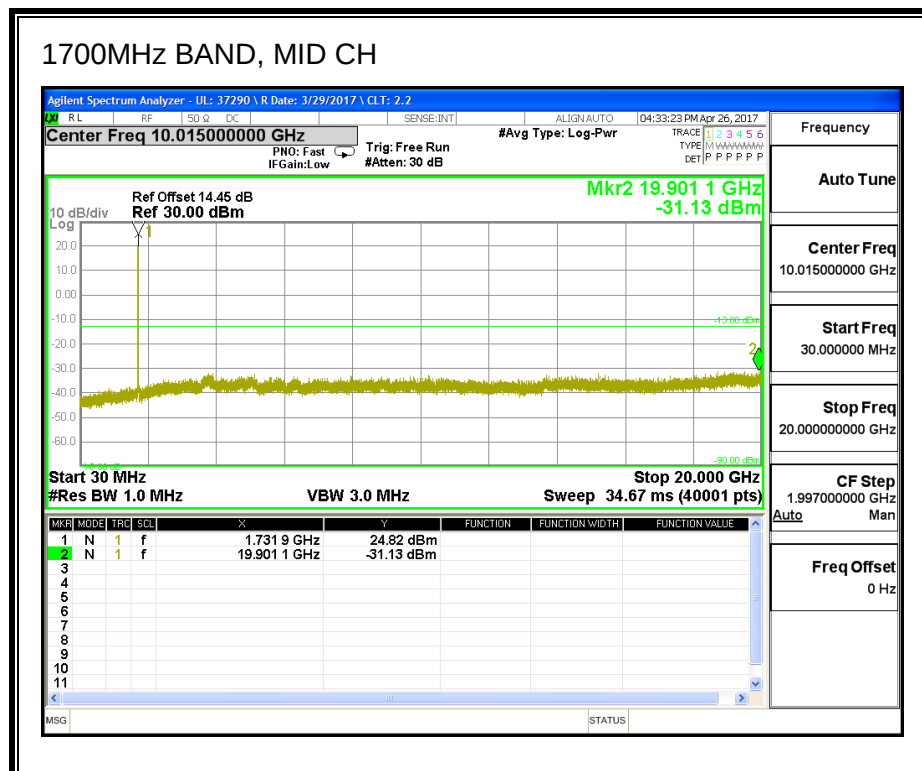
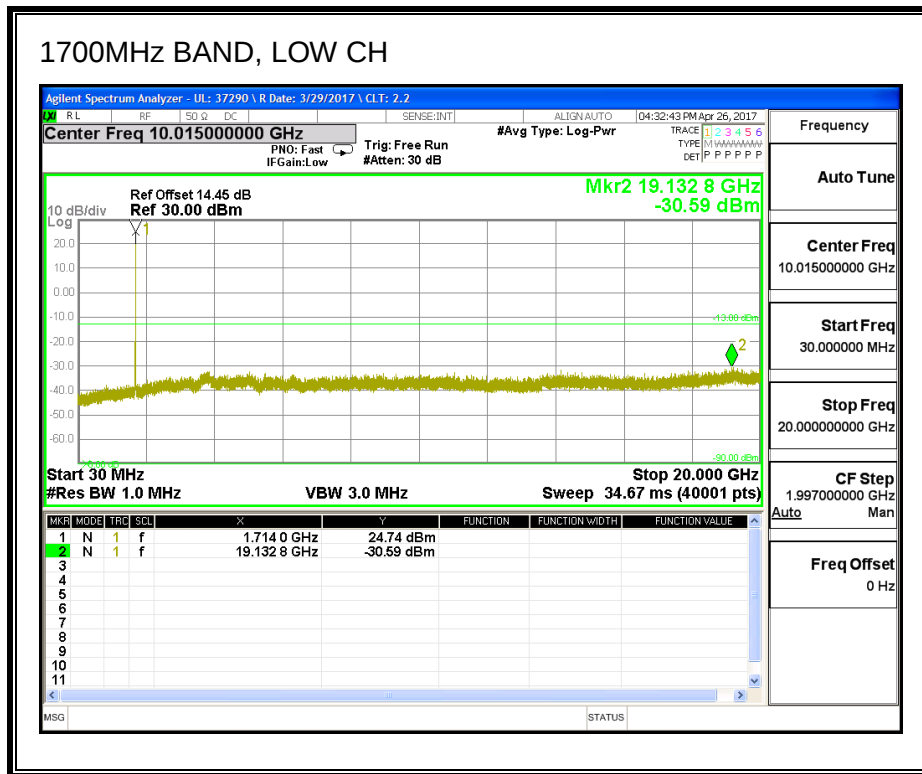
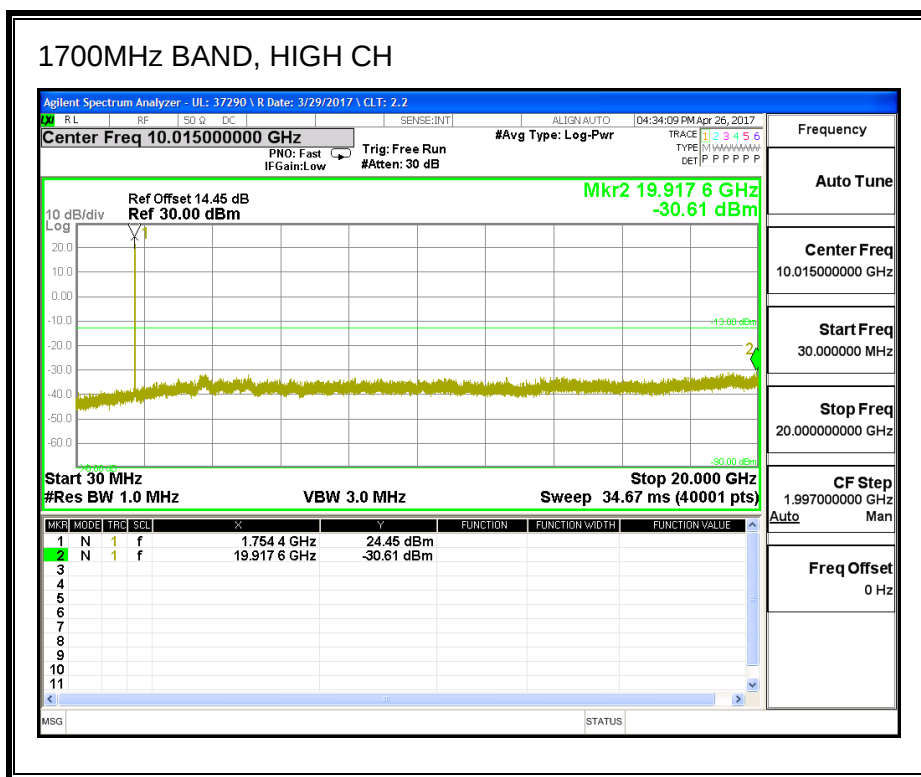






9. FREQUENCY STABILITY

RULE PART(S)

FCC: §2.1055, §22.355, §24.235, §27.54 and §90.213
IC: RSS132§5.3; RSS133§6.3 and RSS139§6.4

LIMITS

FCC §22.355

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

FCC §24.235 & §27.54

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

FCC §90.213

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

RSS132§5.3

The carrier frequency shall not depart from the reference frequency in excess of ± 2.5 SRSP for mobile stations and ± 1.5 ppm for base stations.

In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the occupied bandwidth stays within each of the sub-bands (see Section 5.1) when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS133§6.3

The carrier frequency shall not depart from the reference frequency, in excess of ± 2.5 ppm for mobile stations and ± 1.0 ppm for base stations.

In lieu of meeting the above stability values, the test report may show that the frequency stability is sufficient to ensure that the emission bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

RSS139§6.4

The frequency stability shall be sufficient to ensure that the occupied bandwidth stays within the operating frequency block when tested to the temperature and supply voltage variations specified in RSS-Gen.

TEST PROCEDURE

Use CMW 500 with Frequency Error measurement capability.

- Temp. = -30° to $+50^{\circ}\text{C}$
- Voltage = (85% - 115%)

Low voltage, 3.23VDC, Normal, 3.8VDC and High voltage, 4.37VDC.
End Voltage, 3.2VDC.

Frequency Stability vs Temperature:

The EUT is placed inside a temperature chamber. The temperature is set to 20°C and allowed to stabilize. After sufficient soak time, the transmitting frequency error is measured. The

temperature is increased by 10 degrees, allowed to stabilize and soak, and then the measurement is repeated. This is repeated until +50°C is reached.

Frequency Stability vs Voltage:

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

RESULTS

See the following pages.

9.1. GSM

ID:	29446	Date:	4/19/17
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GPRS 850MHz

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	824.0317	848.9663		
Extreme (50C)		824.0318	848.9663	26.4	0.03
Extreme (40C)		824.0318	848.9663	26.9	0.03
Extreme (30C)		824.0318	848.9663	27.2	0.03
Extreme (10C)		824.0318	848.9663	25.9	0.03
Extreme (0C)		824.0318	848.9663	21.2	0.03
Extreme (-10C)		824.0318	848.9663	18.8	0.02
Extreme (-20C)		824.0318	848.9663	18.5	0.02
Extreme (-30C)		824.0318	848.9663	20.8	0.02
20C	15%	824.0318	848.9663	18.6	0.02
	-15%	824.0318	848.9663	19.8	0.02
	End Point	824.0318	848.9663	19.2	0.02

ID:	29446	Date:	4/19/17
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GPRS 1900MHz

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1850.0300	1909.7585		
Extreme (50C)		1850.0301	1909.7585	24.1	0.01
Extreme (40C)		1850.0301	1909.7585	25.3	0.01
Extreme (30C)		1850.0301	1909.7585	23.7	0.01
Extreme (10C)		1850.0301	1909.7585	22.0	0.01
Extreme (0C)		1850.0301	1909.7585	21.2	0.01
Extreme (-10C)		1850.0301	1909.7585	25.7	0.01
Extreme (-20C)		1850.0301	1909.7585	22.0	0.01
Extreme (-30C)		1850.0301	1909.7585	23.7	0.01
20C	15%	1850.0301	1909.7585	27.7	0.01
	-15%	1850.0301	1909.7585	22.7	0.01
	End Point	1850.0301	1909.7585	20.1	0.01

9.2. CDMA2000

ID:	29446	Date:	4/19/17
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CDMA 1xRTT BC0

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	824.0271	848.9838		
Extreme (50C)		824.0271	848.9838	-4.3	-0.01
Extreme (40C)		824.0271	848.9838	-4.5	-0.01
Extreme (30C)		824.0271	848.9838	-4.2	0.00
Extreme (10C)		824.0271	848.9838	-3.1	0.00
Extreme (0C)		824.0271	848.9838	2.7	0.00
Extreme (-10C)		824.0271	848.9838	3.2	0.00
Extreme (-20C)		824.0271	848.9838	4.0	0.00
Extreme (-30C)		824.0271	848.9838	4.0	0.00
20C	15%	824.0271	848.9838	-4.3	-0.01
	-15%	824.0271	848.9838	-3.7	0.00
	End Point	824.0271	848.9838	-3.4	0.00

