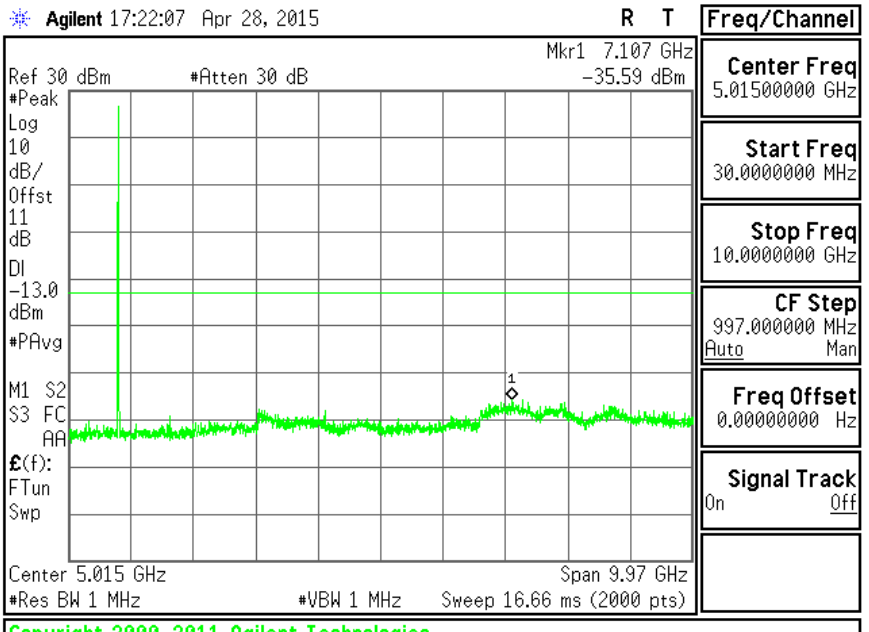
800MHz SECONDARY BAND

LOW CH



MID CH



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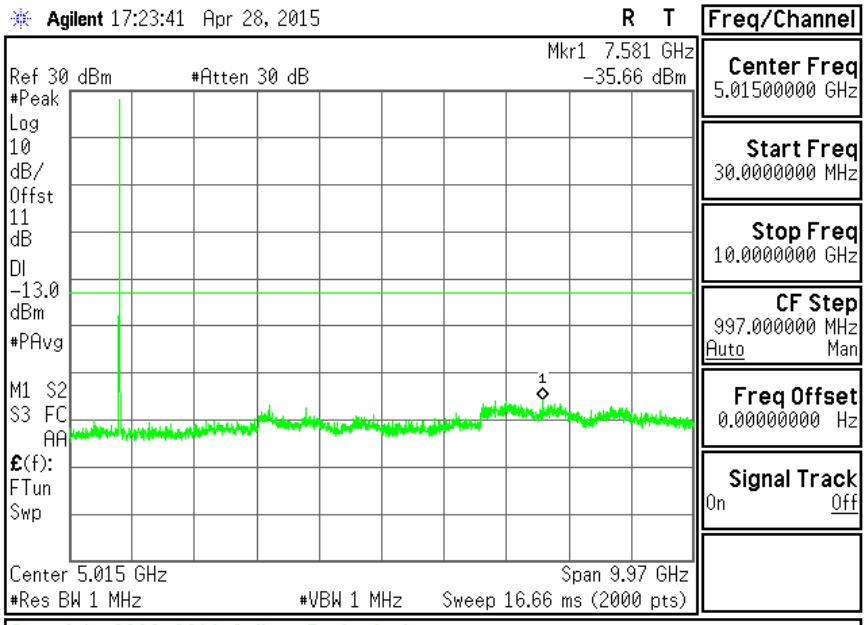
HIGH CH



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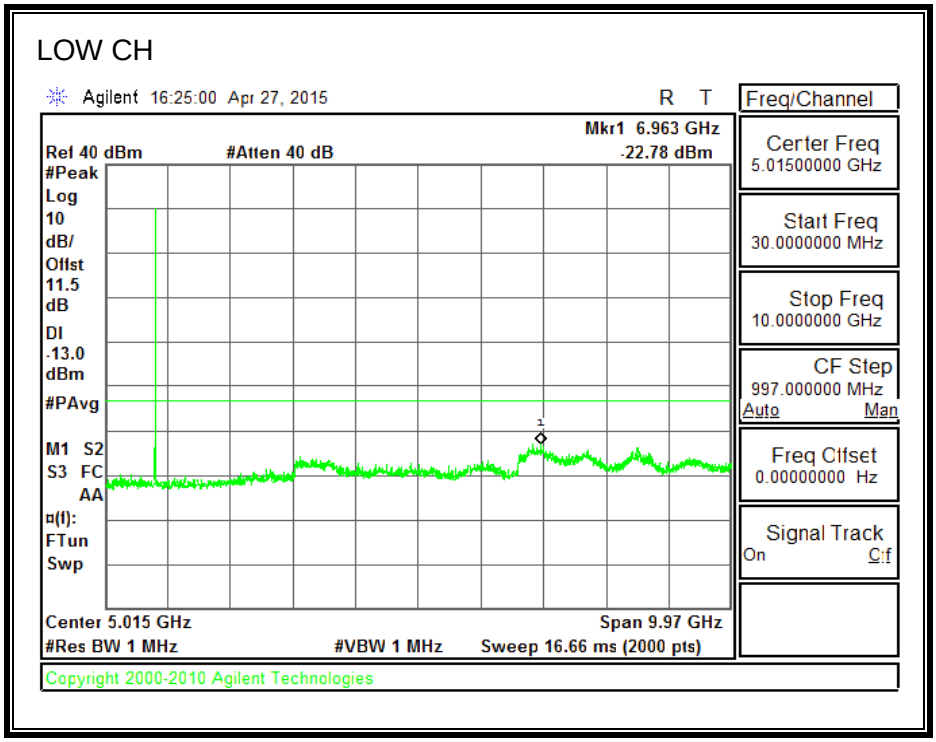
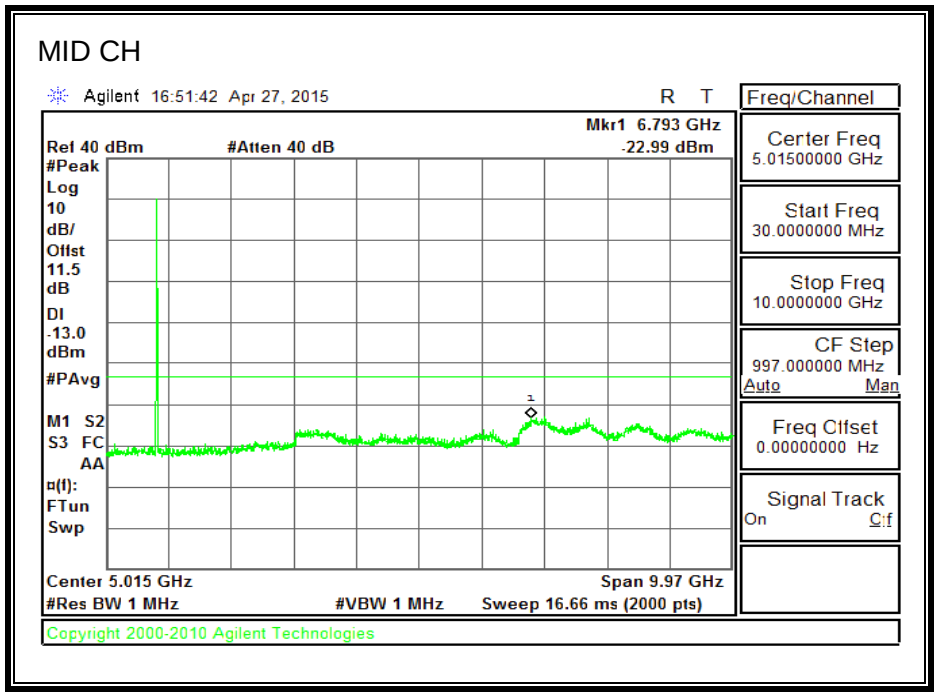
8.5.4. CDMA2000 REV A

850MHz BAND

LOW CH



MID CH



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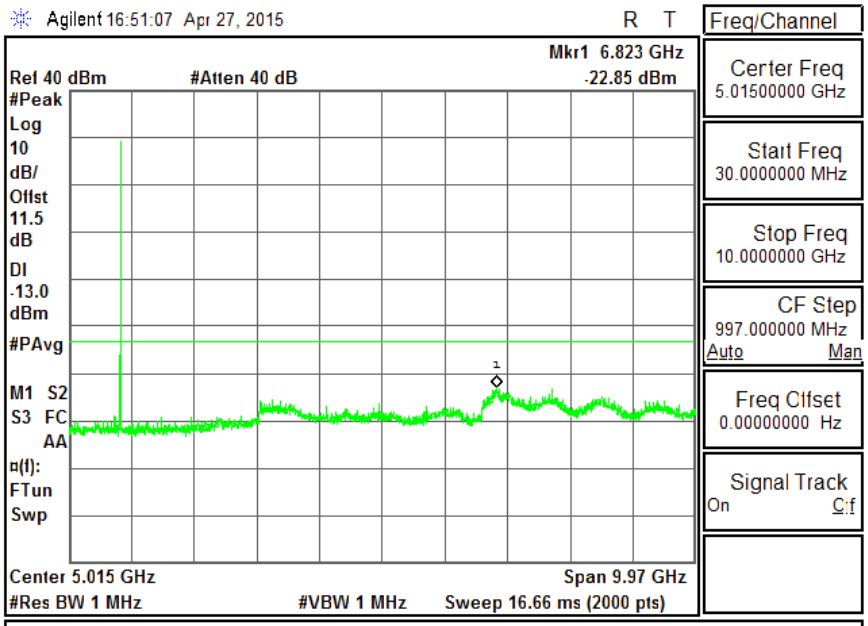
HIGH CH



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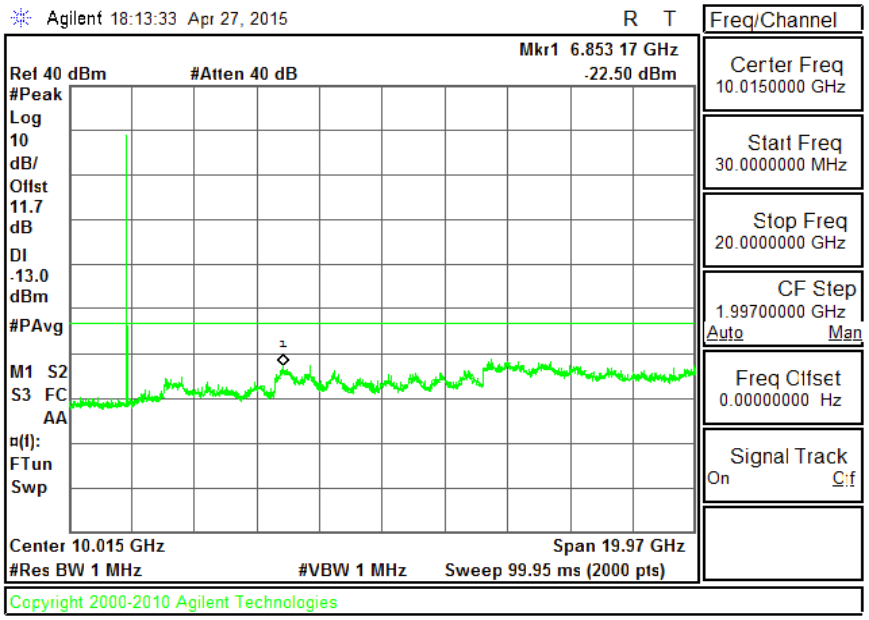
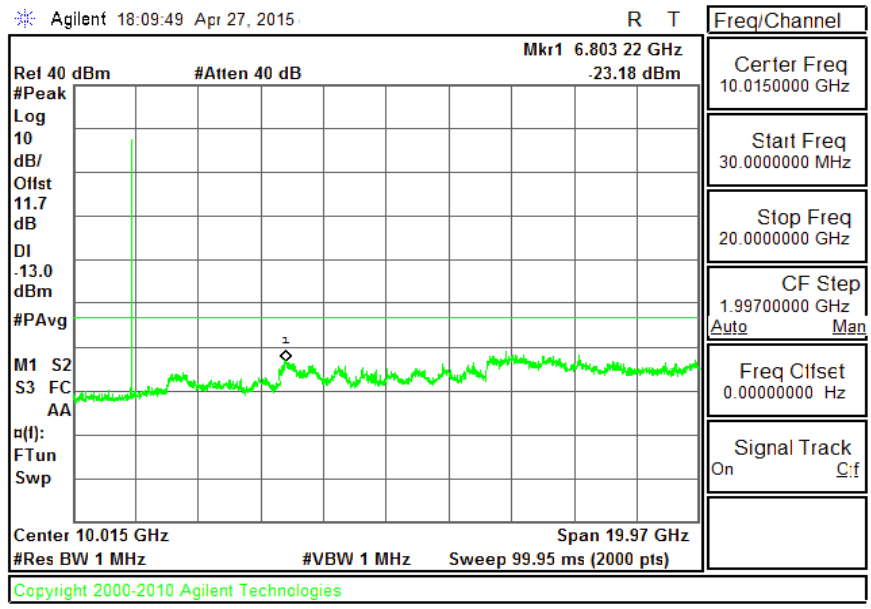
1900MHz BAND

LOW CH



MID CH



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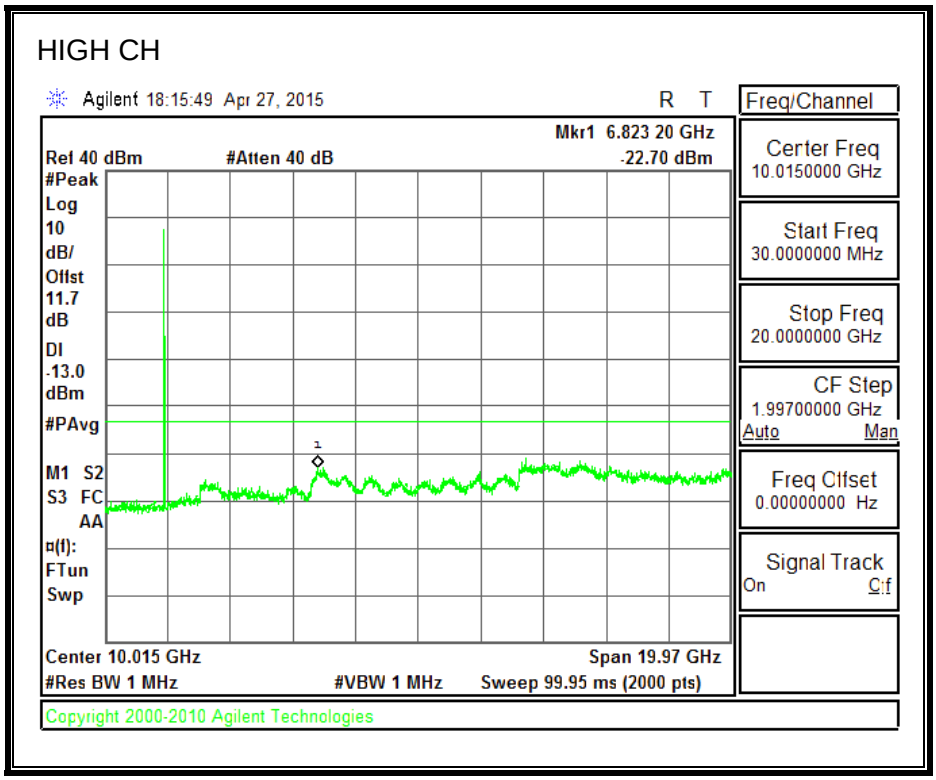
HIGH CH



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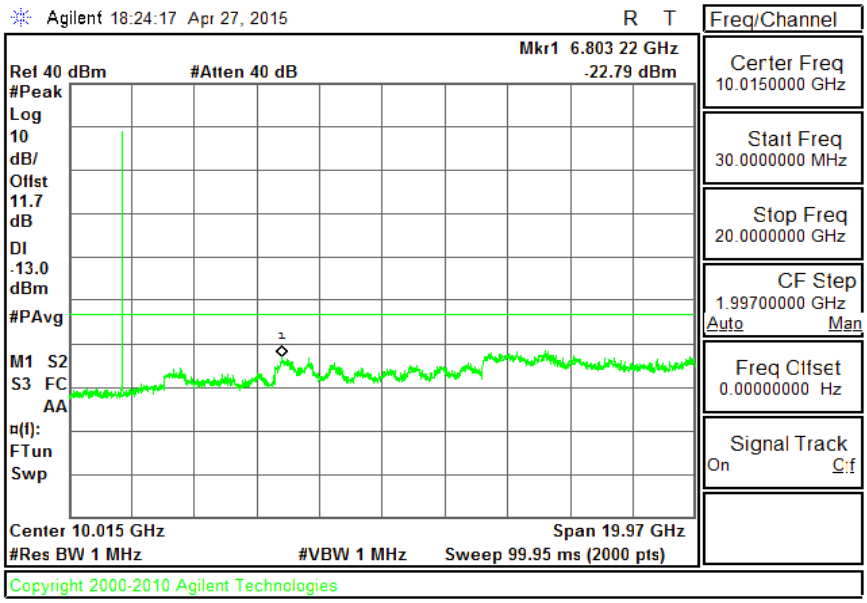
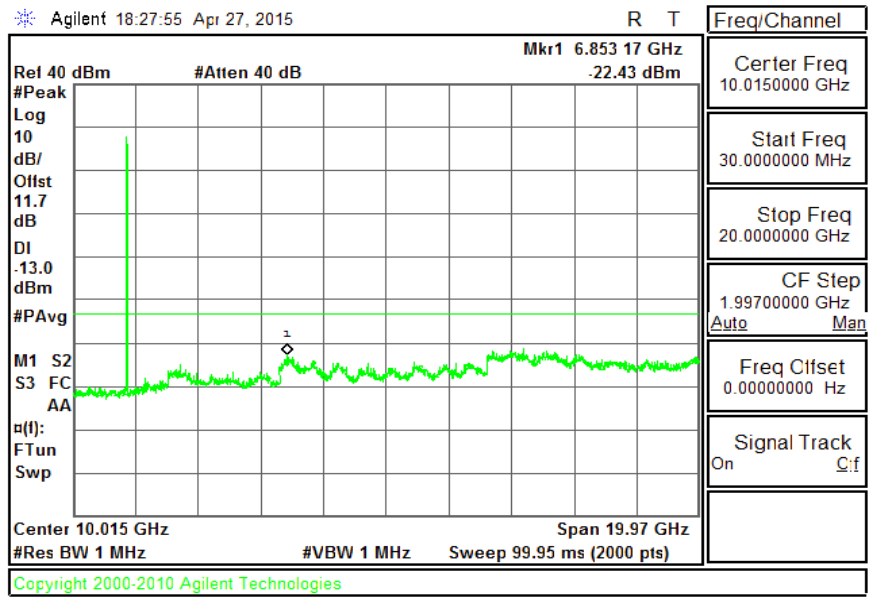
1700MHz BAND

LOW CH



MID CH



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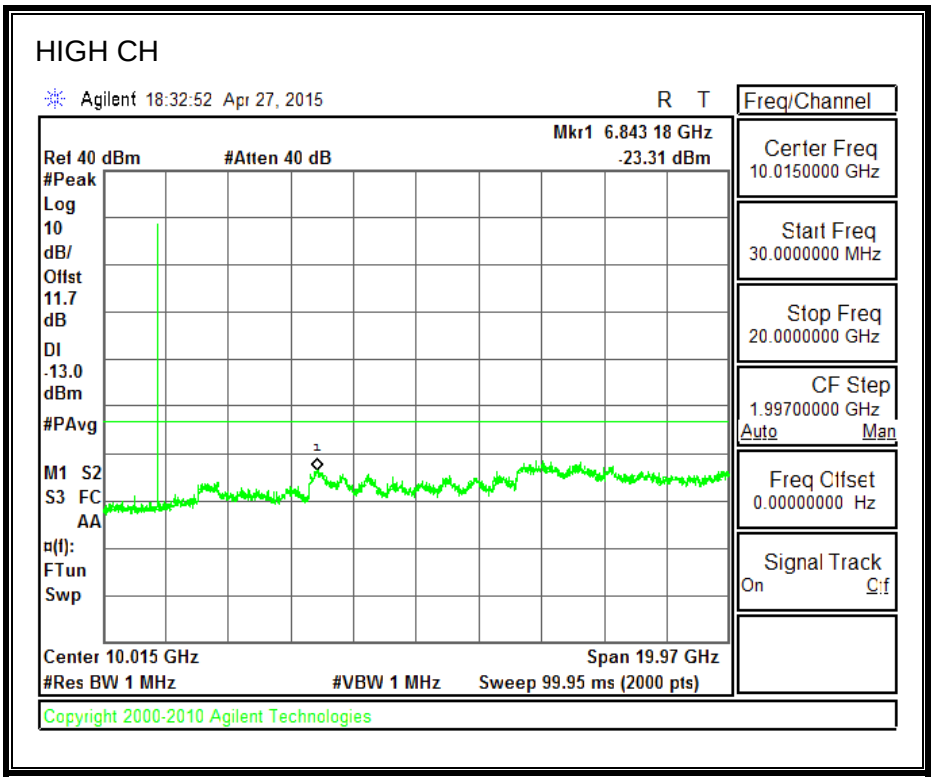
HIGH CH



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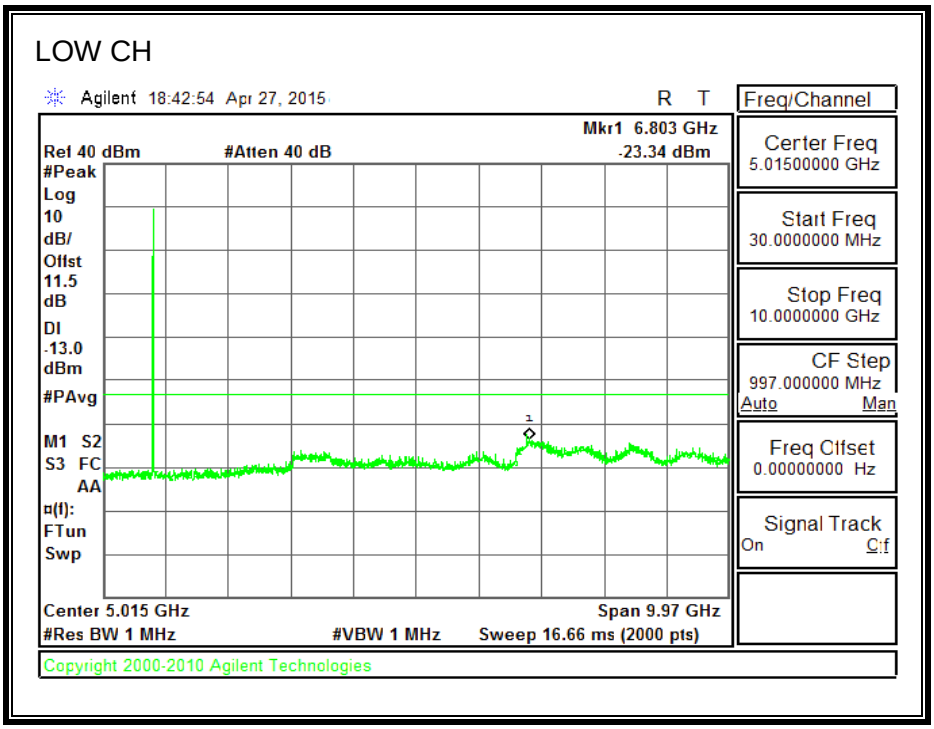
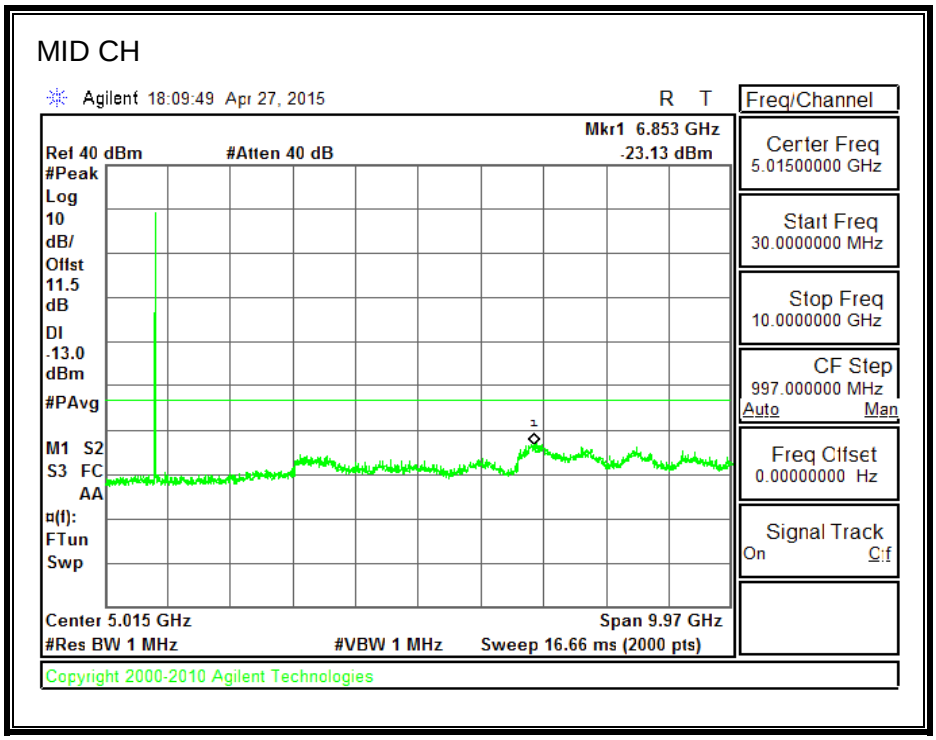
800MHz SECONDARY BAND

LOW CH



MID CH



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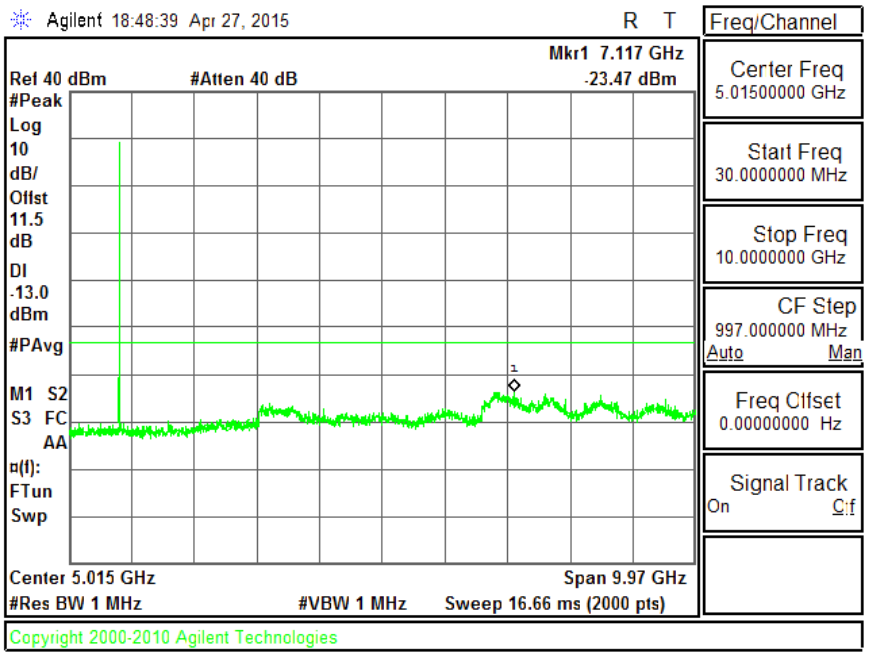
HIGH CH



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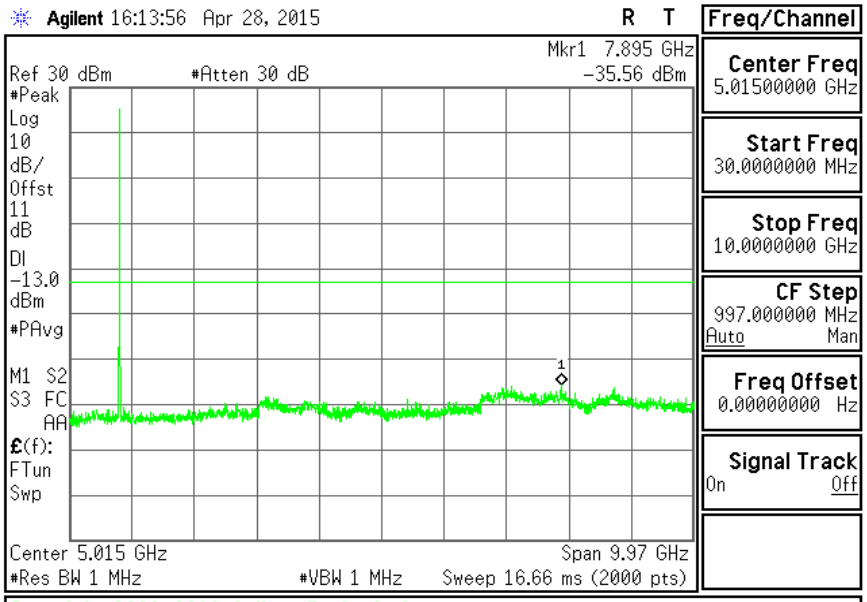
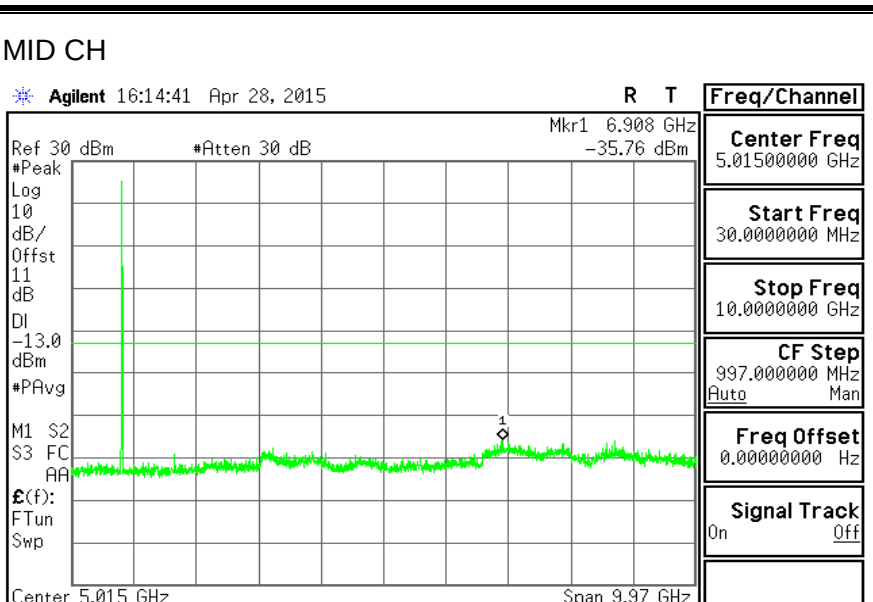
8.5.5. UMTS REL 99

850MHz BAND

LOW CH



MID CH



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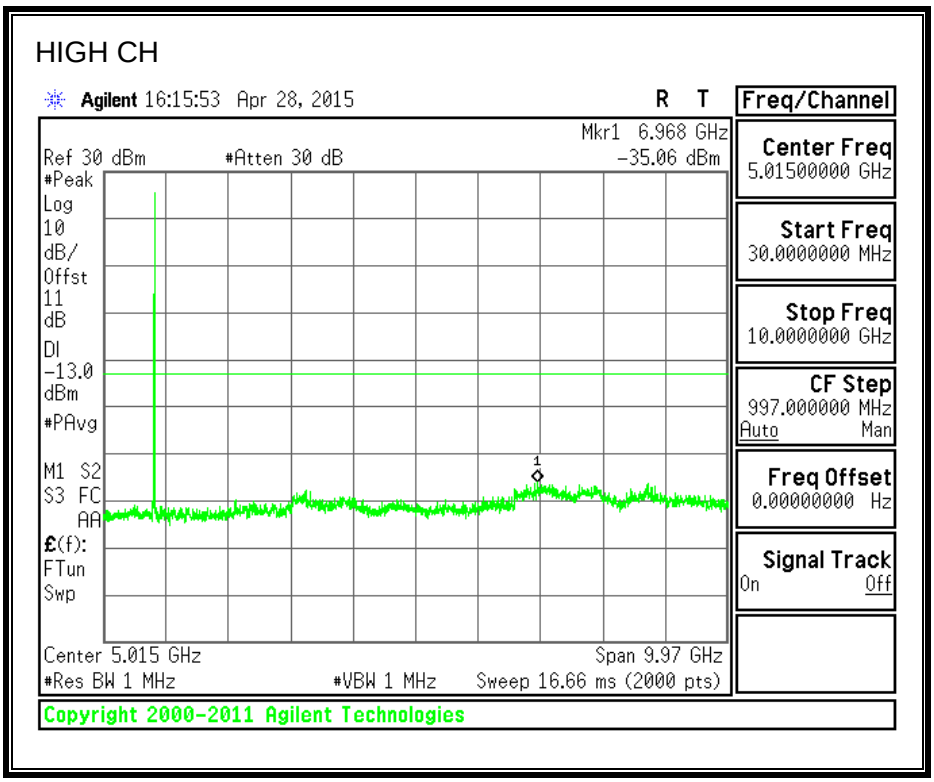
HIGH CH



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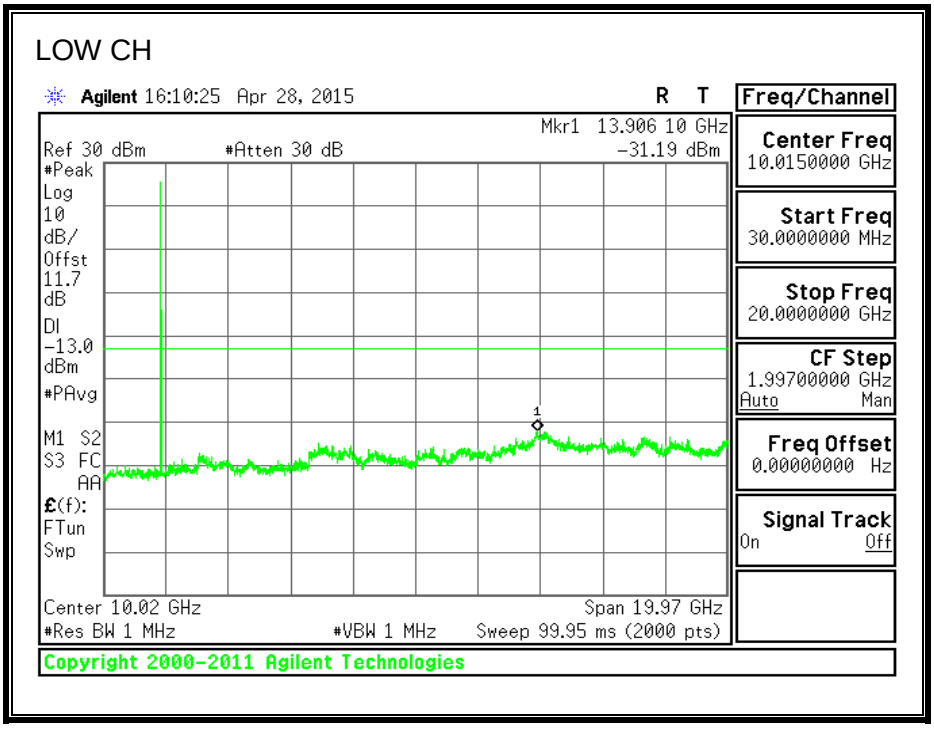
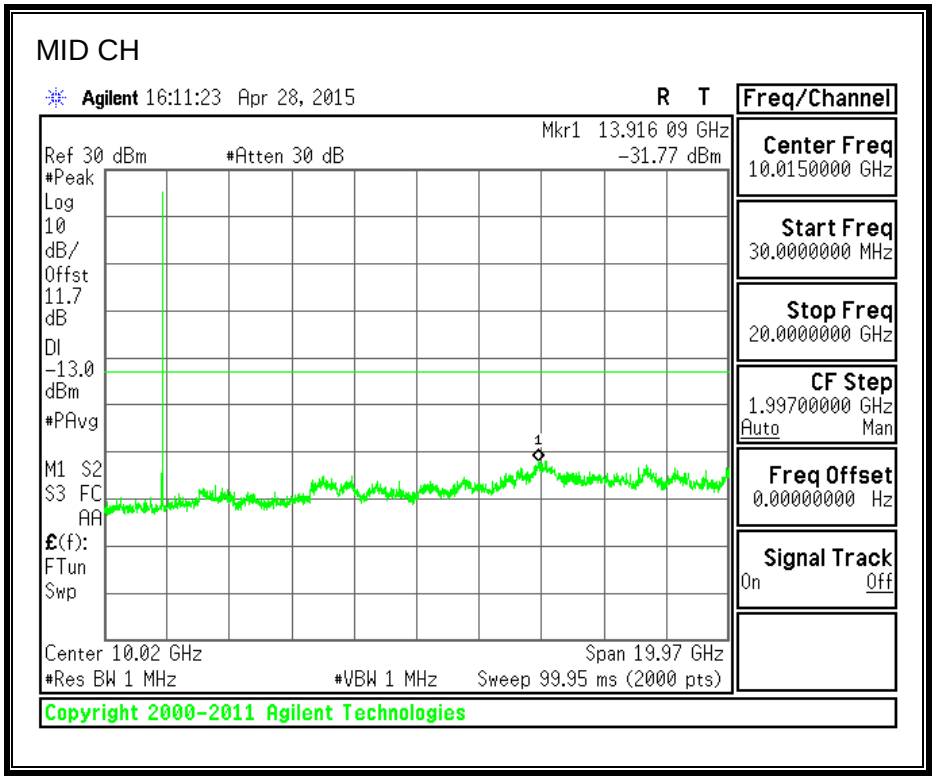
1900MHz BAND

LOW CH



MID CH



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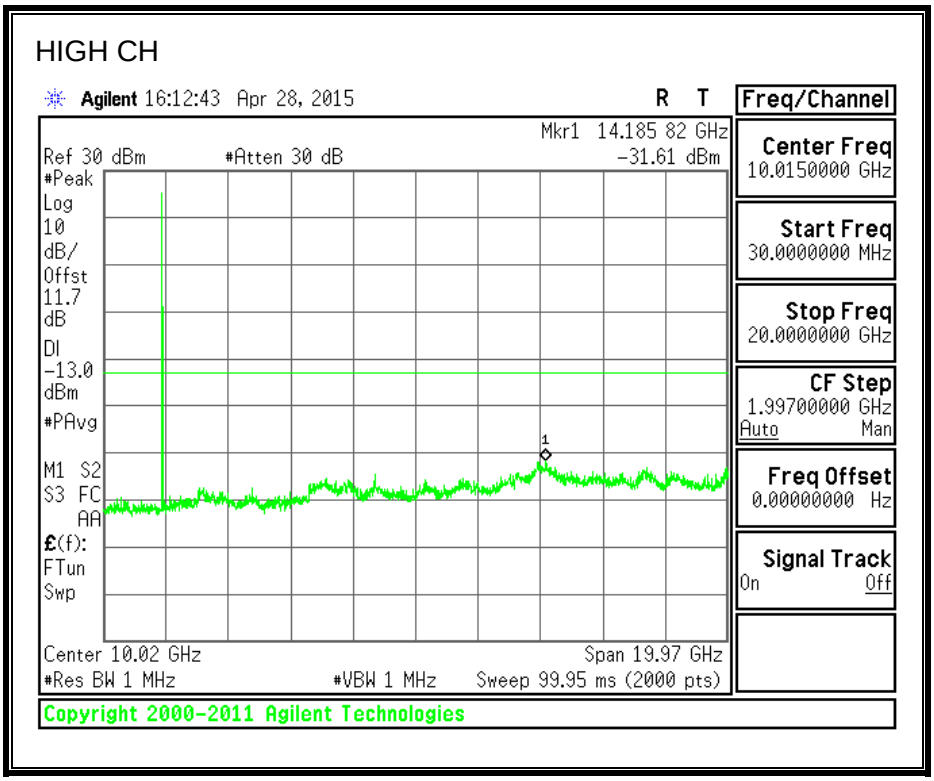
HIGH CH