ID:	29446	Date:	4/19/17
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CDMA 1x RTT BC1

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1850.5263	1909.4738		
Extreme (50C)		1850.5263	1909.4738	13.4	0.01
Extreme (40C)		1850.5263	1909.4738	14.4	0.01
Extreme (30C)		1850.5263	1909.4738	14.1	0.01
Extreme (10C)		1850.5263	1909.4738	15.4	0.01
Extreme (0C)		1850.5263	1909.4738	18.5	0.01
Extreme (-10C)		1850.5263	1909.4738	18.9	0.01
Extreme (-20C)		1850.5263	1909.4738	19.3	0.01
Extreme (-30C)		1850.5263	1909.4738	19.5	0.01
20C	15%	1850.5263	1909.4738	14.1	0.01
	-15%	1850.5263	1909.4738	14.1	0.01
	End Point	1850.5263	1909.4738	14.3	0.01

ID:	29446	Date:	4/19/17
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CDMA 1xRTT BC10

Limit		816.35	823.65	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	816.5760	823.4272		
Extreme (50C)		816.5760	823.4272	-4.1	-0.01
Extreme (40C)		816.5760	823.4272	-4.0	0.00
Extreme (30C)		816.5760	823.4272	-3.8	0.00
Extreme (10C)		816.5760	823.4272	-3.5	0.00
Extreme (0C)		816.5760	823.4272	3.2	0.00
Extreme (-10C)		816.5760	823.4272	3.5	0.00
Extreme (-20C)		816.5760	823.4272	4.0	0.00
Extreme (-30C)		816.5760	823.4272	4.3	0.01
20C	15%	816.5760	823.4272	-3.7	0.00
	-15%	816.5760	823.4272	-3.7	0.00
	End Point	816.5760	823.4272	-3.3	0.00

9.3. UMTS

ID:	29446	Date:	4/19/17
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UMTS REL99 BAND 5

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	824.0952	848.9133		
Extreme (50C)		824.0952	848.9133	3.8	0.00
Extreme (40C)		824.0952	848.9133	3.4	0.00
Extreme (30C)		824.0952	848.9133	-2.5	0.00
Extreme (10C)		824.0952	848.9133	-3.2	0.00
Extreme (0C)		824.0952	848.9133	-4.1	0.00
Extreme (-10C)		824.0952	848.9133	-4.9	-0.01
Extreme (-20C)		824.0952	848.9133	-5.1	-0.01
Extreme (-30C)		824.0952	848.9133	-4.5	-0.01
20C	15%	824.0952	848.9133	-2.3	0.00
	-15%	824.0952	848.9133	-2.2	0.00
	End Point	824.0952	848.9133	-2.8	0.00

ID:	29446	Date:	4/19/17
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UMTS REL99 BAND 2

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1850.0934	1909.9066		
Extreme (50C)		1850.0934	1909.9066	19.2	0.01
Extreme (40C)		1850.0934	1909.9066	18.2	0.01
Extreme (30C)		1850.0934	1909.9066	15.3	0.01
Extreme (10C)		1850.0934	1909.9066	11.4	0.01
Extreme (0C)		1850.0934	1909.9066	11.9	0.01
Extreme (-10C)		1850.0934	1909.9066	10.2	0.01
Extreme (-20C)		1850.0934	1909.9066	10.4	0.01
Extreme (-30C)		1850.0934	1909.9066	11.4	0.01
20C	15%	1850.0934	1909.9066	14.1	0.01
	-15%	1850.0934	1909.9066	13.9	0.01
	End Point	1850.0934	1909.9066	13.8	0.01

ID:	38602	Date:	4/25/17
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UMTS REL99 BAND 4

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1710.0989	1754.9145		
Extreme (50C)		1710.0989	1754.9145	-6.0	0.00
Extreme (40C)		1710.0989	1754.9145	-5.4	0.00
Extreme (30C)		1710.0989	1754.9145	-5.8	0.00
Extreme (10C)		1710.0989	1754.9145	-6.0	0.00
Extreme (0C)		1710.0989	1754.9145	-4.8	0.00
Extreme (-10C)		1710.0989	1754.9145	-4.4	0.00
Extreme (-20C)		1710.0989	1754.9145	-4.8	0.00
Extreme (-30C)		1710.0989	1754.9145	-5.8	0.00
20C	15%	1710.0989	1754.9145	-6.3	0.00
	-15%	1710.0989	1754.9145	-5.7	0.00
	End Point	1710.0989	1754.9145	-5.4	0.00

10. PEAK-TO-AVERAGE RATIO

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

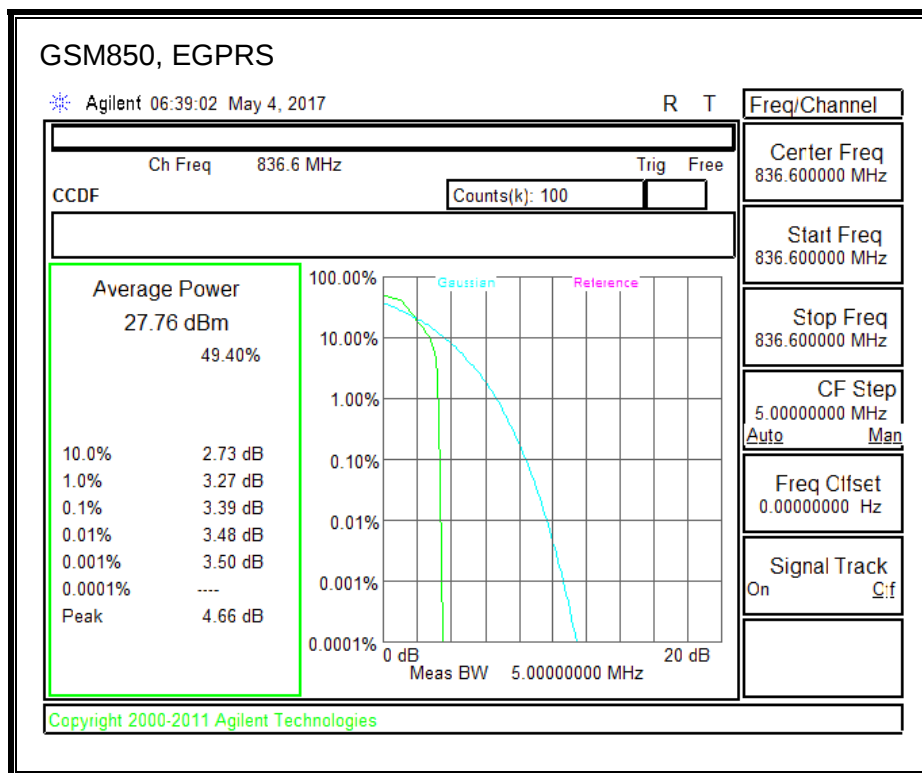
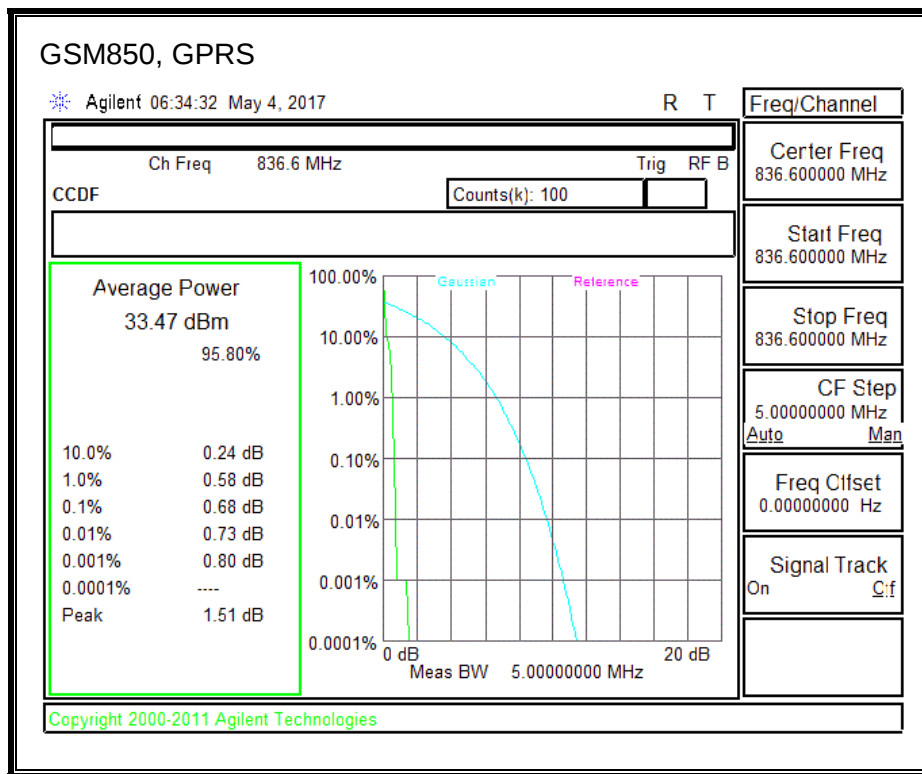
RESULT