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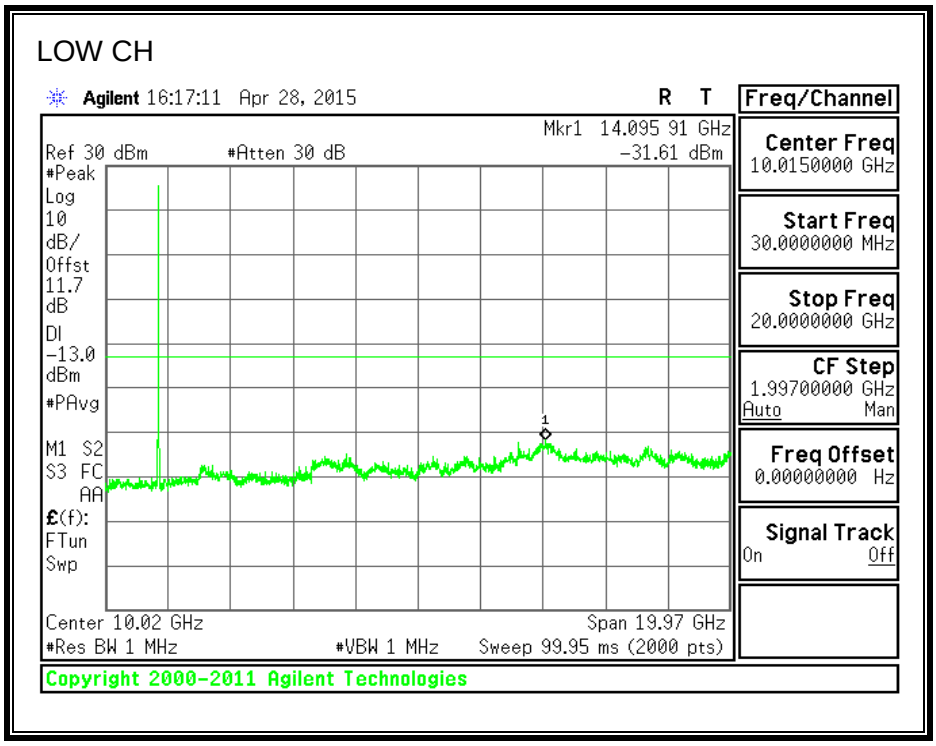
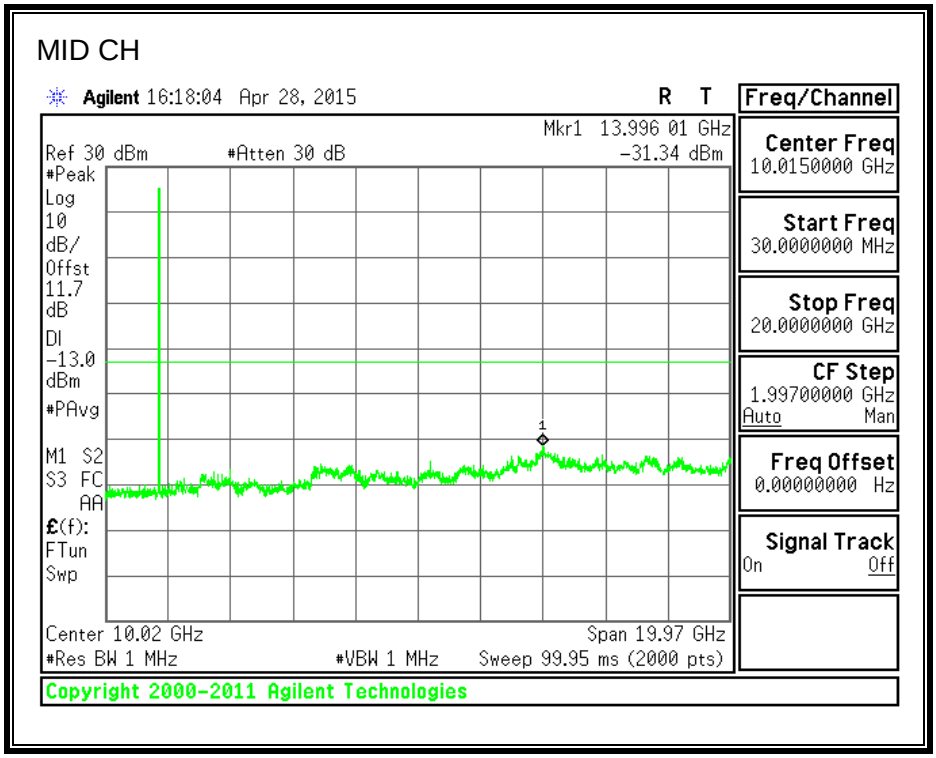
1700MHz BAND

LOW CH



MID CH



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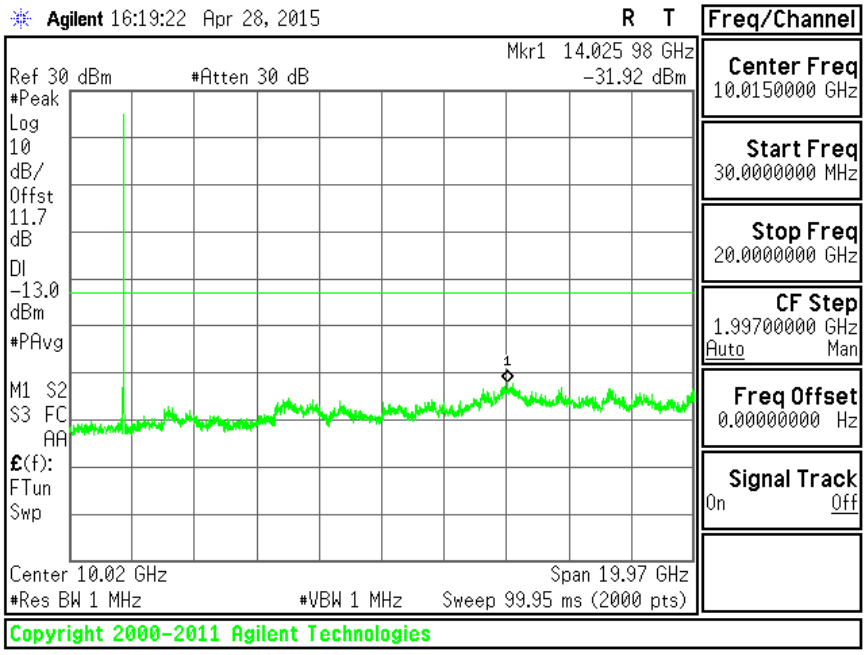
HIGH CH



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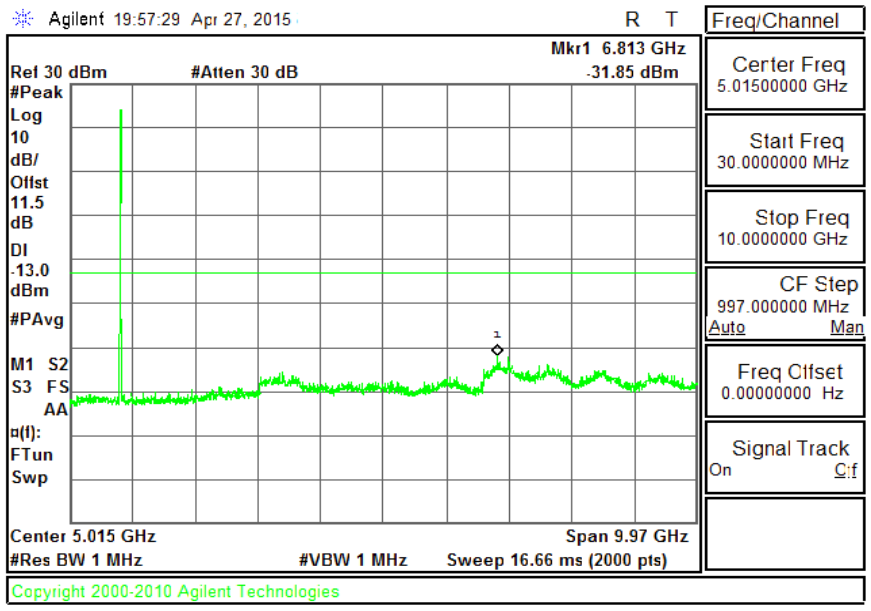
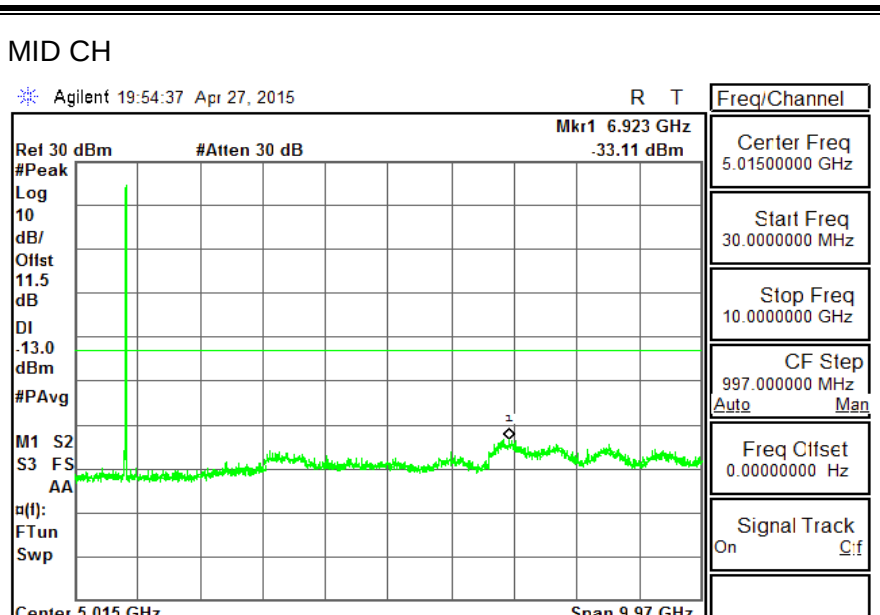
8.5.6. UMTS HSDPA

850MHz BAND

LOW CH



MID CH



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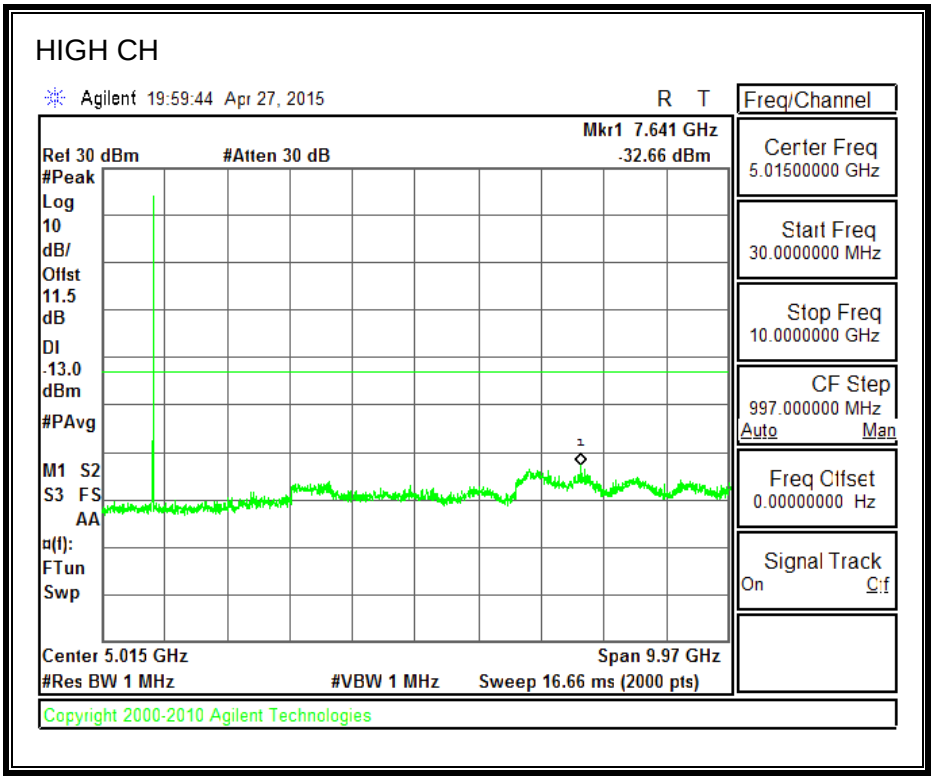
HIGH CH



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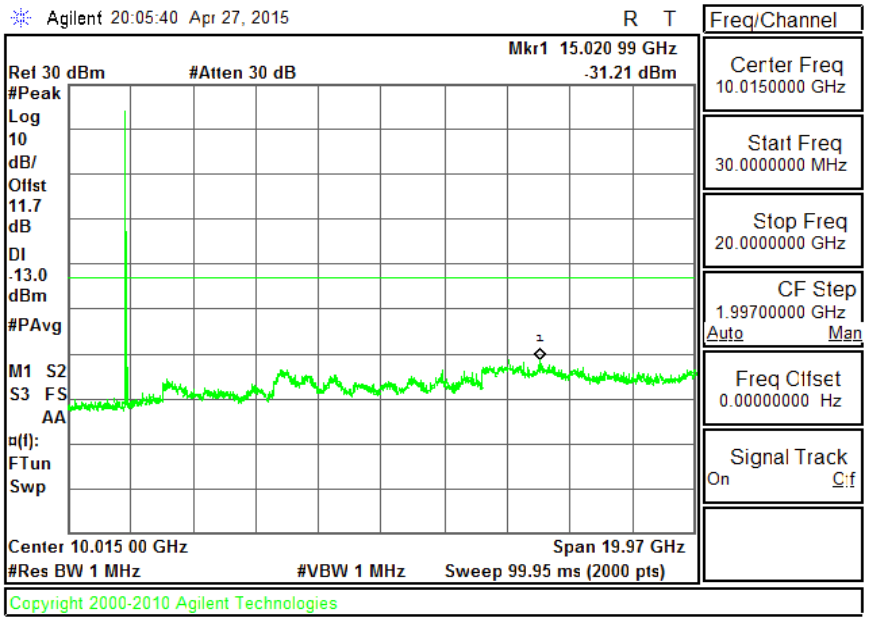
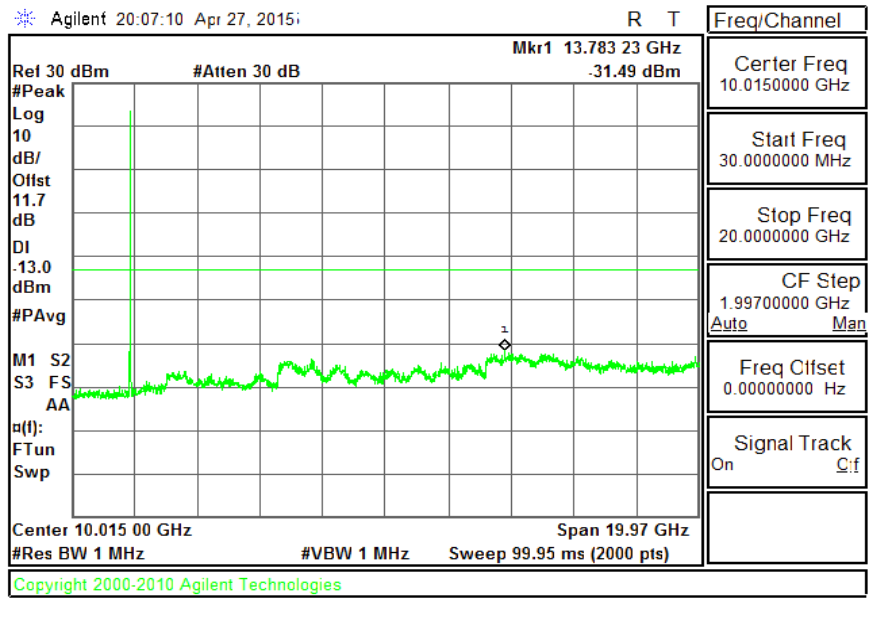
1900MHz BAND

LOW CH



MID CH



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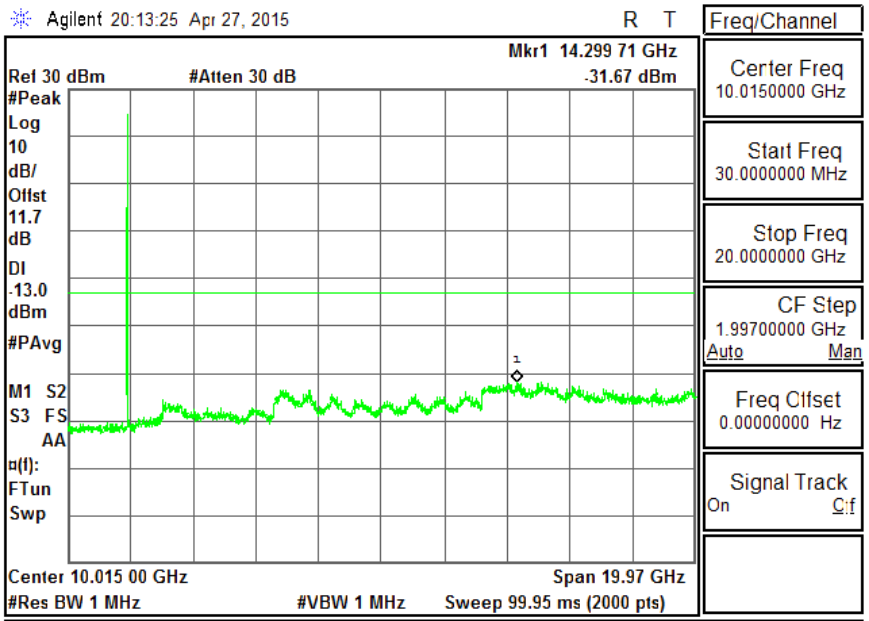
HIGH CH



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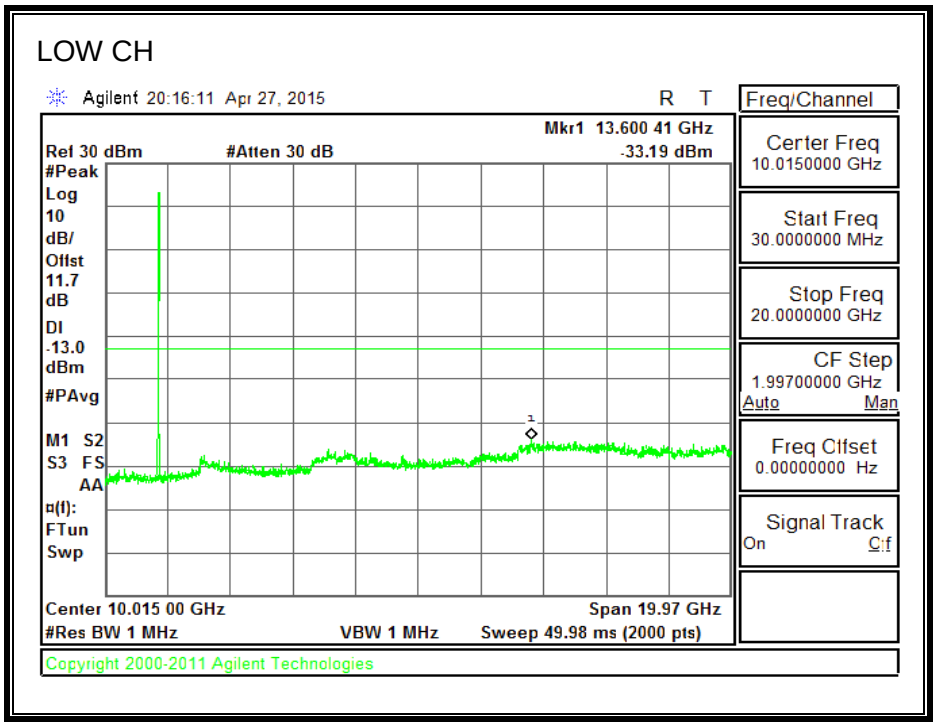
1700MHz BAND

LOW CH



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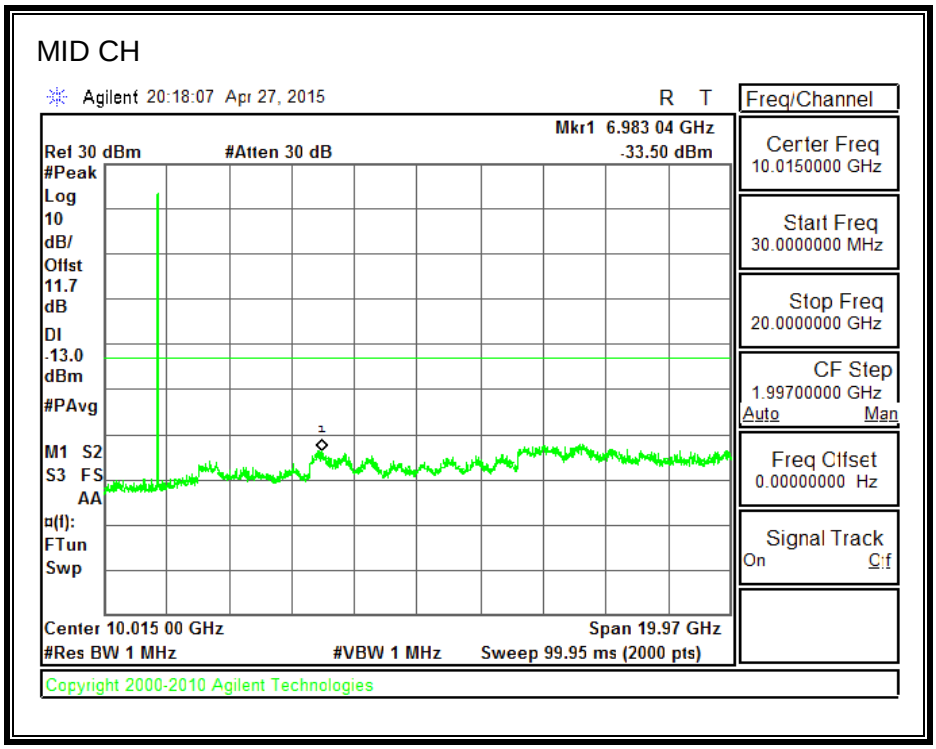

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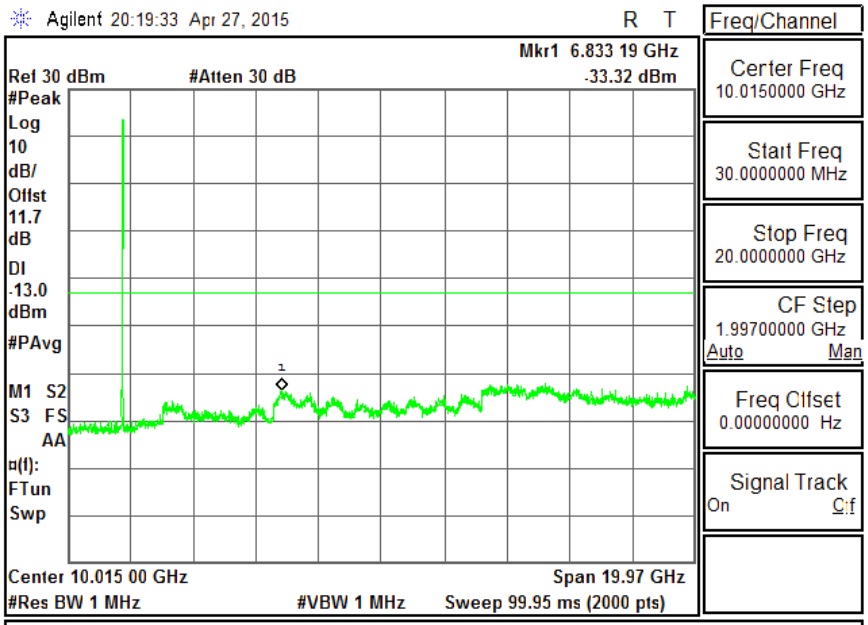
HIGH CH



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8.6. OUT OF BAND EMISSIONS (MODEL: A1688)

RULE PART(S)

FCC: §2.1051, §22.901, §22.917, §24.238 and §90.691

LIMITS

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

TEST PROCEDURE

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

For each out of band emissions measurement:

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

RESULTS

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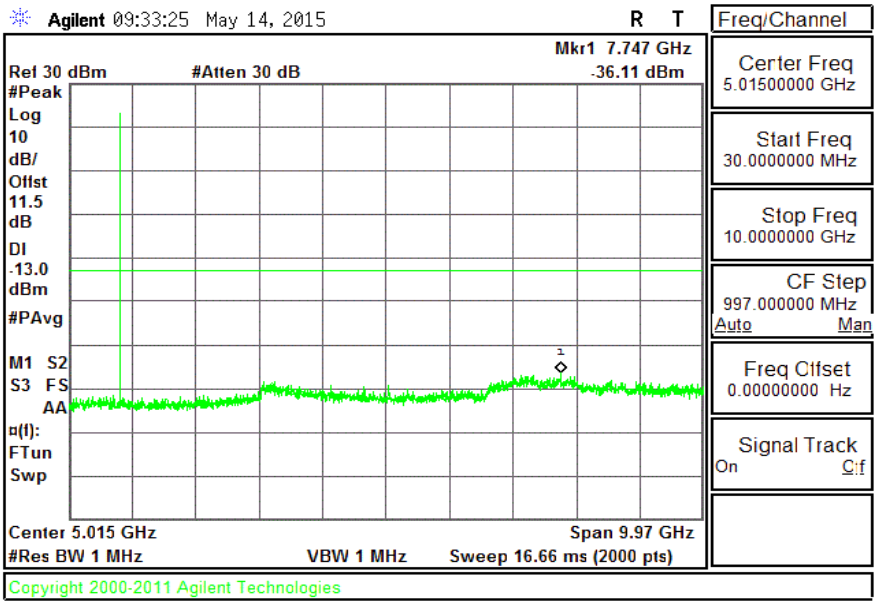
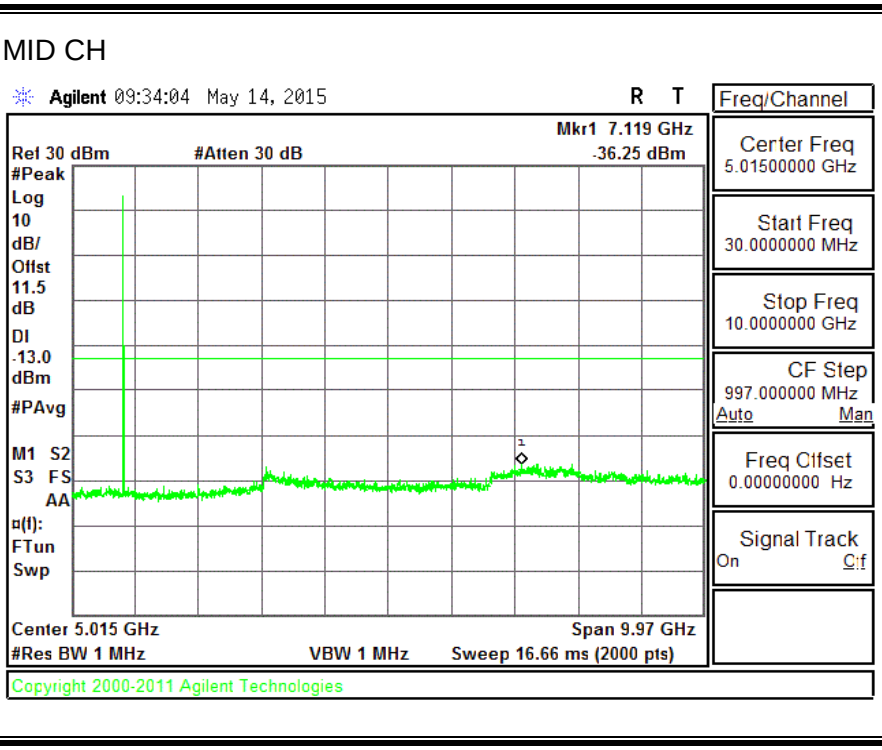
8.6.1. GSM-GPRS

850MHz BAND

LOW CH



MID CH



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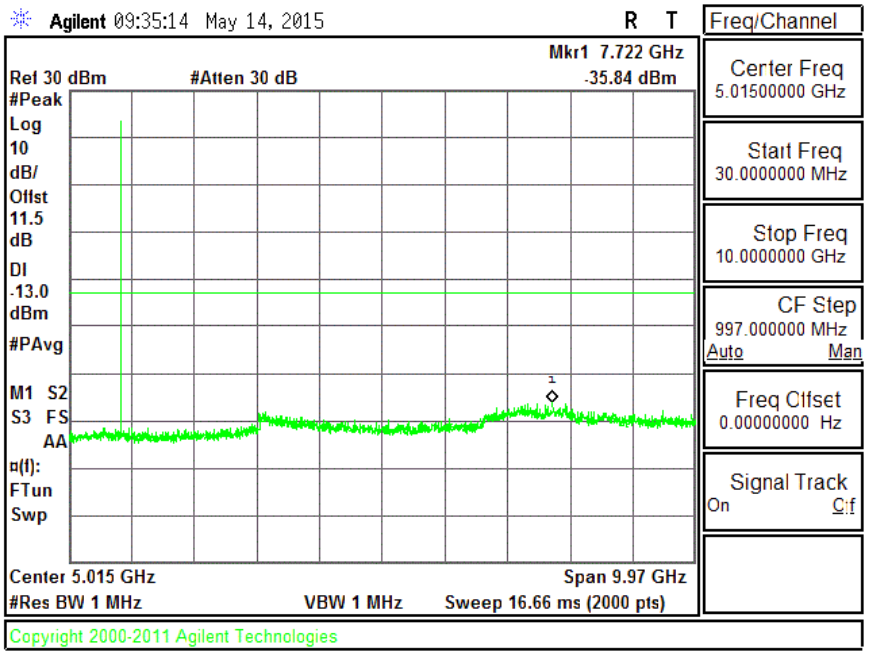
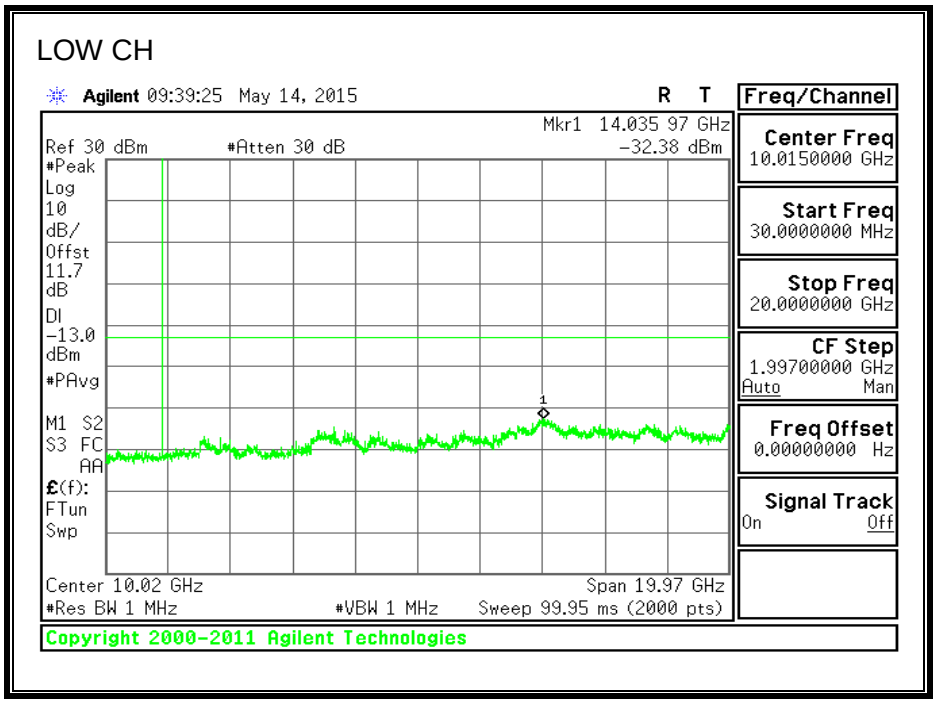
HIGH CH



1900MHz BAND

LOW CH



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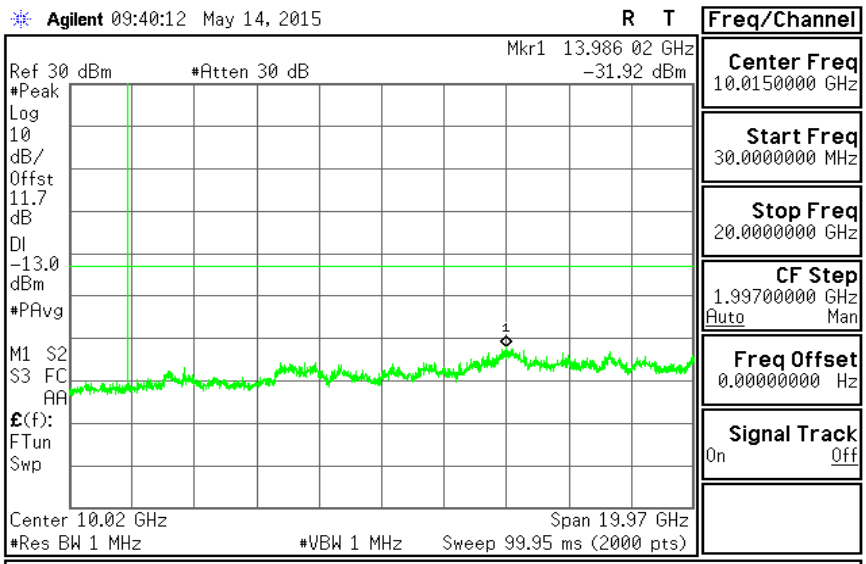
MID CH



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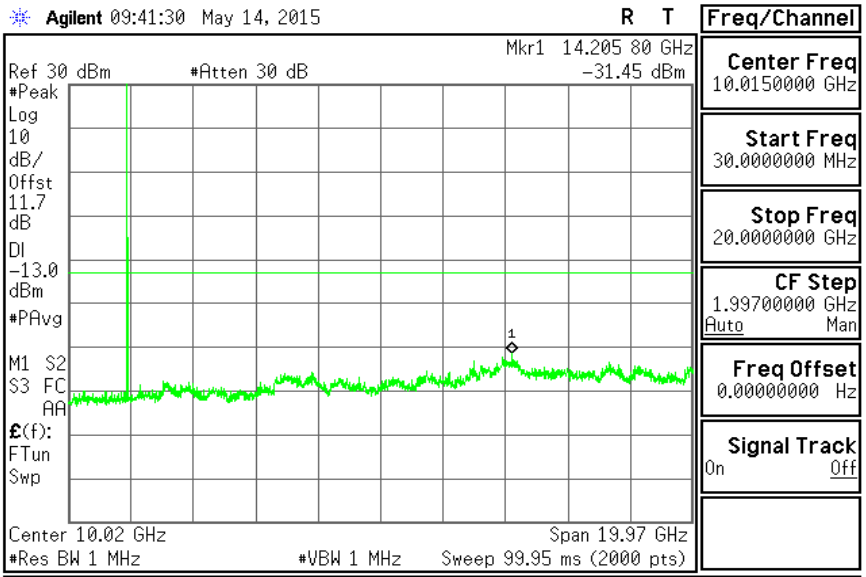

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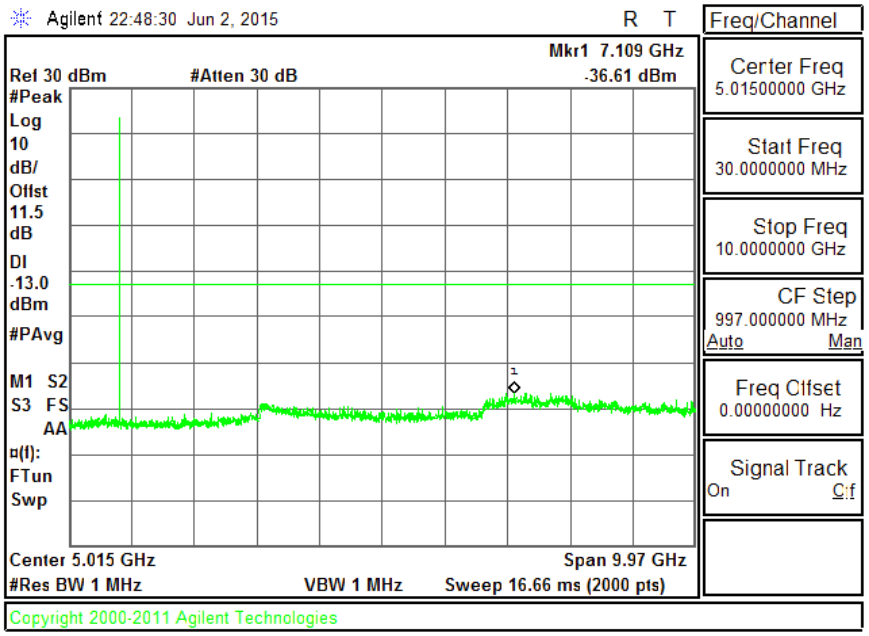
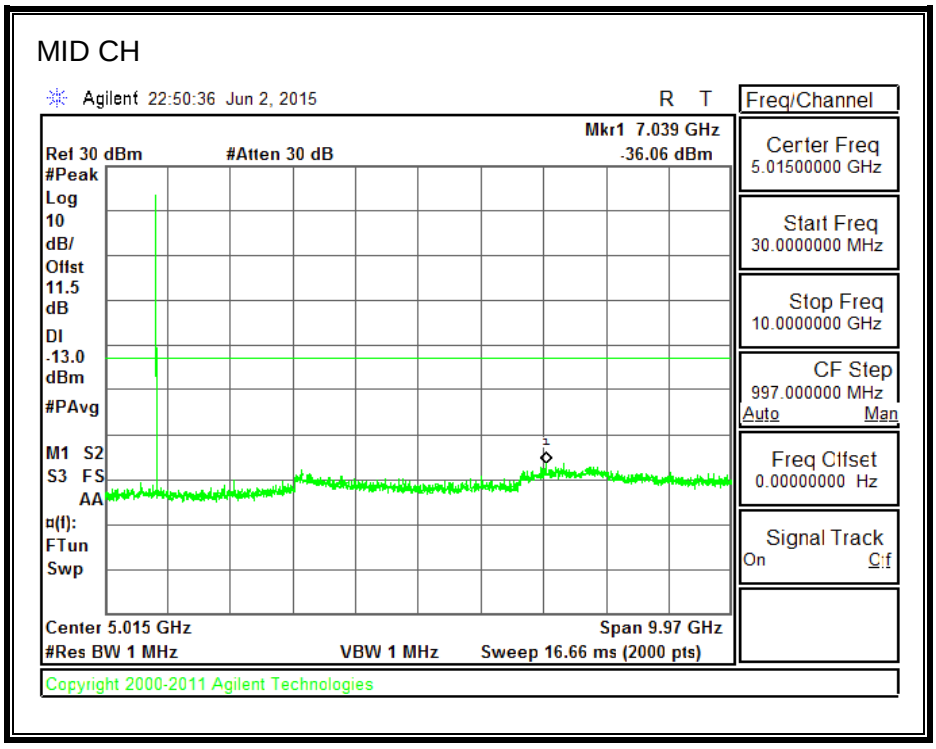
8.6.2. GSM-EGPRS

850MHz BAND

LOW CH



MID CH



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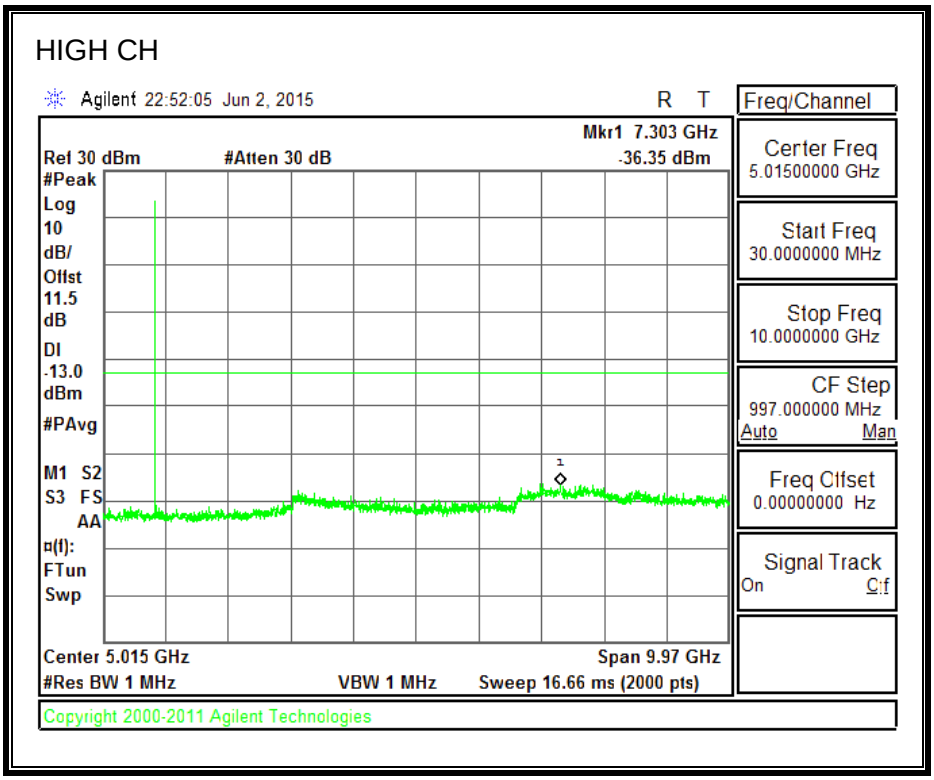
HIGH CH



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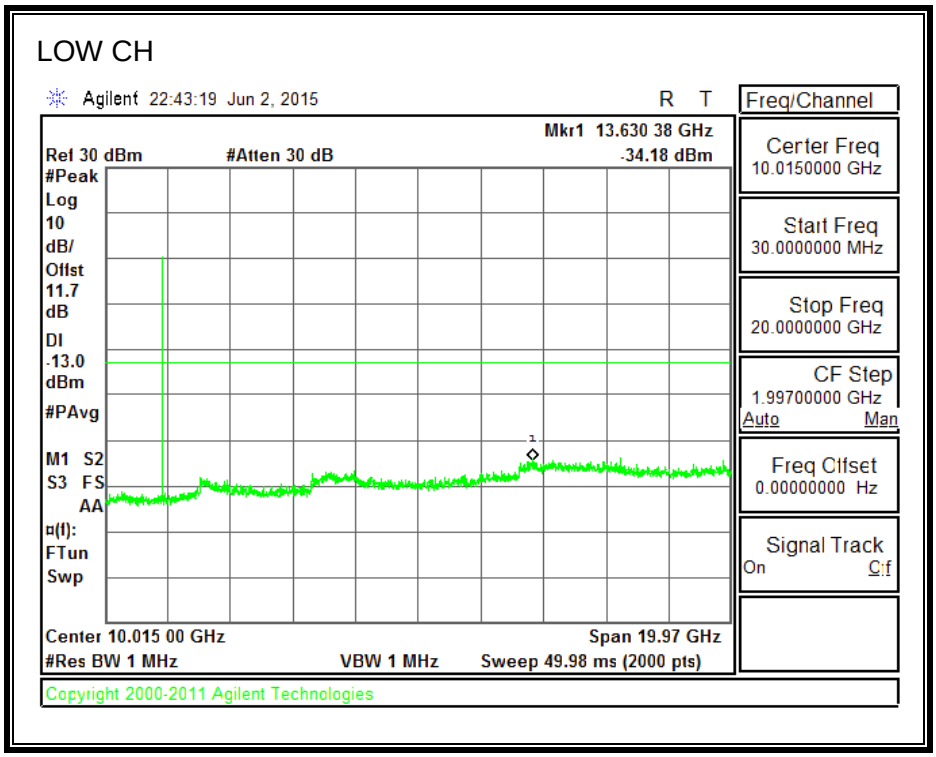
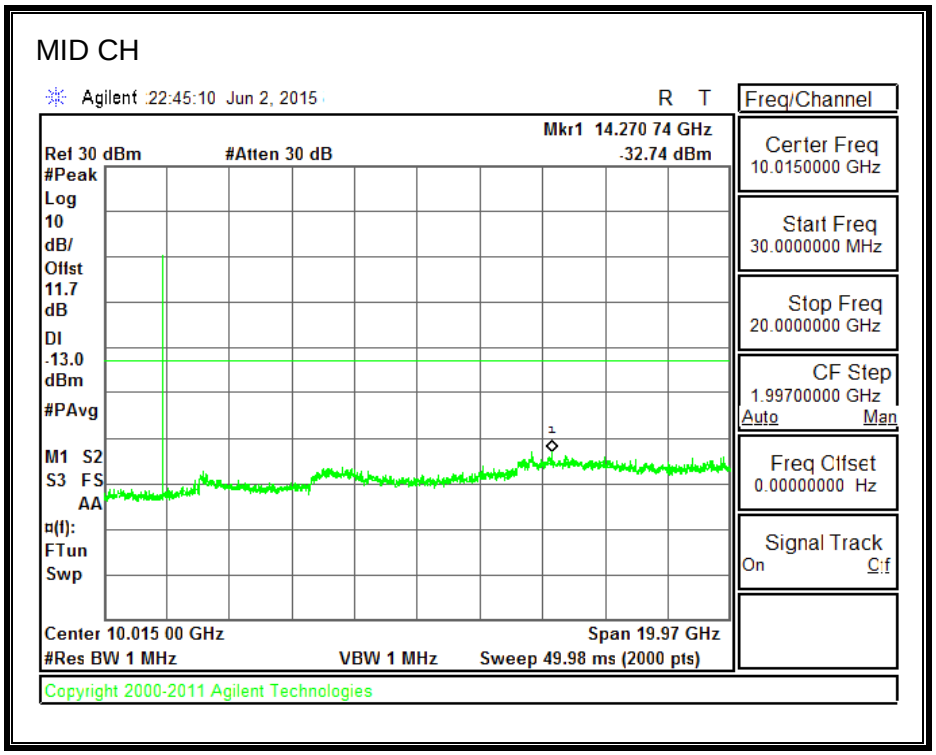
1900MHz BAND

LOW CH



MID CH



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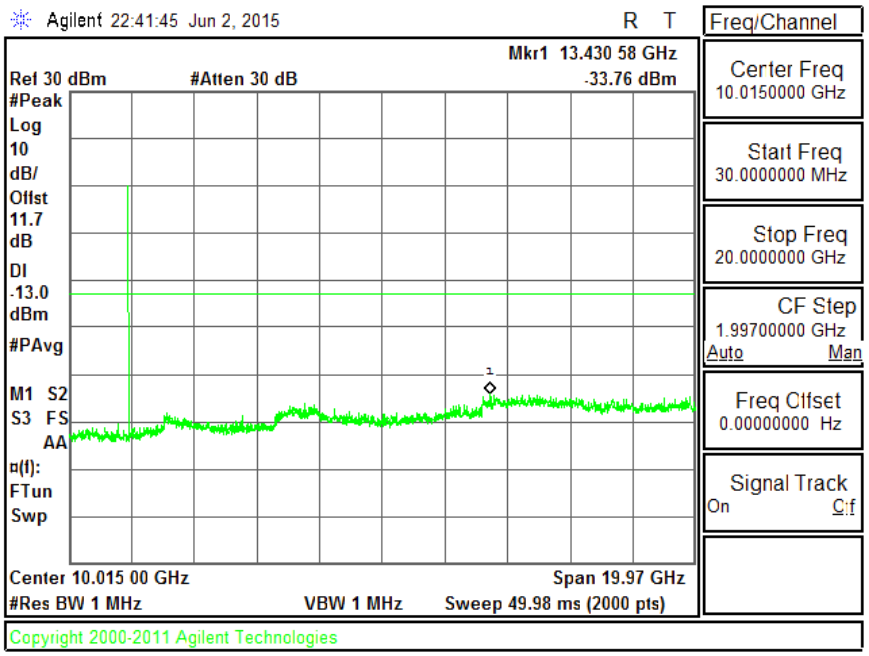
HIGH CH



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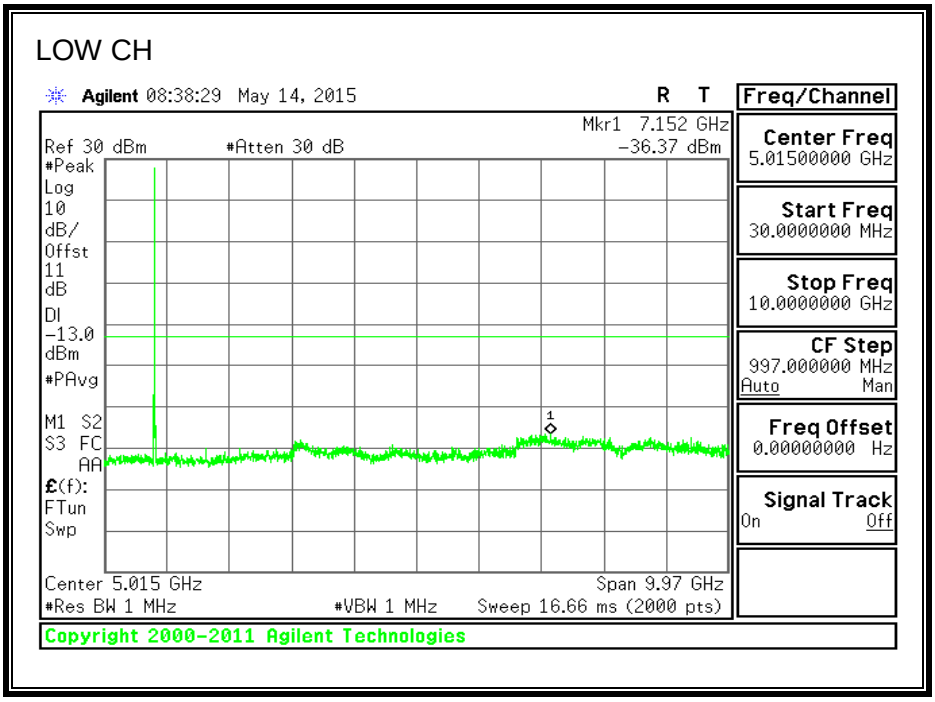
8.6.3. CDMA2000 1xRTT

850MHz BAND

LOW CH



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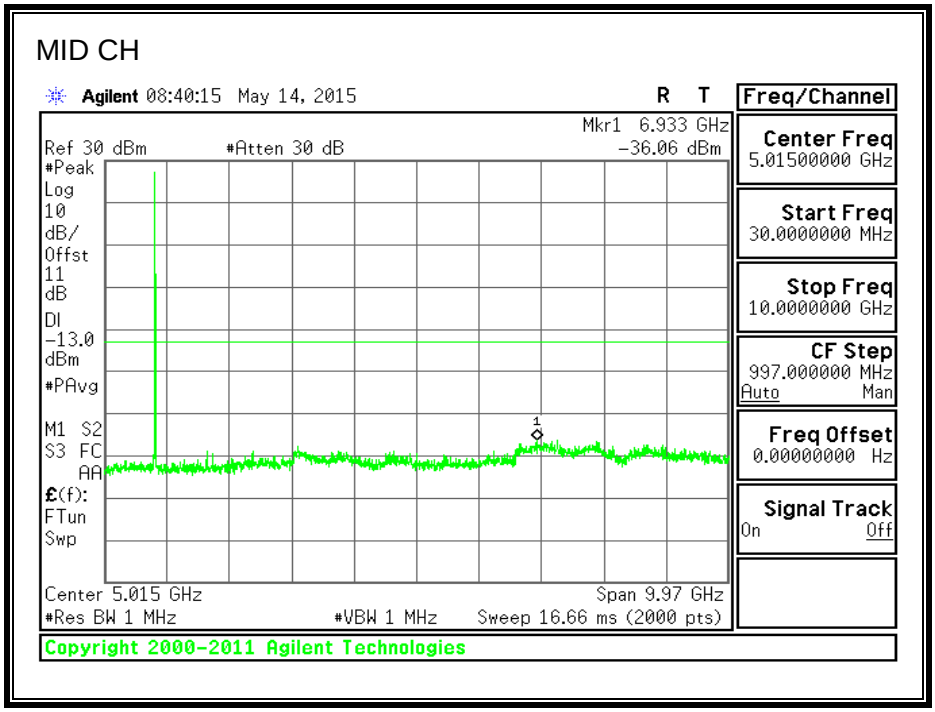

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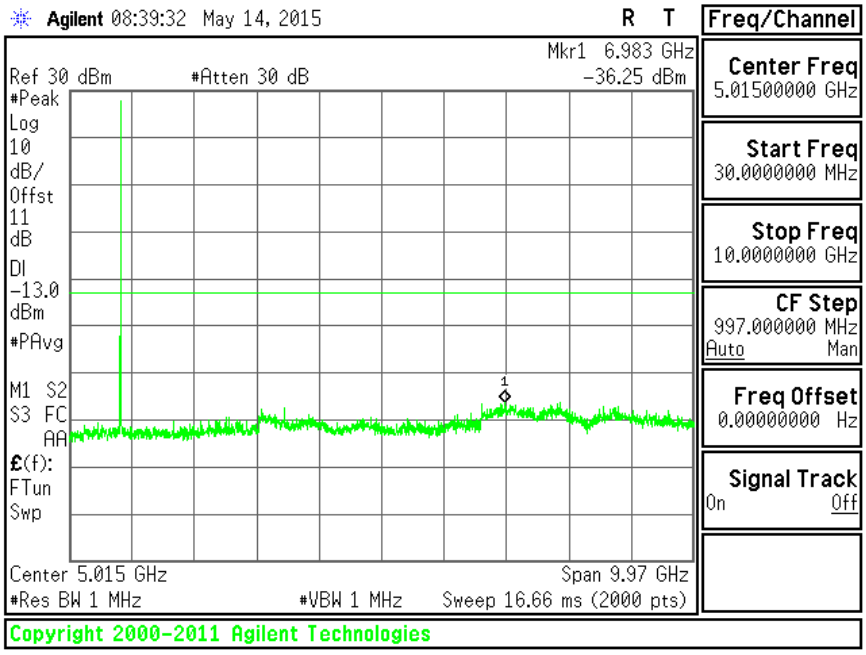
HIGH CH



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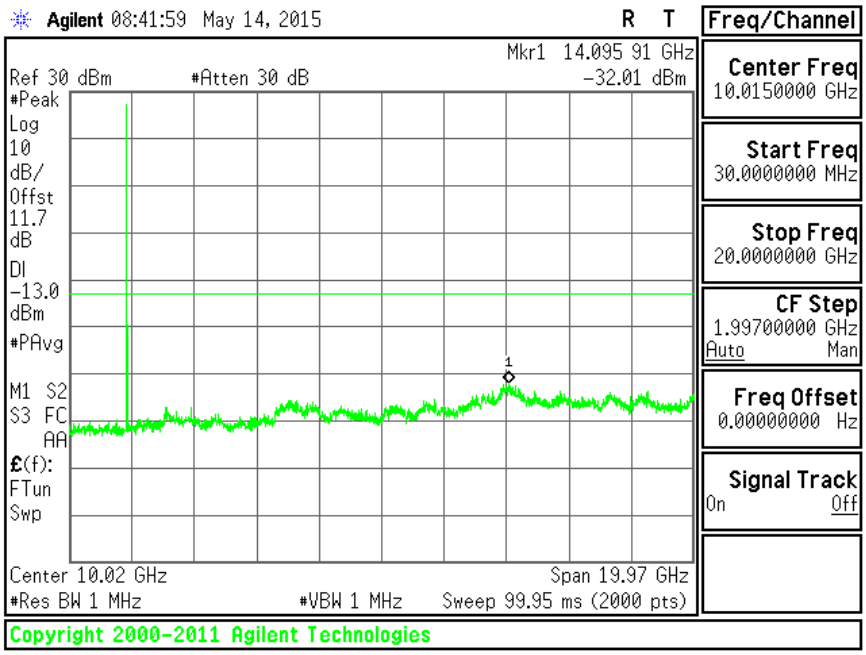
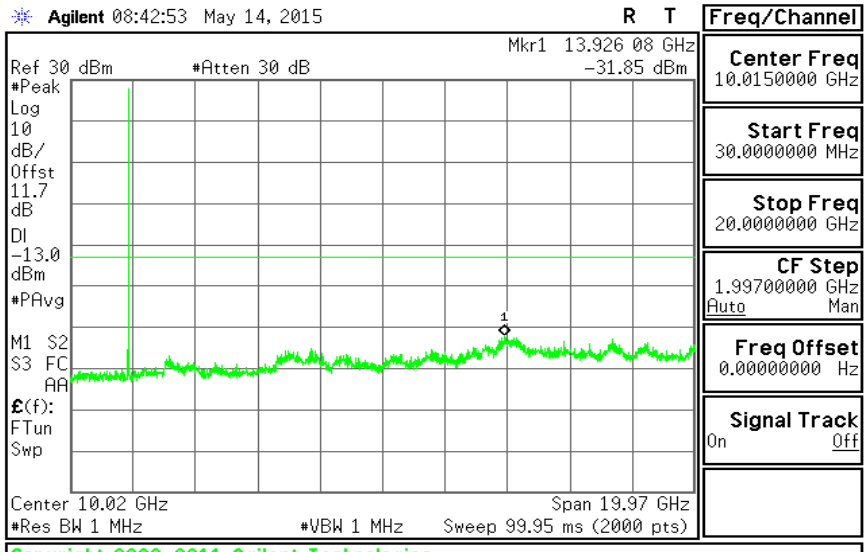
1900MHz BAND

LOW CH



MID CH



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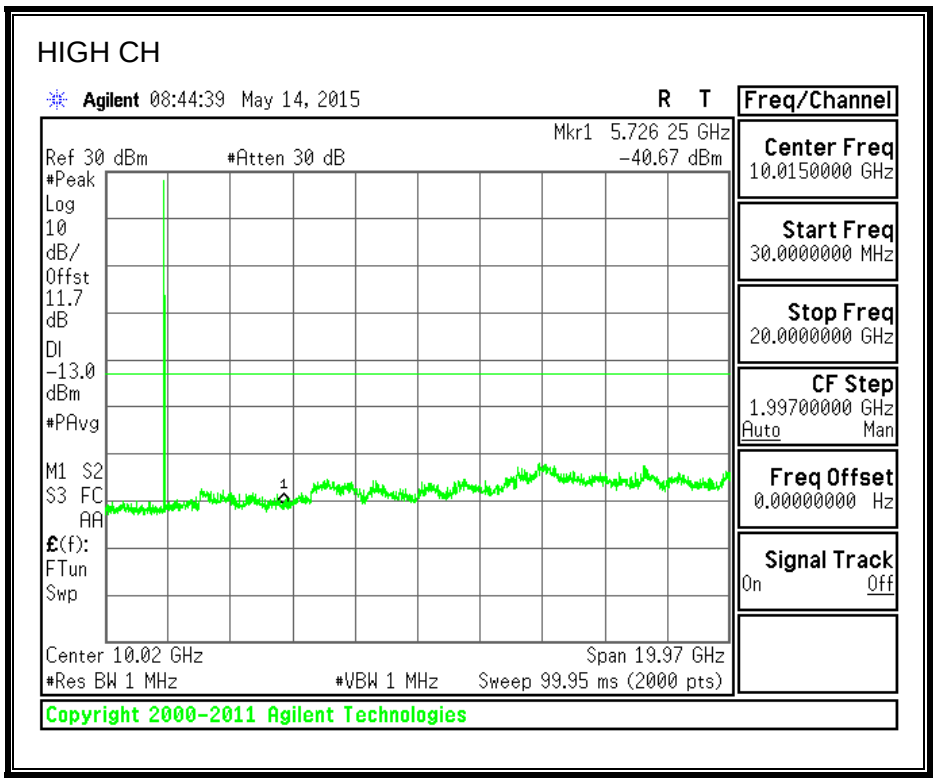

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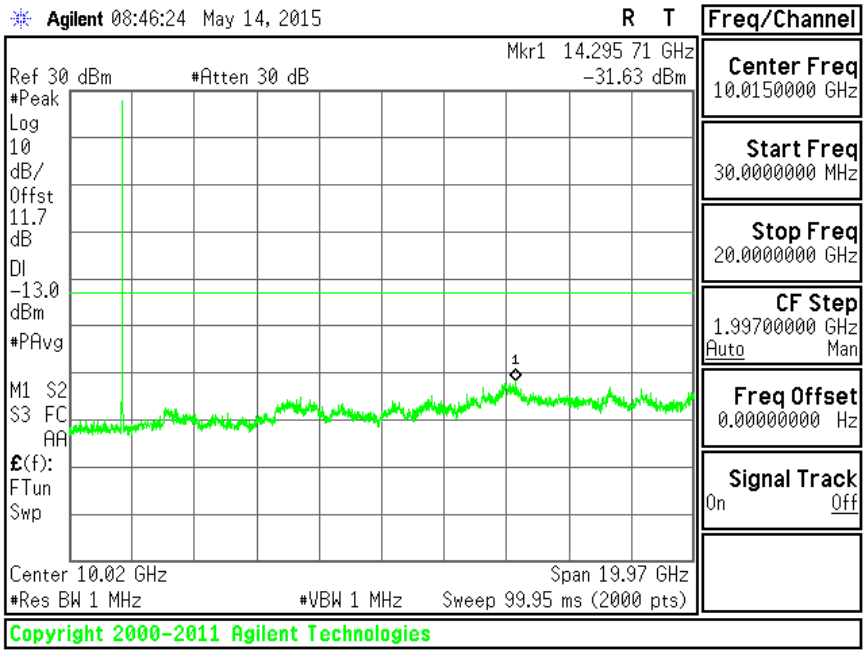
1700MHz BAND

LOW CH



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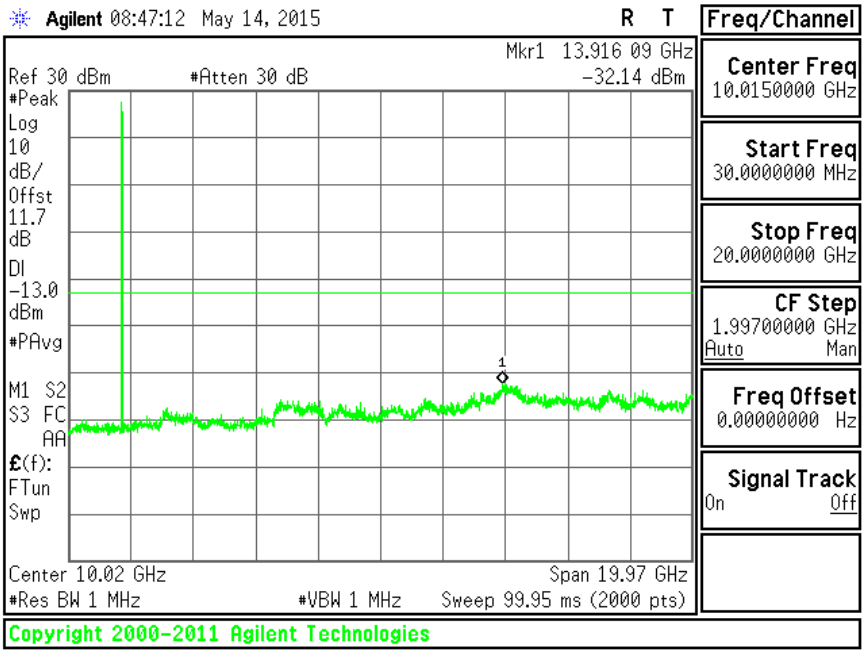

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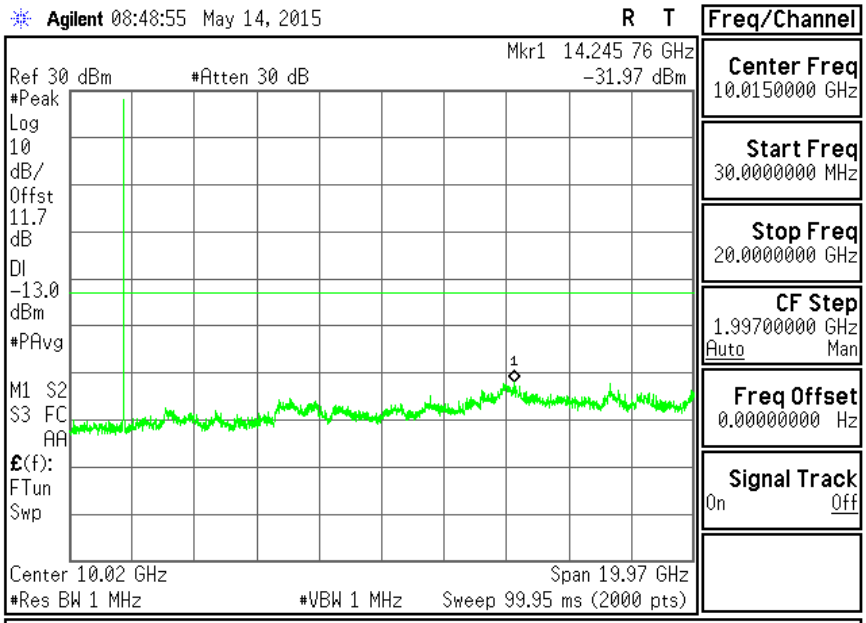
HIGH CH



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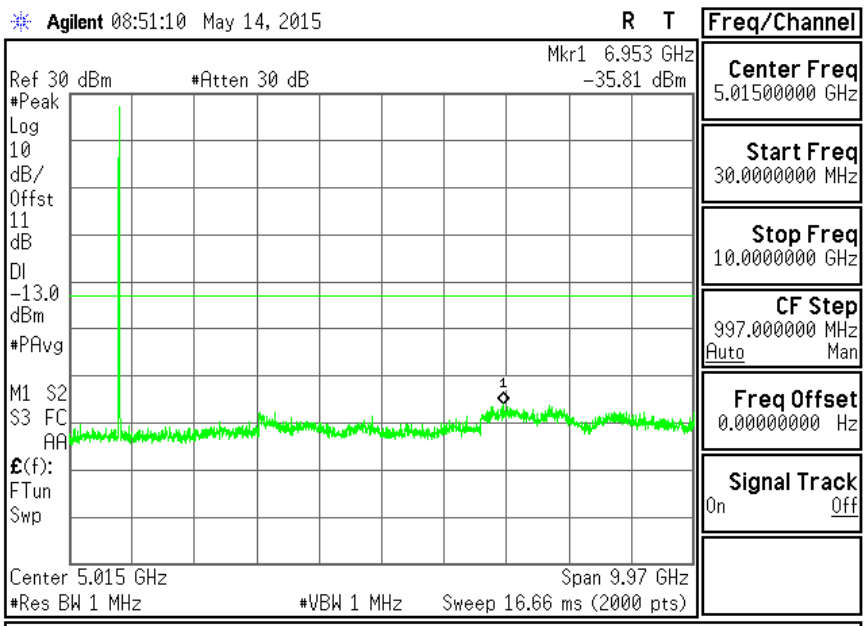
800MHz SECONDARY BAND

LOW CH



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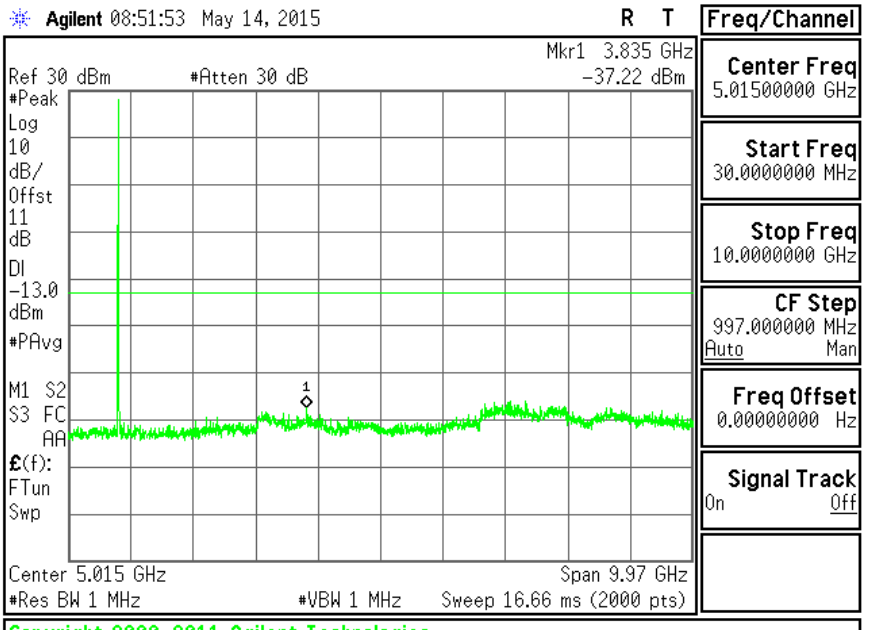

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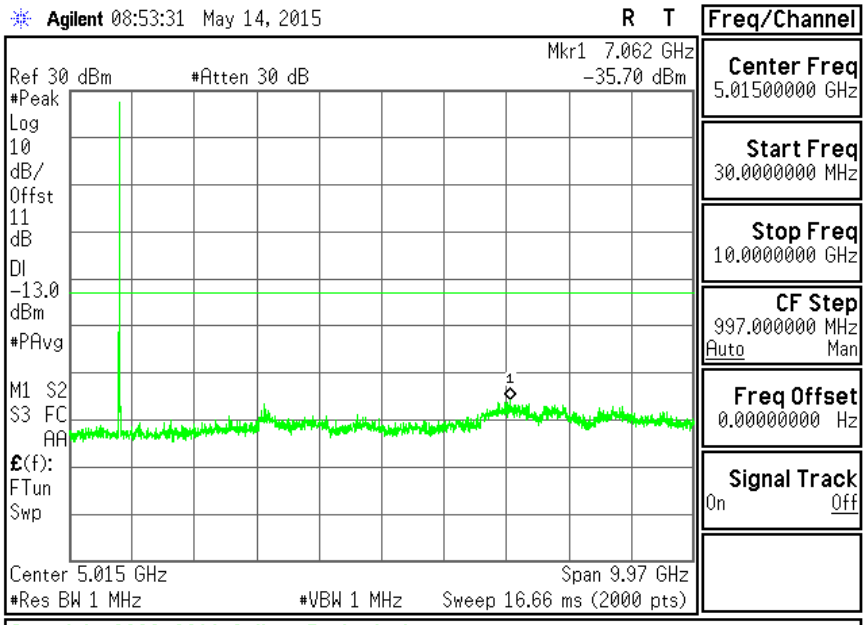
HIGH CH



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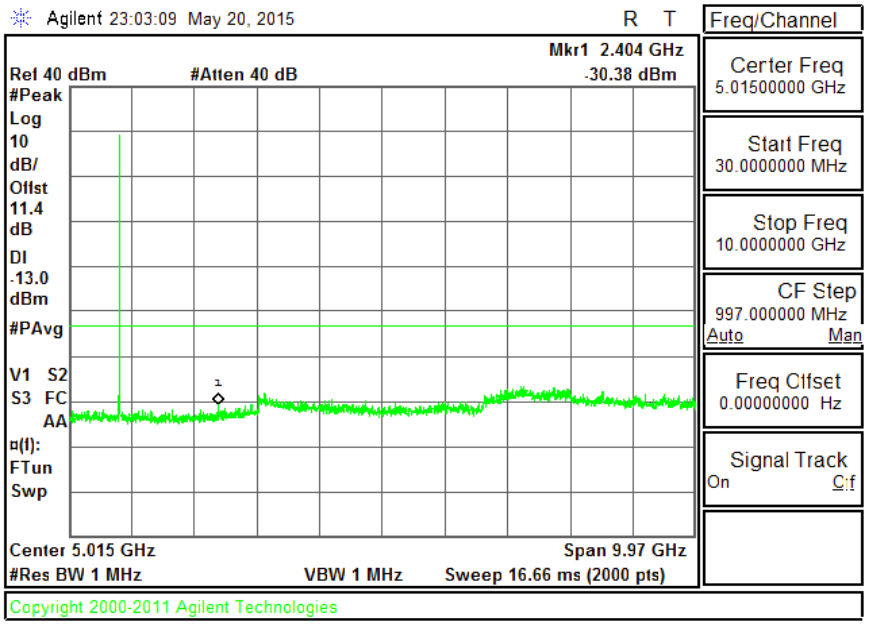
8.6.4. CDMA2000 REV A

850MHz BAND

LOW CH



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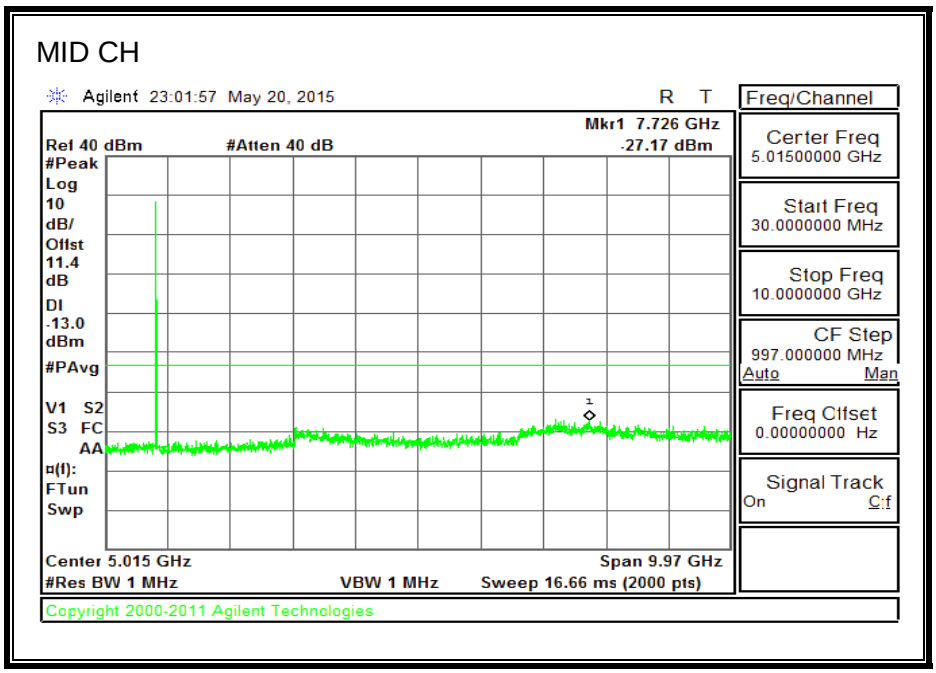

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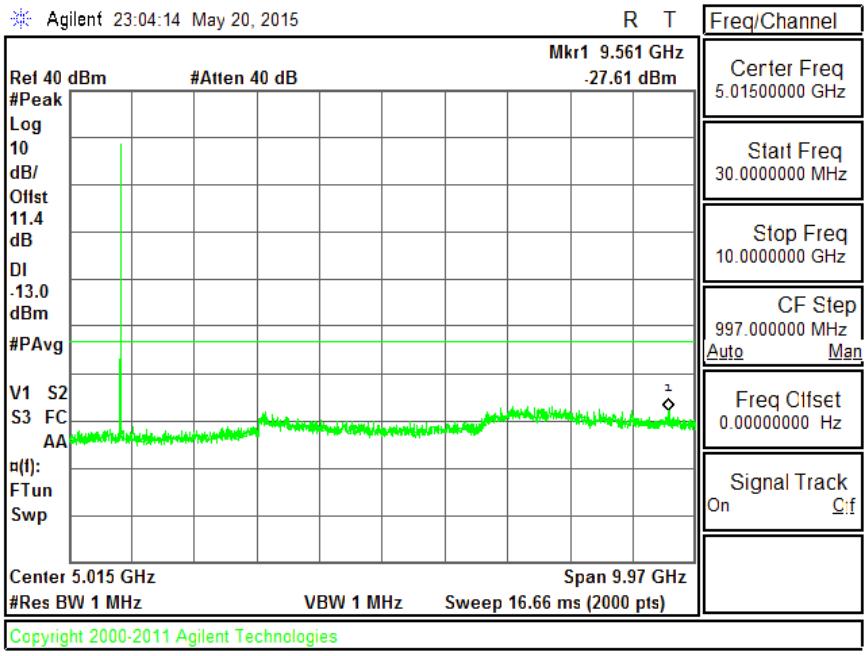
HIGH CH



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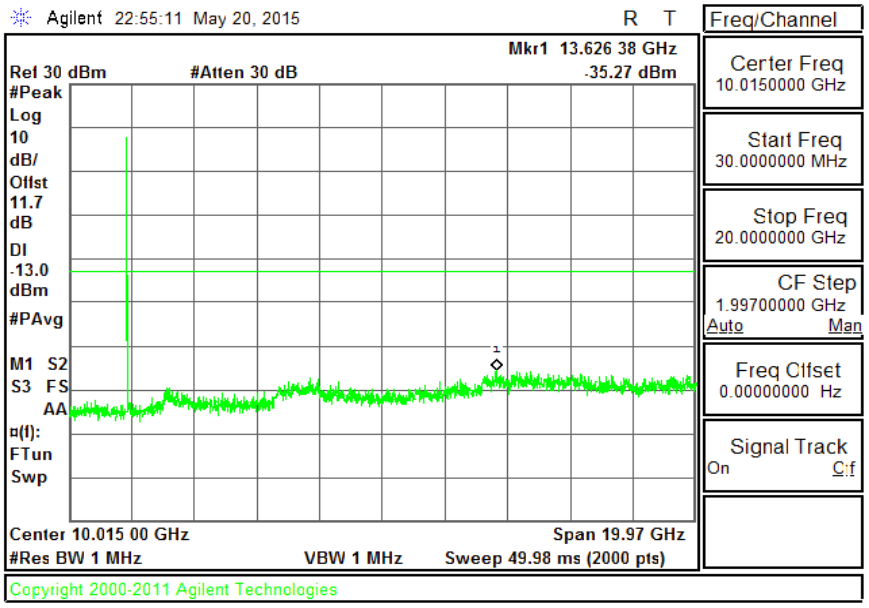
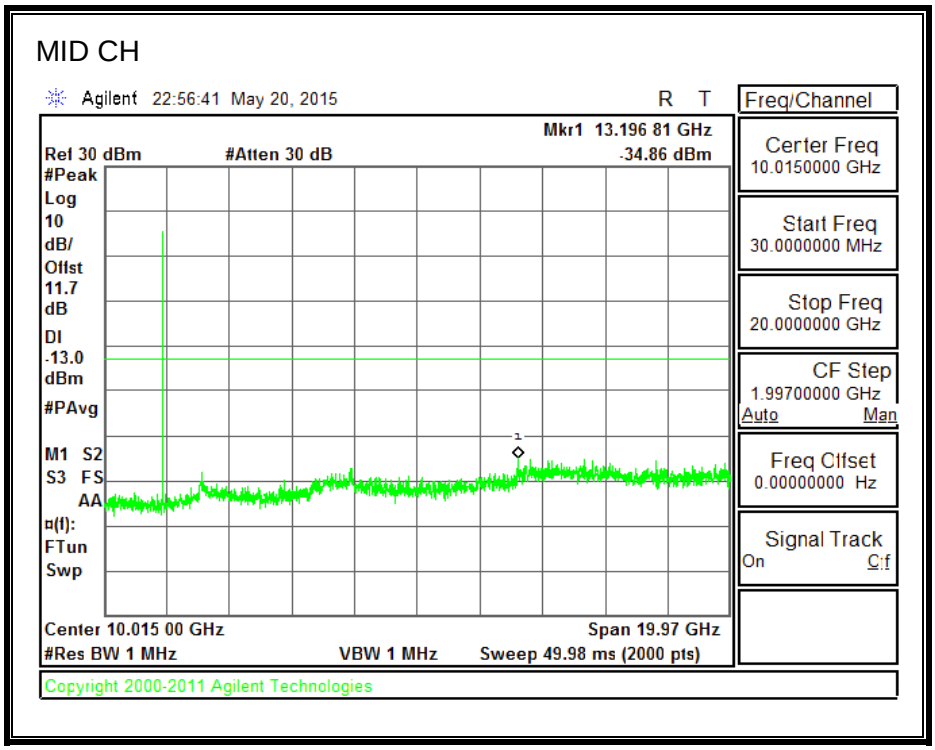
1900MHz BAND

LOW CH



MID CH



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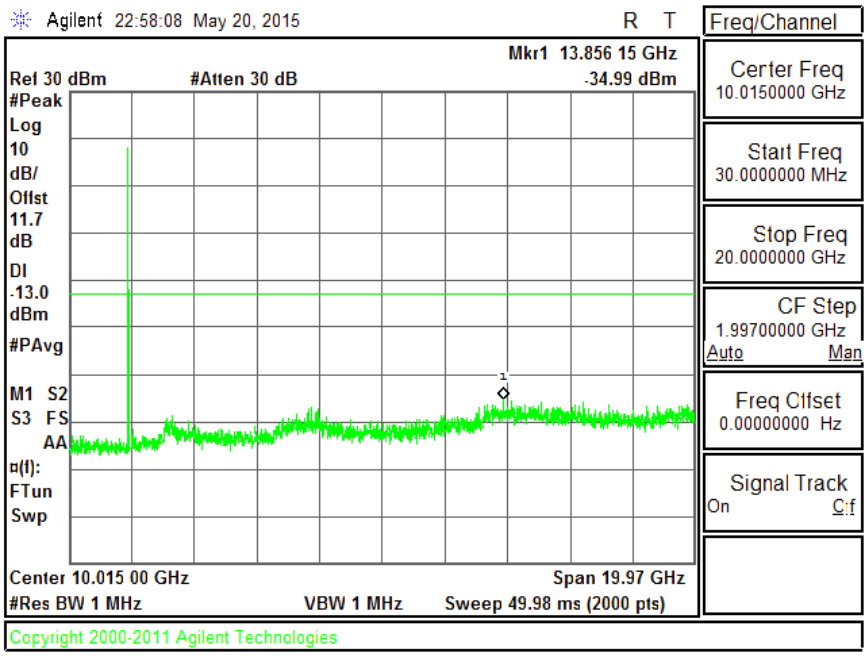
HIGH CH



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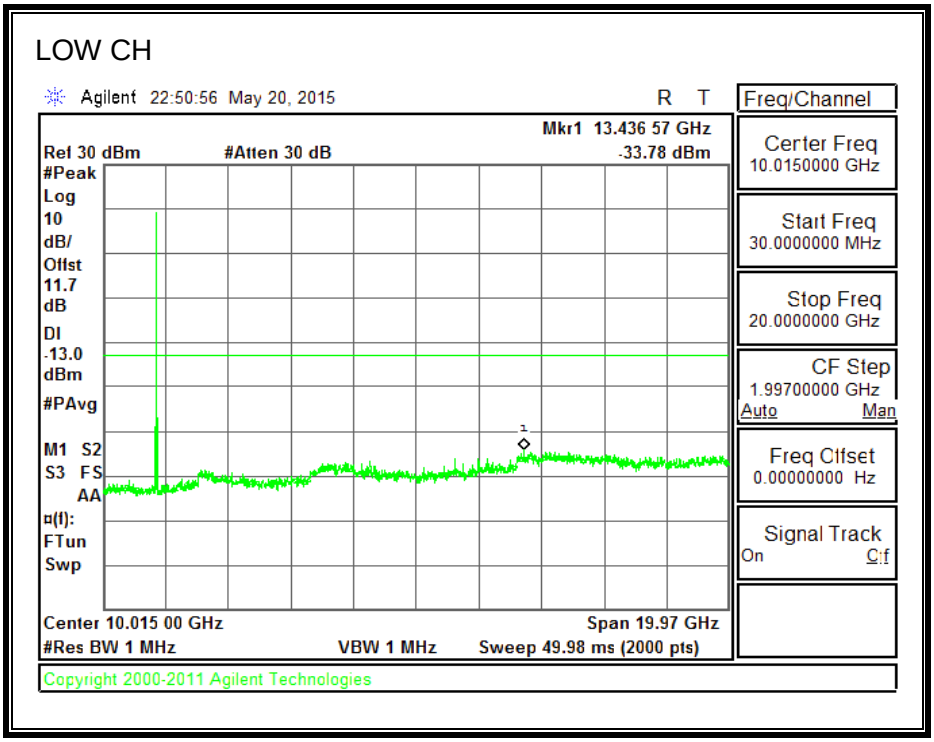
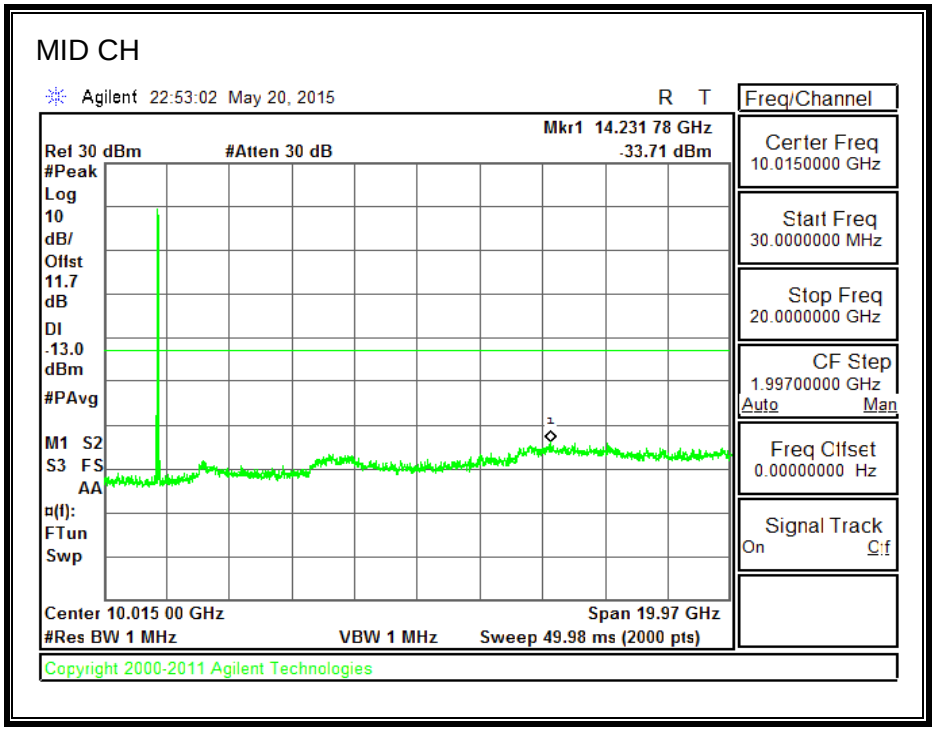
1700MHz BAND