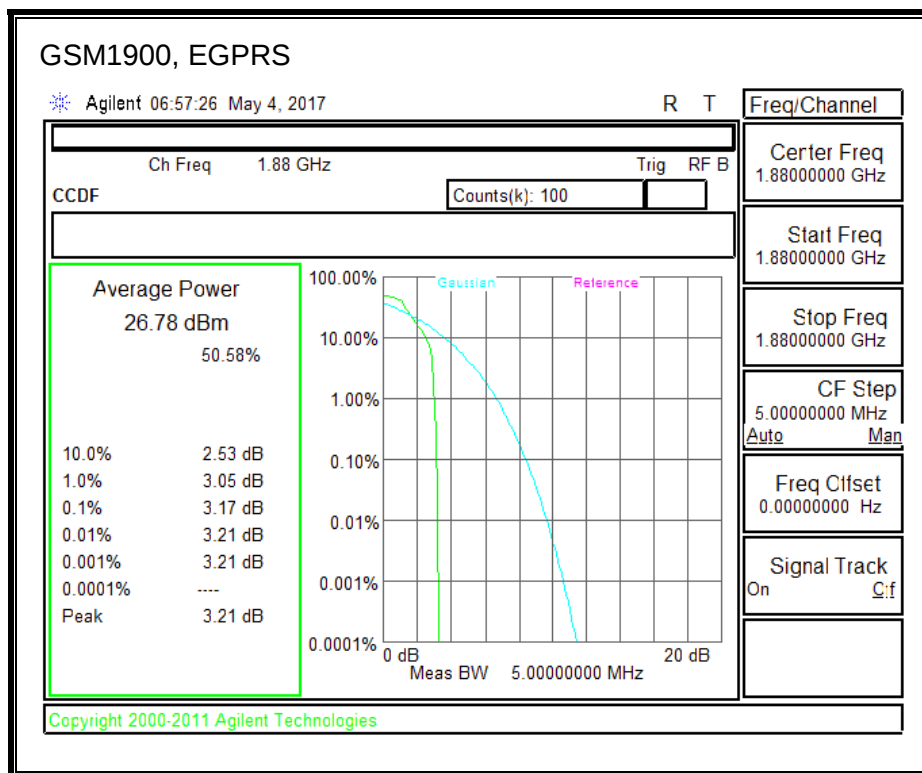
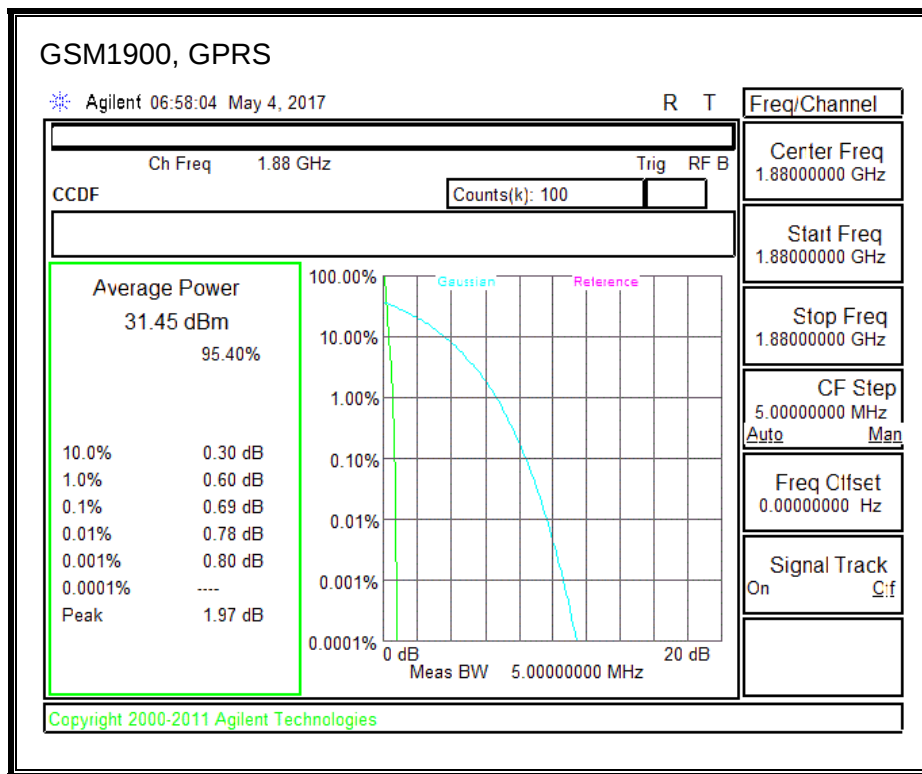
LAT 1 antenna was used to measure as the worst case. The results from all CCDF plots are passed with 13dB peak-to-average ratio criteria.

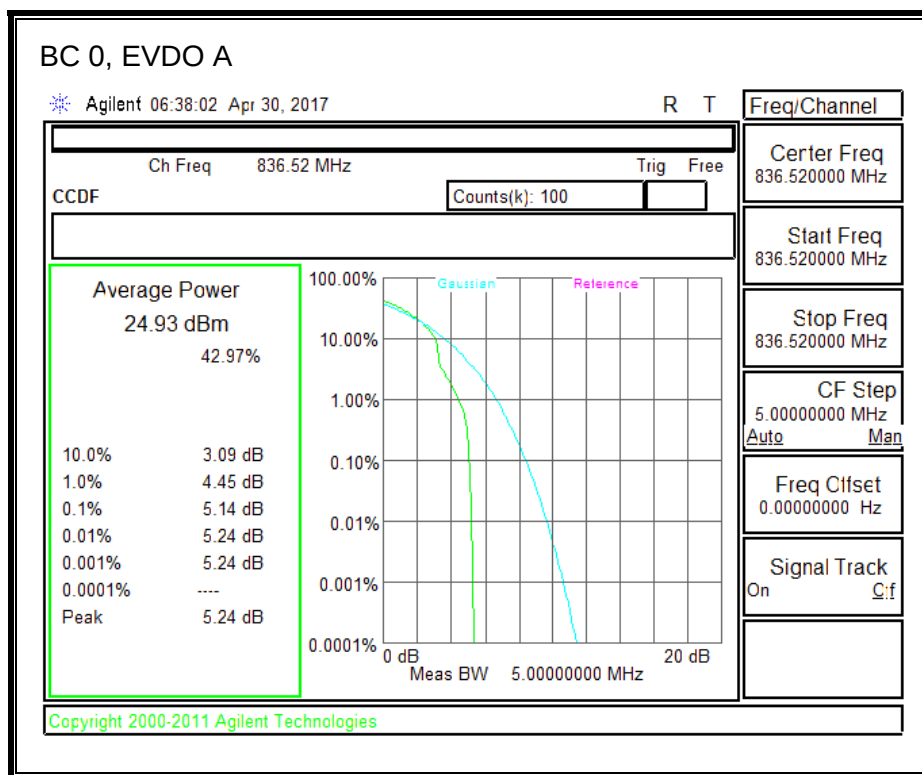
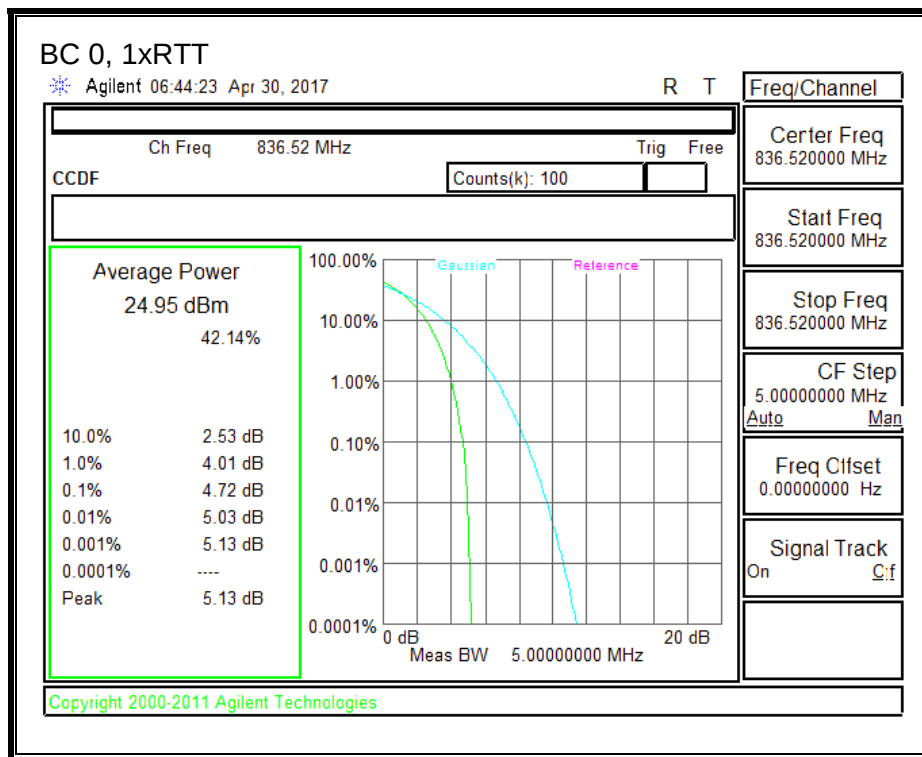
Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio
		*Peak	Average	
GSM850	GPRS	34.15	33.47	0.68
	EGPRS	31.15	27.76	3.39
GSM1900	GPRS	32.14	31.45	0.69
	EGPRS	29.95	26.78	3.17
*Peak Reading = Average Reading + Peak - to - Average Ratio				

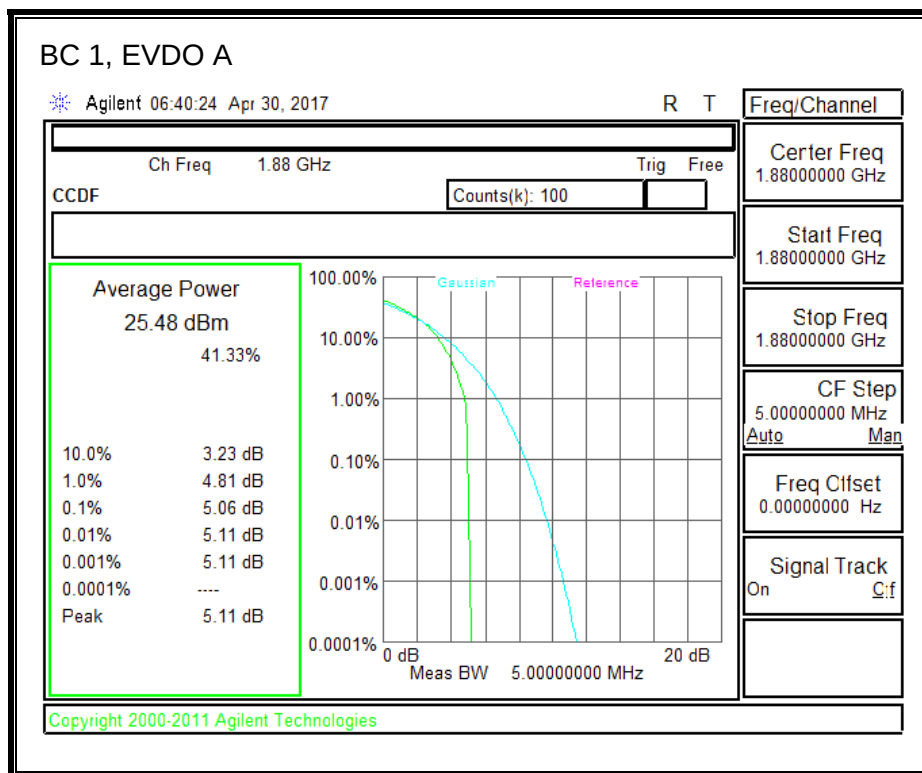
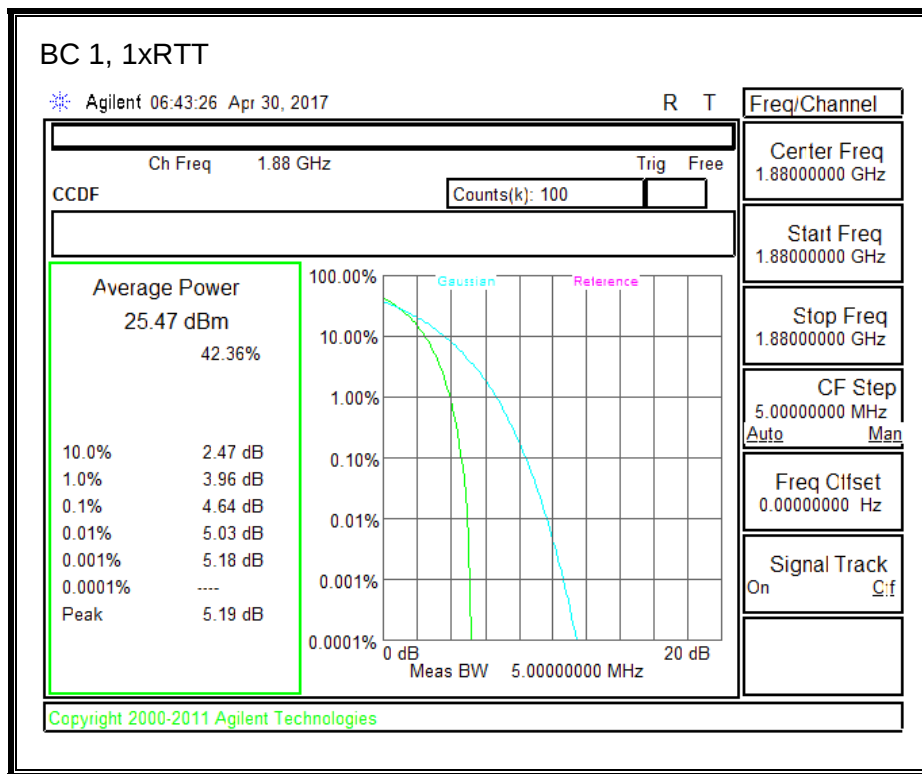
Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio
		*Peak	Average	
CDMA2000 BC0	1xRTT	29.67	24.95	4.72
	EVDO A	30.07	24.93	5.14
CDMA2000 BC1	1xRTT	30.11	25.47	4.64
	EVDO A	30.54	25.48	5.06
CDMA2000 BC10	1xRTT	29.65	24.96	4.69
	EVDO A	30.16	25.00	5.16
*Peak Reading = Average Reading + Peak - to - Average Ratio				

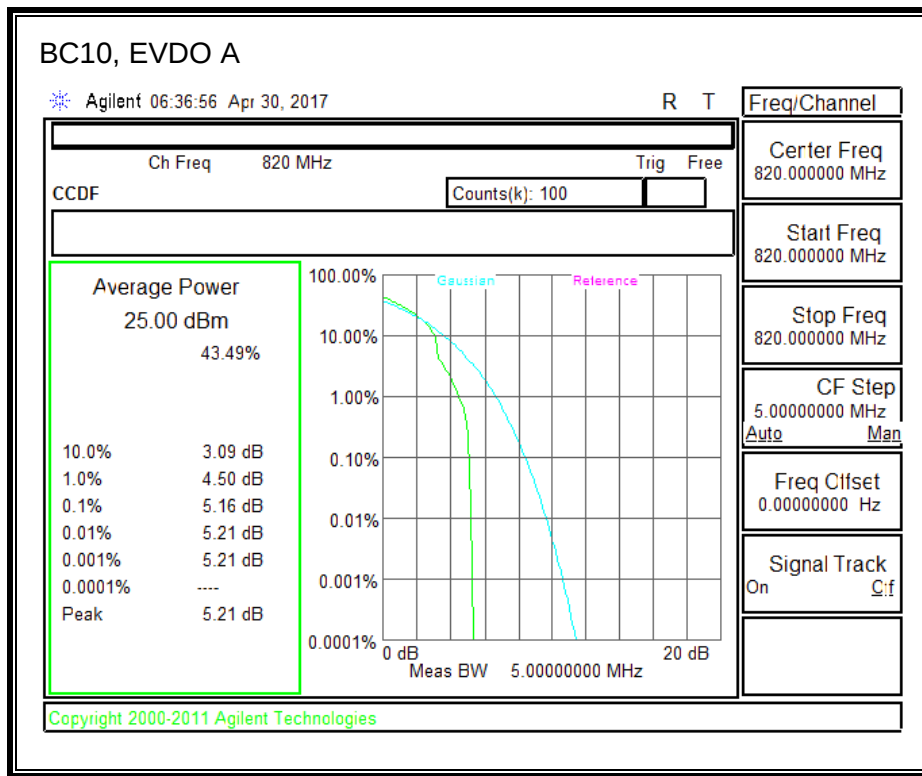
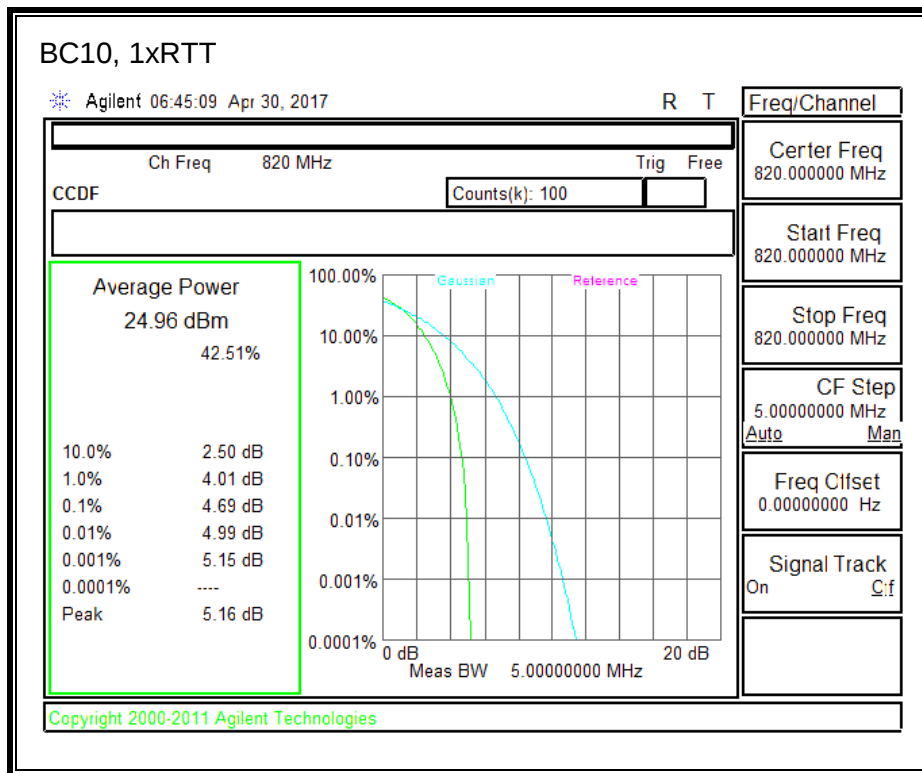
Mode	Modulation	Conducted Power (dBm)		Peak-to-Average Ratio
		*Peak	Average	
UMTS Band 5	REL99	27.73	24.67	3.06
	HSDPA	27.78	24.63	3.15
UMTS Band 2	REL99	28.33	25.29	3.04
	HSDPA	28.29	25.14	3.15
UMTS Band 4	REL99	28.27	25.24	3.03
	HSDPA	28.37	25.17	3.20
*Peak Reading = Average Reading + Peak - to - Average Ratio				

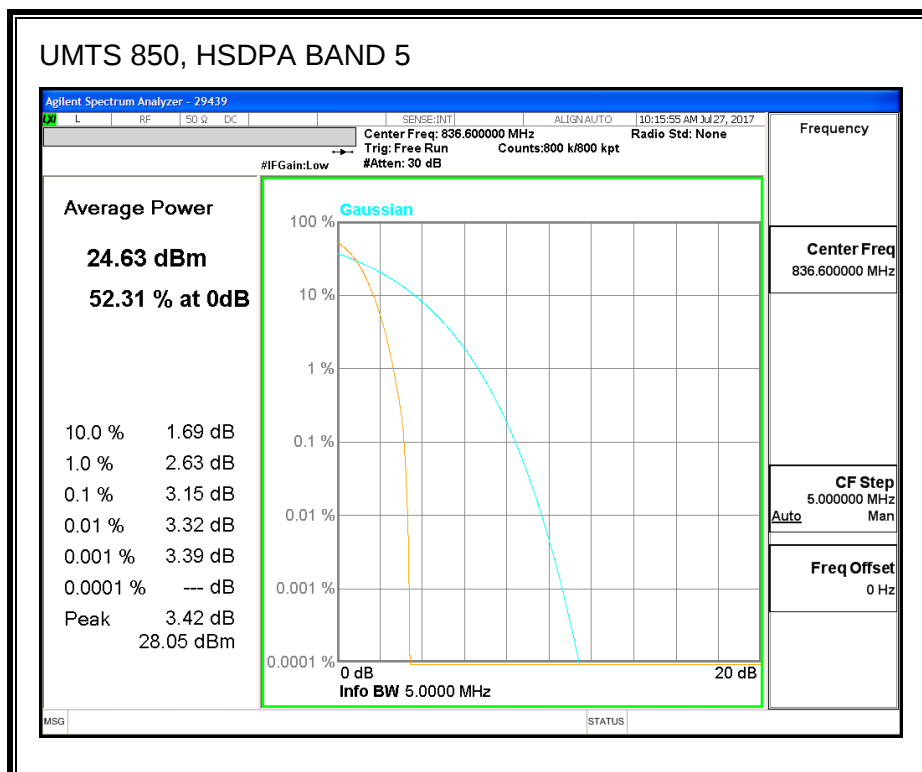
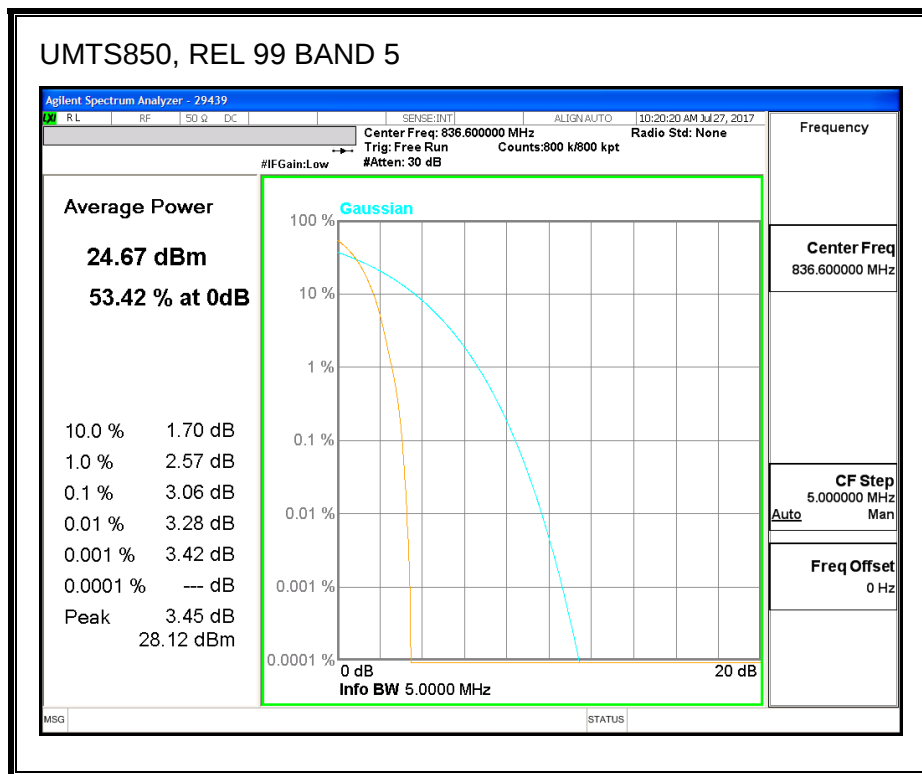