LOW CH



MID CH



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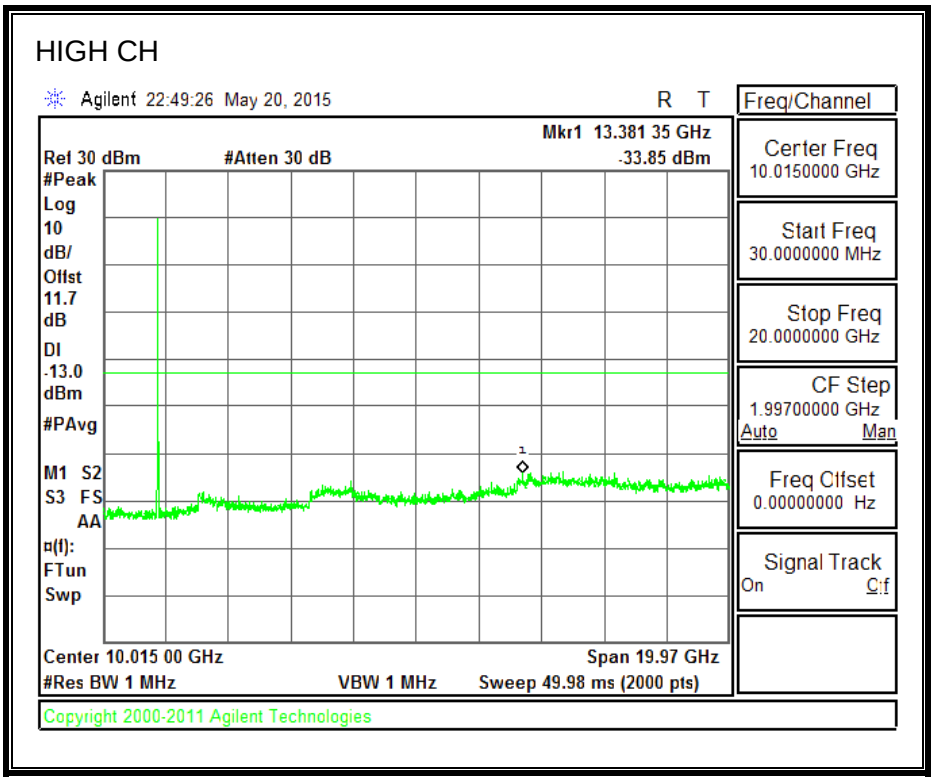
HIGH CH



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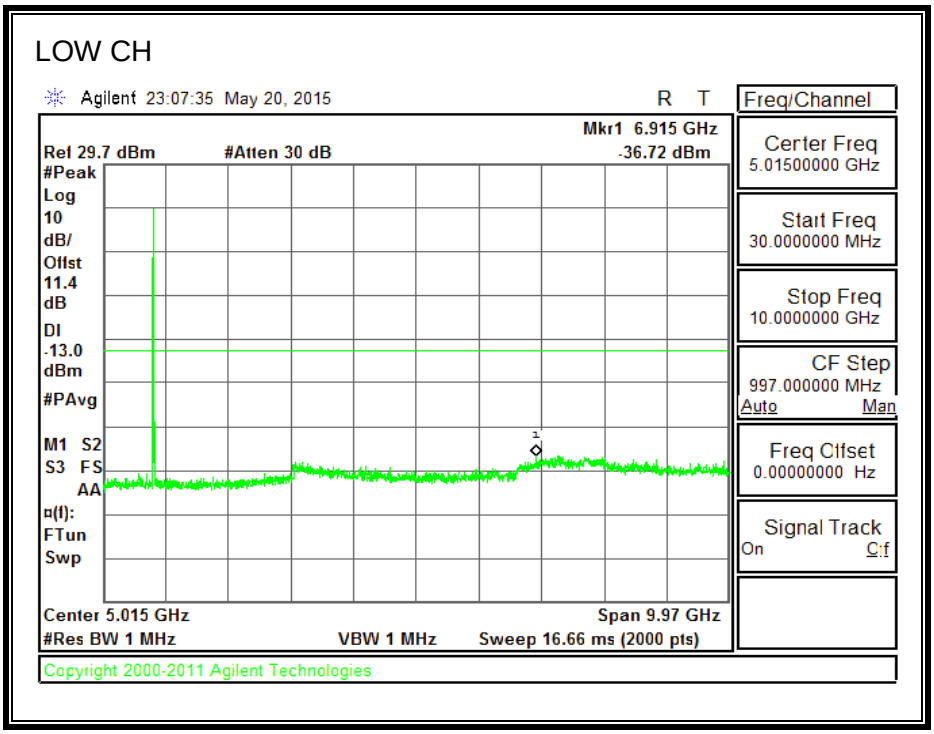
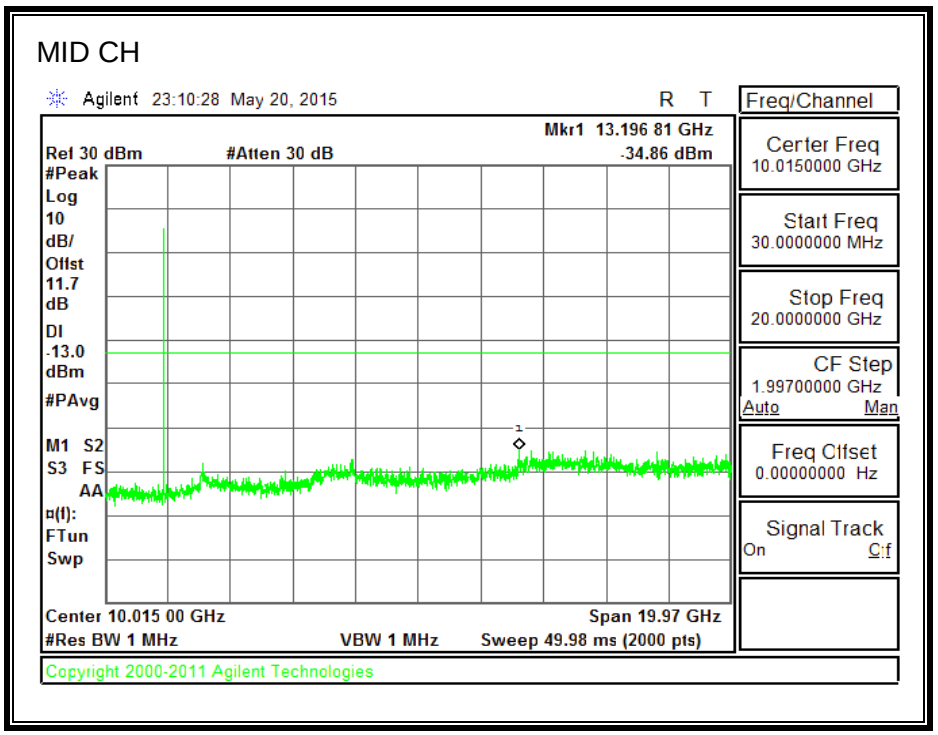
800MHz SECONDARY BAND

LOW CH



MID CH



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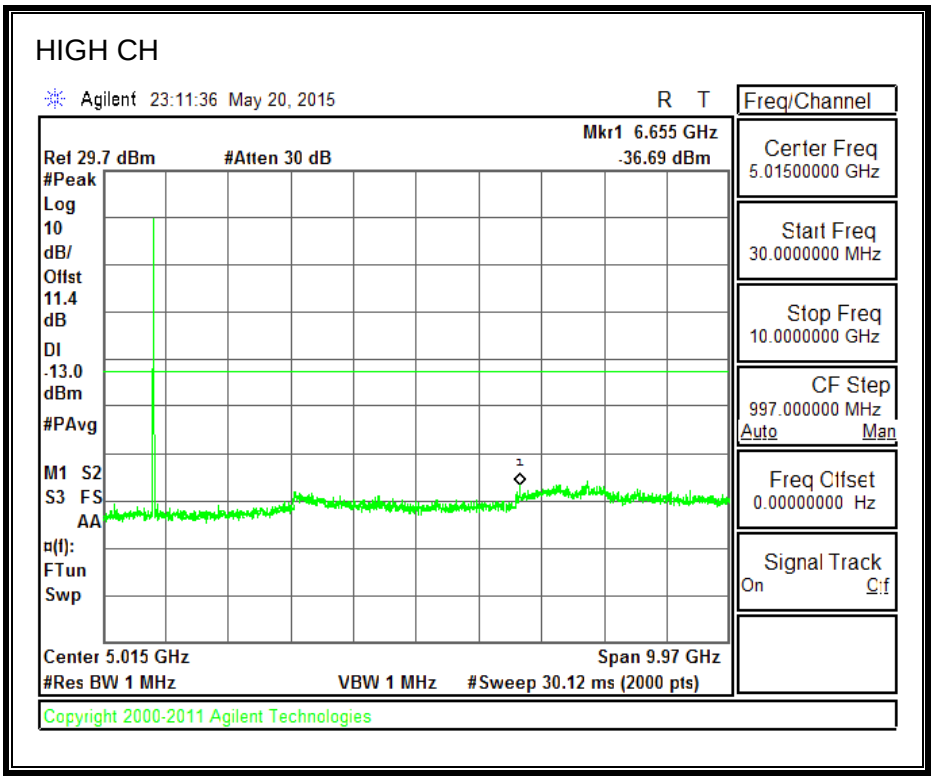
HIGH CH



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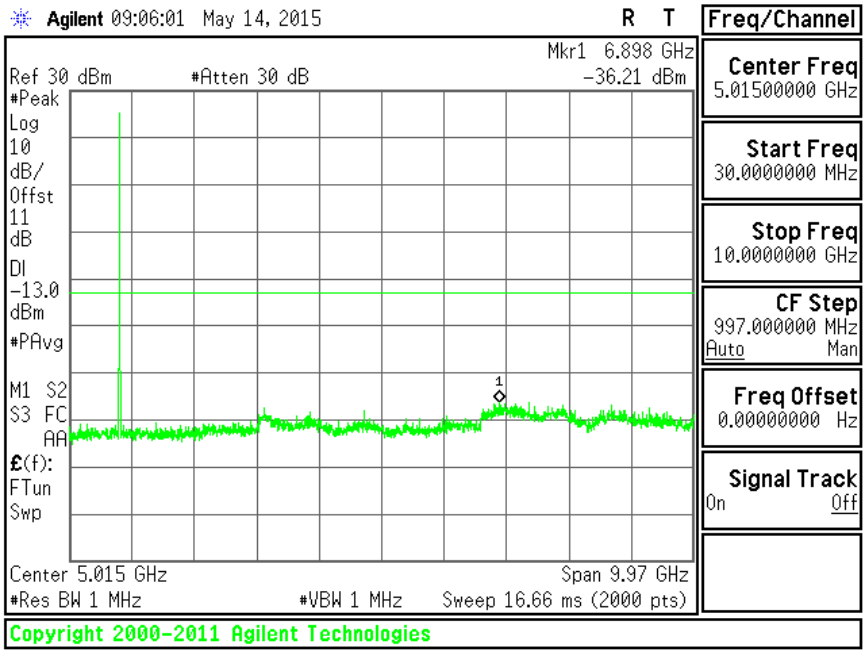
8.6.5. UMTS REL 99

850MHz BAND

LOW CH



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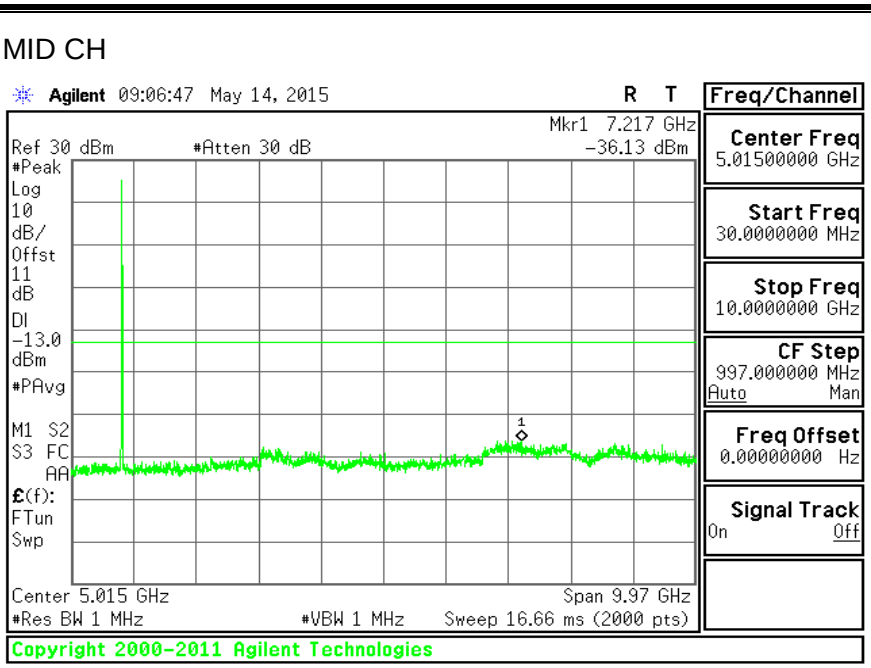

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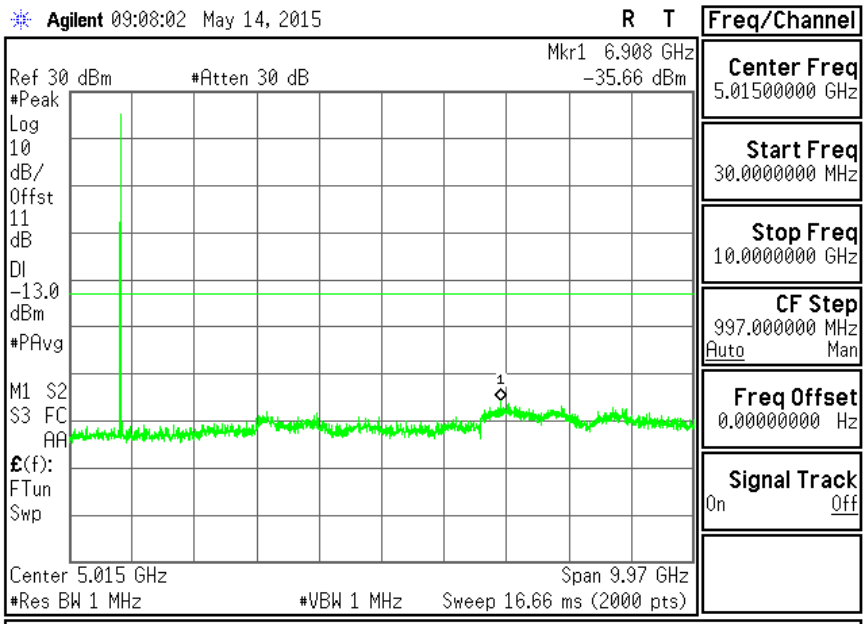
HIGH CH



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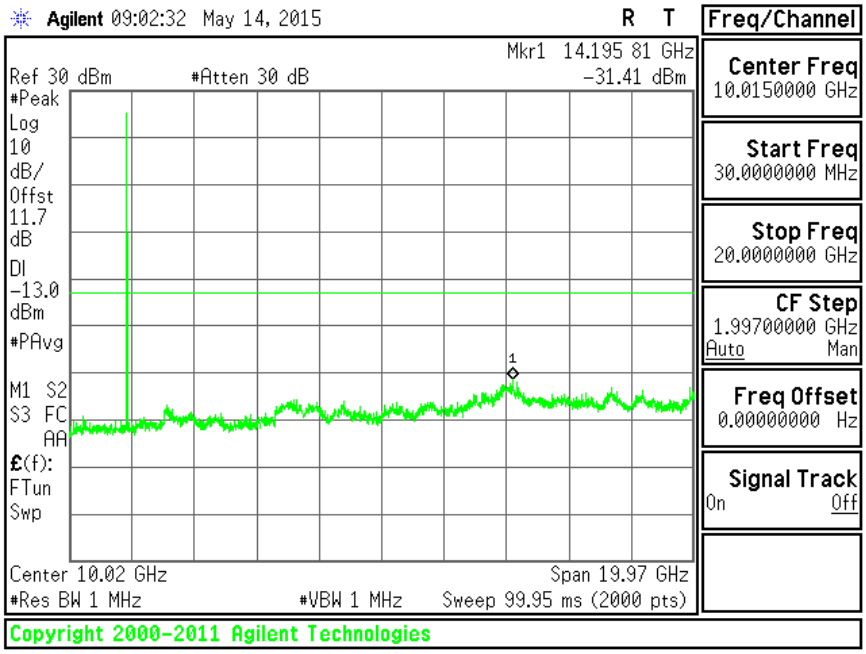
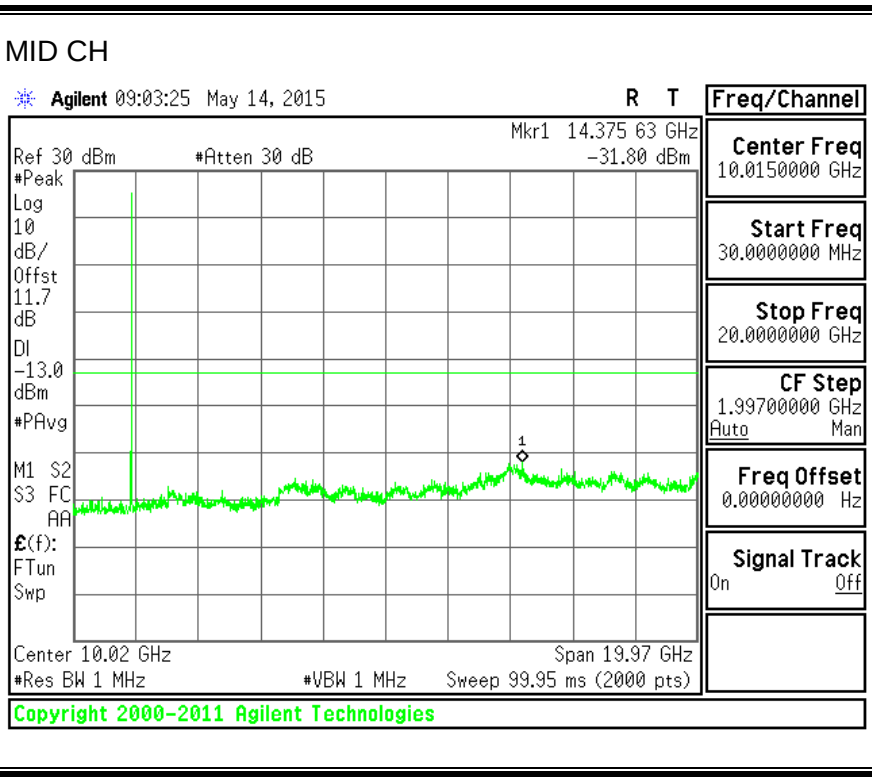
1900MHz BAND

LOW CH



MID CH



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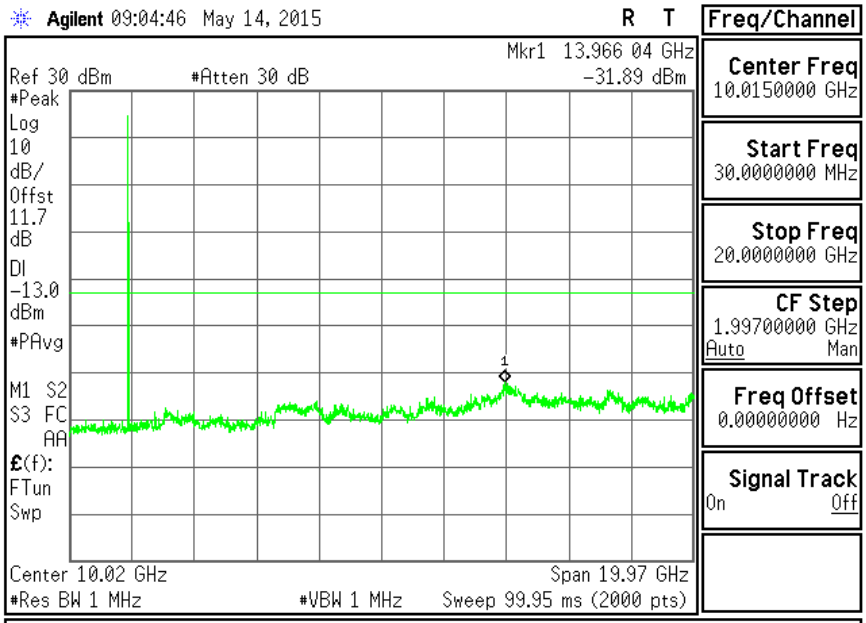
HIGH CH



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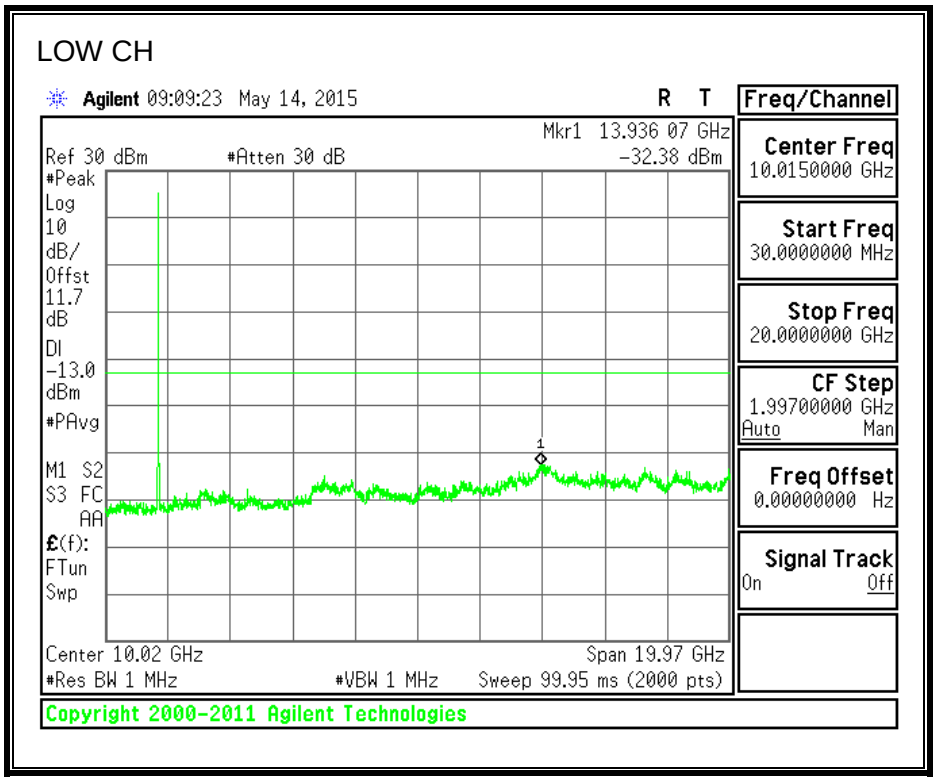
1700MHz BAND

LOW CH



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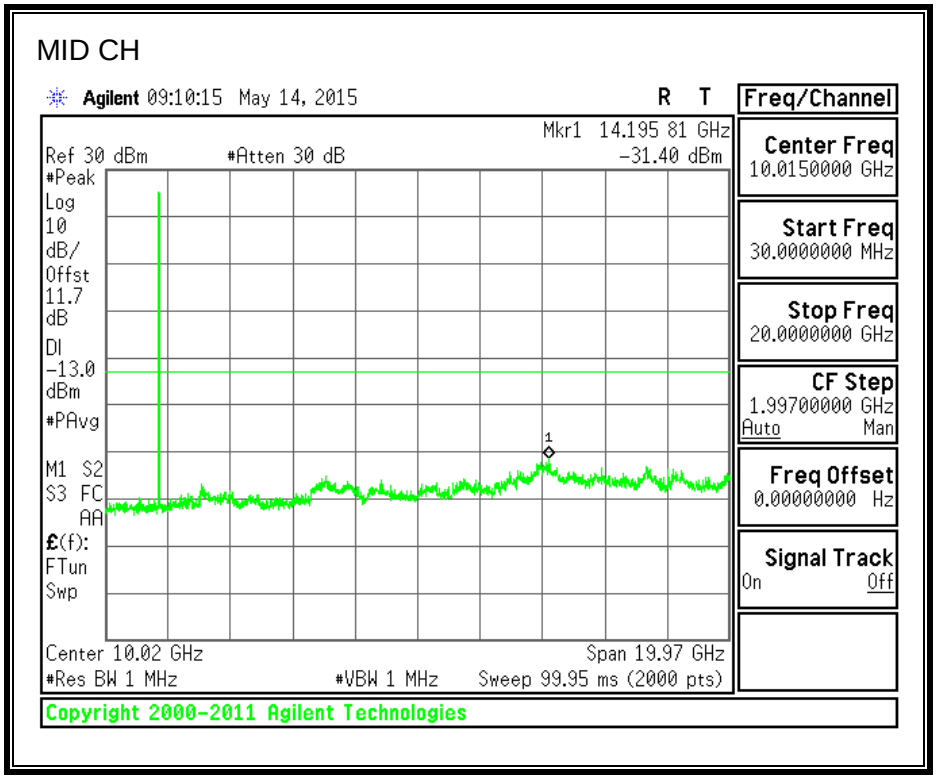

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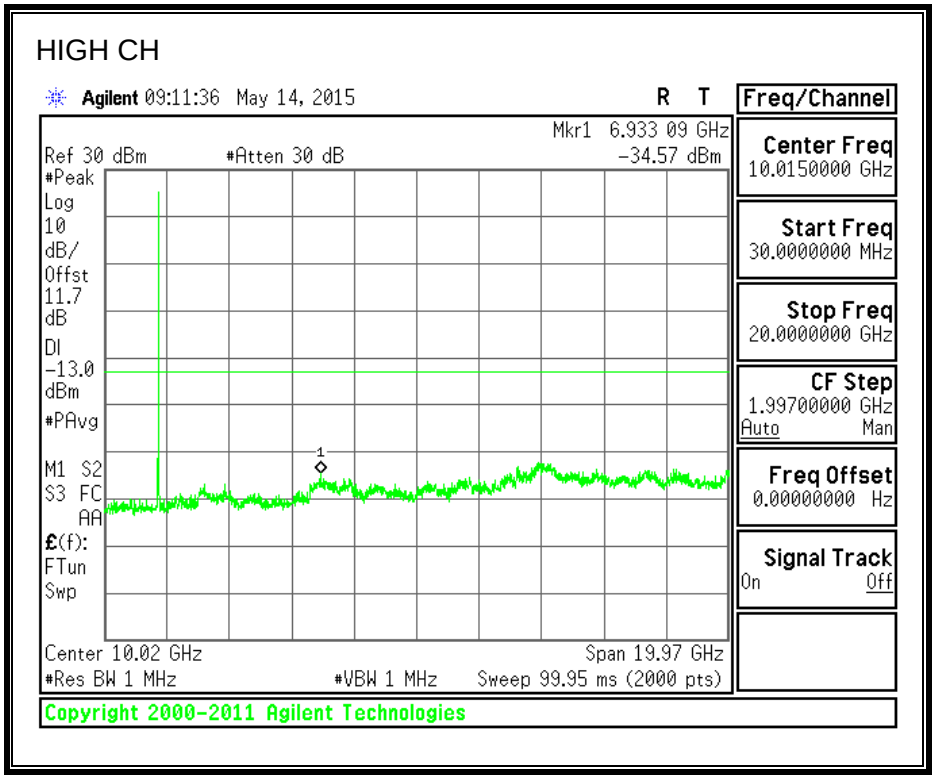
HIGH CH



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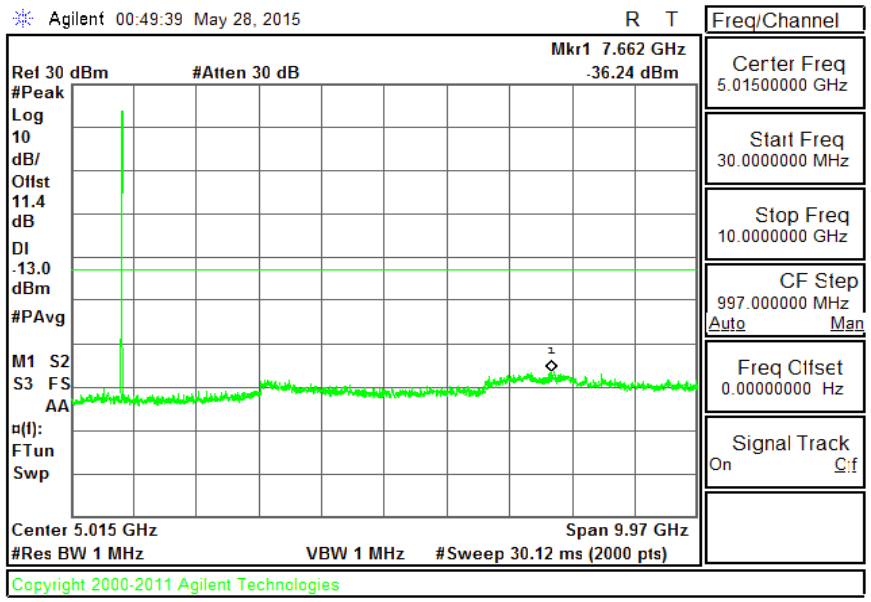
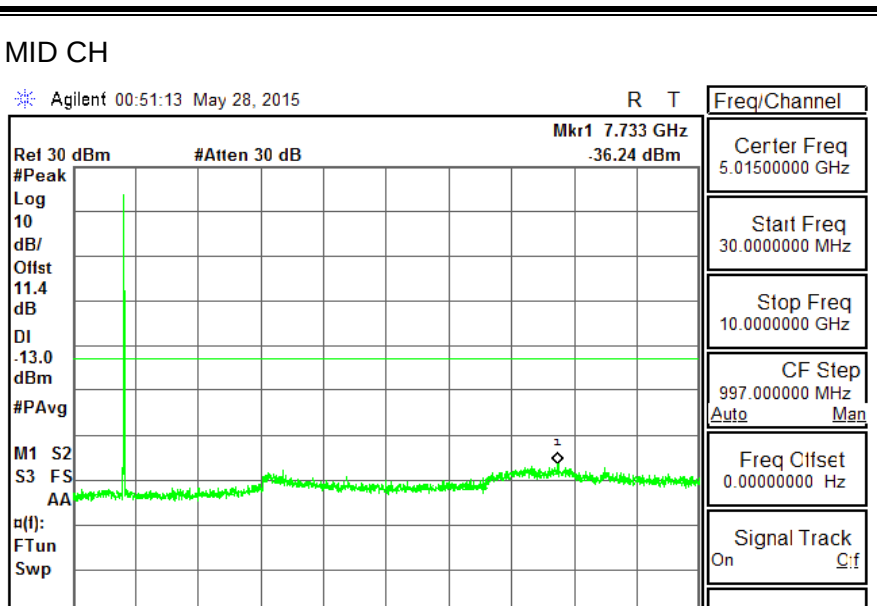
8.6.6. UMTS HSDPA

850MHz BAND

LOW CH



MID CH



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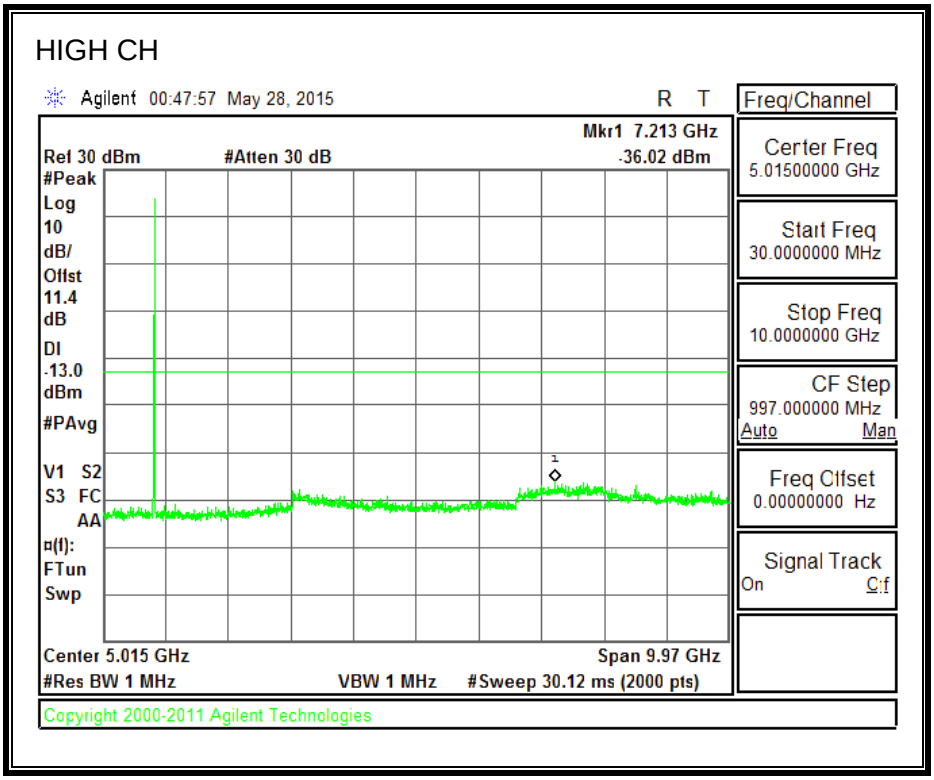
HIGH CH



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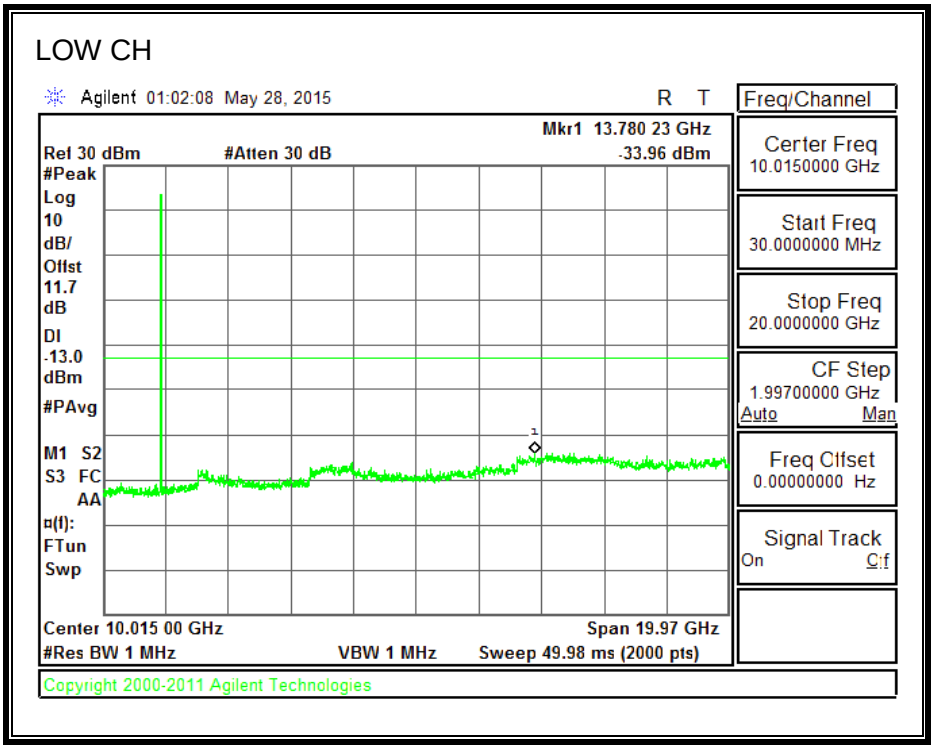
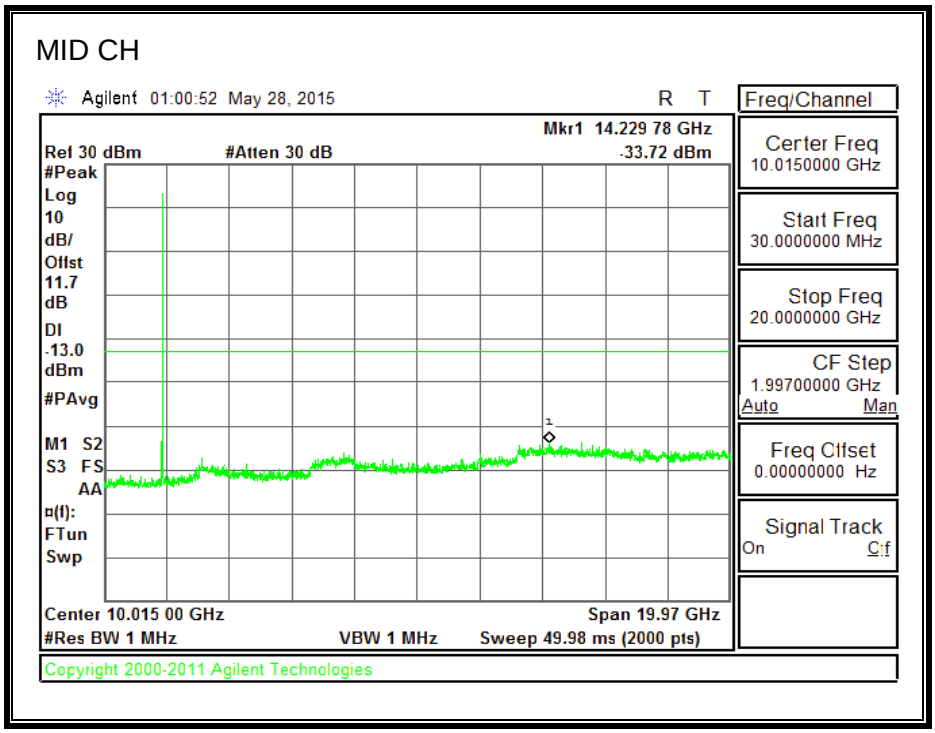
1900MHz BAND

LOW CH



MID CH



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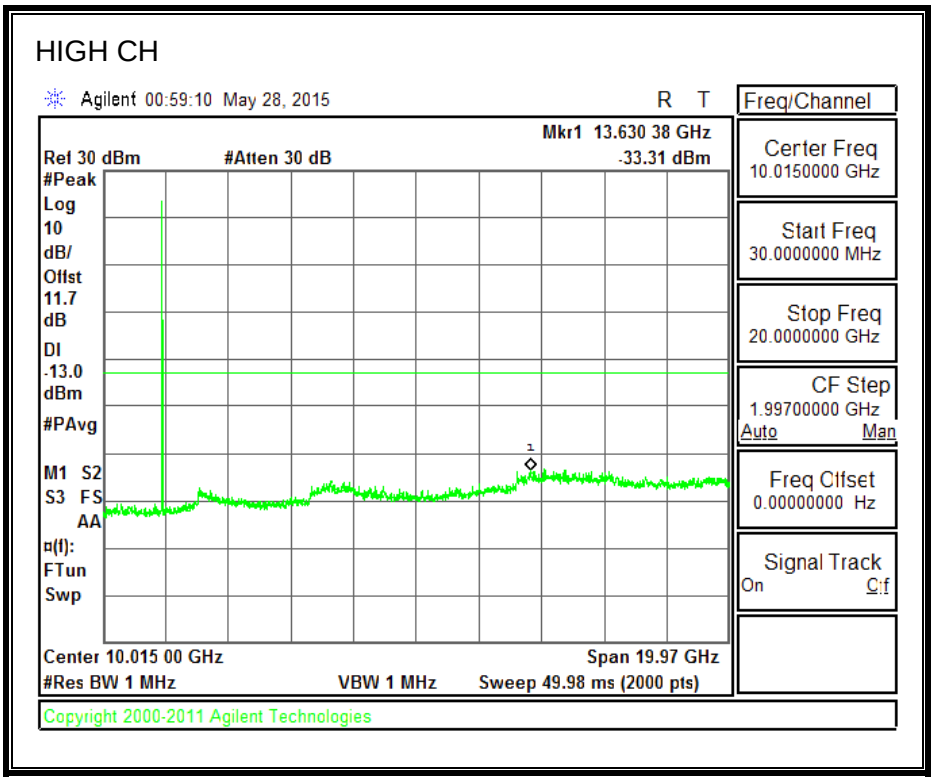
HIGH CH



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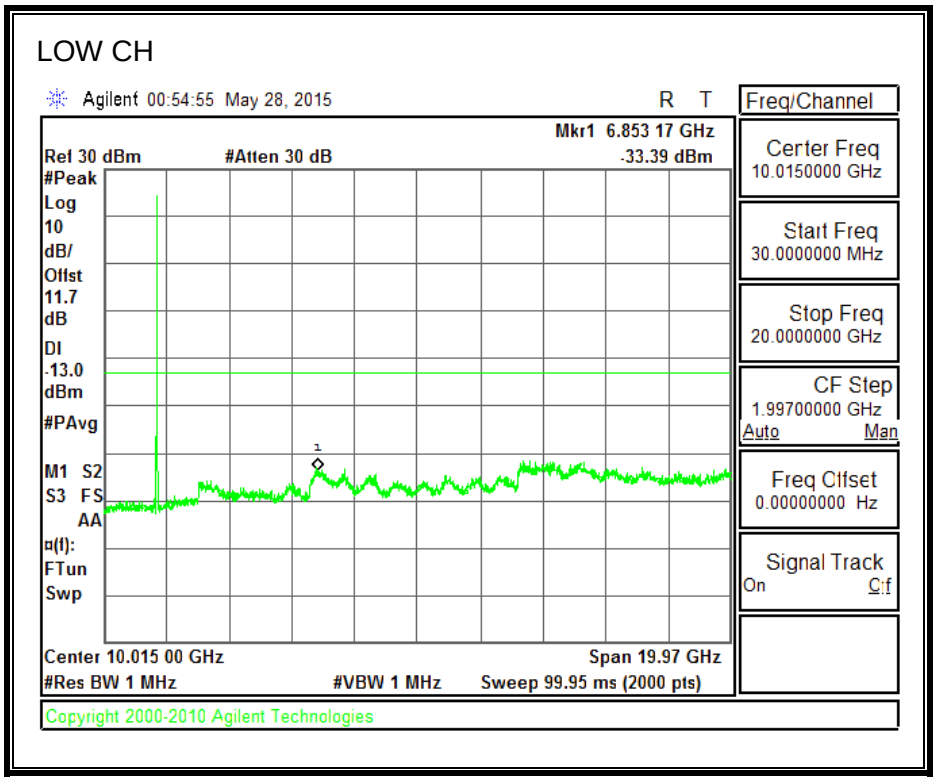
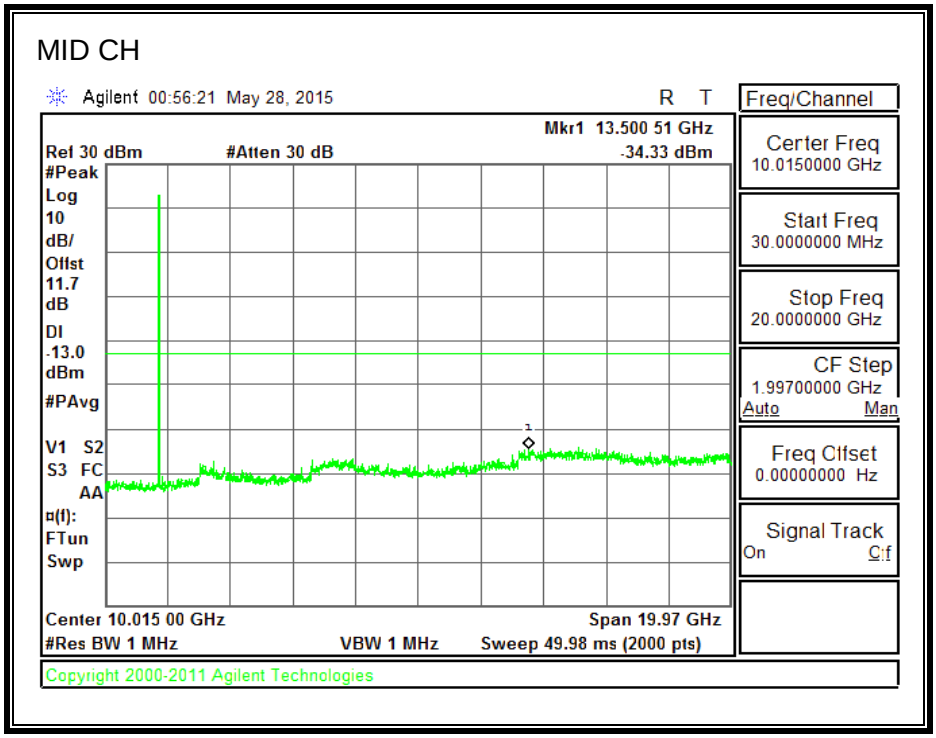
1700MHz BAND

LOW CH



MID CH



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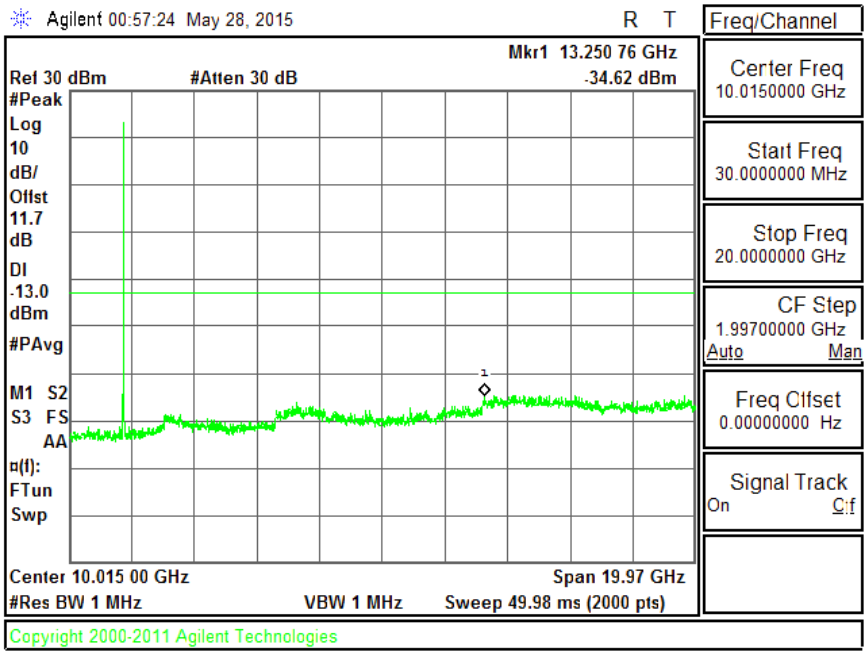
HIGH CH



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9. FREQUENCY STABILITY

9.1. MODEL: A1633

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54.and §90.213

LIMITS

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

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

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

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

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

Frequency Stability vs Temperature:

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

Frequency Stability vs Voltage:

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

RESULTS

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GPRS 850

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	824.0204	848.9816		
Extreme (50C)		824.0204	848.9816	28.2	0.03
Extreme (40C)		824.0204	848.9816	24.5	0.03
Extreme (30C)		824.0204	848.9816	19.7	0.02
Extreme (10C)		824.0204	848.9816	20.3	0.02
Extreme (0C)		824.0204	848.9816	17.8	0.02
Extreme (-10C)		824.0204	848.9816	20.3	0.02
Extreme (-20C)		824.0204	848.9816	20.9	0.02
Extreme (-30C)		824.0204	848.9816	17.5	0.02
25C	10%	824.0221	848.9737	27.7	0.03
	-10%	824.0204	848.9816	26.1	0.03
	End Point	824.0204	848.9816	20.4	0.02

EGPRS 850

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	824.0222	848.9684		
Extreme (50C)		824.0223	848.9684	40.7	0.05
Extreme (40C)		824.0222	848.9684	27.5	0.03
Extreme (30C)		824.0222	848.9684	26.5	0.03
Extreme (10C)		824.0222	848.9684	27.3	0.03
Extreme (0C)		824.0222	848.9684	27.7	0.03
Extreme (-10C)		824.0222	848.9684	31.3	0.04
Extreme (-20C)		824.0222	848.9684	31.6	0.04
Extreme (-30C)		824.0222	848.9684	33.0	0.04
25C	10%	824.0335	848.9725	42.6	0.05
	-10%	824.0223	848.9684	43.5	0.05
	End Point	824.0222	848.9684	39.6	0.05

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GPRS 1900

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1850.0016	1909.9668		
Extreme (50C)		1850.0017	1909.9669	37.5	0.02
Extreme (40C)		1850.0017	1909.9668	25.6	0.01
Extreme (30C)		1850.0017	1909.9669	40.5	0.02
Extreme (10C)		1850.0017	1909.9669	35.4	0.02
Extreme (0C)		1850.0017	1909.9669	32.2	0.02
Extreme (-10C)		1850.0017	1909.9669	33.0	0.02
Extreme (-20C)		1850.0017	1909.9669	43.4	0.02
Extreme (-30C)		1850.0017	1909.9669	35.7	0.02
25C	10%	1850.0308	1909.9655	34.0	0.02
	-10%	1850.0017	1909.9668	28.4	0.02
	End Point	1850.0017	1909.9668	25.7	0.01

EGPRS 1900

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1850.0451	1909.9397		
Extreme (50C)		1850.0452	1909.9398	38.8	0.02
Extreme (40C)		1850.0452	1909.9398	32.5	0.02
Extreme (30C)		1850.0452	1909.9398	31.9	0.02
Extreme (10C)		1850.0452	1909.9398	53.4	0.03
Extreme (0C)		1850.0452	1909.9398	51.2	0.03
Extreme (-10C)		1850.0452	1909.9398	60.4	0.03
Extreme (-20C)		1850.0452	1909.9398	41.6	0.02
Extreme (-30C)		1850.0452	1909.9398	43.2	0.02
25C	10%	1850.0452	1909.9398	33.6	0.02
	-10%	1850.0452	1909.9398	28.0	0.01
	End Point	1850.0452	1909.9398	24.4	0.01

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CDMA 1xRTT BC0

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	824.0084	849.0000		
Extreme (50C)		824.0084	849.0000	-5.6	-0.01
Extreme (40C)		824.0084	849.0000	-4.1	0.00
Extreme (30C)		824.0084	849.0000	-5.3	-0.01
Extreme (10C)		824.0084	849.0000	-4.6	-0.01
Extreme (0C)		824.0084	849.0000	-3.6	0.00
Extreme (-10C)		824.0084	849.0000	-1.1	0.00
Extreme (-20C)		824.0084	849.0000	2.4	0.00
Extreme (-30C)		824.0084	849.0000	3.0	0.00
25C	10%	824.0084	849.0000	-4.5	-0.01
	-10%	824.0084	849.0000	-2.4	0.00
	End Point	824.0084	849.0000	-2.6	0.00

CDMA 1x RTT BC1

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1850.5534	1909.4428		
Extreme (50C)		1850.5533	1909.4428	-8.6	0.00
Extreme (40C)		1850.5533	1909.4428	-10.2	-0.01
Extreme (30C)		1850.5533	1909.4428	-10.5	-0.01
Extreme (10C)		1850.5533	1909.4428	-8.1	0.00
Extreme (0C)		1850.5534	1909.4428	-3.3	0.00
Extreme (-10C)		1850.5534	1909.4428	3.2	0.00
Extreme (-20C)		1850.5534	1909.4428	5.8	0.00
Extreme (-30C)		1850.5534	1909.4428	6.7	0.00
25C	10%	1850.5534	1909.4428	2.4	0.00
	-10%	1850.5534	1909.4428	-2.5	0.00
	End Point	1850.5534	1909.4428	-4.1	0.00

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CDMA 1xRTT BC15

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1710.5571	1754.4417		
Extreme (50C)		1710.5570	1754.4417	-6.3	0.00
Extreme (40C)		1710.5570	1754.4417	-8.0	0.00
Extreme (30C)		1710.5570	1754.4417	-7.7	0.00
Extreme (10C)		1710.5570	1754.4417	-5.9	0.00
Extreme (0C)		1710.5570	1754.4417	-4.2	0.00
Extreme (-10C)		1710.5571	1754.4417	-3.8	0.00
Extreme (-20C)		1710.5571	1754.4417	3.2	0.00
Extreme (-30C)		1710.5571	1754.4417	5.1	0.00
25C	10%	1710.5571	1754.4417	5.0	0.00
	-10%	1710.5571	1754.4417	2.7	0.00
	End Point	1710.5571	1754.4417	-3.2	0.00

CDMA 1xRTT BC10

Limit		816.35	823.65	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	816.5582	823.4419		
Extreme (50C)		816.5582	823.4419	-5.3	-0.01
Extreme (40C)		816.5582	823.4419	-5.1	-0.01
Extreme (30C)		816.5582	823.4419	-4.9	-0.01
Extreme (10C)		816.5582	823.4419	-4.0	0.00
Extreme (0C)		816.5582	823.4419	-1.4	0.00
Extreme (-10C)		816.5582	823.4419	2.2	0.00
Extreme (-20C)		816.5582	823.4419	3.1	0.00
Extreme (-30C)		816.5582	823.4419	4.1	0.00
25C	10%	816.5582	823.4419	-3.7	0.00
	-10%	816.5582	823.4419	-3.3	0.00
	End Point	816.5582	823.4419	-2.4	0.00

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UMTS REL99 BAND 5

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	824.1283	848.8772		
Extreme (50C)		824.1283	848.8772	-1.0	0.00
Extreme (40C)		824.1283	848.8772	-0.5	0.00
Extreme (30C)		824.1283	848.8772	1.0	0.00
Extreme (10C)		824.1283	848.8772	-0.7	0.00
Extreme (0C)		824.1283	848.8772	-0.6	0.00
Extreme (-10C)		824.1283	848.8772	-0.7	0.00
Extreme (-20C)		824.1283	848.8772	-0.4	0.00
Extreme (-30C)		824.1283	848.8772	-0.6	0.00
25C	10%	824.1283	848.8772	0.9	0.00
	-10%	824.1283	848.8772	0.9	0.00
	End Point	824.1283	848.8772	-1.0	0.00

UMTS REL99 BAND 2

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1850.1005	1909.9253		
Extreme (50C)		1850.1005	1909.9253	-1.9	0.00
Extreme (40C)		1850.1005	1909.9253	-1.3	0.00
Extreme (30C)		1850.1005	1909.9253	-1.0	0.00
Extreme (10C)		1850.1005	1909.9253	0.5	0.00
Extreme (0C)		1850.1005	1909.9253	-0.5	0.00
Extreme (-10C)		1850.1005	1909.9253	-1.2	0.00
Extreme (-20C)		1850.1005	1909.9253	-0.7	0.00
Extreme (-30C)		1850.1005	1909.9253	-0.6	0.00
25C	10%	1850.1005	1909.9253	-1.2	0.00
	-10%	1850.1005	1909.9253	-1.2	0.00
	End Point	1850.1005	1909.9253	-1.6	0.00

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UMTS REL99 BAND 4

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1710.1062	1754.9462		
Extreme (50C)		1710.1062	1754.9462	7.6	0.00
Extreme (40C)		1710.1063	1754.9462	19.3	0.01
Extreme (30C)		1710.1062	1754.9462	7.2	0.00
Extreme (10C)		1710.1062	1754.9462	-2.5	0.00
Extreme (0C)		1710.1062	1754.9462	-0.9	0.00
Extreme (-10C)		1710.1062	1754.9462	-0.5	0.00
Extreme (-20C)		1710.1062	1754.9462	-0.9	0.00
Extreme (-30C)		1710.1062	1754.9462	-1.7	0.00
25C	10%	1710.1062	1754.9462	7.6	0.00
	-10%	1710.1062	1754.9462	13.0	0.01
	End Point	1710.1062	1754.9462	13.6	0.01

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9.2. MODEL: A1688

RULE PART(S)
FCC: §2.1055, §22.355, §24.235, §27.54.and §90.213

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

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

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

TEST PROCEDURE
Use CMW 500 with Frequency Error measurement capability.

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

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

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

RESULTS

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GPRS 850

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	824.0263	848.9783		
Extreme (50C)		824.0263	848.9783	14.7	0.02
Extreme (40C)		824.0263	848.9783	15.7	0.02
Extreme (30C)		824.0263	848.9783	21.8	0.03
Extreme (10C)		824.0263	848.9783	21.5	0.03
Extreme (0C)		824.0263	848.9783	24.4	0.03
Extreme (-10C)		824.0263	848.9783	24.6	0.03
Extreme (-20C)		824.0263	848.9783	22.4	0.03
Extreme (-30C)		824.0263	848.9783	21.4	0.03
25C	10%	824.0221	848.9737	19.0	0.02
	-10%	824.0263	848.9783	16.1	0.02
	End Point	824.0263	848.9783	20.5	0.02

EGPRS 850

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	824.0318	848.9690		
Extreme (50C)		824.0318	848.9690	26.4	0.03
Extreme (40C)		824.0318	848.9690	24.6	0.03
Extreme (30C)		824.0318	848.9690	27.9	0.03
Extreme (10C)		824.0318	848.9690	32.4	0.04
Extreme (0C)		824.0318	848.9690	23.5	0.03
Extreme (-10C)		824.0318	848.9690	21.5	0.03
Extreme (-20C)		824.0318	848.9690	27.5	0.03
Extreme (-30C)		824.0318	848.9690	25.3	0.03
25C	10%	824.0335	848.9725	29.1	0.03
	-10%	824.0318	848.9690	27.4	0.03
	End Point	824.0318	848.9690	26.2	0.03

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GPRS 1900

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		1850.0247	1909.9625		
Extreme (50C)		1850.0247	1909.9625	43.0	0.02
Extreme (40C)		1850.0247	1909.9625	27.2	0.01
Extreme (30C)		1850.0247	1909.9625	25.8	0.01
Extreme (10C)	Normal	1850.0247	1909.9625	41.5	0.02
Extreme (0C)		1850.0247	1909.9625	39.0	0.02
Extreme (-10C)		1850.0247	1909.9625	37.9	0.02
Extreme (-20C)		1850.0247	1909.9625	41.3	0.02
Extreme (-30C)		1850.0247	1909.9625	45.1	0.02
	10%	1850.0247	1909.9625	35.8	0.02
25C	-10%	1850.0247	1909.9625	42.2	0.02
	End Point	1850.0247	1909.9625	43.3	0.02

EGPRS 1900

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		1850.0375	1909.9565		
Extreme (50C)		1850.0375	1909.9566	41.3	0.02
Extreme (40C)		1850.0375	1909.9566	34.6	0.02
Extreme (30C)		1850.0375	1909.9566	37.4	0.02
Extreme (10C)	Normal	1850.0375	1909.9566	51.4	0.03
Extreme (0C)		1850.0375	1909.9566	38.5	0.02
Extreme (-10C)		1850.0375	1909.9566	40.2	0.02
Extreme (-20C)		1850.0375	1909.9566	39.0	0.02
Extreme (-30C)		1850.0375	1909.9566	42.7	0.02
	10%	1850.0375	1909.9566	43.0	0.02
25C	-10%	1850.0375	1909.9566	42.7	0.02
	End Point	1850.0375	1909.9566	42.0	0.02

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CDMA 1xRTT BC0

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		824.0032	849.0000		
Extreme (50C)		824.0031	849.0000	-6.2	-0.01
Extreme (40C)		824.0031	849.0000	-5.6	-0.01
Extreme (30C)		824.0032	849.0000	-4.1	0.00
Extreme (10C)	Normal	824.0032	849.0000	-3.3	0.00
Extreme (0C)		824.0032	849.0000	1.4	0.00
Extreme (-10C)		824.0032	849.0000	3.0	0.00
Extreme (-20C)		824.0032	849.0000	3.4	0.00
Extreme (-30C)		824.0032	849.0000	2.5	0.00
25C	10%	824.0031	849.0000	-5.4	-0.01
	-10%	824.0031	849.0000	-5.9	-0.01
	End Point	824.0032	849.0000	-5.3	-0.01

CDMA 1x RTT BC1

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)		1850.5539	1909.4548		
Extreme (50C)		1850.5539	1909.4547	-10.4	-0.01
Extreme (40C)		1850.5539	1909.4547	-11.5	-0.01
Extreme (30C)		1850.5539	1909.4547	-10.9	-0.01
Extreme (10C)	Normal	1850.5539	1909.4548	-3.3	0.00
Extreme (0C)		1850.5539	1909.4548	3.1	0.00
Extreme (-10C)		1850.5539	1909.4548	6.2	0.00
Extreme (-20C)		1850.5539	1909.4548	10.4	0.01
Extreme (-30C)		1850.5539	1909.4548	6.2	0.00
25C	10%	1850.5539	1909.4547	-10.9	-0.01
	-10%	1850.5539	1909.4547	-11.0	-0.01
	End Point	1850.5539	1909.4547	-10.1	-0.01

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CDMA 1xRTT BC10

Limit		816.35	823.65	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	816.5472	823.4459		
Extreme (50C)		816.5472	823.4459	-4.7	-0.01
Extreme (40C)		816.5472	823.4459	-4.9	-0.01
Extreme (30C)		816.5472	823.4459	-3.7	0.00
Extreme (10C)		816.5472	823.4459	-0.3	0.00
Extreme (0C)		816.5472	823.4459	1.1	0.00
Extreme (-10C)		816.5472	823.4459	2.0	0.00
Extreme (-20C)		816.5472	823.4459	2.2	0.00
Extreme (-30C)		816.5472	823.4459	1.3	0.00
25C	10%	816.5472	823.4459	-3.3	0.00
	-10%	816.5472	823.4459	-3.3	0.00
	End Point	816.5472	823.4459	-3.2	0.00

CDMA 1xRTT BC15

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1710.5569	1754.4458		
Extreme (50C)		1710.5569	1754.4458	-7.9	0.00
Extreme (40C)		1710.5569	1754.4458	-8.8	-0.01
Extreme (30C)		1710.5569	1754.4458	-3.6	0.00
Extreme (10C)		1710.5569	1754.4458	0.3	0.00
Extreme (0C)		1710.5569	1754.4458	3.2	0.00
Extreme (-10C)		1710.5569	1754.4458	4.8	0.00
Extreme (-20C)		1710.5569	1754.4458	2.5	0.00
Extreme (-30C)		1710.5569	1754.4458	2.1	0.00
25C	10%	1710.5569	1754.4458	-6.0	0.00
	-10%	1710.5569	1754.4458	-6.5	0.00
	End Point	1710.5569	1754.4458	-5.8	0.00

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UMTS REL99 BAND 5

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	824.0992	848.8961		
Extreme (50C)		824.0992	848.8961	-1.2	0.00
Extreme (40C)		824.0992	848.8961	-1.4	0.00
Extreme (30C)		824.0992	848.8961	-1.2	0.00
Extreme (10C)		824.0992	848.8961	-0.8	0.00
Extreme (0C)		824.0992	848.8961	-0.8	0.00
Extreme (-10C)		824.0992	848.8961	-0.1	0.00
Extreme (-20C)		824.0992	848.8961	-0.5	0.00
Extreme (-30C)		824.0992	848.8961	-0.7	0.00
25C	10%	824.0992	848.8961	-0.9	0.00
	-10%	824.0992	848.8961	-1.0	0.00
	End Point	824.0992	848.8961	-0.9	0.00

UMTSREL99 BAND 2

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1850.0931	1909.8991		
Extreme (50C)		1850.0931	1909.8991	-1.8	0.00
Extreme (40C)		1850.0931	1909.8991	-1.6	0.00
Extreme (30C)		1850.0931	1909.8991	-1.7	0.00
Extreme (10C)		1850.0931	1909.8991	-1.2	0.00
Extreme (0C)		1850.0931	1909.8991	-0.8	0.00
Extreme (-10C)		1850.0931	1909.8991	-0.7	0.00
Extreme (-20C)		1850.0931	1909.8991	-0.6	0.00
Extreme (-30C)		1850.0931	1909.8991	-0.9	0.00
25C	10%	1850.0931	1909.8991	-1.1	0.00
	-10%	1850.0931	1909.8991	-1.0	0.00
	End Point	1850.0931	1909.8991	-1.1	0.00

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UMTS REL99 BAND 4

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (25C)	Normal	1710.1044	1754.8997		
Extreme (50C)		1710.1044	1754.8997	18.5	0.01
Extreme (40C)		1710.1044	1754.8997	20.1	0.01
Extreme (30C)		1710.1044	1754.8997	17.9	0.01
Extreme (10C)		1710.1044	1754.8997	1.5	0.00
Extreme (0C)		1710.1044	1754.8997	-7.2	0.00
Extreme (-10C)		1710.1043	1754.8997	-13.7	-0.01
Extreme (-20C)		1710.1043	1754.8997	-14.7	-0.01
Extreme (-30C)		1710.1044	1754.8997	-8.1	0.00
25C	10%	1710.1044	1754.8997	13.3	0.01
	-10%	1710.1044	1754.8997	13.1	0.01
	End Point	1710.1044	1754.8997	12.9	0.01

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10. RADIATED TEST RESULTS

10.1. RADIATED POWER (ERP & EIRP), MODEL: A1633 (LAT)

RULE PART(S)

FCC: §2.1046, §22.913, §24.232, §27.50 and §90.635

LIMITS

§22.913(a)(2) - 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(d) (4) Fixed, mobile, and portable (hand-held) stations operating in the 1710-1755 MHz band are limited to 1 watt EIRP. Fixed stations operating in this band are limited to a maximum antenna height of 10 meters above ground. Mobile and portable stations operating in this band must employ a means for limiting power to the minimum necessary for successful communications

§90.635 Limitations on power and antenna height.

(a) The effective radiated power and antenna height for base stations may not exceed 1 kilowatt (30 dBw) and 304 m. (1,000 ft.) above average terrain (AAT), respectively, or the equivalent thereof as determined from the Table. These are maximum values, and applicants will be required to justify power levels and antenna heights requested.

(b) The maximum output power of the transmitter for mobile stations is 100 watts (20 dBw).

Table—Equivalent Power and Antenna Heights for Base Stations in the 851–869 MHz and 935–940 MHz Bands Which Have a Requirement for a 32 km (20 mi) Service Area Radius

Antenna height (ATT) meters (feet)	Effective radiated power (watts)[1,2,4]
Above 1,372 (4,500)	65
Above 1,220 (4,000) to 1,372 (4,500)	70
Above 1,067 (3,500) to 1,220 (4,000)	75
Above 915 (3,000) to 1,067 (3,500)	100
Above 763 (2,500) to 915 (3,000)	140
Above 610 (2,000) to 763 (2,500)	200
Above 458 (1,500) to 610 (2,000)	350
Above 305 (1,000) to 458 (1,500)	600
Up to 305 (1,000)	31,000

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1 Power is given in terms of effective radiated power (ERP).

2 Applicants in the Los Angeles, CA, area who demonstrate a need to serve both the downtown and fringe areas will be permitted to utilize an ERP of 1 kw at the following mountaintop sites: Santiago Park, Sierra Peak, Mount Lukens, and Mount Wilson.

3 Stations with antennas below 305 m (1,000 ft) (AAT) will be restricted to a maximum power of 1 kw (ERP).

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 D01RF Power output using broadband peak and average power meter method

MODES TESTED

- GPRS/EGPRS
- UMTS, REL 99 and HSDPA
- CDMA2000, 1xRTT and EVDO Rev A

RESULTS

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10.1.1. GSM

Part 22 / RSS 132 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	GPRS	128	824.2	30.62	1153.45
		190	836.6	30.55	1135.01
		251	848.8	**30.81**	1205.04
	EGPRS	128	824.2	25.62	364.75
		190	836.6	25.64	366.44
		251	848.8	**25.71**	372.39

Part 24 / RSS 133 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	GPRS	512	1850.2	29.88	972.75
		661	1880.0	**30.10**	1023.29
		810	1909.8	30.07	1016.25
	EGPRS	512	1850.2	**28.87**	770.90
		661	1880.0	28.19	659.17
		810	1909.8	28.44	698.23

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10.1.2. CDMA2000

Part 90 800MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	BC10, 1xRTT	450	817.3	20.25	105.93
		560	820.0	20.28	106.66
		670	822.8	**20.48**	111.69
	BC10, EVDO A	450	817.3	20.45	110.92
		560	820.0	20.41	109.90
		670	822.8	**20.52**	112.72

Part 22 / RSS 132 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	BC 0, 1xRTT	1013	824.7	21.43	139.00
		384	836.5	22.06	160.69
		777	848.3	**22.25**	167.88
	BC 0, EVDO Rev A	1013	824.7	21.60	144.54
		384	836.5	22.04	159.96
		777	848.3	**22.20**	165.96

Part 24 / RSS 133 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	BC1, 1xRTT	25	1851.3	25.24	334.20
		600	1880.0	25.64	366.44
		1175	1908.8	**25.84**	383.71
	BC1, EVDO REV A	25	1851.3	25.36	343.56
		600	1880.0	25.97	395.37
		1175	1908.8	**26.04**	401.79

Part 27 / RSS 139 1700MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
AWS	BC15, 1xRTT	25	1711.3	23.51	224.39
		450	1732.5	23.73	236.05
		875	1753.8	**23.86**	243.22
	BC15, EVDO, REV A	25	1711.3	23.55	226.46
		450	1732.5	23.83	241.55
		875	1753.8	**23.96**	248.89

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10.1.3. UMTS

Part 22 / RSS 132 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	UMTS,REL 99	4132	826.4	**23.35**	216.27
		4183	836.6	23.11	204.64
		4233	846.6	23.27	212.32
	UMTS, HSDPA	4132	826.4	**22.47**	176.60
		4183	836.6	22.36	172.19
		4233	846.6	22.38	172.98

Part 24 / RSS 133 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	UMTS,REL 99	9662	1852.4	**26.88**	487.53
		9800	1880.0	26.38	434.51
		9938	1907.6	26.82	480.84
	UMTS, HSDPA	9662	1852.4	**25.88**	387.26
		9800	1880.0	25.55	358.92
		9938	1907.6	25.77	377.57

Part 27 / RSS 139 1700MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	UMTS,REL 99	1537	1712.4	**24.66**	292.42
		1638	1732.6	24.46	279.25
		1738	1752.5	24.26	266.69
	UMTS, HSDPA	1537	1712.4	**23.83**	241.55
		1638	1732.6	23.66	232.27
		1738	1752.5	23.36	216.77

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10.1.4. GSM

GPRS, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/04/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: GPRS 850MHz

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole T416, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.20	31.2	V	0.6	0.0	30.62	32.77	38.45	40.60	-7.8	
824.20	13.2	H	0.6	0.0	12.61	14.76	38.45	40.60	-25.8	
Mid Ch										
836.60	31.2	V	0.6	0.0	30.55	32.70	38.45	40.60	-7.9	
836.60	12.4	H	0.6	0.0	11.78	13.93	38.45	40.60	-26.7	
High Ch										
848.80	31.4	V	0.6	0.0	30.81	32.96	38.45	40.60	-7.6	
848.80	12.6	H	0.6	0.0	12.02	14.17	38.45	40.60	-26.4	

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EGPRS, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/04/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: EDGE 850MHz

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole T416, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.20	26.2	V	0.6	0.0	25.62	27.77	38.45	40.60	-12.8	
824.20	5.9	H	0.6	0.0	5.31	7.46	38.45	40.60	-33.1	
Mid Ch										
836.60	26.3	V	0.6	0.0	25.64	27.79	38.45	40.60	-12.8	
836.60	7.1	H	0.6	0.0	6.44	8.59	38.45	40.60	-32.0	
High Ch										
848.80	26.3	V	0.6	0.0	25.71	27.86	38.45	40.60	-12.7	
848.80	7.0	H	0.6	0.0	6.36	8.51	38.45	40.60	-32.1	

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GPRS, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/04/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: GPRS 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	22.4	V	0.98	8.05	29.48	33.0	-3.5	
1.851	22.8	H	0.98	8.05	29.88	33.0	-3.1	
Mid Ch								
1.880	21.4	V	0.98	8.03	28.41	33.0	-4.6	
1.880	23.0	H	0.98	8.03	30.10	33.0	-2.9	
High Ch								
1.910	21.3	V	0.98	8.05	28.38	33.0	-4.6	
1.910	23.0	H	0.98	8.05	30.07	33.0	-2.9	

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EGPRS, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/04/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: EDGE 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	21.2	V	0.98	8.05	28.28	33.0	-4.7	
1.851	21.8	H	0.98	8.05	28.87	33.0	-4.1	
Mid Ch								
1.880	20.4	V	0.98	8.03	27.45	33.0	-5.6	
1.880	21.1	H	0.98	8.03	28.19	33.0	-4.8	
High Ch								
1.910	20.0	V	0.98	8.05	27.06	33.0	-5.9	
1.910	21.4	H	0.98	8.05	28.44	33.0	-4.6	

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10.1.5. CDMA2000

CDMA2000 1xRTT, 800MHz BC10

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20164
Date: 06/24/15
Test Engineer: J. Liu
Configuration: EUT Only
Mode: CDMA 1XRTT 800MHz

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

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
817.25	20.87	V	0.6	0.0	20.25	50.00	-29.7	
817.25	5.28	H	0.6	0.0	4.66	50.00	-45.3	
Mid Ch								
820.00	20.90	V	0.6	0.0	20.28	50.00	-29.7	
820.00	5.18	H	0.6	0.0	4.56	50.00	-45.4	
High Ch								
822.75	21.10	V	0.6	0.0	20.48	50.00	-29.5	
822.75	5.36	H	0.6	0.0	4.74	50.00	-45.3	

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EVDO-Rev A, 800MHz BC10

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 800MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
817.25	21.07	V	0.6	0.0	20.45	50.00	-29.5	
817.25	5.43	H	0.6	0.0	4.81	50.00	-45.2	
Mid Ch								
820.00	21.03	V	0.6	0.0	20.41	50.00	-29.6	
820.00	5.45	H	0.6	0.0	4.83	50.00	-45.2	
High Ch								
822.75	21.14	V	0.6	0.0	20.52	50.00	-29.5	
822.75	5.68	H	0.6	0.0	5.06	50.00	-44.9	

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CDMA2000 1xRTT, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/29/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	22.1	V	0.6	0.0	21.43	23.58	38.45	40.60	-17.0	
824.70	5.0	H	0.6	0.0	4.35	6.50	38.45	40.60	-34.1	
Mid Ch										
836.52	22.7	V	0.6	0.0	22.06	24.21	38.45	40.60	-16.4	
836.52	5.2	H	0.6	0.0	4.56	6.71	38.45	40.60	-33.9	
High Ch										
848.31	22.9	V	0.6	0.0	22.25	24.40	38.45	40.60	-16.2	
848.31	5.4	H	0.6	0.0	4.78	6.93	38.45	40.60	-33.7	

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EVDO-Rev A, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	22.2	V	0.6	0.0	21.60	23.75	38.45	40.60	-16.8	
824.70	5.3	H	0.6	0.0	4.65	6.80	38.45	40.60	-33.8	
Mid Ch										
836.52	22.7	V	0.6	0.0	22.04	24.19	38.45	40.60	-16.4	
836.52	5.2	H	0.6	0.0	4.61	6.76	38.45	40.60	-33.8	
High Ch										
848.31	22.8	V	0.6	0.0	22.20	24.35	38.45	40.60	-16.2	
848.31	5.8	H	0.6	0.0	5.18	7.33	38.45	40.60	-33.3	

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CDMA2000 1xRTT, 1900MHz BC1

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/29/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 1900MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.8510	17.5	V	0.98	8.05	24.61	33.0	-8.4	
1.8510	18.2	H	0.98	8.05	25.24	33.0	-7.8	
Mid Ch								
1.880	16.9	V	0.98	8.03	23.97	33.0	-9.0	
1.880	18.6	H	0.98	8.03	25.64	33.0	-7.4	
High Ch								
1.9088	18.1	V	0.98	8.05	25.17	33.0	-7.8	
1.9088	18.8	H	0.98	8.05	25.84	33.0	-7.2	

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EVDO-Rev A, 1900MHz BC1

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 1900MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	17.6	V	0.98	8.05	24.71	33.0	-8.3	
1.851	18.3	H	0.98	8.05	25.36	33.0	-7.6	
Mid Ch								
1.880	17.6	V	0.98	8.03	24.67	33.0	-8.3	
1.880	18.9	H	0.98	8.03	25.97	33.0	-7.0	
High Ch								
1.909	18.2	V	0.98	8.05	25.27	33.0	-7.7	
1.909	19.0	H	0.98	8.05	26.04	33.0	-7.0	

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CDMA2000 1xRTT, 1700MHz BC15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20163
Date: 06/27/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 1700MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.7113	14.5	V	0.95	8.27	21.82	30.0	-8.2	
1.7113	16.2	H	0.95	8.27	23.51	30.0	-6.5	
Mid Ch								
1.7325	14.1	V	0.95	8.23	21.33	30.0	-8.7	
1.7325	16.5	H	0.95	8.23	23.73	30.0	-6.3	
High Ch								
1.7538	14.5	V	0.95	8.18	21.71	30.0	-8.3	
1.7538	16.6	H	0.95	8.18	23.86	30.0	-6.1	

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EVDO-Rev A, 1700MHz BC15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 1700MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.711	14.3	V	0.95	8.27	21.62	30.0	-8.4	
1.711	16.2	H	0.95	8.27	23.55	30.0	-6.4	
Mid Ch								
1.733	14.3	V	0.95	8.23	21.53	30.0	-8.5	
1.733	16.6	H	0.95	8.23	23.83	30.0	-6.2	
High Ch								
1.754	14.9	V	0.95	8.18	22.11	30.0	-7.9	
1.754	16.7	H	0.95	8.18	23.96	30.0	-6.0	

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10.1.6. UMTS

UMTS REL 99, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 850MHz

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole T416, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.40	24.0	V	0.6	0.0	23.35	25.50	38.45	40.60	-15.1	
826.40	13.0	H	0.6	0.0	12.36	14.51	38.45	40.60	-26.1	
Mid Ch										
836.60	23.7	V	0.6	0.0	23.11	25.26	38.45	40.60	-15.3	
836.60	13.0	H	0.6	0.0	12.34	14.49	38.45	40.60	-26.1	
High Ch										
846.60	23.9	V	0.6	0.0	23.27	25.42	38.45	40.60	-15.2	
846.60	13.1	H	0.6	0.0	12.48	14.63	38.45	40.60	-26.0	

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UMTS HSDPA, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20164
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: WCDMA HSDPA 850MHz

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.40	23.1	V	0.6	0.0	22.47	24.62	38.45	40.60	-16.0	
826.40	11.9	H	0.6	0.0	11.30	13.45	38.45	40.60	-27.2	
Mid Ch										
836.60	23.0	V	0.6	0.0	22.36	24.51	38.45	40.60	-16.1	
836.60	12.1	H	0.6	0.0	11.48	13.63	38.45	40.60	-27.0	
High Ch										
846.60	23.0	V	0.6	0.0	22.38	24.53	38.45	40.60	-16.1	
846.60	12.4	H	0.6	0.0	11.77	13.92	38.45	40.60	-26.7	

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UMTS REL 99, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.852	16.2	V	0.98	8.05	23.28	33.0	-9.7	
1.852	19.8	H	0.98	8.05	26.88	33.0	-6.1	
Mid Ch								
1.880	16.5	V	0.98	8.03	23.57	33.0	-9.4	
1.880	19.3	H	0.98	8.03	26.38	33.0	-6.6	
High Ch								
1.908	16.2	V	0.98	8.04	23.22	33.0	-9.8	
1.908	19.8	H	0.98	8.04	26.82	33.0	-6.2	

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UMTS HSDPA, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20164
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: WCDMA HSDPA 1900MHz

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.852	15.3	V	0.98	8.05	22.40	33.0	-10.6	
1.852	18.8	H	0.98	8.05	25.88	33.0	-7.1	
Mid Ch								
1.880	15.6	V	0.98	8.03	22.67	33.0	-10.3	
1.880	18.5	H	0.98	8.03	25.55	33.0	-7.4	
High Ch								
1.908	15.2	V	0.98	8.04	22.31	33.0	-10.7	
1.908	18.7	H	0.98	8.04	25.77	33.0	-7.2	

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UMTS REL 99, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 1700MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.712	13.7	V	0.95	8.27	20.97	30.0	-9.0	
1.712	17.3	H	0.95	8.27	24.66	30.0	-5.3	
Mid Ch								
1.733	13.8	V	0.95	8.23	21.08	30.0	-8.9	
1.733	17.2	H	0.95	8.23	24.46	30.0	-5.5	
High Ch								
1.753	13.8	V	0.95	8.18	21.02	30.0	-9.0	
1.753	17.0	H	0.95	8.18	24.26	30.0	-5.7	

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UMTS HSDPA, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20164
Date: 06/06/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA HSDPA 1700MHz

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.712	12.9	V	0.95	8.27	20.17	30.0	-9.8	
1.712	16.5	H	0.95	8.27	23.83	30.0	-6.2	
Mid Ch								
1.733	12.9	V	0.95	8.23	20.19	30.0	-9.8	
1.733	16.4	H	0.95	8.23	23.66	30.0	-6.3	
High Ch								
1.753	12.9	V	0.95	8.18	20.08	30.0	-9.9	
1.753	16.1	H	0.95	8.18	23.36	30.0	-6.6	

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10.2. RADIATED POWER (ERP & EIRP), MODEL: A1633 (UAT)

10.2.1. GSM

Part 22 / RSS 132 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	GPRS	128	824.2	25.02	317.69
		190	836.6	24.94	311.89
		251	848.8	**25.74**	374.97
	EGPRS	128	824.2	22.60	181.97
		190	836.6	22.26	168.27
		251	848.8	**22.74**	187.93

Part 24 / RSS 133 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	GPRS	512	1850.2	25.88	387.26
		661	1880.0	26.16	413.05
		810	1909.8	**26.19**	415.91
	EGPRS	512	1850.2	23.08	203.24
		661	1880.0	**23.14**	206.06
		810	1909.8	23.01	199.99

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10.2.2. CDMA2000

Part 90 800MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	BC10, 1xRTT	450	817.3	17.11	51.40
		560	820.0	17.04	50.58
		670	822.8	**17.42**	55.21
	BC10, EVDO A	450	817.3	17.21	52.60
		560	820.0	17.10	51.29
		670	822.8	**17.22**	52.72

Part 22 / RSS 132 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	BC 0, 1xRTT	1013	824.7	16.43	43.95
		384	836.5	16.71	46.88
		777	848.3	**16.75**	47.32
	BC 0, EVDO Rev A	1013	824.7	16.63	46.03
		384	836.5	16.76	47.42
		777	848.3	**16.81**	47.97

Part 24 / RSS 133 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	BC1, 1xRTT	25	1851.3	**20.61**	115.08
		600	1880.0	20.57	114.02
		1175	1908.8	20.25	105.93
	BC1, EVDO REV A	25	1851.3	**20.66**	116.41
		600	1880.0	20.52	112.72
		1175	1908.8	20.25	105.93

Part 27 / RSS 139 1700MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
AWS	BC15, 1xRTT	25	1711.3	**18.65**	73.28
		450	1732.5	18.03	63.53
		875	1753.8	18.56	71.78
	BC15, EVDO, REV A	25	1711.3	**18.57**	71.94
		450	1732.5	18.30	67.61
		875	1753.8	18.44	69.82

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10.2.3. UMTS

Part 22 / RSS 132 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	UMTS,REL 99	4132	826.4	16.13	41.02
		4183	836.6	16.46	44.26
		4233	846.6	**16.65**	46.24
	UMTS, HSDPA	4132	826.4	15.43	34.91
		4183	836.6	**15.76**	37.67
		4233	846.6	15.75	37.58

Part 24 / RSS 133 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	UMTS,REL 99	9662	1852.4	19.71	93.54
		9800	1880.0	19.76	94.62
		9938	1907.6	**20.50**	112.20
	UMTS, HSDPA	9662	1852.4	18.88	77.27
		9800	1880.0	18.92	77.98
		9938	1907.6	**19.64**	92.04