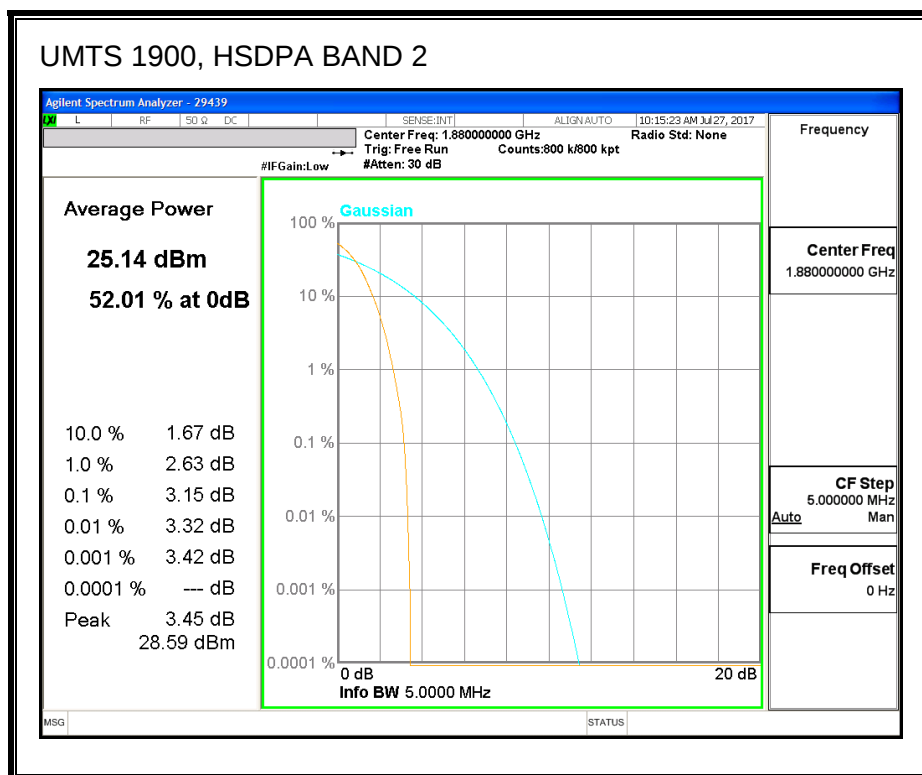
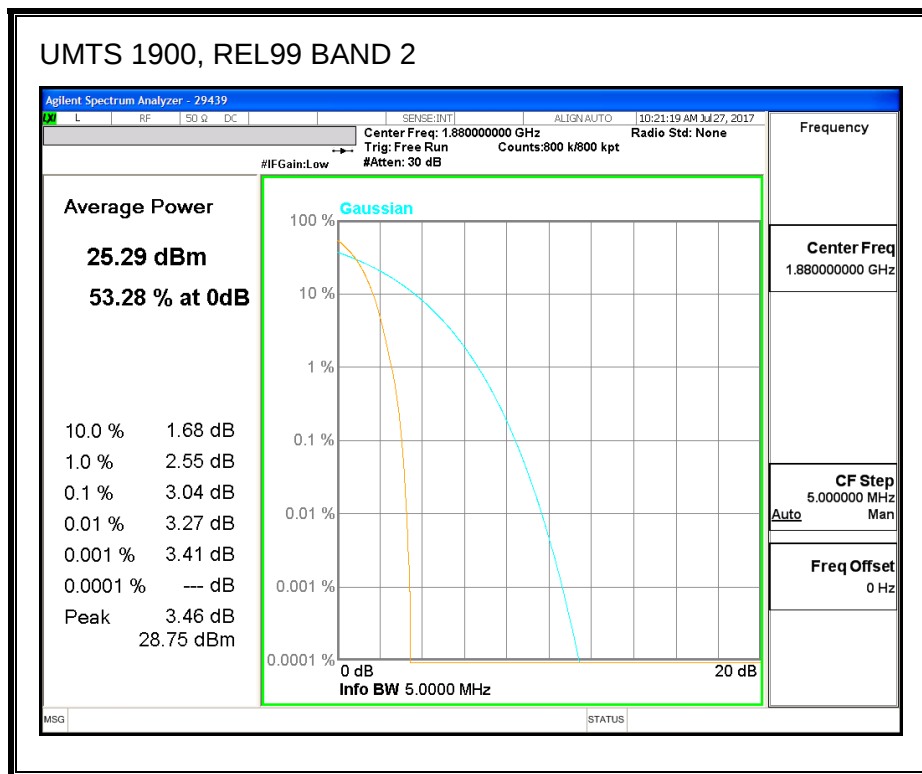


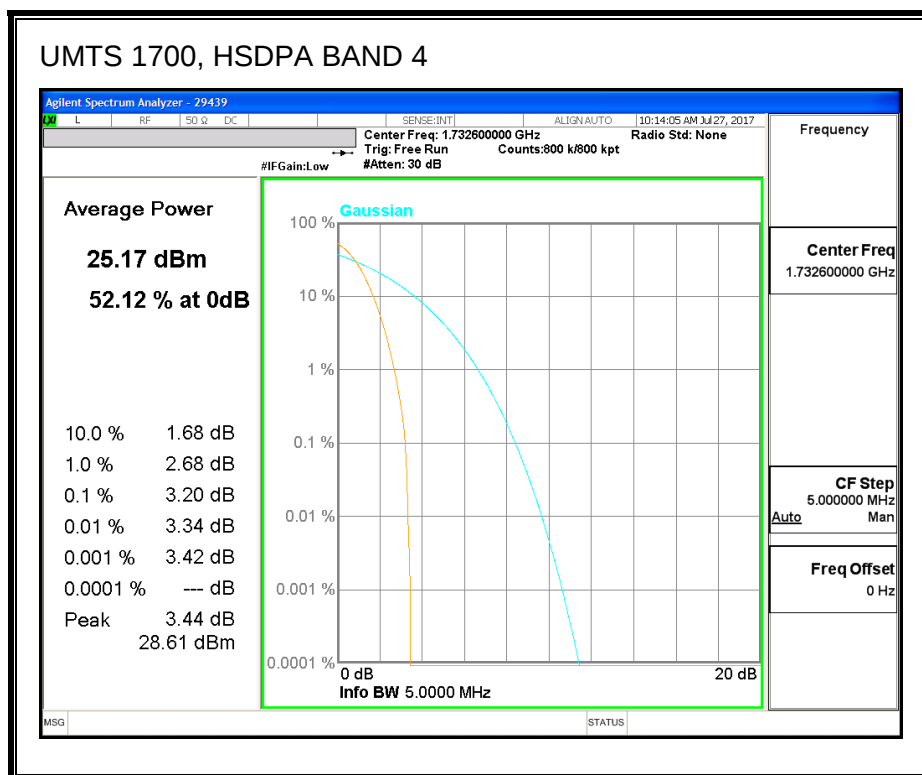
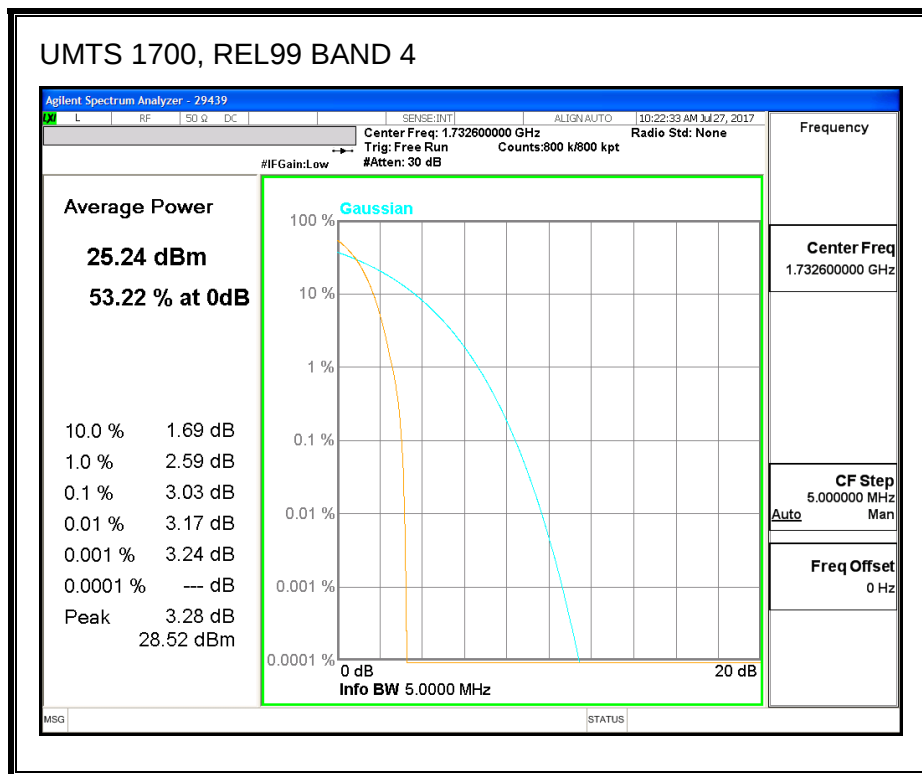












11. RADIATED TEST RESULTS

11.1. FIELD STRENGTH OF SPURIOUS RADIATION, LAT 1

RULE PART(S)

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

IC: RSS132§5.5; RSS133§6.5 and RSS139§6.6

LIMIT

FCC: §22.917, §24.238, §27.53

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.

FCC: §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 $116 \log_{10} (f/6.1)$ decibels or $50 + 10 \log_{10} (P)$ 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 $43 + 10 \log_{10} (P)$ 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.

RSS132§5.5

Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

In the first 1.0 MHz band immediately outside and adjacent to each of the sub-bands specified in Section 5.1, the power of emissions per any 1% of the occupied bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).

After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any 100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the occupied bandwidth, power integration over 100 kHz is required.

RSS133§6.5

Equipment shall comply with the limits in (i) and (ii) below.

(i) In the 1.0 MHz bands immediately outside and adjacent to the equipment's operating frequency block, the emission power per any 1% of the emission bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts).

(ii) After the first 1.0 MHz, the emission power in any 1 MHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least $43 + 10 \log_{10} p$ (watts). If the measurement is performed using 1% of the emission bandwidth, power integration over 1.0 MHz is required.

RSS139§6.6

(i) In the first 1.0 MHz bands immediately outside and adjacent to the equipment's smallest operating frequency block, Footnote 2 which can contain the equipment's occupied bandwidth, the emission power per any 1% of the emission bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.

(ii) After the first 1.0 MHz outside the equipment's smallest operating frequency block, which can contain the equipment's occupied bandwidth, the emission power in any 1 MHz bandwidth shall be attenuated below the transmitter output power P (in dBW) by at least $43 + 10 \log_{10} p$ (watts) dB.

TEST PROCEDURE

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

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

MODES TESTED

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

RESULTS

11.1.1. GSM

GPRS, 850MHz

High Frequency Substitution Measurement UL Fremont Radiated Chamber											
Company: Project #: Date: 04/05/17 Test Engineer: 39004 Configuration: EUT only Mode: GPRS 850MHz											
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable											
Chamber 3m Chamber E		Pre-amplifier 3m Chamber E		Filter Filter		Limit EIRP					
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes	
Low Channel (824.2MHz)											
1.65	-56.9	H	3.0	-14.5	37.8	1.0	-51.3	-13.0	-38.3		
2.47	-63.3	H	3.0	-18.3	38.5	1.0	-55.7	-13.0	-42.7		
3.30	-63.6	H	3.0	-14.7	38.5	1.0	-52.2	-13.0	-39.2		
1.65	-54.5	V	3.0	-12.4	37.8	1.0	-49.2	-13.0	-36.2		
2.47	-63.7	V	3.0	-18.6	38.5	1.0	-56.0	-13.0	-43.0		
3.30	-63.9	V	3.0	-15.2	38.5	1.0	-52.7	-13.0	-39.7		
Mid Channel (836.6MHz)											
1.67	-57.9	H	3.0	-15.4	37.8	1.0	-52.2	-13.0	-39.2		
2.51	-58.5	H	3.0	-13.3	38.6	1.0	-50.9	-13.0	-37.9		
3.35	-63.8	H	3.0	-14.7	38.5	1.0	-52.2	-13.0	-39.2		
1.67	-55.3	V	3.0	-13.1	37.8	1.0	-49.9	-13.0	-36.9		
2.51	-59.9	V	3.0	-14.5	38.6	1.0	-52.1	-13.0	-39.1		
3.35	-63.7	V	3.0	-14.8	38.5	1.0	-52.3	-13.0	-39.3		
High Channel (848.8MHz)											
1.70	-57.8	H	3.0	-15.3	37.9	1.0	-52.1	-13.0	-39.1		
2.55	-56.5	H	3.0	-11.0	38.6	1.0	-48.6	-13.0	-35.6		
3.40	-64.4	H	3.0	-15.1	38.5	1.0	-52.7	-13.0	-39.7		
1.70	-53.7	V	3.0	-11.3	37.9	1.0	-48.1	-13.0	-35.1		
2.55	-55.9	V	3.0	-10.3	38.6	1.0	-47.8	-13.0	-34.8		
3.40	-64.3	V	3.0	-15.3	38.5	1.0	-52.8	-13.0	-39.8		
Rev. 03.19.15											

EGPRS, 850MHz

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/05/17
Test Engineer: 39004
Configuration: EUT only
Mode: EGPRS 850MHz

Test Equipment:
 Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
 3m Chamber E

Pre-amplifier
 3m Chamber E

Filter
 Filter

Limit
 EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)										
1.65	-57.3	H	3.0	-14.9	37.8	1.0	-51.7	-13.0	-38.7	
2.47	-63.9	H	3.0	-18.9	38.5	1.0	-56.3	-13.0	-43.3	
3.30	-63.7	H	3.0	-14.8	38.5	1.0	-52.2	-13.0	-39.2	
1.65	-55.9	V	3.0	-13.7	37.8	1.0	-50.6	-13.0	-37.6	
2.47	-63.9	V	3.0	-18.8	38.5	1.0	-56.2	-13.0	-43.2	
3.30	-63.7	V	3.0	-15.0	38.5	1.0	-52.5	-13.0	-39.5	
Mid Channel (836.6MHz)										
1.67	-57.2	H	3.0	-14.7	37.8	1.0	-51.6	-13.0	-38.6	
2.51	-59.4	H	3.0	-14.2	38.6	1.0	-51.8	-13.0	-38.8	
3.35	-63.4	H	3.0	-14.4	38.5	1.0	-51.9	-13.0	-38.9	
1.67	-51.2	V	3.0	-9.0	37.8	1.0	-45.8	-13.0	-32.8	
2.51	-60.5	V	3.0	-15.1	38.6	1.0	-52.7	-13.0	-39.7	
3.35	-64.3	V	3.0	-15.4	38.5	1.0	-52.9	-13.0	-39.9	
High Channel (848.8MHz)										
1.70	-58.3	H	3.0	-15.7	37.9	1.0	-52.6	-13.0	-39.6	
2.55	-57.2	H	3.0	-11.7	38.6	1.0	-49.3	-13.0	-36.3	
3.40	-64.4	H	3.0	-15.2	38.5	1.0	-52.7	-13.0	-39.7	
1.70	-54.8	V	3.0	-12.4	37.9	1.0	-49.3	-13.0	-36.3	
2.55	-56.3	V	3.0	-10.7	38.6	1.0	-48.3	-13.0	-35.3	
3.40	-64.4	V	3.0	-15.4	38.5	1.0	-52.9	-13.0	-39.9	

Rev. 03.19.15

GPRS, 1900MHz

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/17 Test Engineer: 39004 Configuration: EUT only Mode: GPRS 1900MHz										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber E		3m Chamber E		Filter		EIRP				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)										
3.70	-56.5	H	3.0	-6.5	38.6	1.0	-44.2	-13.0	-31.2	
5.55	-61.5	H	3.0	-7.5	38.6	1.0	-45.0	-13.0	-32.0	
7.40	-64.3	H	3.0	-6.6	37.8	1.0	-43.4	-13.0	-30.4	
3.70	-57.8	V	3.0	-7.9	38.6	1.0	-45.5	-13.0	-32.5	
5.55	-61.0	V	3.0	-7.3	38.6	1.0	-44.8	-13.0	-31.8	
7.40	-63.8	V	3.0	-6.3	37.8	1.0	-43.1	-13.0	-30.1	
Mid Channel (1880.0)										
3.76	-56.0	H	3.0	-5.9	38.6	1.0	-43.5	-13.0	-30.5	
5.64	-61.0	H	3.0	-6.8	38.5	1.0	-44.3	-13.0	-31.3	
7.52	-63.8	H	3.0	-6.0	37.7	1.0	-42.7	-13.0	-29.7	
3.76	-57.6	V	3.0	-7.5	38.6	1.0	-45.1	-13.0	-32.1	
5.64	-60.7	V	3.0	-6.8	38.5	1.0	-44.3	-13.0	-31.3	
7.52	-63.8	V	3.0	-6.2	37.7	1.0	-42.9	-13.0	-29.9	
High Channel (1909.8MHz)										
3.82	-58.0	H	3.0	-7.7	38.7	1.0	-45.4	-13.0	-32.4	
5.73	-60.8	H	3.0	-6.4	38.5	1.0	-43.9	-13.0	-30.9	
7.54	-63.6	H	3.0	-5.8	37.7	1.0	-42.5	-13.0	-29.5	
3.82	-59.0	V	3.0	-8.8	38.7	1.0	-46.4	-13.0	-33.4	
5.73	-61.1	V	3.0	-7.0	38.5	1.0	-44.5	-13.0	-31.5	
7.54	-64.3	V	3.0	-6.7	37.7	1.0	-43.4	-13.0	-30.4	
Rev. 03.19.15										

EGPRS, 1900MHz

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/05/17 Test Engineer: 39004 Configuration: EUT only Mode: EGPRS 1900MHz										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber E		3m Chamber E		Filter		EIRP				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)										
3.70	-59.1	H	3.0	-9.1	38.6	1.0	-46.8	-13.0	-33.8	
5.55	-62.2	H	3.0	-8.2	38.6	1.0	-45.7	-13.0	-32.7	
7.40	-64.8	H	3.0	-7.1	37.8	1.0	-43.9	-13.0	-30.9	
3.70	-59.0	V	3.0	-9.1	38.6	1.0	-46.7	-13.0	-33.7	
5.55	-60.9	V	3.0	-7.2	38.6	1.0	-44.7	-13.0	-31.7	
7.40	-63.9	V	3.0	-6.4	37.8	1.0	-43.3	-13.0	-30.3	
Mid Channel (1880.0)										
3.76	-57.9	H	3.0	-7.8	38.6	1.0	-45.4	-13.0	-32.4	
5.64	-60.8	H	3.0	-6.6	38.5	1.0	-44.1	-13.0	-31.1	
7.52	-64.8	H	3.0	-7.0	37.7	1.0	-43.7	-13.0	-30.7	
3.76	-57.5	V	3.0	-7.4	38.6	1.0	-45.1	-13.0	-32.1	
5.64	-61.0	V	3.0	-7.1	38.5	1.0	-44.6	-13.0	-31.6	
7.52	-63.6	V	3.0	-6.0	37.7	1.0	-42.7	-13.0	-29.7	
High Channel (1909.8MHz)										
3.82	-58.7	H	3.0	-8.4	38.7	1.0	-46.1	-13.0	-33.1	
5.73	-61.2	H	3.0	-6.8	38.5	1.0	-44.3	-13.0	-31.3	
7.54	-63.7	H	3.0	-5.9	37.7	1.0	-42.6	-13.0	-29.6	
3.82	-58.8	V	3.0	-8.5	38.7	1.0	-46.2	-13.0	-33.2	
5.73	-61.6	V	3.0	-7.5	38.5	1.0	-45.0	-13.0	-32.0	
7.54	-64.0	V	3.0	-6.3	37.7	1.0	-43.1	-13.0	-30.1	
Rev. 03.19.15										

11.1.2. CDMA2000

CDMA2000 1xRTT, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/06/17
Test Engineer: 39004
Configuration: EUT Only
Mode: 1xRTT 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
 3m Chamber E

Pre-amplifier
 3m Chamber E

Filter
 Filter

Limit
 EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)										
1.65	-63.6	H	3.0	-21.2	37.8	1.0	-58.0	-13.0	-45.0	
2.47	-63.5	H	3.0	-18.5	38.5	1.0	-55.9	-13.0	-42.9	
3.30	-63.7	H	3.0	-14.7	38.5	1.0	-52.2	-13.0	-39.2	
1.65	-63.5	V	3.0	-21.3	37.8	1.0	-58.2	-13.0	-45.2	
2.47	-63.7	V	3.0	-18.5	38.5	1.0	-56.0	-13.0	-43.0	
3.30	-62.2	V	3.0	-13.5	38.5	1.0	-51.0	-13.0	-38.0	
Mid Channel (836.52MHz)										
1.67	-65.4	H	3.0	-22.9	37.8	1.0	-59.7	-13.0	-46.7	
2.51	-63.9	H	3.0	-18.7	38.6	1.0	-56.2	-13.0	-43.2	
3.35	-65.4	H	3.0	-16.3	38.5	1.0	-53.8	-13.0	-40.8	
1.67	-64.8	V	3.0	-22.5	37.8	1.0	-59.4	-13.0	-46.4	
2.51	-64.2	V	3.0	-18.8	38.6	1.0	-56.4	-13.0	-43.4	
3.35	-65.3	V	3.0	-16.4	38.5	1.0	-53.9	-13.0	-40.9	
High Channel (848.31MHz)										
1.70	-62.5	H	3.0	-19.9	37.9	1.0	-56.8	-13.0	-43.8	
2.54	-63.7	H	3.0	-18.3	38.6	1.0	-55.8	-13.0	-42.8	
3.39	-66.5	H	3.0	-17.3	38.5	1.0	-54.8	-13.0	-41.8	
1.70	-62.9	V	3.0	-20.5	37.9	1.0	-57.3	-13.0	-44.3	
2.54	-62.8	V	3.0	-17.3	38.6	1.0	-54.9	-13.0	-41.9	
3.39	-65.2	V	3.0	-16.2	38.5	1.0	-53.7	-13.0	-40.7	