Part 27 / RSS 139 1700MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	UMTS,REL 99	1537	1712.4	**19.52**	89.54
		1638	1732.6	19.25	84.14
		1738	1752.5	19.27	84.53
	UMTS, HSDPA	1537	1712.4	**18.66**	73.45
		1638	1732.6	18.36	68.55
		1738	1752.5	18.46	70.15

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10.2.4. GSM

GPRS, 850MHz BAND 5)

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: GPRS 850MHz

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole 416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.20	25.6	V	0.6	0.0	25.02	27.17	38.45	40.60	-13.4	
824.20	16.7	H	0.6	0.0	16.09	18.24	38.45	40.60	-22.4	
Mid Ch										
836.60	25.6	V	0.6	0.0	24.94	27.09	38.45	40.60	-13.5	
836.60	16.2	H	0.6	0.0	15.59	17.74	38.45	40.60	-22.9	
High Ch										
848.80	26.4	V	0.6	0.0	25.74	27.89	38.45	40.60	-12.7	
848.80	16.6	H	0.6	0.0	15.96	18.11	38.45	40.60	-22.5	

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EGPRS, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only 7281
Mode: EDGE 850MHz

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole 416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.20	23.2	V	0.6	0.0	22.60	24.75	38.45	40.60	-15.8	
824.20	12.1	H	0.6	0.0	11.44	13.59	38.45	40.60	-27.0	
Mid Ch										
836.60	22.9	V	0.6	0.0	22.26	24.41	38.45	40.60	-16.2	
836.60	10.3	H	0.6	0.0	9.63	11.78	38.45	40.60	-28.8	
High Ch										
848.80	23.4	V	0.6	0.0	22.74	24.89	38.45	40.60	-15.7	
848.80	9.7	H	0.6	0.0	9.08	11.23	38.45	40.60	-29.4	

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GPRS, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only 7281
Mode: GPRS 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 6ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	15.8	V	0.98	8.05	22.86	33.0	-10.1	
1.851	18.8	H	0.98	8.05	25.88	33.0	-7.1	
Mid Ch								
1.880	14.4	V	0.98	8.03	21.44	33.0	-11.6	
1.880	19.1	H	0.98	8.03	26.16	33.0	-6.8	
High Ch								
1.910	15.3	V	0.98	8.05	22.33	33.0	-10.7	
1.910	19.1	H	0.98	8.05	26.19	33.0	-6.8	

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EGPRS, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only 7281
Mode: EDGE 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 6ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	13.3	V	0.98	8.05	20.32	33.0	-12.7	
1.851	16.0	H	0.98	8.05	23.08	33.0	-9.9	
Mid Ch								
1.880	12.0	V	0.98	8.03	19.06	33.0	-13.9	
1.880	16.1	H	0.98	8.03	23.14	33.0	-9.9	
High Ch								
1.910	12.3	V	0.98	8.05	19.38	33.0	-13.6	
1.910	15.9	H	0.98	8.05	23.01	33.0	-10.0	

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10.2.5. CDMA2000

CDMA2000 1xRTT, 800MHz BC10

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/30/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 800MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
817.25	17.73	V	0.6	0.0	17.11	50.00	-32.9	
817.25	3.23	H	0.6	0.0	2.61	50.00	-47.4	
Mid Ch								
820.00	17.66	V	0.6	0.0	17.04	50.00	-33.0	
820.00	3.13	H	0.6	0.0	2.51	50.00	-47.5	
High Ch								
822.75	18.04	V	0.6	0.0	17.42	50.00	-32.6	
822.75	2.98	H	0.6	0.0	2.36	50.00	-47.6	

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EVDO-Rev A, 800MHz BC10

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 800MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
817.25	17.83	V	0.6	0.0	17.21	50.00	-32.8	
817.25	3.03	H	0.6	0.0	2.41	50.00	-47.6	
Mid Ch								
820.00	17.72	V	0.6	0.0	17.10	50.00	-32.9	
820.00	2.83	H	0.6	0.0	2.21	50.00	-47.8	
High Ch								
822.75	17.84	V	0.6	0.0	17.22	50.00	-32.8	
822.75	2.98	H	0.6	0.0	2.36	50.00	-47.6	

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CDMA2000 1xRTT, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/30/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	17.1	V	0.6	0.0	16.43	18.58	38.45	40.60	-22.0	
824.70	-0.6	H	0.6	0.0	-1.25	0.90	38.45	40.60	-39.7	
Mid Ch										
836.52	17.3	V	0.6	0.0	16.71	18.86	38.45	40.60	-21.7	
836.52	-0.3	H	0.6	0.0	-0.94	1.21	38.45	40.60	-39.4	
High Ch										
848.31	17.4	V	0.6	0.0	16.75	18.90	38.45	40.60	-21.7	
848.31	-0.6	H	0.6	0.0	-1.22	0.93	38.45	40.60	-39.7	

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EVDO-Rev A, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	17.3	V	0.6	0.0	16.63	18.78	38.45	40.60	-21.8	
824.70	-0.8	H	0.6	0.0	-1.45	0.70	38.45	40.60	-39.9	
Mid Ch										
836.52	17.4	V	0.6	0.0	16.76	18.91	38.45	40.60	-21.7	
836.52	-0.3	H	0.6	0.0	-0.91	1.24	38.45	40.60	-39.4	
High Ch										
848.31	17.4	V	0.6	0.0	16.81	18.96	38.45	40.60	-21.6	
848.31	-0.7	H	0.6	0.0	-1.32	0.83	38.45	40.60	-39.8	

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CDMA2000 1xRTT, 1900MHz BC1

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/30/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 1900MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.8510	13.5	V	0.98	8.05	20.61	33.0	-12.4	
1.8510	9.5	H	0.98	8.05	16.56	33.0	-16.4	
Mid Ch								
1.880	13.5	V	0.98	8.03	20.57	33.0	-12.4	
1.880	9.7	H	0.98	8.03	16.79	33.0	-16.2	
High Ch								
1.9088	13.2	V	0.98	8.05	20.25	33.0	-12.8	
1.9088	9.8	H	0.98	8.05	16.89	33.0	-16.1	

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EVDO-Rev A, 1900MHz BC1

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 07/07/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 1900MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	13.6	V	0.98	8.05	20.66	33.0	-12.3	
1.851	9.3	H	0.98	8.05	16.41	33.0	-16.6	
Mid Ch								
1.880	13.5	V	0.98	8.03	20.52	33.0	-12.5	
1.880	9.2	H	0.98	8.03	16.29	33.0	-16.7	
High Ch								
1.909	13.2	V	0.98	8.05	20.25	33.0	-12.8	
1.909	9.5	H	0.98	8.05	16.59	33.0	-16.4	

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CDMA2000 1xRTT, 1700MHz BC15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20163
Date: 06/27/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 1700MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.7113	6.5	V	0.95	8.27	13.82	30.0	-16.2	
1.7113	11.3	H	0.95	8.27	18.65	30.0	-11.3	
Mid Ch								
1.7325	5.8	V	0.95	8.23	13.03	30.0	-17.0	
1.7325	10.8	H	0.95	8.23	18.03	30.0	-12.0	
High Ch								
1.7538	6.4	V	0.95	8.18	13.61	30.0	-16.4	
1.7538	11.3	H	0.95	8.18	18.56	30.0	-11.4	

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EVDO-Rev A, 1700MHz BC15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 1700MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.711	6.6	V	0.95	8.27	13.88	30.0	-16.1	
1.711	11.3	H	0.95	8.27	18.57	30.0	-11.4	
Mid Ch								
1.733	5.8	V	0.95	8.23	13.06	30.0	-16.9	
1.733	11.0	H	0.95	8.23	18.30	30.0	-11.7	
High Ch								
1.754	5.9	V	0.95	8.18	13.11	30.0	-16.9	
1.754	11.2	H	0.95	8.18	18.44	30.0	-11.6	

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10.2.6. UMTS

UMTS REL 99, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/27/15
Test Engineer: T Wang
Configuration: EUT only
Mode: WCDMA Rel 99 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.40	16.8	V	0.6	0.0	16.13	18.28	38.45	40.60	-22.3	
826.40	-3.6	H	0.6	0.0	-4.25	-2.10	38.45	40.60	-42.7	
Mid Ch										
836.60	17.1	V	0.6	0.0	16.46	18.61	38.45	40.60	-22.0	
836.60	-3.0	H	0.6	0.0	-3.64	-1.49	38.45	40.60	-42.1	
High Ch										
846.60	17.3	V	0.6	0.0	16.65	18.80	38.45	40.60	-21.8	
846.60	-2.3	H	0.6	0.0	-2.92	-0.77	38.45	40.60	-41.4	

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UMTS HSDPA, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/30/15
Test Engineer: T Wang
Configuration: EUT only
Mode: WCDMA HSPA 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.40	16.1	V	0.6	0.0	15.43	17.58	38.45	40.60	-23.0	
826.40	-4.0	H	0.6	0.0	-4.65	-2.50	38.45	40.60	-43.1	
Mid Ch										
836.60	16.4	V	0.6	0.0	15.76	17.91	38.45	40.60	-22.7	
836.60	-3.6	H	0.6	0.0	-4.24	-2.09	38.45	40.60	-42.7	
High Ch										
846.60	16.4	V	0.6	0.0	15.75	17.90	38.45	40.60	-22.7	
846.60	-2.7	H	0.6	0.0	-3.32	-1.17	38.45	40.60	-41.8	

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UMTS REL 99, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only 7281
Mode: WCDMA Rel 99 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 6ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.852	9.5	V	0.98	8.05	16.56	33.0	-16.4	
1.852	12.6	H	0.98	8.05	19.71	33.0	-13.3	
Mid Ch								
1.880	10.6	V	0.98	8.03	17.65	33.0	-15.4	
1.880	12.7	H	0.98	8.03	19.76	33.0	-13.2	
High Ch								
1.908	11.5	V	0.98	8.04	18.55	33.0	-14.4	
1.908	13.4	H	0.98	8.04	20.50	33.0	-12.5	

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UMTS HSDPA, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20164
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: WCDMA HSDPA 1900MHz

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.852	8.8	V	0.98	8.05	15.89	33.0	-17.1	
1.852	11.8	H	0.98	8.05	18.88	33.0	-14.1	
Mid Ch								
1.880	10.2	V	0.98	8.03	17.29	33.0	-15.7	
1.880	11.9	H	0.98	8.03	18.92	33.0	-14.1	
High Ch								
1.908	10.8	V	0.98	8.04	17.86	33.0	-15.1	
1.908	12.6	H	0.98	8.04	19.64	33.0	-13.4	

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UMTS REL 99, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only 7281
Mode: WCDMA Rel 99 1700MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 6ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.712	11.2	V	0.95	8.27	18.52	30.0	-11.5	
1.712	12.2	H	0.95	8.27	19.52	30.0	-10.5	
Mid Ch								
1.733	11.0	V	0.95	8.23	18.24	30.0	-11.8	
1.733	12.0	H	0.95	8.23	19.25	30.0	-10.8	
High Ch								
1.753	10.4	V	0.95	8.18	17.59	30.0	-12.4	
1.753	12.0	H	0.95	8.18	19.27	30.0	-10.7	

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UMTS HSDPA, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20164
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: WCDMA HSDPA 1700MHz

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.712	10.6	V	0.95	8.27	17.87	30.0	-12.1	
1.712	11.3	H	0.95	8.27	18.66	30.0	-11.3	
Mid Ch								
1.733	10.2	V	0.95	8.23	17.44	30.0	-12.6	
1.733	11.1	H	0.95	8.23	18.36	30.0	-11.6	
High Ch								
1.753	9.6	V	0.95	8.18	16.78	30.0	-13.2	
1.753	11.2	H	0.95	8.18	18.46	30.0	-11.5	

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10.3. RADIATED POWER (ERP & EIRP), MODEL: A1688 (LAT)

10.3.1. GSM

Part 22 / 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	GPRS	128	824.2	30.02	1004.62
		190	836.6	**30.30**	1071.52
		251	848.8	30.21	1049.54
	EGPRS	128	824.2	25.52	356.45
		190	836.6	25.56	359.75
		251	848.8	**25.64**	366.44

Part 24 / 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	GPRS	512	1850.2	29.78	950.60
		661	1880.0	**30.01**	1002.31
		810	1909.8	29.72	937.56
	EGPRS	512	1850.2	**28.48**	704.69
		661	1880.0	27.89	615.18
		810	1909.8	28.22	663.74

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10.3.2. CDMA2000

Part 90 800MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	BC10, 1xRTT	450	817.3	20.11	102.57
		560	820.0	20.04	100.93
		670	822.8	**20.42**	110.15
	BC10, EVDO A	450	817.3	20.31	107.40
		560	820.0	20.14	103.28
		670	822.8	**20.37**	108.89

Part 22 / 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	BC 0, 1xRTT	1013	824.7	21.15	130.32
		384	836.5	21.81	151.71
		777	848.3	**22.04**	159.96
	BC 0, EVDO Rev A	1013	824.7	21.18	131.22
		384	836.5	21.86	153.46
		777	848.3	**22.09**	161.81

Part 24 / 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	BC1, 1xRTT	25	1851.3	25.10	323.59
		600	1880.0	**25.77**	377.57
		1175	1908.8	25.69	370.68
	BC1, EVDO REV A	25	1851.3	25.46	351.56
		600	1880.0	**26.00**	398.11
		1175	1908.8	25.94	392.64

Part 27 / 1700MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
AWS	BC15, 1xRTT	25	1711.3	23.47	222.33
		450	1732.5	23.38	217.77
		875	1753.8	**23.54**	225.94
	BC15, EVDO, REV A	25	1711.3	23.49	223.36
		450	1732.5	23.62	230.14
		875	1753.8	**23.76**	237.68

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10.3.3. UMTS

Part 22 / 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	UMTS,REL 99	4132	826.4	22.93	196.34
		4183	836.6	22.76	188.80
		4233	846.6	**23.10**	204.17
	UMTS, HSDPA	4132	826.4	22.02	159.22
		4183	836.6	21.86	153.46
		4233	846.6	**22.22**	166.72

Part 24 / 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	UMTS,REL 99	9662	1852.4	**26.58**	454.99
		9800	1880.0	26.15	412.10
		9938	1907.6	26.39	435.51
	UMTS, HSDPA	9662	1852.4	**25.78**	378.44
		9800	1880.0	25.35	342.77
		9938	1907.6	25.31	339.63

Part 27 / 1700MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	UMTS,REL 99	1537	1712.4	**24.26**	266.69
		1638	1732.6	24.21	263.63
		1738	1752.5	23.86	243.22
	UMTS, HSDPA	1537	1712.4	**23.56**	226.99
		1638	1732.6	23.39	218.27
		1738	1752.5	23.16	207.01

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10.3.4. GSM

GPRS, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/04/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: GSM 850MHz

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.20	30.6	V	0.6	0.0	30.02	32.17	38.45	40.60	-8.4	
824.20	10.4	H	0.6	0.0	9.76	11.91	38.45	40.60	-28.7	
Mid Ch										
836.60	30.9	V	0.6	0.0	30.30	32.45	38.45	40.60	-8.1	
836.60	11.5	H	0.6	0.0	10.93	13.08	38.45	40.60	-27.5	
High Ch										
848.80	30.8	V	0.6	0.0	30.21	32.36	38.45	40.60	-8.2	
848.80	11.8	H	0.6	0.0	11.17	13.32	38.45	40.60	-27.3	

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EGPRS, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/04/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: EDGE 850MHz

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.20	26.1	V	0.6	0.0	25.52	27.67	38.45	40.60	-12.9	
824.20	5.6	H	0.6	0.0	5.00	7.15	38.45	40.60	-33.5	
Mid Ch										
836.60	26.2	V	0.6	0.0	25.56	27.71	38.45	40.60	-12.9	
836.60	6.8	H	0.6	0.0	6.23	8.38	38.45	40.60	-32.2	
High Ch										
848.80	26.3	V	0.6	0.0	25.64	27.79	38.45	40.60	-12.8	
848.80	6.7	H	0.6	0.0	6.07	8.22	38.45	40.60	-32.4	

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GPRS, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/04/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: GPRS 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	22.5	V	0.98	8.05	29.58	33.0	-3.4	
1.851	22.7	H	0.98	8.05	29.78	33.0	-3.2	
Mid Ch								
1.880	21.4	V	0.98	8.03	28.49	33.0	-4.5	
1.880	23.0	H	0.98	8.03	30.01	33.0	-3.0	
High Ch								
1.910	21.5	V	0.98	8.05	28.60	33.0	-4.4	
1.910	22.6	H	0.98	8.05	29.72	33.0	-3.3	

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EGPRS, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/04/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: EDGE 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	20.9	V	0.98	8.05	27.98	33.0	-5.0	
1.851	21.4	H	0.98	8.05	28.48	33.0	-4.5	
Mid Ch								
1.880	20.3	V	0.98	8.03	27.32	33.0	-5.7	
1.880	20.8	H	0.98	8.03	27.89	33.0	-5.1	
High Ch								
1.910	20.1	V	0.98	8.05	27.12	33.0	-5.9	
1.910	21.1	H	0.98	8.05	28.22	33.0	-4.8	

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10.3.5. CDMA2000

CDMA2000 1xRTT, 800MHz BC10

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/30/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 800MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
817.25	20.73	V	0.6	0.0	20.11	50.00	-29.9	
817.25	5.23	H	0.6	0.0	4.61	50.00	-45.4	
Mid Ch								
820.00	20.66	V	0.6	0.0	20.04	50.00	-30.0	
820.00	5.13	H	0.6	0.0	4.51	50.00	-45.5	
High Ch								
822.75	21.04	V	0.6	0.0	20.42	50.00	-29.6	
822.75	4.98	H	0.6	0.0	4.36	50.00	-45.6	

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EVDO-Rev A, 800MHz BC10

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20165
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 800MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
817.25	20.93	V	0.6	0.0	20.31	50.00	-29.7	
817.25	4.83	H	0.6	0.0	4.21	50.00	-45.8	
Mid Ch								
820.00	20.76	V	0.6	0.0	20.14	50.00	-29.9	
820.00	5.33	H	0.6	0.0	4.71	50.00	-45.3	
High Ch								
822.75	20.99	V	0.6	0.0	20.37	50.00	-29.6	
822.75	5.56	H	0.6	0.0	4.94	50.00	-45.1	

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CDMA2000 1xRTT, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/29/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	21.8	V	0.6	0.0	21.15	23.30	38.45	40.60	-17.3	
824.70	4.6	H	0.6	0.0	3.95	6.10	38.45	40.60	-34.5	
Mid Ch										
836.52	22.4	V	0.6	0.0	21.81	23.96	38.45	40.60	-16.6	
836.52	4.8	H	0.6	0.0	4.16	6.31	38.45	40.60	-34.3	
High Ch										
848.31	22.7	V	0.6	0.0	22.04	24.19	38.45	40.60	-16.4	
848.31	5.2	H	0.6	0.0	4.58	6.73	38.45	40.60	-33.9	

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EVDO-Rev A, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20165
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	21.8	V	0.6	0.0	21.18	23.33	38.45	40.60	-17.3	
824.70	4.7	H	0.6	0.0	4.05	6.20	38.45	40.60	-34.4	
Mid Ch										
836.52	22.5	V	0.6	0.0	21.86	24.01	38.45	40.60	-16.6	
836.52	5.0	H	0.6	0.0	4.36	6.51	38.45	40.60	-34.1	
High Ch										
848.31	22.7	V	0.6	0.0	22.09	24.24	38.45	40.60	-16.4	
848.31	5.3	H	0.6	0.0	4.63	6.78	38.45	40.60	-33.8	

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CDMA2000 1xRTT, 1900MHz BC1

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/29/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 1900MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.8510	17.2	V	0.98	8.05	24.26	33.0	-8.7	
1.8510	18.0	H	0.98	8.05	25.10	33.0	-7.9	
Mid Ch								
1.880	16.8	V	0.98	8.03	23.82	33.0	-9.2	
1.880	18.7	H	0.98	8.03	25.77	33.0	-7.2	
High Ch								
1.9088	18.0	V	0.98	8.05	25.04	33.0	-8.0	
1.9088	18.6	H	0.98	8.05	25.69	33.0	-7.3	

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EVDO-Rev A, 1900MHz BC1

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20165
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 1900MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	17.5	V	0.98	8.05	24.61	33.0	-8.4	
1.851	18.4	H	0.98	8.05	25.46	33.0	-7.5	
Mid Ch								
1.880	17.5	V	0.98	8.03	24.57	33.0	-8.4	
1.880	19.0	H	0.98	8.03	26.00	33.0	-7.0	
High Ch								
1.909	18.1	V	0.98	8.05	25.17	33.0	-7.8	
1.909	18.9	H	0.98	8.05	25.94	33.0	-7.1	

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CDMA2000 1xRTT, 1700MHz BC15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20163
Date: 06/27/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 1700MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.7113	14.4	V	0.95	8.27	21.76	30.0	-8.2	
1.7113	16.2	H	0.95	8.27	23.47	30.0	-6.5	
Mid Ch								
1.7325	13.8	V	0.95	8.23	21.03	30.0	-9.0	
1.7325	16.1	H	0.95	8.23	23.38	30.0	-6.6	
High Ch								
1.7538	14.3	V	0.95	8.18	21.56	30.0	-8.4	
1.7538	16.3	H	0.95	8.18	23.54	30.0	-6.5	

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EVDO-Rev A, 1700MHz BC15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20165
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 1700MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.711	14.2	V	0.95	8.27	21.52	30.0	-8.5	
1.711	16.2	H	0.95	8.27	23.49	30.0	-6.5	
Mid Ch								
1.733	14.4	V	0.95	8.23	21.63	30.0	-8.4	
1.733	16.3	H	0.95	8.23	23.62	30.0	-6.4	
High Ch								
1.754	14.8	V	0.95	8.18	22.01	30.0	-8.0	
1.754	16.5	H	0.95	8.18	23.76	30.0	-6.2	

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10.3.6. UMTS

UMTS REL 99, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 850MHz

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.40	23.6	V	0.6	0.0	22.93	25.08	38.45	40.60	-15.5	
826.40	12.7	H	0.6	0.0	12.11	14.26	38.45	40.60	-26.3	
Mid Ch										
836.60	23.4	V	0.6	0.0	22.76	24.91	38.45	40.60	-15.7	
836.60	12.7	H	0.6	0.0	12.13	14.28	38.45	40.60	-26.3	
High Ch										
846.60	23.7	V	0.6	0.0	23.10	25.25	38.45	40.60	-15.4	
846.60	12.0	H	0.6	0.0	11.35	13.50	38.45	40.60	-27.1	

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UMTS HSDPA, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20165
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: WCDMA HSDPA 850MHz

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.40	22.6	V	0.6	0.0	22.02	24.17	38.45	40.60	-16.4	
826.40	11.9	H	0.6	0.0	11.31	13.46	38.45	40.60	-27.1	
Mid Ch										
836.60	22.5	V	0.6	0.0	21.86	24.01	38.45	40.60	-16.6	
836.60	11.9	H	0.6	0.0	11.25	13.40	38.45	40.60	-27.2	
High Ch										
846.60	22.8	V	0.6	0.0	22.22	24.37	38.45	40.60	-16.2	
846.60	11.1	H	0.6	0.0	10.47	12.62	38.45	40.60	-28.0	

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UMTS REL 99, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.852	16.0	V	0.98	8.05	23.10	33.0	-9.9	
1.852	19.5	H	0.98	8.05	26.58	33.0	-6.4	
Mid Ch								
1.880	16.7	V	0.98	8.03	23.76	33.0	-9.2	
1.880	19.1	H	0.98	8.03	26.15	33.0	-6.8	
High Ch								
1.908	16.2	V	0.98	8.04	23.31	33.0	-9.7	
1.908	19.3	H	0.98	8.04	26.39	33.0	-6.6	

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UMTS HSDPA, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20165
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: WCDMA HSDPA 1900MHz

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.852	15.2	V	0.98	8.05	22.30	33.0	-10.7	
1.852	18.7	H	0.98	8.05	25.78	33.0	-7.2	
Mid Ch								
1.880	15.8	V	0.98	8.03	22.85	33.0	-10.2	
1.880	18.3	H	0.98	8.03	25.35	33.0	-7.6	
High Ch								
1.908	15.3	V	0.98	8.04	22.41	33.0	-10.6	
1.908	18.2	H	0.98	8.04	25.31	33.0	-7.7	

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UMTS REL 99, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 1700MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.712	13.4	V	0.95	8.27	20.70	30.0	-9.3	
1.712	16.9	H	0.95	8.27	24.26	30.0	-5.7	
Mid Ch								
1.733	13.7	V	0.95	8.23	20.94	30.0	-9.1	
1.733	16.9	H	0.95	8.23	24.21	30.0	-5.8	
High Ch								
1.753	13.7	V	0.95	8.18	20.89	30.0	-9.1	
1.753	16.6	H	0.95	8.18	23.86	30.0	-6.1	

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UMTS HSDPA, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20165
Date: 06/06/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA HSDPA 1700MHz

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.712	12.6	V	0.95	8.27	19.87	30.0	-10.1	
1.712	16.2	H	0.95	8.27	23.56	30.0	-6.4	
Mid Ch								
1.733	12.8	V	0.95	8.23	20.04	30.0	-10.0	
1.733	16.1	H	0.95	8.23	23.39	30.0	-6.6	
High Ch								
1.753	12.8	V	0.95	8.18	20.00	30.0	-10.0	
1.753	15.9	H	0.95	8.18	23.16	30.0	-6.8	

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10.4. RADIATED POWER (ERP & EIRP), MODEL: A1688 (UAT)

10.4.1. GSM

Part 22 / 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	GPRS	128	824.2	24.72	296.48
		190	836.6	24.86	306.20
		251	848.8	**25.54**	358.10
	EGPRS	128	824.2	22.06	160.69
		190	836.6	21.74	149.28
		251	848.8	**22.65**	184.08

Part 24 / 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	GPRS	512	1850.2	24.78	300.61
		661	1880.0	26.02	399.94
		810	1909.8	**26.05**	402.72
	EGPRS	512	1850.2	22.96	197.70
		661	1880.0	**23.02**	200.45
		810	1909.8	22.75	188.36

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10.4.2. CDMA2000

Part 90 800MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	BC10, 1xRTT	450	817.3	17.01	50.23
		560	820.0	16.79	47.75
		670	822.8	**17.26**	53.21
	BC10, EVDO A	450	817.3	16.71	46.88
		560	820.0	16.76	47.42
		670	822.8	**17.22**	52.72

Part 22 / 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	BC 0, 1xRTT	1013	824.7	16.36	43.25
		384	836.5	**16.71**	46.88
		777	848.3	16.67	46.45
	BC 0, EVDO Rev A	1013	824.7	16.43	43.95
		384	836.5	16.78	47.64
		777	848.3	**16.85**	48.42

Part 24 / 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	BC1, 1xRTT	25	1851.3	**20.47**	111.43
		600	1880.0	20.23	105.44
		1175	1908.8	20.12	102.80
	BC1, EVDO REV A	25	1851.3	**20.49**	111.94
		600	1880.0	20.32	107.65
		1175	1908.8	20.17	103.99

Part 27 / 1700MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
AWS	BC15, 1xRTT	25	1711.3	**18.41**	69.34
		450	1732.5	17.91	61.80
		875	1753.8	18.24	66.68
	BC15, EVDO, REV A	25	1711.3	**18.47**	70.31
		450	1732.5	18.03	63.53
		875	1753.8	18.25	66.83

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10.4.3. UMTS

Part 22 / 850MHz Band

Band	Mode	Channel	f (MHz)	ERP (Average)	
				dBm	mW
CELL	UMTS,REL 99	4132	826.4	16.22	41.88
		4183	836.6	16.26	42.27
		4233	846.6	**16.61**	45.81
	UMTS, HSDPA	4132	826.4	15.54	35.81
		4183	836.6	15.56	35.97
		4233	846.6	**15.94**	39.26

Part 24 / 1900MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	UMTS,REL 99	9662	1852.4	19.62	91.62
		9800	1880.0	19.65	92.26
		9938	1907.6	**20.44**	110.66
	UMTS, HSDPA	9662	1852.4	18.78	75.51
		9800	1880.0	18.62	72.78
		9938	1907.6	**19.36**	86.30

Part 27 / 1700MHz Band

Band	Mode	Channel	f (MHz)	EIRP (Average)	
				dBm	mW
PCS	UMTS,REL 99	1537	1712.4	**19.06**	80.54
		1638	1732.6	18.88	77.27
		1738	1752.5	18.96	78.70
	UMTS, HSDPA	1537	1712.4	**18.46**	70.15
		1638	1732.6	18.06	63.97
		1738	1752.5	18.36	68.55

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10.4.4. GSM

GPRS, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: GSM 850MHz

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole 416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.20	25.3	V	0.6	0.0	24.72	26.87	38.45	40.60	-13.7	
824.20	16.9	H	0.6	0.0	16.28	18.43	38.45	40.60	-22.2	
Mid Ch										
836.60	25.5	V	0.6	0.0	24.86	27.01	38.45	40.60	-13.6	
836.60	16.4	H	0.6	0.0	15.80	17.95	38.45	40.60	-22.7	
High Ch										
848.80	26.2	V	0.6	0.0	25.54	27.69	38.45	40.60	-12.9	
848.80	16.7	H	0.6	0.0	16.10	18.25	38.45	40.60	-22.4	

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EGPRS, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: EDGE 850MHz

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole 416, 6ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.20	22.7	V	0.6	0.0	22.06	24.21	38.45	40.60	-16.4	
824.20	11.6	H	0.6	0.0	10.95	13.10	38.45	40.60	-27.5	
Mid Ch										
836.60	22.4	V	0.6	0.0	21.74	23.89	38.45	40.60	-16.7	
836.60	10.3	H	0.6	0.0	9.68	11.83	38.45	40.60	-28.8	
High Ch										
848.80	23.3	V	0.6	0.0	22.65	24.80	38.45	40.60	-15.8	
848.80	10.3	H	0.6	0.0	9.72	11.87	38.45	40.60	-28.7	

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GPRS, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: GSM 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 6ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	15.0	V	0.98	8.05	22.09	33.0	-10.9	
1.851	17.7	H	0.98	8.05	24.78	33.0	-8.2	
Mid Ch								
1.880	14.7	V	0.98	8.03	21.79	33.0	-11.2	
1.880	19.0	H	0.98	8.03	26.02	33.0	-7.0	
High Ch								
1.910	14.6	V	0.98	8.05	21.66	33.0	-11.3	
1.910	19.0	H	0.98	8.05	26.05	33.0	-6.9	

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EGPRS, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: EDGE 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 6ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	12.8	V	0.98	8.05	19.84	33.0	-13.2	
1.851	15.9	H	0.98	8.05	22.96	33.0	-10.0	
Mid Ch								
1.880	12.1	V	0.98	8.03	19.16	33.0	-13.8	
1.880	16.0	H	0.98	8.03	23.02	33.0	-10.0	
High Ch								
1.910	11.9	V	0.98	8.05	18.96	33.0	-14.0	
1.910	15.7	H	0.98	8.05	22.75	33.0	-10.2	

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10.4.5. CDMA2000

CDMA2000 1xRTT, 800MHz BC10

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/29/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 800MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
817.25	17.63	V	0.6	0.0	17.01	50.00	-33.0	
817.25	3.12	H	0.6	0.0	2.50	50.00	-47.5	
Mid Ch								
820.00	17.41	V	0.6	0.0	16.79	50.00	-33.2	
820.00	3.07	H	0.6	0.0	2.45	50.00	-47.5	
High Ch								
822.75	17.88	V	0.6	0.0	17.26	50.00	-32.7	
822.75	2.81	H	0.6	0.0	2.19	50.00	-47.8	

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EVDO-Rev A, 800MHz BC10

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20165
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 800MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
817.25	17.33	V	0.6	0.0	16.71	50.00	-33.3	
817.25	3.13	H	0.6	0.0	2.51	50.00	-47.5	
Mid Ch								
820.00	17.38	V	0.6	0.0	16.76	50.00	-33.2	
820.00	3.20	H	0.6	0.0	2.58	50.00	-47.4	
High Ch								
822.75	17.84	V	0.6	0.0	17.22	50.00	-32.8	
822.75	3.28	H	0.6	0.0	2.66	50.00	-47.3	

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CDMA2000 1xRTT, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/29/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	17.0	V	0.6	0.0	16.36	18.51	38.45	40.60	-22.1	
824.70	-0.9	H	0.6	0.0	-1.47	0.68	38.45	40.60	-39.9	
Mid Ch										
836.52	17.3	V	0.6	0.0	16.71	18.86	38.45	40.60	-21.7	
836.52	-0.6	H	0.6	0.0	-1.24	0.91	38.45	40.60	-39.7	
High Ch										
848.31	17.3	V	0.6	0.0	16.67	18.82	38.45	40.60	-21.8	
848.31	-0.7	H	0.6	0.0	-1.33	0.82	38.45	40.60	-39.8	

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EVDO-Rev A, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20165
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 850MHz

Test Equipment:
Receiving: Sunol T899, and Chamber G Cable
Substitution: Dipole S/N: 00022117, 8ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
824.70	17.1	V	0.6	0.0	16.43	18.58	38.45	40.60	-22.0	
824.70	-1.0	H	0.6	0.0	-1.65	0.50	38.45	40.60	-40.1	
Mid Ch										
836.52	17.4	V	0.6	0.0	16.78	18.93	38.45	40.60	-21.7	
836.52	-0.4	H	0.6	0.0	-1.04	1.11	38.45	40.60	-39.5	
High Ch										
848.31	17.5	V	0.6	0.0	16.85	19.00	38.45	40.60	-21.6	
848.31	-0.5	H	0.6	0.0	-1.13	1.02	38.45	40.60	-39.6	

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CDMA2000 1xRTT, 1900MHz BC1

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20164
Date: 06/29/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 1900MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.8510	13.4	V	0.98	8.05	20.47	33.0	-12.5	
1.8510	9.3	H	0.98	8.05	16.36	33.0	-16.6	
Mid Ch								
1.880	13.2	V	0.98	8.03	20.23	33.0	-12.8	
1.880	9.6	H	0.98	8.03	16.65	33.0	-16.4	
High Ch								
1.9088	13.1	V	0.98	8.05	20.12	33.0	-12.9	
1.9088	9.5	H	0.98	8.05	16.54	33.0	-16.5	

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EVDO-Rev A, 1900MHz BC1

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20165
Date: 07/07/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 1900MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.851	13.4	V	0.98	8.05	20.49	33.0	-12.5	
1.851	9.3	H	0.98	8.05	16.37	33.0	-16.6	
Mid Ch								
1.880	13.3	V	0.98	8.03	20.32	33.0	-12.7	
1.880	9.3	H	0.98	8.03	16.34	33.0	-16.7	
High Ch								
1.909	13.1	V	0.98	8.05	20.17	33.0	-12.8	
1.909	9.5	H	0.98	8.05	16.54	33.0	-16.5	

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CDMA2000 1xRTT, 1700MHz BC15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20163
Date: 06/27/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA 1XRTT 1700MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.7113	6.5	V	0.95	8.27	13.79	30.0	-16.2	
1.7113	11.1	H	0.95	8.27	18.41	30.0	-11.6	
Mid Ch								
1.7325	5.6	V	0.95	8.23	12.91	30.0	-17.1	
1.7325	10.6	H	0.95	8.23	17.91	30.0	-12.1	
High Ch								
1.7538	6.3	V	0.95	8.18	13.48	30.0	-16.5	
1.7538	11.0	H	0.95	8.18	18.24	30.0	-11.8	

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EVDO-Rev A, 1700MHz BC15

High Frequency Substitution Measurement
UL Fremont Radiated Chamber G

Company:
Project #: 15U20165
Date: 07/06/15
Test Engineer: T Wang
Configuration: EUT only
Mode: CDMA Rev A 1700MHz

Test Equipment:
Receiving: Horn T862 and Chamber G SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.711	6.5	V	0.95	8.27	13.80	30.0	-16.2	
1.711	11.2	H	0.95	8.27	18.47	30.0	-11.5	
Mid Ch								
1.733	5.7	V	0.95	8.23	12.93	30.0	-17.1	
1.733	10.8	H	0.95	8.23	18.03	30.0	-12.0	
High Ch								
1.754	6.3	V	0.95	8.18	13.56	30.0	-16.4	
1.754	11.0	H	0.95	8.18	18.25	30.0	-11.7	

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10.4.6. UMTS

UMTS REL 99, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20164
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 850MHz

Test Equipment:
Receiving: Sunol T408, and Chamber E Cable
Substitution: Dipole T416, ft SMA Cable

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.40	16.8	V	0.6	0.0	16.22	18.37	38.45	40.60	-22.2	
826.40	-3.0	H	0.6	0.0	-3.64	-1.49	38.45	40.60	-42.1	
Mid Ch										
836.60	16.9	V	0.6	0.0	16.26	18.41	38.45	40.60	-22.2	
836.60	-2.4	H	0.6	0.0	-3.02	-0.87	38.45	40.60	-41.5	
High Ch										
846.60	17.2	V	0.6	0.0	16.61	18.76	38.45	40.60	-21.8	
846.60	-1.9	H	0.6	0.0	-2.49	-0.34	38.45	40.60	-40.9	

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UMTS HSDPA, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20164
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT only
Mode: WCDMA HSDPA 850MHz

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

f MHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBd)	ERP (dBm)	EIRP (dBm)	ERP Limit (dBm)	EIRP Limit (dBm)	Margin (dB)	Notes
Low Ch										
826.40	16.2	V	0.6	0.0	15.54	17.69	38.45	40.60	-22.9	
826.40	-3.9	H	0.6	0.0	-4.49	-2.34	38.45	40.60	-42.9	
Mid Ch										
836.60	16.2	V	0.6	0.0	15.56	17.71	38.45	40.60	-22.9	
836.60	-3.1	H	0.6	0.0	-3.72	-1.57	38.45	40.60	-42.2	
High Ch										
846.60	16.6	V	0.6	0.0	15.94	18.09	38.45	40.60	-22.5	
846.60	-2.6	H	0.6	0.0	-3.24	-1.09	38.45	40.60	-41.7	

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UMTS REL 99, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 1900MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 6ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.852	10.0	V	0.98	8.05	17.10	33.0	-15.9	
1.852	12.6	H	0.98	8.05	19.62	33.0	-13.4	
Mid Ch								
1.880	10.4	V	0.98	8.03	17.42	33.0	-15.6	
1.880	12.6	H	0.98	8.03	19.65	33.0	-13.4	
High Ch								
1.908	10.8	V	0.98	8.04	17.86	33.0	-15.1	
1.908	13.4	H	0.98	8.04	20.44	33.0	-12.6	

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UMTS HSDPA, 1900MHz BAND 2

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20165
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: WCDMA HSDPA 1900MHz

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.852	9.0	V	0.98	8.05	16.09	33.0	-16.9	
1.852	11.7	H	0.98	8.05	18.78	33.0	-14.2	
Mid Ch								
1.880	9.6	V	0.98	8.03	16.69	33.0	-16.3	
1.880	11.6	H	0.98	8.03	18.62	33.0	-14.4	
High Ch								
1.908	9.9	V	0.98	8.04	16.96	33.0	-16.0	
1.908	12.3	H	0.98	8.04	19.36	33.0	-13.6	

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UMTS REL 99, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber E

Company:
Project #: 15U20165
Date: 06/05/15
Test Engineer: K. Huynh
Configuration: EUT Only
Mode: WCDMA Rel 99 1700MHz

Test Equipment:
Receiving: Horn T346 and Chamber E SMA Cables
Substitution: Horn T60 Substitution, and 6ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.712	8.2	V	0.95	8.27	15.47	30.0	-14.5	
1.712	11.7	H	0.95	8.27	19.06	30.0	-10.9	
Mid Ch								
1.733	7.8	V	0.95	8.23	15.12	30.0	-14.9	
1.733	11.6	H	0.95	8.23	18.88	30.0	-11.1	
High Ch								
1.753	8.2	V	0.95	8.18	15.46	30.0	-14.5	
1.753	11.7	H	0.95	8.18	18.96	30.0	-11.0	

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UMTS HSDPA, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber D

Company:
Project #: 15U20165
Date: 06/06/15
Test Engineer: F. Guarnero
Configuration: EUT Only
Mode: WCDMA HSDPA 1700MHz

Test Equipment:
Receiving: Horn T344 and Chamber D SMA Cables
Substitution: Horn T59 Substitution, and 8ft SMA Cable

f GHz	SG reading (dBm)	Ant. Pol. (H/V)	Cable Loss (dB)	Antenna Gain (dBi)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Notes
Low Ch								
1.712	6.5	V	0.95	8.27	13.77	30.0	-16.2	
1.712	11.1	H	0.95	8.27	18.46	30.0	-11.5	
Mid Ch								
1.733	7.2	V	0.95	8.23	14.44	30.0	-15.6	
1.733	10.8	H	0.95	8.23	18.06	30.0	-11.9	
High Ch								
1.753	7.4	V	0.95	8.18	14.58	30.0	-15.4	
1.753	11.1	H	0.95	8.18	18.36	30.0	-11.6	

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10.5. PEAK-TO-AVERAGE RATIO (MODEL: A1633)

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.