Rev. 03.19.15

EVDO-Rev A, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #: 11708541
Date: 06/13/17
Test Engineer: 31300
Configuration: EUT only
Mode: Rev 0/A 850MHz

Test Equipment:
 Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
 3m Chamber E

Pre-amplifier
 3m Chamber E

Filter
 Filter

Limit
 EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)										
1.65	-67.0	H	3.0	-24.5	37.8	1.0	-61.4	-13.0	-48.4	
2.47	-72.5	H	3.0	-27.5	38.5	1.0	-64.9	-13.0	-51.9	
3.30	-72.9	H	3.0	-24.0	38.5	1.0	-61.4	-13.0	-48.4	
1.65	-62.1	V	3.0	-20.0	37.8	1.0	-56.8	-13.0	-43.8	
2.47	-73.0	V	3.0	-27.9	38.5	1.0	-65.3	-13.0	-52.3	
3.30	-72.7	V	3.0	-24.0	38.5	1.0	-61.5	-13.0	-48.5	
Mid Channel (836.52MHz)										
1.67	-71.0	H	3.0	-28.5	37.8	1.0	-65.3	-13.0	-52.3	
2.51	-72.7	H	3.0	-27.5	38.6	1.0	-65.1	-13.0	-52.1	
3.35	-72.5	H	3.0	-23.4	38.5	1.0	-60.9	-13.0	-47.9	
1.67	-68.0	V	3.0	-25.7	37.8	1.0	-62.6	-13.0	-49.6	
2.51	-71.4	V	3.0	-26.0	38.6	1.0	-63.6	-13.0	-50.6	
3.35	-73.0	V	3.0	-24.2	38.5	1.0	-61.7	-13.0	-48.7	
High Channel (848.31MHz)										
1.70	-67.3	H	3.0	-24.7	37.9	1.0	-61.6	-13.0	-48.6	
2.54	-72.4	H	3.0	-27.0	38.6	1.0	-64.6	-13.0	-51.6	
3.39	-73.6	H	3.0	-24.4	38.5	1.0	-61.9	-13.0	-48.9	
1.70	-59.7	V	3.0	-17.3	37.9	1.0	-54.2	-13.0	-41.2	
2.54	-70.9	V	3.0	-25.4	38.6	1.0	-63.0	-13.0	-50.0	
3.39	-73.0	V	3.0	-24.1	38.5	1.0	-61.6	-13.0	-48.6	

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UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
 47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
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CDMA2000 1xRTT, 1900MHz BC1

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #:
Date: 04/06/17
Test Engineer: 39004
Configuration: EUT only
Mode: 1xRTT 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1851.25MHz)										
3.70	-63.6	H	3.0	-13.7	38.6	1.0	-51.3	-13.0	-38.3	
5.55	-63.8	H	3.0	-9.7	38.6	1.0	-47.3	-13.0	-34.3	
7.41	-63.7	H	3.0	-6.0	37.8	1.0	-42.8	-13.0	-29.8	
3.70	-63.6	V	3.0	-13.7	38.6	1.0	-51.4	-13.0	-38.4	
5.55	-63.7	V	3.0	-10.0	38.6	1.0	-47.6	-13.0	-34.6	
7.41	-62.1	V	3.0	-4.7	37.8	1.0	-41.5	-13.0	-28.5	
Mid Channel (1880MHz)										
3.76	-65.4	H	3.0	-15.3	38.6	1.0	-52.9	-13.0	-39.9	
5.64	-63.9	H	3.0	-9.6	38.5	1.0	-47.2	-13.0	-34.2	
7.52	-65.5	H	3.0	-7.7	37.7	1.0	-44.4	-13.0	-31.4	
3.76	-64.8	V	3.0	-14.7	38.6	1.0	-52.3	-13.0	-39.3	
5.64	-64.2	V	3.0	-10.2	38.5	1.0	-47.8	-13.0	-34.8	
7.52	-65.3	V	3.0	-7.6	37.7	1.0	-44.4	-13.0	-31.4	
High Channel (1908.75MHz)										
3.82	-62.4	H	3.0	-12.2	38.7	1.0	-49.8	-13.0	-36.8	
5.73	-63.6	H	3.0	-9.2	38.5	1.0	-46.7	-13.0	-33.7	
7.64	-66.6	H	3.0	-8.6	37.7	1.0	-45.3	-13.0	-32.3	
3.82	-62.9	V	3.0	-12.7	38.7	1.0	-50.3	-13.0	-37.3	
5.73	-62.9	V	3.0	-8.7	38.5	1.0	-46.3	-13.0	-33.3	
7.64	-66.2	V	3.0	-8.4	37.7	1.0	-45.1	-13.0	-32.1	

Rev. 03.19.15

EVDO-Rev A, 1900MHz BC1

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #: 11708541
Date: 06/13/17
Test Engineer: 31300
Configuration: EUT only
Mode: Rev 0/A 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1851.25MHz)										
3.70	-71.0	H	3.0	-21.1	38.6	1.0	-58.7	-13.0	-45.7	
5.55	-72.5	H	3.0	-18.5	38.6	1.0	-56.1	-13.0	-43.1	
7.41	-73.1	H	3.0	-15.4	37.8	1.0	-52.2	-13.0	-39.2	
3.70	-71.4	V	3.0	-21.5	38.6	1.0	-59.1	-13.0	-46.1	
5.55	-72.6	V	3.0	-18.9	38.6	1.0	-56.5	-13.0	-43.5	
7.41	-73.2	V	3.0	-15.8	37.8	1.0	-52.6	-13.0	-39.6	
Mid Channel (1880MHz)										
3.76	-71.1	H	3.0	-20.9	38.6	1.0	-58.6	-13.0	-45.6	
5.64	-72.2	H	3.0	-18.0	38.5	1.0	-55.5	-13.0	-42.5	
7.52	-74.1	H	3.0	-16.3	37.7	1.0	-53.0	-13.0	-40.0	
3.76	-70.7	V	3.0	-20.7	38.6	1.0	-58.3	-13.0	-45.3	
5.64	-72.2	V	3.0	-18.3	38.5	1.0	-55.8	-13.0	-42.8	
7.52	-73.1	V	3.0	-15.5	37.7	1.0	-52.2	-13.0	-39.2	
High Channel (1908.75MHz)										
3.82	-70.7	H	3.0	-20.5	38.7	1.0	-58.1	-13.0	-45.1	
5.73	-72.6	H	3.0	-18.2	38.5	1.0	-55.7	-13.0	-42.7	
7.64	-73.7	H	3.0	-15.8	37.7	1.0	-52.4	-13.0	-39.4	
3.82	-70.8	V	3.0	-20.6	38.7	1.0	-58.3	-13.0	-45.3	
5.73	-72.4	V	3.0	-18.3	38.5	1.0	-55.8	-13.0	-42.8	
7.64	-73.7	V	3.0	-16.0	37.7	1.0	-52.6	-13.0	-39.6	

Rev. 03.19.15

CDMA2000 1xRTT, 800MHz BC10

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #:
Date: 04/06/17
Test Engineer: 39004
Configuration: EUT only
Mode: 1xRTT 800MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (817.25MHz)										
1.63	-64.3	H	3.0	-21.9	37.8	1.0	-58.8	-13.0	-45.8	
2.45	-65.6	H	3.0	-20.7	38.4	1.0	-58.1	-13.0	-45.1	
3.27	-64.3	H	3.0	-15.4	38.5	1.0	-52.8	-13.0	-39.8	
1.63	-63.4	V	3.0	-21.3	37.8	1.0	-58.2	-13.0	-45.2	
2.45	-63.7	V	3.0	-18.6	38.4	1.0	-56.0	-13.0	-43.0	
3.27	-63.3	V	3.0	-14.7	38.5	1.0	-52.2	-13.0	-39.2	
Mid Channel (820MHz)										
1.64	-64.1	H	3.0	-21.7	37.8	1.0	-58.5	-13.0	-45.5	
2.46	-64.6	H	3.0	-19.7	38.4	1.0	-57.1	-13.0	-44.1	
3.28	-64.4	H	3.0	-15.5	38.5	1.0	-52.9	-13.0	-39.9	
1.64	-64.7	V	3.0	-22.6	37.8	1.0	-59.5	-13.0	-46.5	
2.46	-64.2	V	3.0	-19.0	38.4	1.0	-56.5	-13.0	-43.5	
3.28	-64.2	V	3.0	-15.6	38.5	1.0	-53.1	-13.0	-40.1	
High Channel (822.75MHz)										
1.65	-64.6	H	3.0	-22.2	37.8	1.0	-59.0	-13.0	-46.0	
2.47	-63.8	H	3.0	-18.8	38.5	1.0	-56.3	-13.0	-43.3	
3.29	-63.6	H	3.0	-14.7	38.5	1.0	-52.2	-13.0	-39.2	
1.65	-63.4	V	3.0	-21.2	37.8	1.0	-58.1	-13.0	-45.1	
2.47	-64.3	V	3.0	-19.1	38.5	1.0	-56.6	-13.0	-43.6	
3.29	-63.6	V	3.0	-15.0	38.5	1.0	-52.4	-13.0	-39.4	

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EVDO-Rev A, 800MHz BC10

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #: 11708541
Date: 06/13/17
Test Engineer: 31300
Configuration: EUT only
Mode: Rev O/A, 800MHz