Peak-To-Average Ratio:

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
GSM850	GPRS	33.70	33.47	0.23
	EGPRS	32.26	28.86	3.4
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
GSM1900	GPRS	30.69	30.45	0.24
	EGPRS	31.53	27.99	3.54
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
CDMA2000 BC0	1xRTT	29.80	24.98	4.82
	EVDO A	30.57	24.93	5.64
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
CDMA2000 BC1	1xRTT	29.20	24.95	4.25
	EVDO A	30.26	24.97	5.29
*Peak Reading = Average Reading + Peak-to-Average Ratio				

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Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
CDMA2000 BC15	1xRTT	29.56	24.98	4.58
	EVDO A	29.94	24.98	4.96
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
CDMA2000 BC10	1xRTT	29.86	24.92	4.94
	EVDO A	30.89	24.95	5.94
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS Band 5	REL99	28.17	24.95	3.22
	HSDPA	27.58	24.14	3.44
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS Band 2	REL99	28.23	24.98	3.25
	HSDPA	27.67	24.27	3.40
*Peak Reading = Average Reading + Peak-to-Average Ratio				

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Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS Band 4	REL99	28.11	24.94	3.17
	HSDPA	27.43	24.10	3.33
*Peak Reading = Average Reading + Peak-to-Average Ratio				

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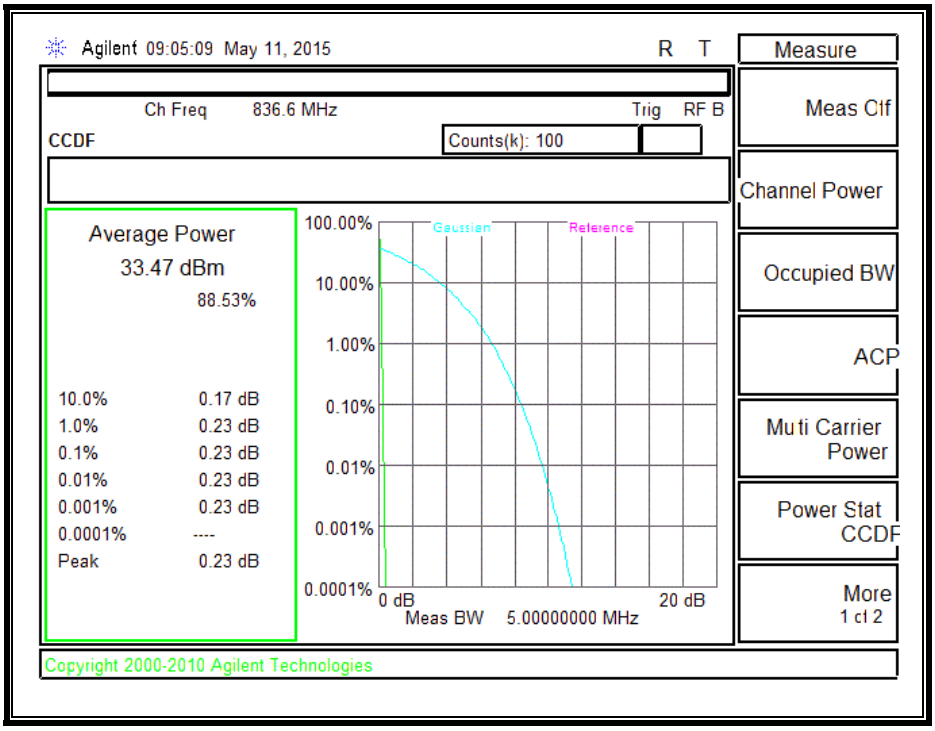
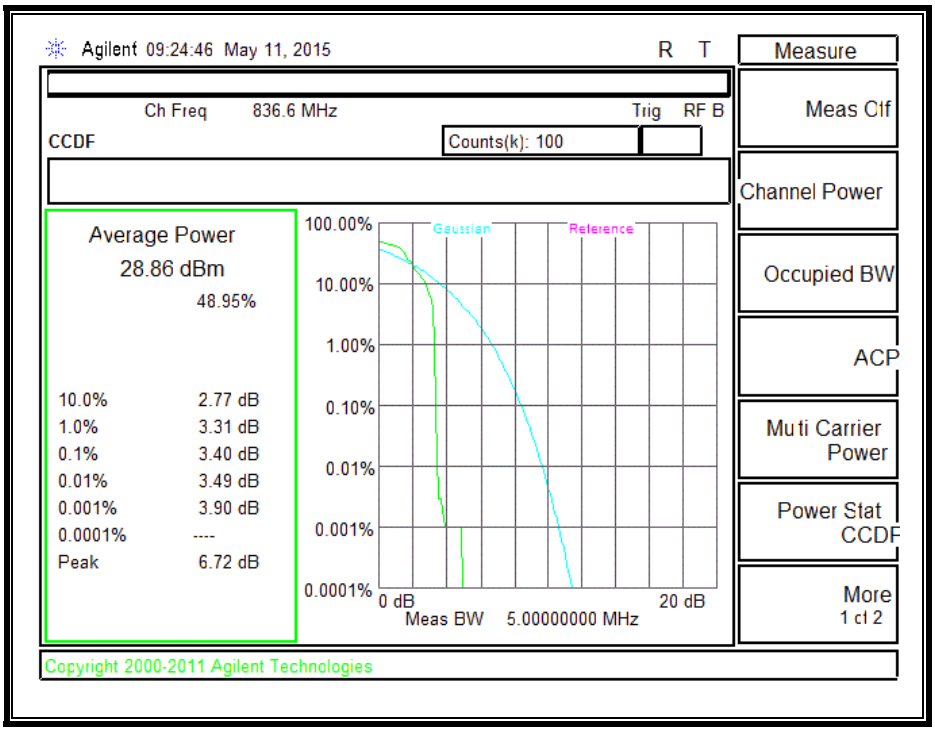
GSM850, GPRS



GSM850, EGPRS



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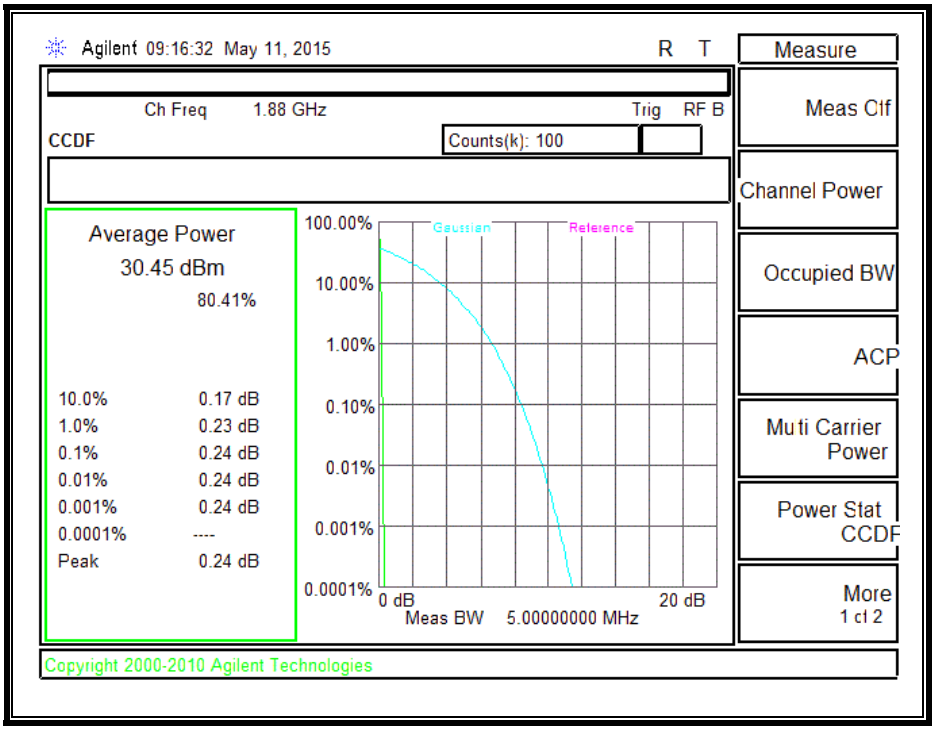
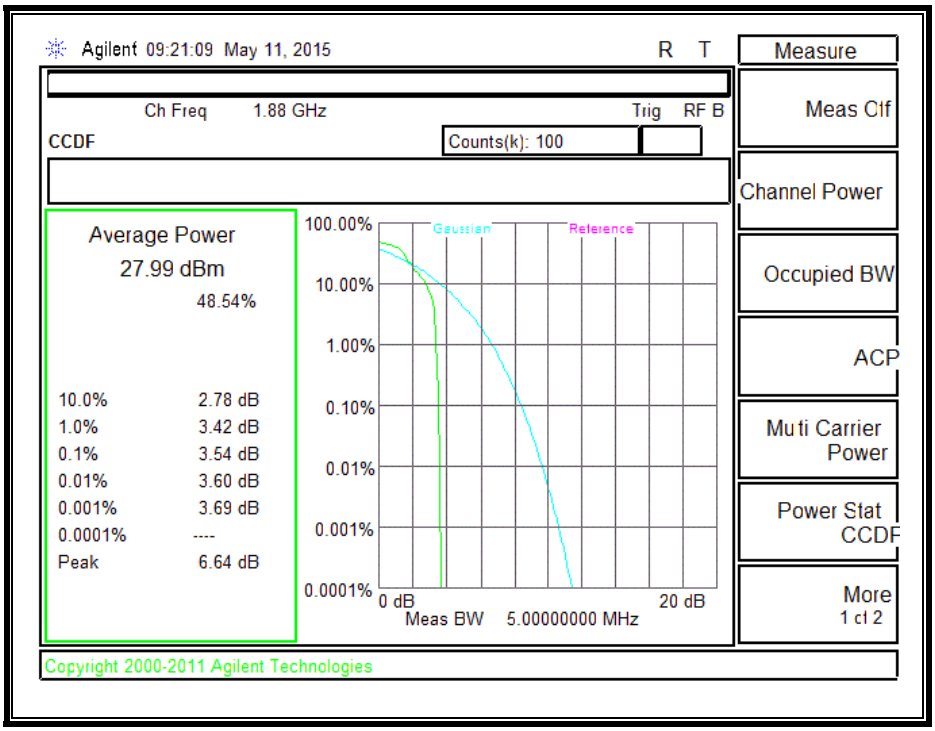
GSM1900, GPRS



GSM1900, EGPRS



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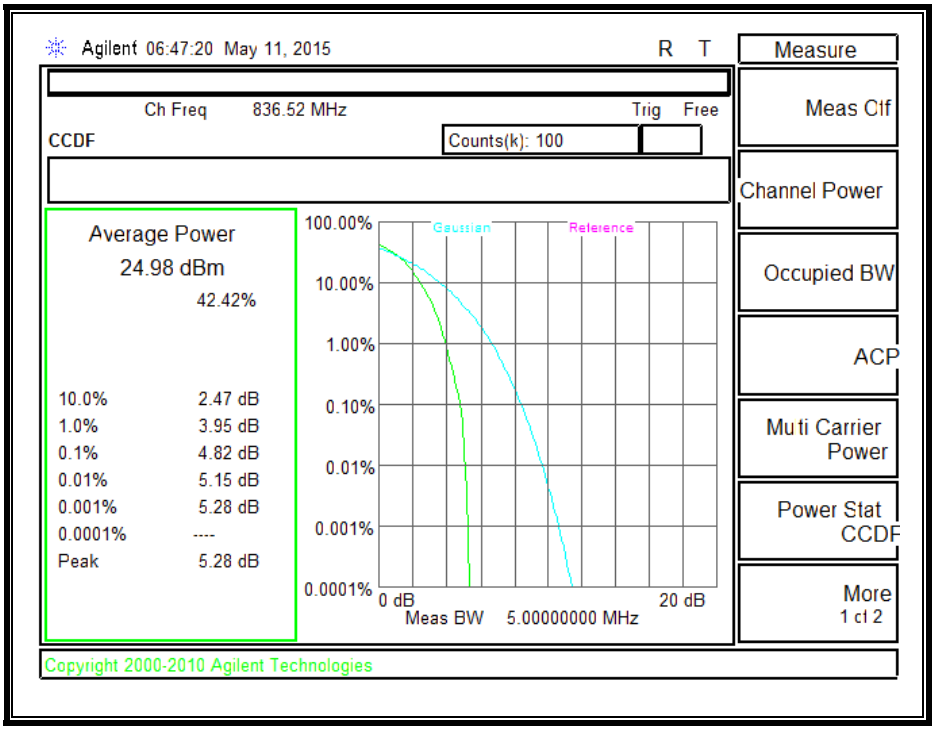
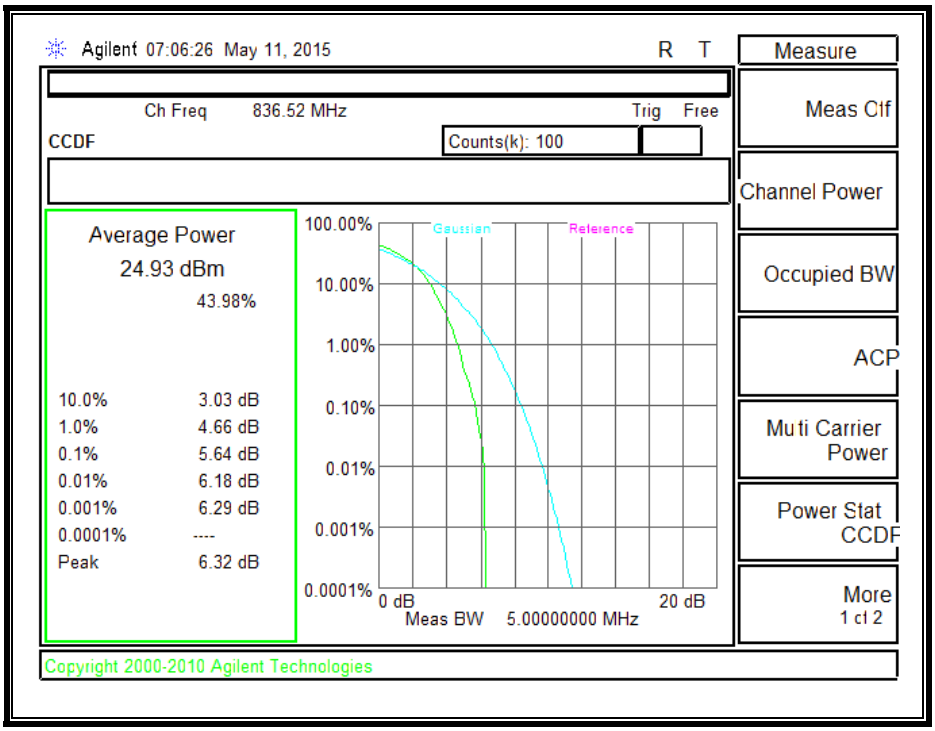
BC 0, 1xRTT



BC 0, EVDO A



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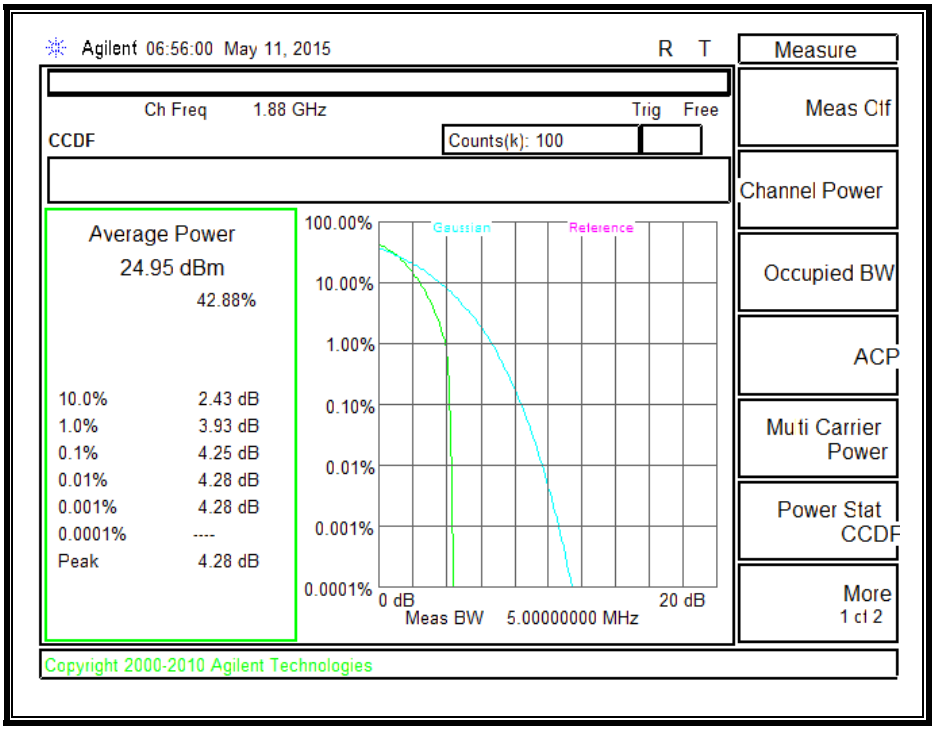
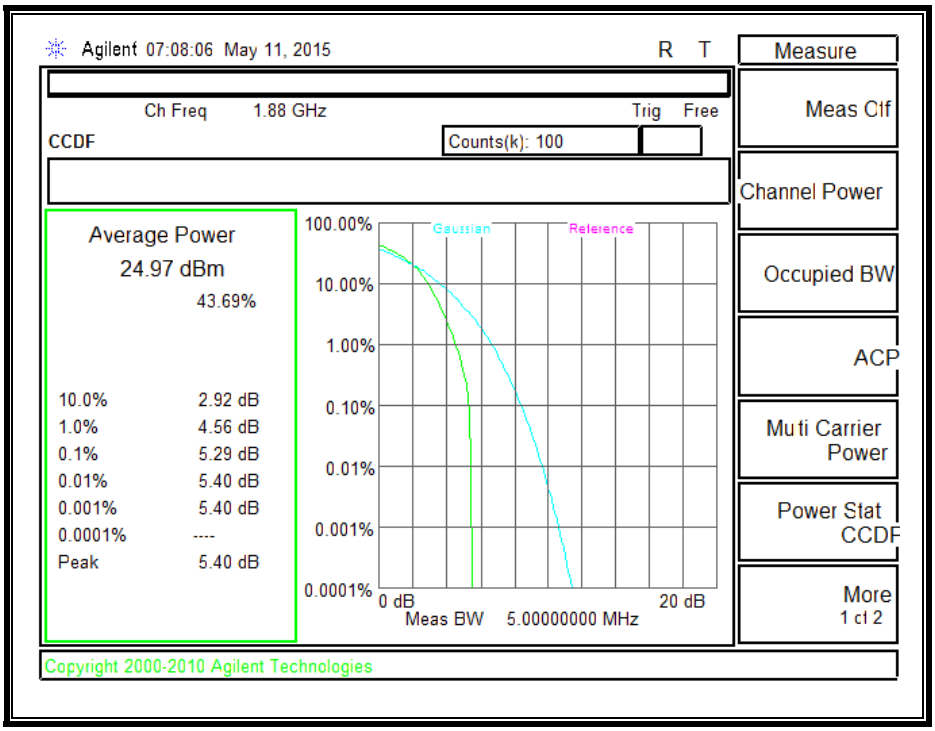
BC 1, 1xRTT



BC 1, EVDO A



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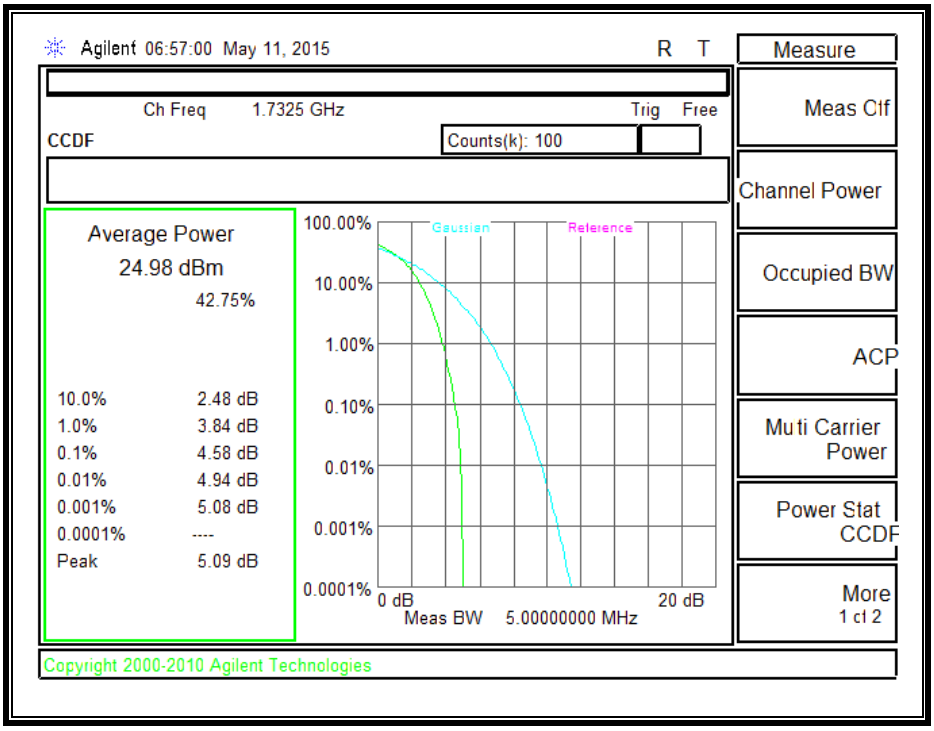
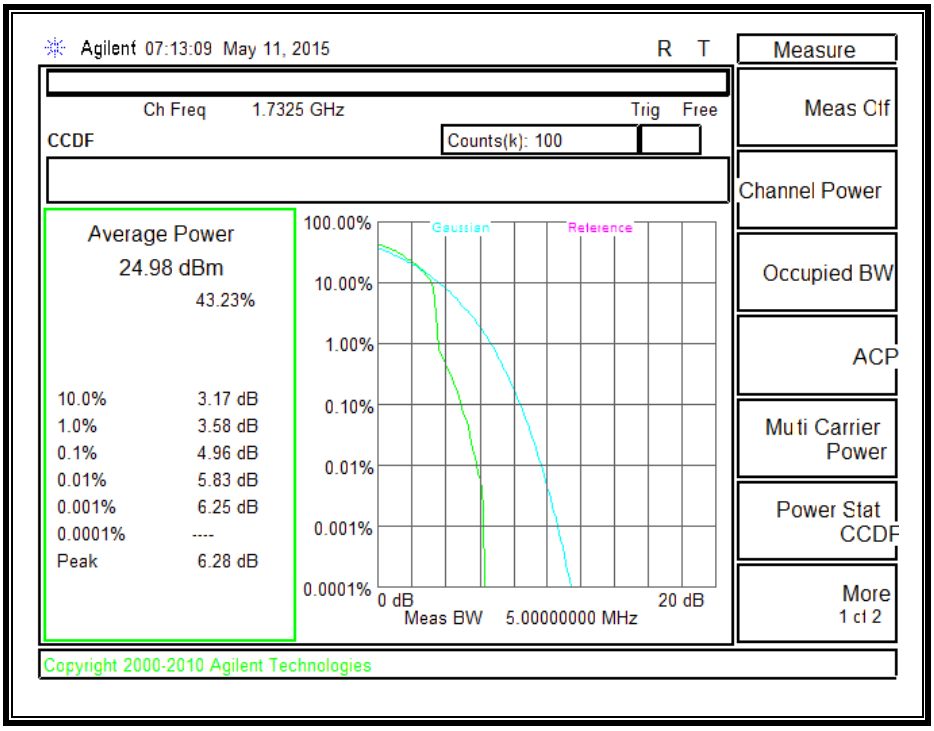
BC15, 1xRTT



BC15, EVDO A



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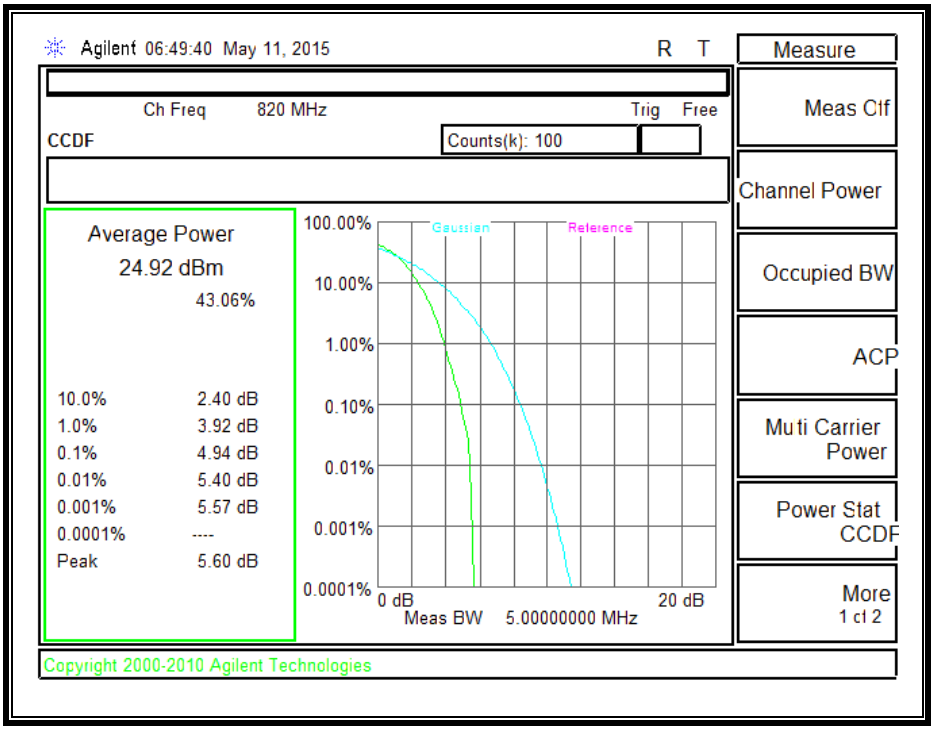
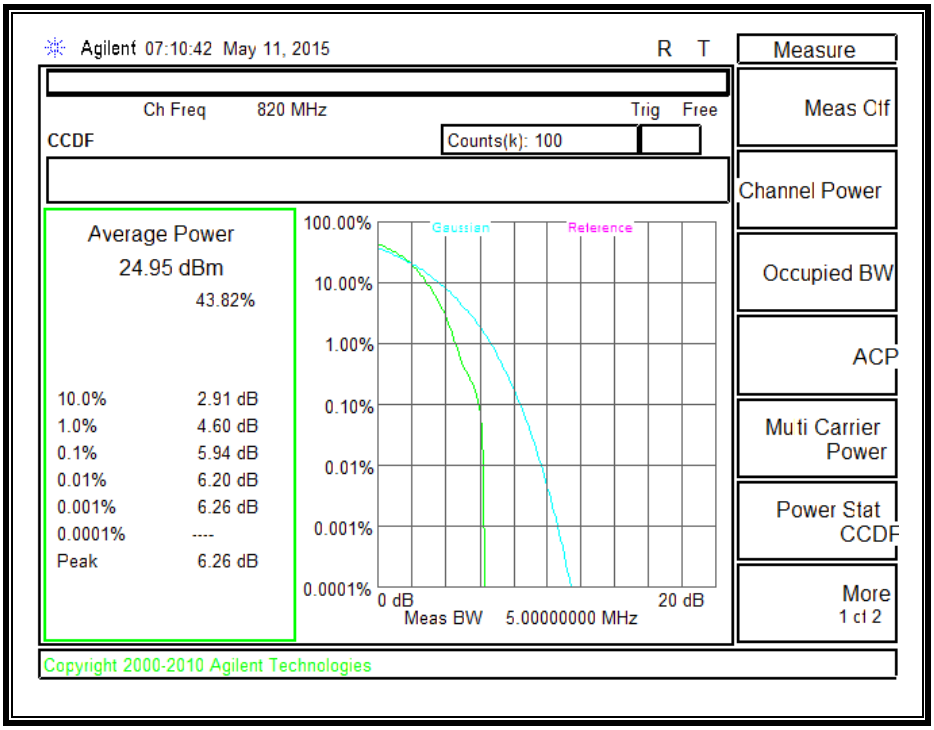
BC10, 1xRTT



BC10, EVDO A



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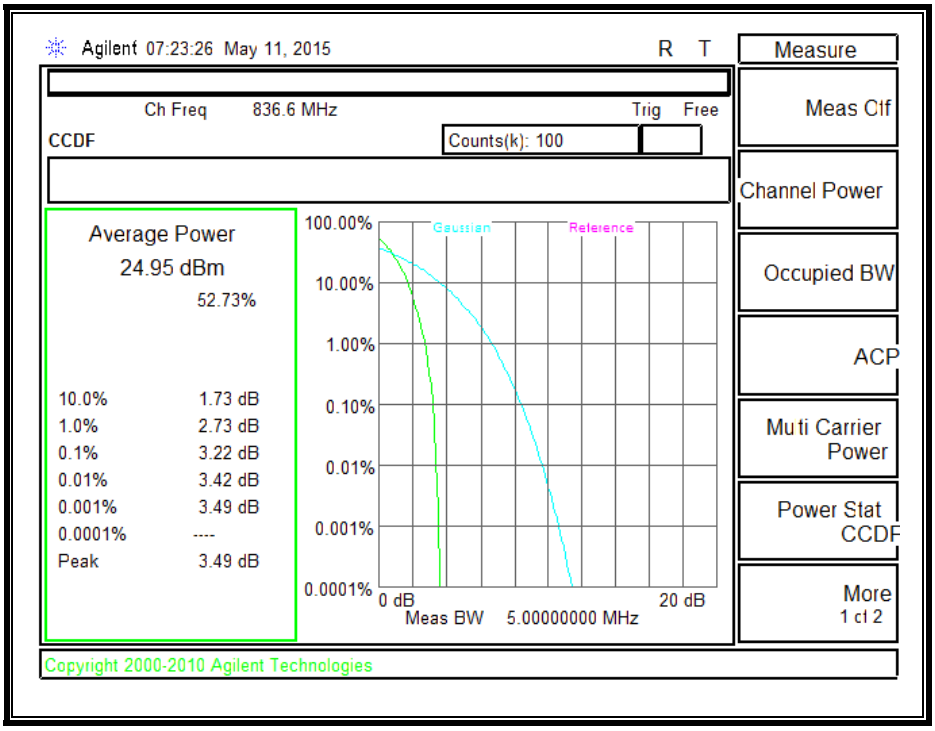
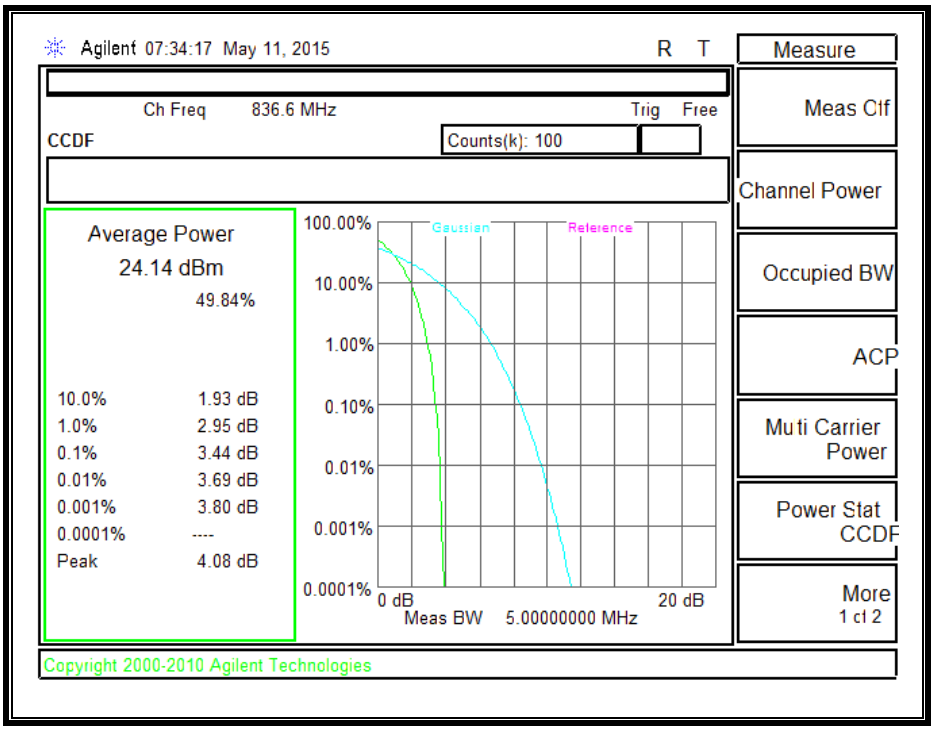
UMTS850, REL 99 BAND 5



UMTS 850, HSDPA BAND 5



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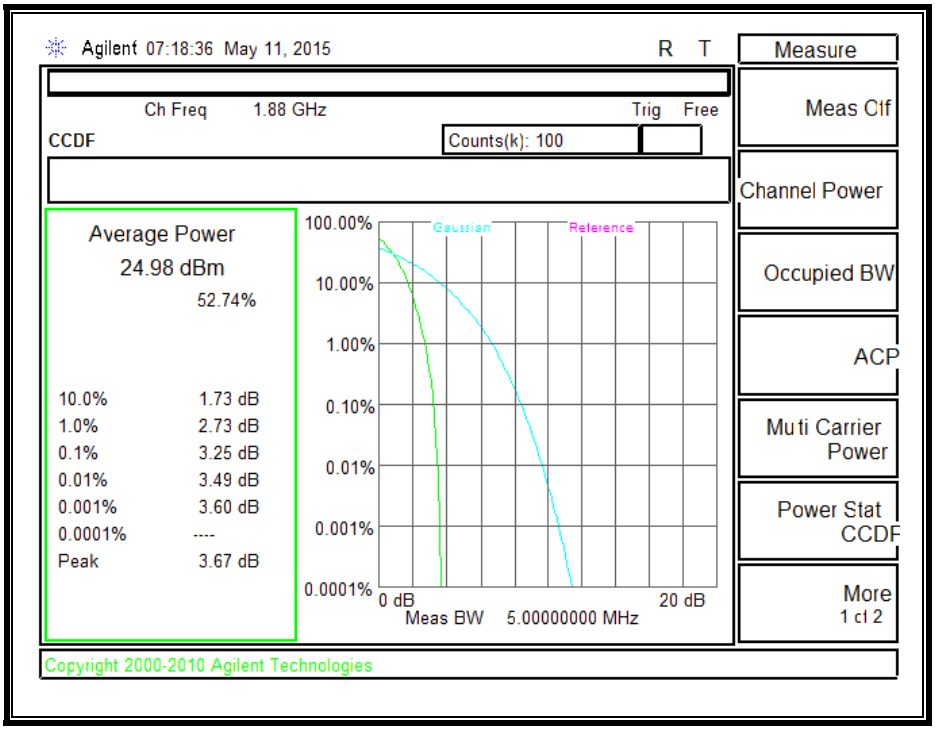
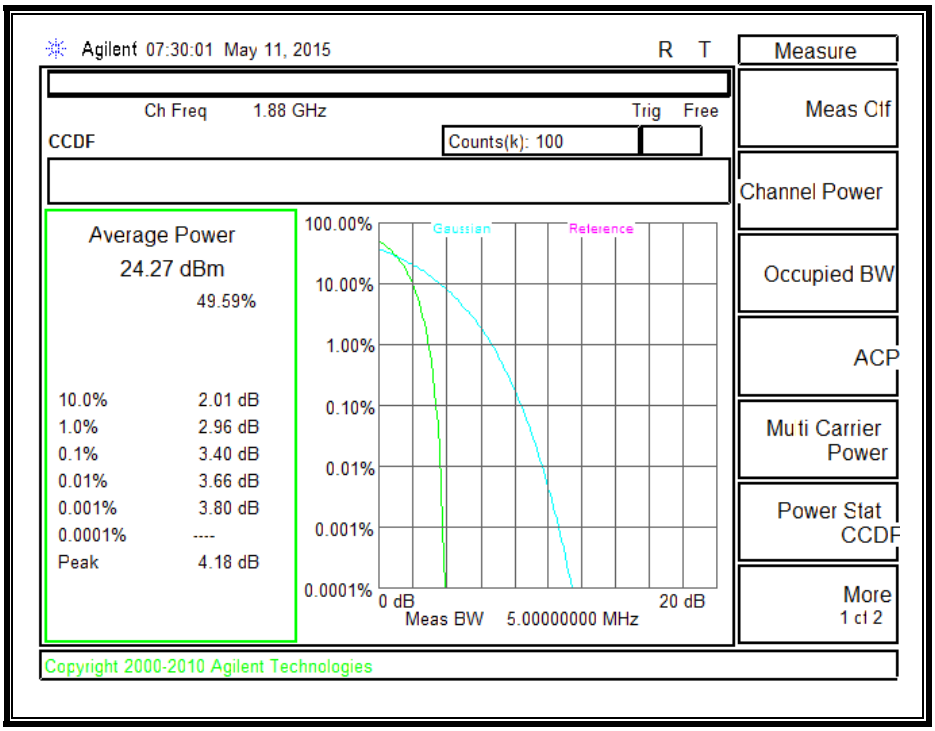
UMTS 1900, REL99 BAND 2



UMTS 1900, HSDPA BAND 2



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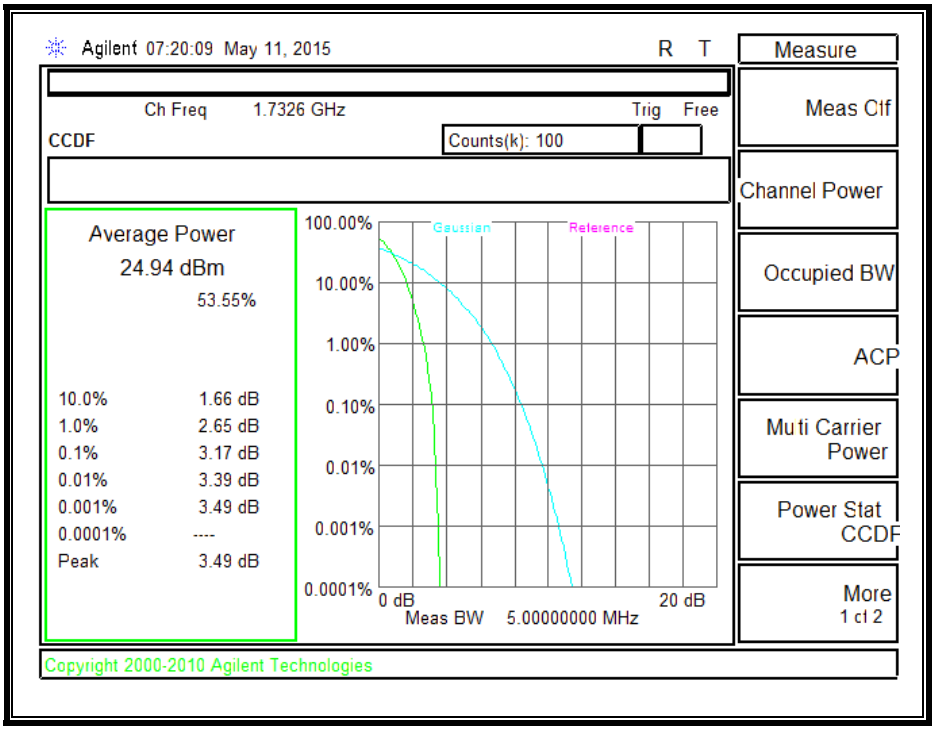
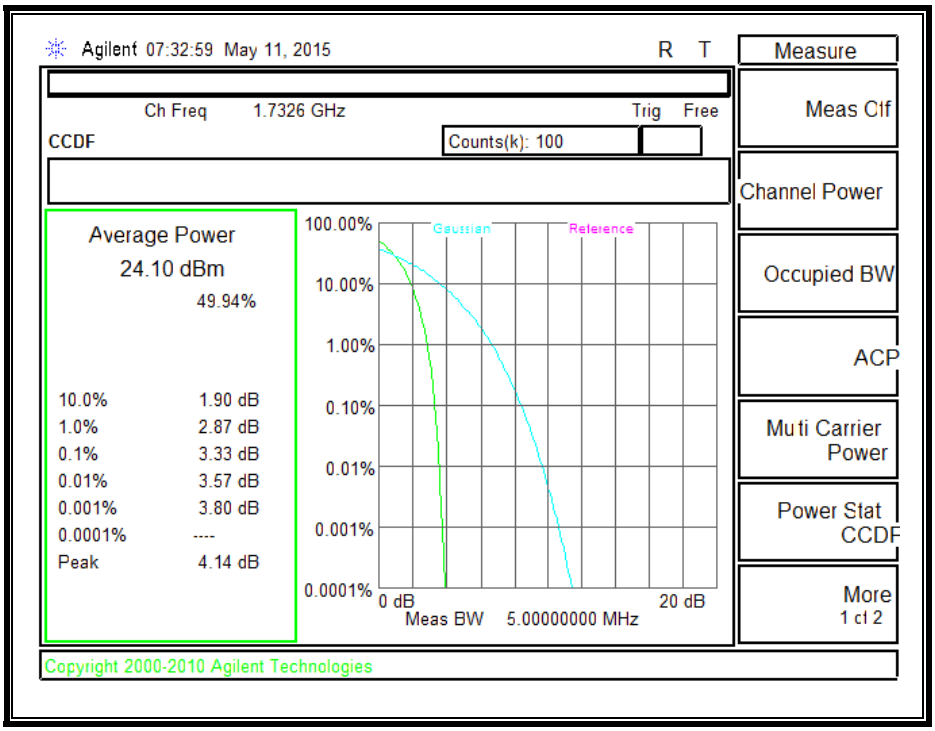
UMTS 1700, REL99 BAND 4



UMTS 1700, HSDPA BAND 4



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10.6. PEAK-TO-AVERAGE RATIO (MODEL: A1688)

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.

Peak-To-Average Ratio:

Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
GSM850	GPRS	33.82	33.49	0.33
	EGPRS	32.09	28.82	3.27
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
GSM1900	GPRS	30.12	29.82	0.3
	EGPRS	31.16	27.99	3.17
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Couducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
CDMA2000 BC0	1xRTT	29.79	24.98	4.81
	EVDO A	30.37	24.97	5.4
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
CDMA2000 BC1	1xRTT	29.46	24.86	4.6
	EVDO A	28.43	24.87	3.56
*Peak Reading = Average Reading + Peak-to-Average Ratio				

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Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
CDMA2000 BC15	1xRTT	29.46	24.92	4.54
	EVDO A	29.02	24.93	4.09
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
CDMA2000 BC10	1xRTT	29.36	24.97	4.39
	EVDO A	30.44	25	5.44
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS Band 5	REL99	28.09	24.92	3.17
	HSDPA	27.16	23.99	3.17
*Peak Reading = Average Reading + Peak-to-Average Ratio				

Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS Band 2	REL99	27.56	24.81	2.75
	HSDPA	27.15	24.02	3.13
*Peak Reading = Average Reading + Peak-to-Average Ratio				

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Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio (PAR)
		*Peak	Average	
UMTS Band 4	REL99	27.97	24.91	3.06
	HSDPA	26.9	24.11	2.79
*Peak Reading = Average Reading + Peak-to-Average Ratio				

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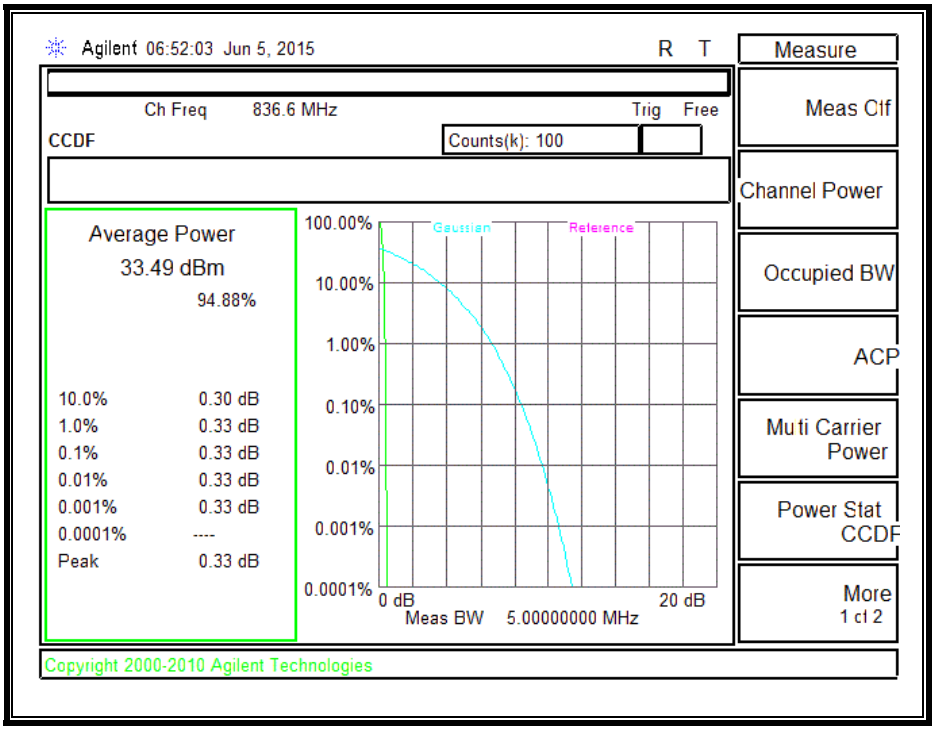
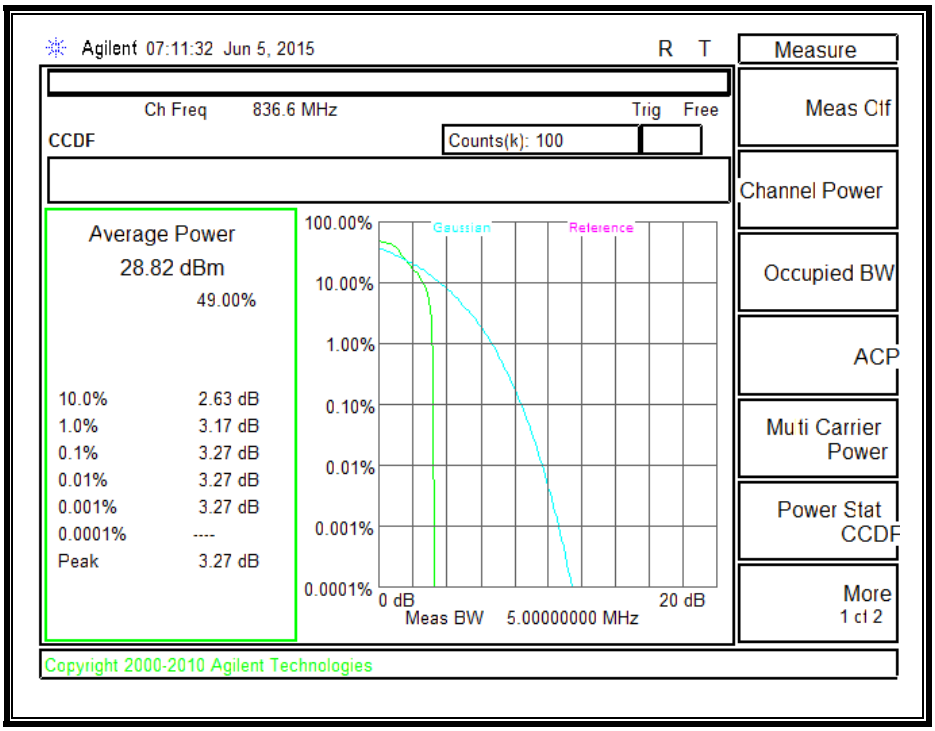
GSM850, GPRS



GSM850, EGPRS



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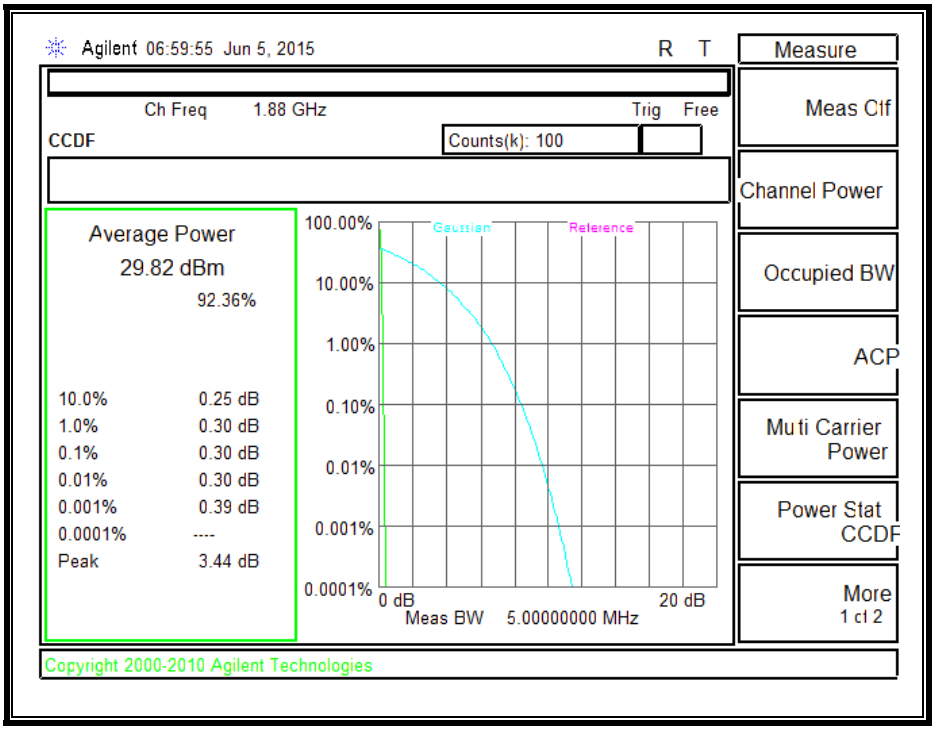
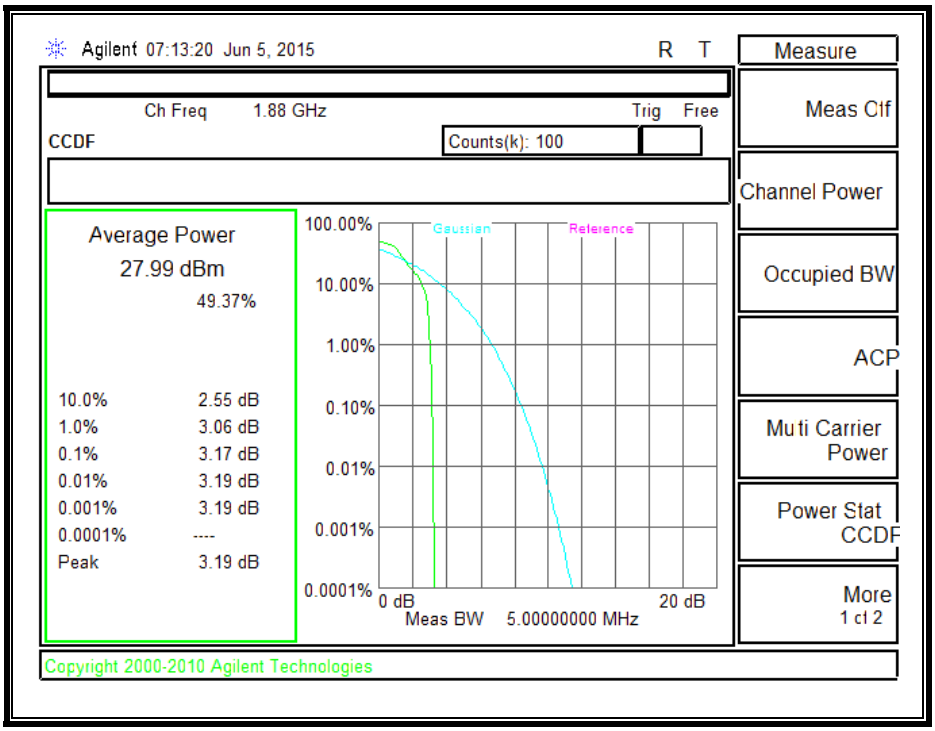
GSM1900, GPRS



GSM1900, EGPRS



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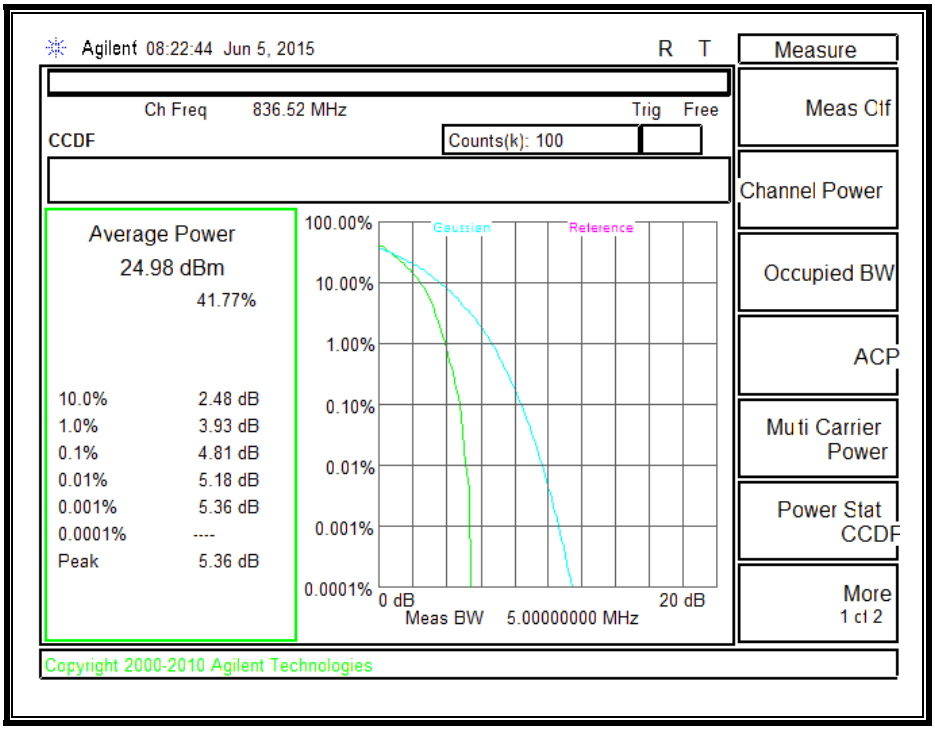
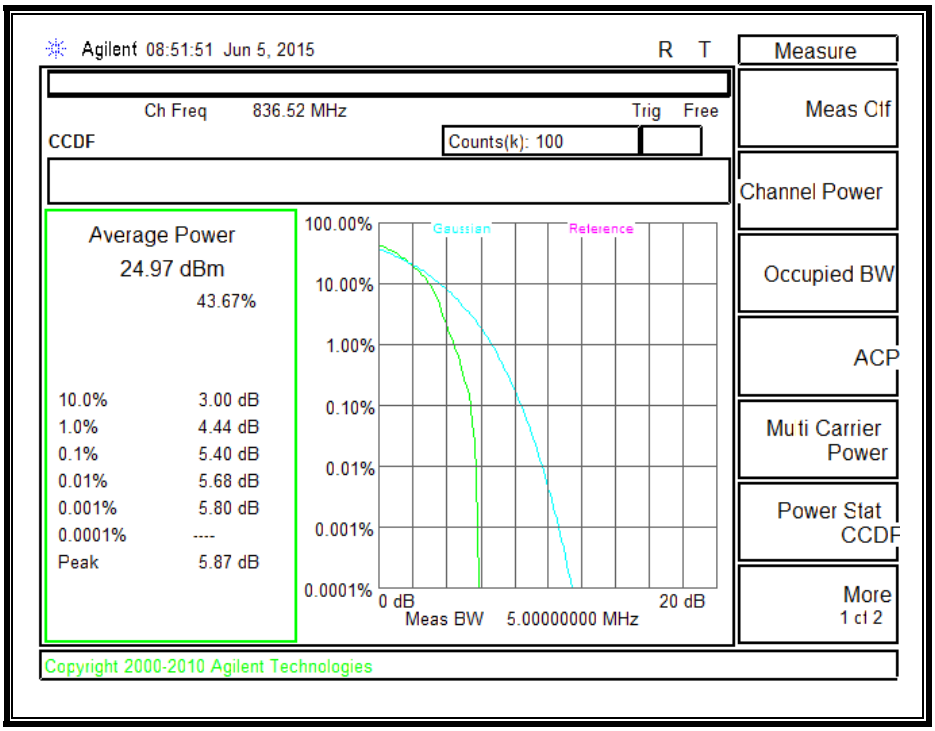
BC 0, 1xRTT



BC 0, EVDO A



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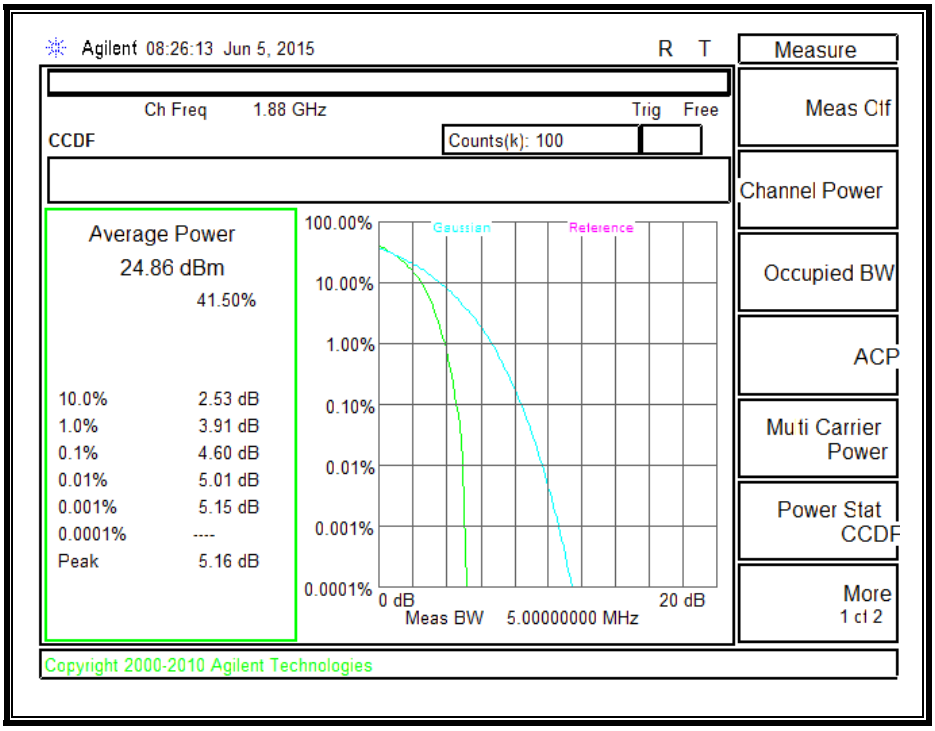
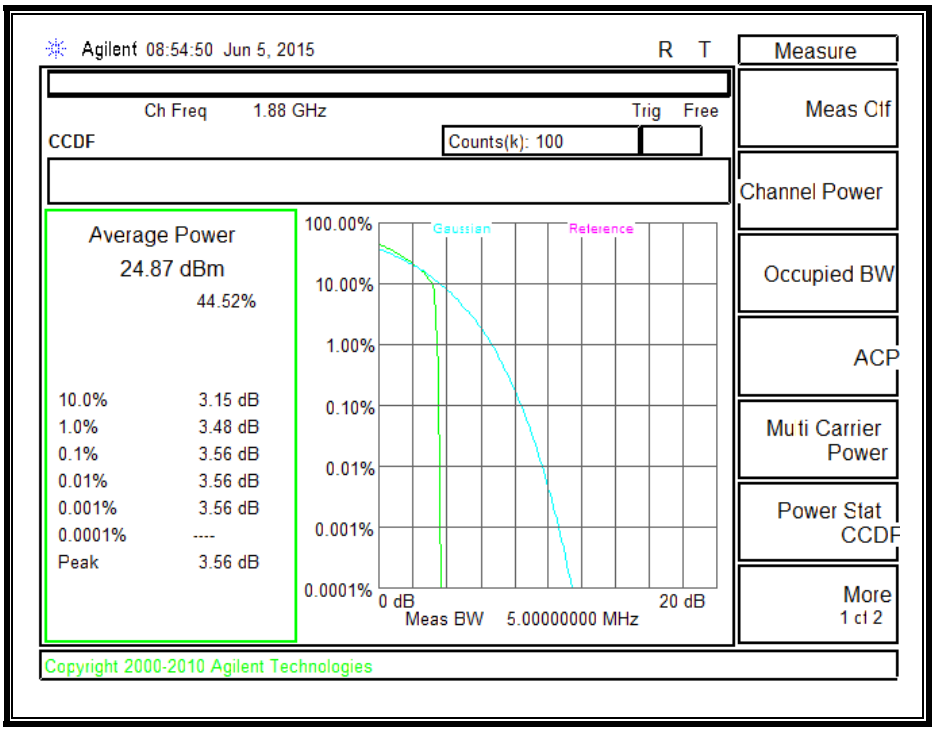
BC 1, 1xRTT



BC 1, EVDO A



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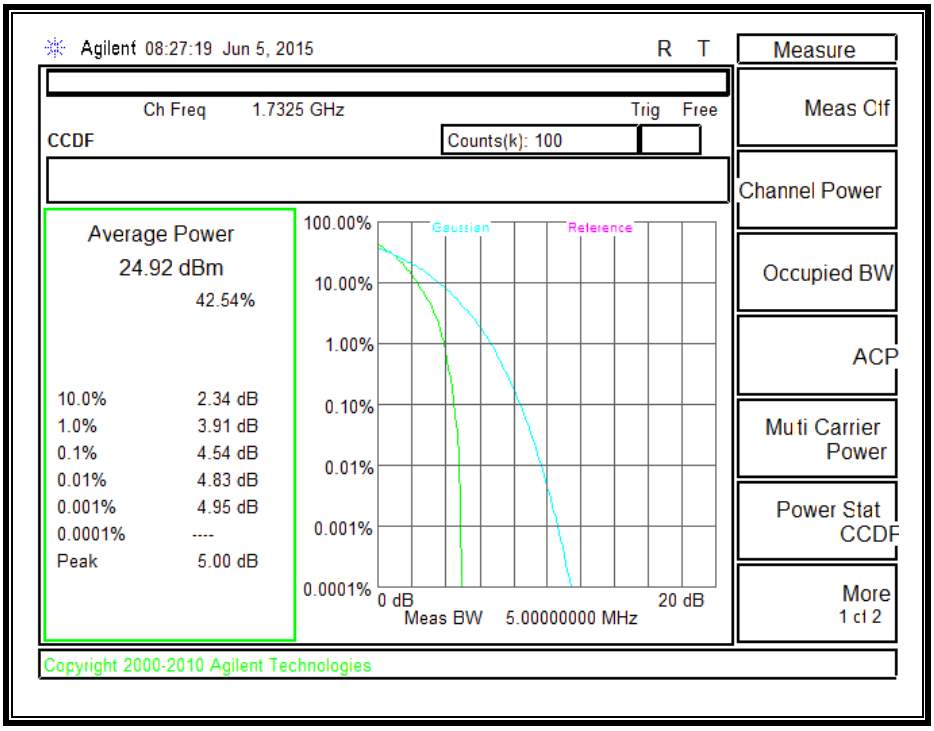
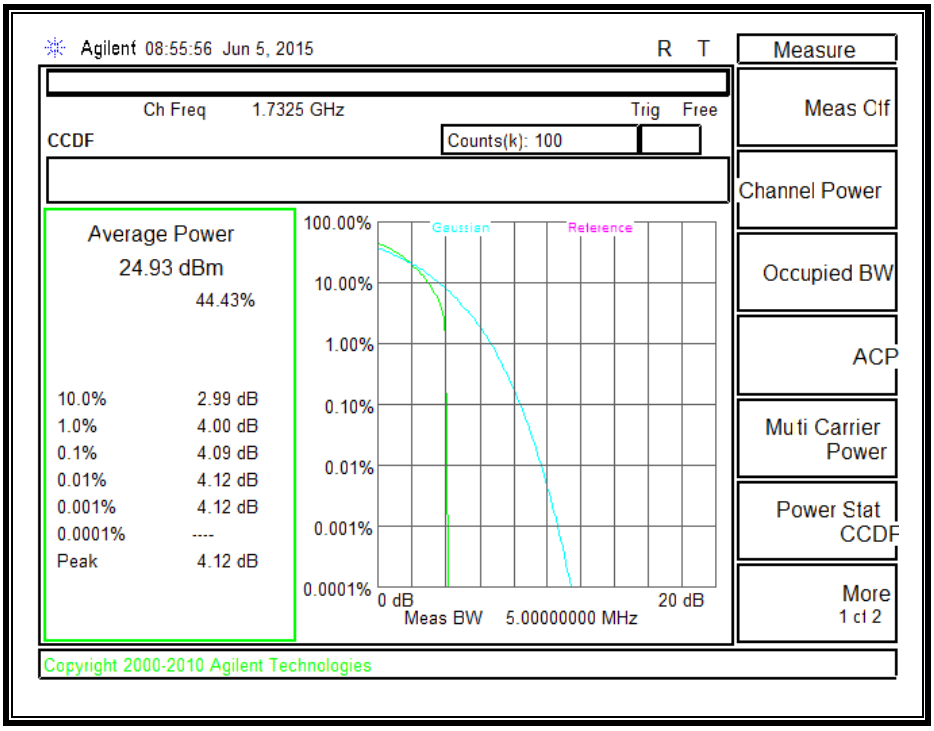
BC15, 1xRTT



BC15, EVDO A



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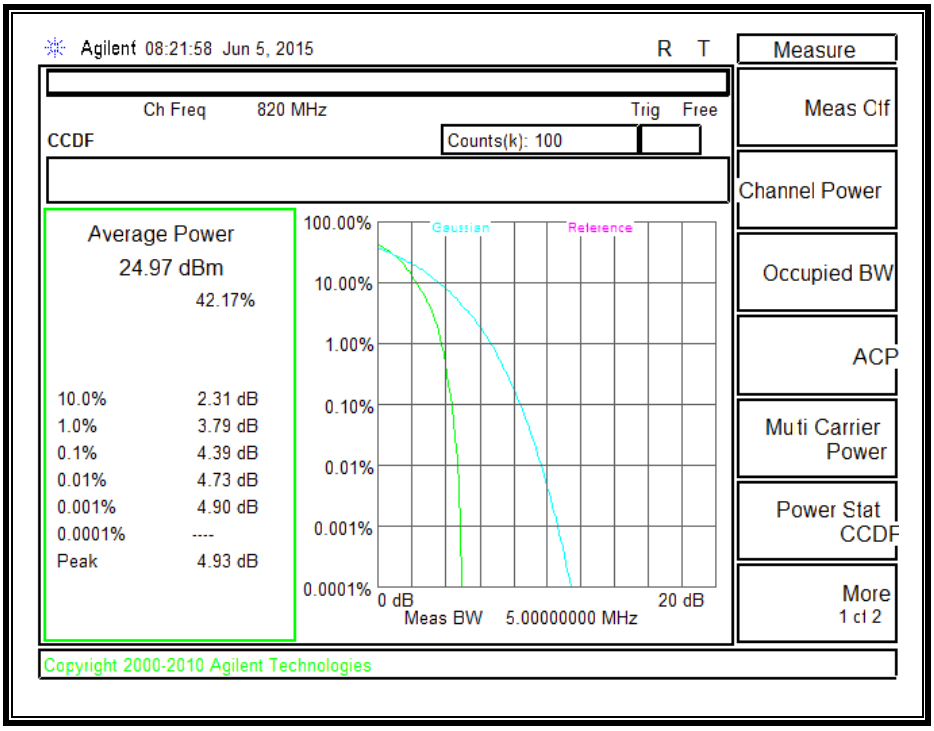
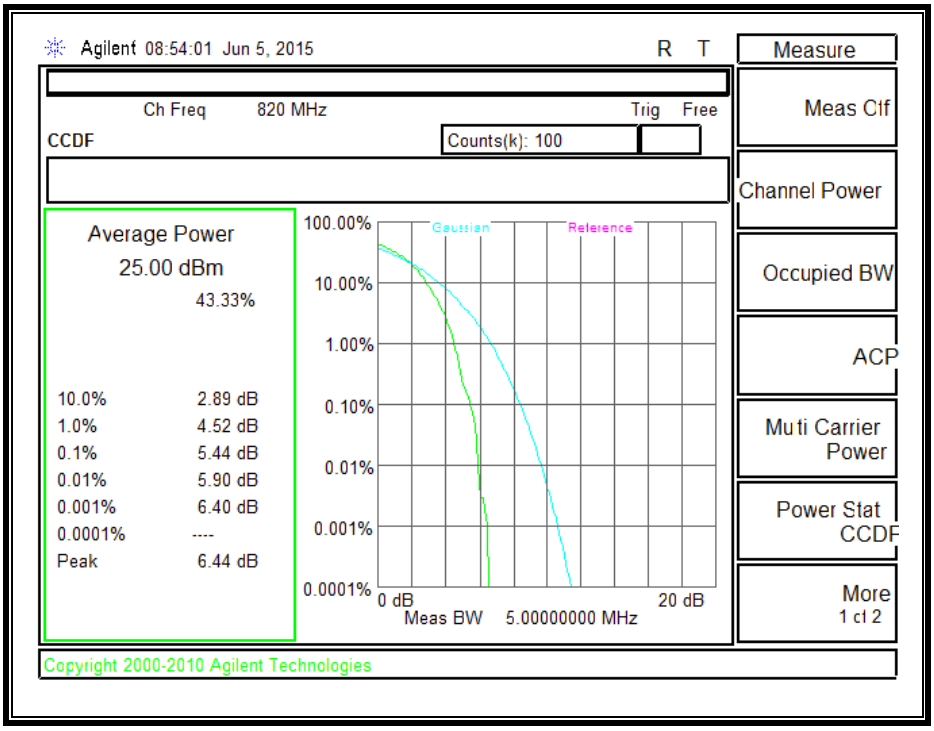
BC10, 1xRTT



BC10, EVDO A



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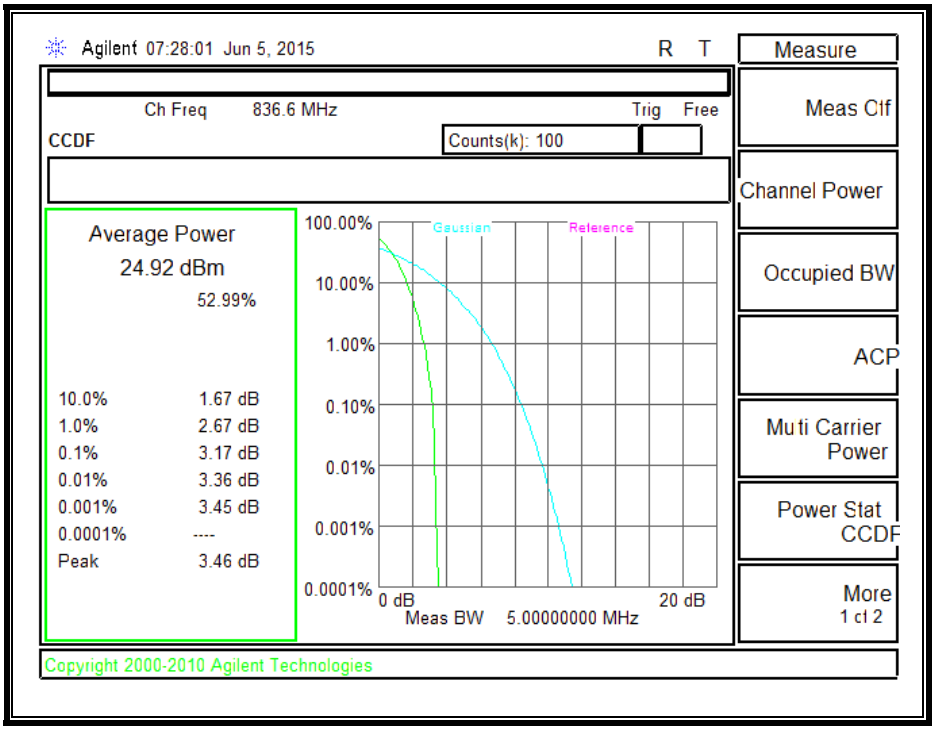
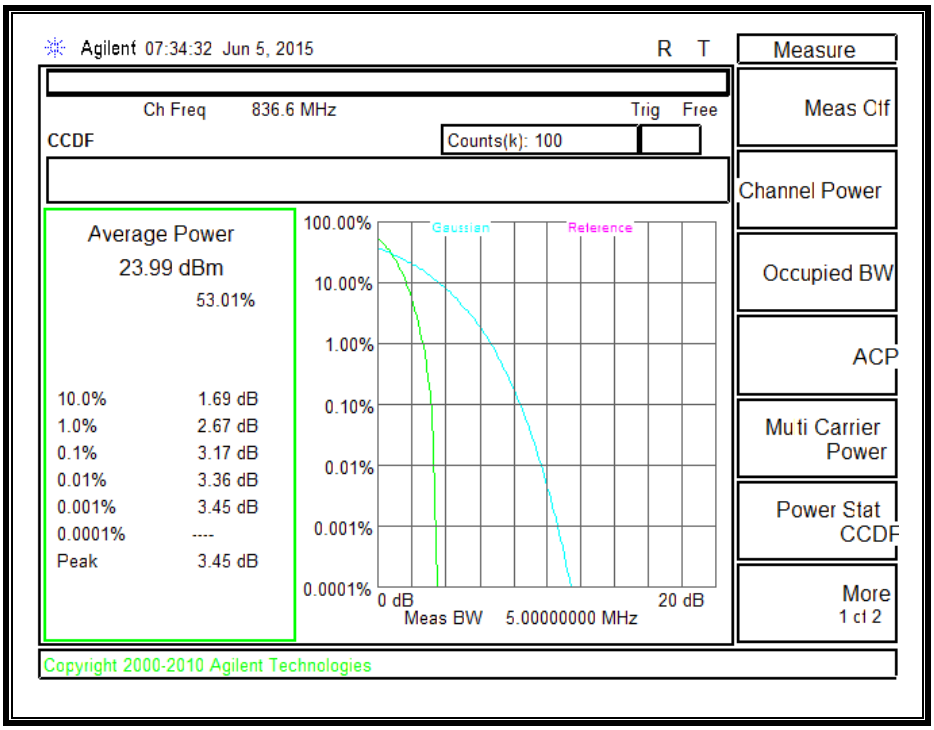
UMTS850, REL 99 BAND 5



UMTS 850, HSDPA BAND 5



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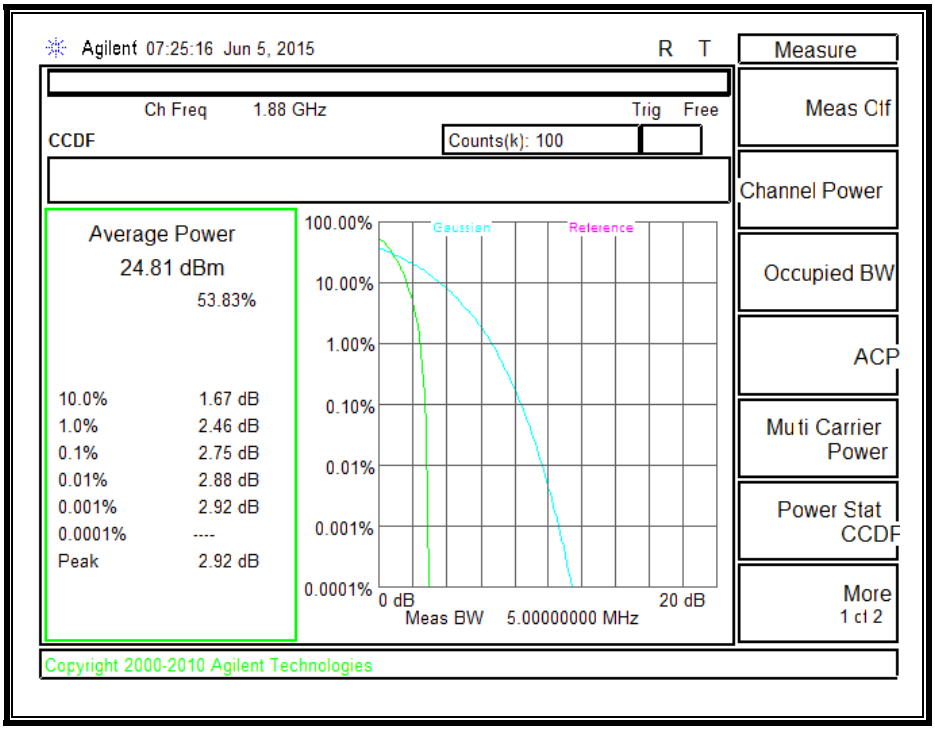
UMTS 1900, REL99 BAND 2



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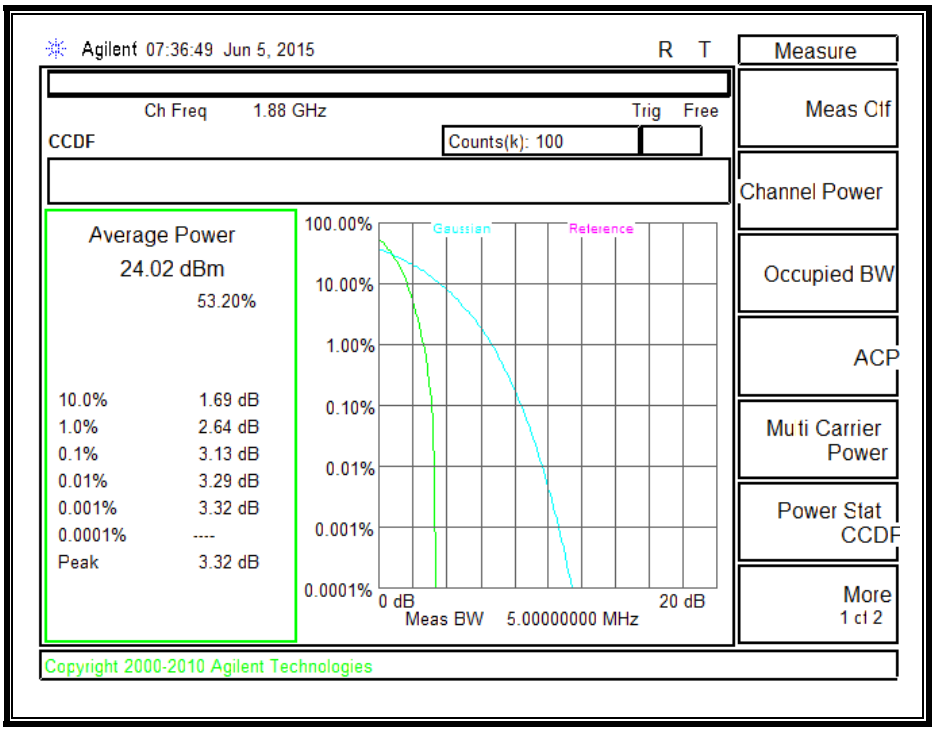

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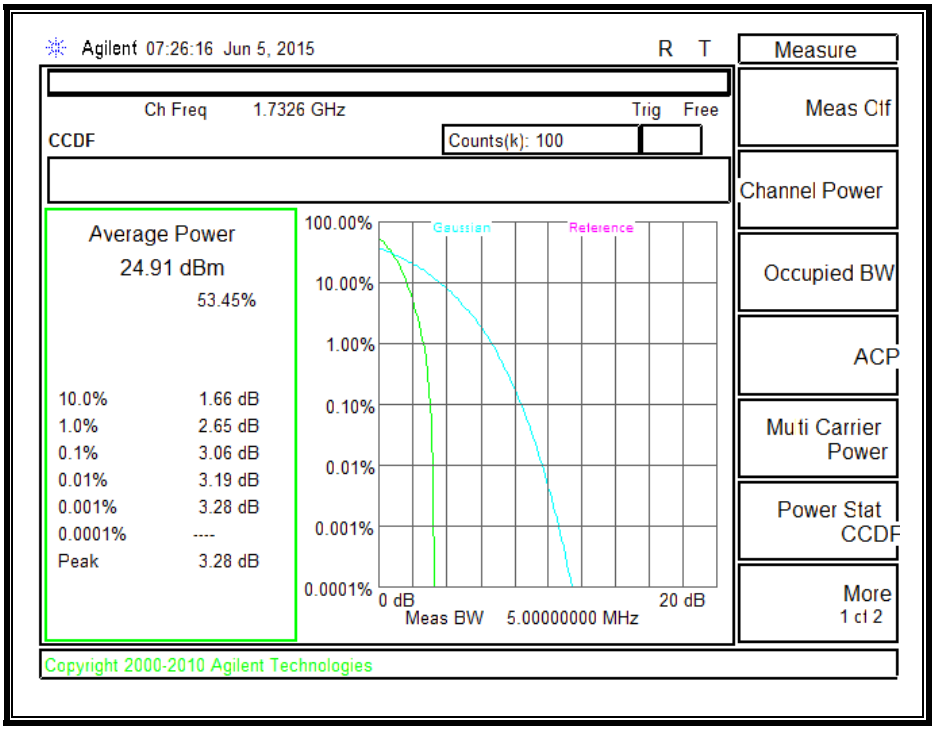
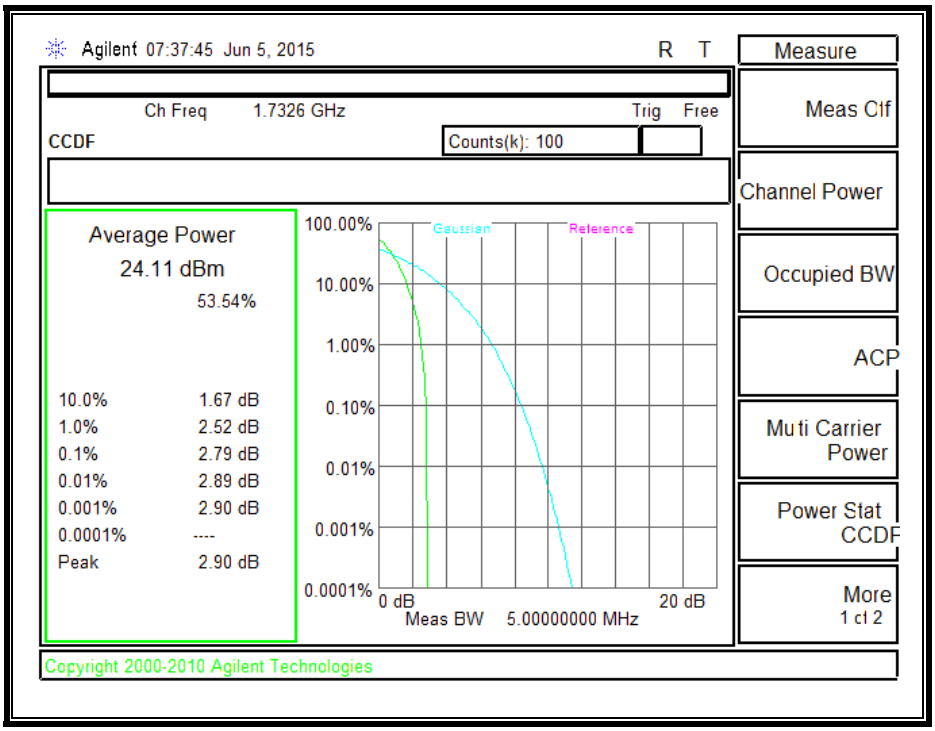
UMTS 1700, REL99 BAND 4



UMTS 1700, HSDPA BAND 4



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10.7. FIELD STRENGTH OF SPURIOUS RADIATION, MODEL: A1633 (LAT)

RULE PART(S)

FCC: §2.1053, §22.917, §24.238, §27.53 and §90.691.

LIMIT

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

§27.53 (h) For operations in the 1710–1755 MHz and 2110–2155 MHz bands, the power of any emission outside a licensee's frequency block shall be attenuated below the transmitter power (P) by at least 43 + 10 log10(P) dB

§90.691 Emission mask requirements for EA-based systems.

(a) Out-of-band emission requirement shall apply only to the “outer” channels included in an EA license and to spectrum adjacent to interior channels used by incumbent licensees. The emission limits are as follows:

(1) For any frequency removed from the EA licensee's frequency block by up to and including 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 116 Log10 (f/6.1) decibels or 50 + 10 Log10 (P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 12.5 kHz.

(2) For any frequency removed from the EA licensee's frequency block greater than 37.5 kHz, the power of any emission shall be attenuated below the transmitter power (P) in watts by at least 43 + 10Log10 (P) decibels or 80 decibels, whichever is the lesser attenuation, where f is the frequency removed from the center of the outer channel in the block in kilohertz and where f is greater than 37.5 kHz.

(b) When an emission outside of the authorized bandwidth causes harmful interference, the Commission may, at its discretion, require greater attenuation than specified in this section.

TEST PROCEDURE

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

For PCS equipment - Compliance with these rules is based on the use of measurement instrumentation employing a resolution bandwidth of 1 MHz or greater. However, in the 1 MHz bands immediately outside and adjacent to the frequency block a resolution bandwidth of at

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