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (817.25MHz)										
1.63	-67.0	H	3.0	-24.6	37.8	1.0	-61.4	-13.0	-48.4	
2.45	-71.7	H	3.0	-26.8	38.4	1.0	-64.2	-13.0	-51.2	
3.27	-72.8	H	3.0	-23.9	38.5	1.0	-61.3	-13.0	-48.3	
1.63	-65.2	V	3.0	-23.1	37.8	1.0	-60.0	-13.0	-47.0	
2.45	-71.3	V	3.0	-26.2	38.4	1.0	-63.6	-13.0	-50.6	
3.27	-72.9	V	3.0	-24.3	38.5	1.0	-61.8	-13.0	-48.8	
Mid Channel (820MHz)										
1.64	-66.0	H	3.0	-23.5	37.8	1.0	-60.4	-13.0	-47.4	
2.46	-72.4	H	3.0	-27.4	38.4	1.0	-64.9	-13.0	-51.9	
3.28	-72.8	H	3.0	-23.9	38.5	1.0	-61.4	-13.0	-48.4	
1.64	-64.3	V	3.0	-22.2	37.8	1.0	-59.1	-13.0	-46.1	
2.46	-72.5	V	3.0	-27.4	38.4	1.0	-64.8	-13.0	-51.8	
3.28	-72.7	V	3.0	-24.1	38.5	1.0	-61.6	-13.0	-48.6	
High Channel (822.75MHz)										
1.65	-67.3	H	3.0	-24.8	37.8	1.0	-61.7	-13.0	-48.7	
2.47	-73.2	H	3.0	-28.2	38.5	1.0	-65.6	-13.0	-52.6	
3.29	-72.7	H	3.0	-23.7	38.5	1.0	-61.2	-13.0	-48.2	
1.65	-65.9	V	3.0	-23.8	37.8	1.0	-60.6	-13.0	-47.6	
2.47	-72.4	V	3.0	-27.2	38.5	1.0	-64.7	-13.0	-51.7	
3.29	-72.5	V	3.0	-23.8	38.5	1.0	-61.3	-13.0	-48.3	

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11.1.3. UMTS

UMTS REL 99, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/05/17
Test Engineer: 39004
Configuration: EUT Only
Mode: REL 99, 850MHz

Test Equipment:
 Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
 3m Chamber E

Pre-amplifier
 3m Chamber E

Filter
 Filter

Limit
 EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)										
1.65	-64.2	H	3.0	-21.7	37.8	1.0	-58.6	-13.0	-45.6	
2.48	-63.9	H	3.0	-18.9	38.5	1.0	-56.4	-13.0	-43.4	
3.31	-63.3	H	3.0	-14.3	38.5	1.0	-51.8	-13.0	-38.8	
1.65	-63.5	V	3.0	-21.3	37.8	1.0	-58.1	-13.0	-45.1	
2.48	-64.6	V	3.0	-19.4	38.5	1.0	-56.9	-13.0	-43.9	
3.31	-64.2	V	3.0	-15.5	38.5	1.0	-53.0	-13.0	-40.0	
Mid Channel (836.6MHz)										
1.67	-64.4	H	3.0	-21.9	37.8	1.0	-58.7	-13.0	-45.7	
2.51	-64.6	H	3.0	-19.4	38.6	1.0	-57.0	-13.0	-44.0	
3.35	-65.1	H	3.0	-16.0	38.5	1.0	-53.5	-13.0	-40.5	
1.67	-64.1	V	3.0	-21.8	37.8	1.0	-58.7	-13.0	-45.7	
2.51	-64.3	V	3.0	-18.9	38.6	1.0	-56.5	-13.0	-43.5	
3.35	-64.2	V	3.0	-15.4	38.5	1.0	-52.9	-13.0	-39.9	
High Channel (846.6MHz)										
1.69	-64.3	H	3.0	-21.8	37.9	1.0	-58.6	-13.0	-45.6	
2.54	-64.1	H	3.0	-18.7	38.6	1.0	-56.3	-13.0	-43.3	
3.39	-63.5	H	3.0	-14.3	38.5	1.0	-51.8	-13.0	-38.8	
1.69	-64.2	V	3.0	-21.9	37.9	1.0	-58.7	-13.0	-45.7	
2.54	-63.3	V	3.0	-17.8	38.6	1.0	-55.4	-13.0	-42.4	
3.39	-64.0	V	3.0	-15.1	38.5	1.0	-52.6	-13.0	-39.6	

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UMTS HSDPA, 850MHz BAND 5

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/05/17
Test Engineer: 39004
Configuration: EUT Only
Mode: HSDPA 850MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber

3m Chamber E

Pre-amplifier

3m Chamber E

Filter

Filter

Limit

EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)										
1.65	-63.2	H	3.0	-20.8	37.8	1.0	-57.6	-13.0	-44.6	
2.48	-62.9	H	3.0	-17.8	38.5	1.0	-55.3	-13.0	-42.3	
3.31	-62.0	H	3.0	-13.0	38.5	1.0	-50.5	-13.0	-37.5	
1.65	-62.7	V	3.0	-20.5	37.8	1.0	-57.3	-13.0	-44.3	
2.48	-63.5	V	3.0	-18.3	38.5	1.0	-55.8	-13.0	-42.8	
3.31	-63.2	V	3.0	-14.4	38.5	1.0	-51.9	-13.0	-38.9	
Mid Channel (836.6MHz)										
1.67	-63.5	H	3.0	-21.0	37.8	1.0	-57.8	-13.0	-44.8	
2.51	-63.3	H	3.0	-18.1	38.6	1.0	-55.6	-13.0	-42.6	
3.35	-62.5	H	3.0	-13.4	38.5	1.0	-50.9	-13.0	-37.9	
1.67	-62.9	V	3.0	-20.6	37.8	1.0	-57.4	-13.0	-44.4	
2.51	-63.7	V	3.0	-18.3	38.6	1.0	-55.9	-13.0	-42.9	
3.35	-63.8	V	3.0	-15.0	38.5	1.0	-52.5	-13.0	-39.5	
High Channel (846.6MHz)										
1.69	-63.1	H	3.0	-20.6	37.9	1.0	-57.4	-13.0	-44.4	
2.54	-63.0	H	3.0	-17.6	38.6	1.0	-55.2	-13.0	-42.2	
3.39	-62.3	H	3.0	-13.1	38.5	1.0	-50.6	-13.0	-37.6	
1.69	-62.9	V	3.0	-20.5	37.9	1.0	-57.4	-13.0	-44.4	
2.54	-63.8	V	3.0	-18.3	38.6	1.0	-55.9	-13.0	-42.9	
3.39	-63.4	V	3.0	-14.5	38.5	1.0	-52.0	-13.0	-39.0	

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UMTS REL 99, 1900MHz BAND 2

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #:
Date: 04/05/17
Test Engineer: 39004
Configuration: EUT Only
Mode: REL 99, 1900MHz

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1852.4MHz)										
3.70	-61.7	H	3.0	-11.8	38.6	1.0	-49.4	-13.0	-36.4	
5.56	-63.6	H	3.0	-9.6	38.6	1.0	-47.1	-13.0	-34.1	
7.41	-64.3	H	3.0	-6.6	37.8	1.0	-43.4	-13.0	-30.4	
3.70	-62.2	V	3.0	-12.3	38.6	1.0	-49.9	-13.0	-36.9	
5.55	-63.8	V	3.0	-10.0	38.6	1.0	-47.6	-13.0	-34.6	
7.42	-64.8	V	3.0	-7.4	37.8	1.0	-44.2	-13.0	-31.2	
Mid Channel (1880MHz)										
3.76	-62.1	H	3.0	-12.0	38.6	1.0	-49.6	-13.0	-36.6	
5.64	-63.3	H	3.0	-9.0	38.5	1.0	-46.5	-13.0	-33.5	
7.52	-63.9	H	3.0	-6.1	37.7	1.0	-42.8	-13.0	-29.8	
3.76	-62.2	V	3.0	-12.2	38.6	1.0	-49.8	-13.0	-36.8	
5.64	-63.6	V	3.0	-9.6	38.5	1.0	-47.2	-13.0	-34.2	
7.52	-64.5	V	3.0	-6.9	37.7	1.0	-43.7	-13.0	-30.7	
High Channel (1907.6MHz)										
3.81	-61.6	H	3.0	-11.4	38.7	1.0	-49.0	-13.0	-36.0	
5.72	-63.7	H	3.0	-9.3	38.5	1.0	-46.8	-13.0	-33.8	
7.66	-64.3	H	3.0	-6.4	37.7	1.0	-43.0	-13.0	-30.0	
3.82	-62.2	V	3.0	-12.0	38.7	1.0	-49.6	-13.0	-36.6	
5.72	-64.1	V	3.0	-10.0	38.5	1.0	-47.5	-13.0	-34.5	
7.63	-64.3	V	3.0	-6.6	37.7	1.0	-43.2	-13.0	-30.2	

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UMTS HSDPA, 1900MHz BAND 2

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #:
Date: 04/05/17
Test Engineer: 39004
Configuration: EUT Only
Mode: HSDPA 1900MHz

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1852.4MHz)										
3.70	-61.0	H	3.0	-11.0	38.6	1.0	-48.7	-13.0	-35.7	
5.56	-62.3	H	3.0	-8.2	38.6	1.0	-45.8	-13.0	-32.8	
7.41	-63.0	H	3.0	-5.3	37.8	1.0	-42.1	-13.0	-29.1	
3.70	-60.3	V	3.0	-10.4	38.6	1.0	-48.0	-13.0	-35.0	
5.56	-61.9	V	3.0	-8.1	38.6	1.0	-45.7	-13.0	-32.7	
7.41	-62.5	V	3.0	-5.0	37.8	1.0	-41.8	-13.0	-28.8	
Mid Channel (1880MHz)										
3.76	-60.5	H	3.0	-10.4	38.6	1.0	-48.0	-13.0	-35.0	
5.64	-62.3	H	3.0	-8.1	38.5	1.0	-45.6	-13.0	-32.6	
7.52	-63.2	H	3.0	-5.4	37.7	1.0	-42.1	-13.0	-29.1	
3.76	-60.5	V	3.0	-10.4	38.6	1.0	-48.1	-13.0	-35.1	
5.64	-62.6	V	3.0	-8.7	38.5	1.0	-46.2	-13.0	-33.2	
7.52	-62.5	V	3.0	-4.9	37.7	1.0	-41.6	-13.0	-28.6	
High Channel (1907.6MHz)										
3.82	-60.8	H	3.0	-10.5	38.7	1.0	-48.2	-13.0	-35.2	
5.72	-62.5	H	3.0	-8.1	38.5	1.0	-45.6	-13.0	-32.6	
7.63	-62.6	H	3.0	-4.7	37.7	1.0	-41.3	-13.0	-28.3	
3.82	-60.2	V	3.0	-10.0	38.7	1.0	-47.6	-13.0	-34.6	
5.72	-62.4	V	3.0	-8.3	38.5	1.0	-45.8	-13.0	-32.8	
7.63	-62.6	V	3.0	-4.9	37.7	1.0	-41.5	-13.0	-28.5	

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UMTS REL 99, 1700MHz BAND 4

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #:
Date: 04/05/17
Test Engineer: 39004
Configuration: EUT Only
Mode: REL 99, 1700MHz

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.4MHz)										
3.42	-63.6	H	3.0	-14.3	38.5	1.0	-51.8	-13.0	-38.8	
5.14	-62.9	H	3.0	-9.7	38.7	1.0	-47.4	-13.0	-34.4	
6.85	-63.4	H	3.0	-6.6	38.1	1.0	-43.7	-13.0	-30.7	
3.42	-63.5	V	3.0	-14.4	38.5	1.0	-51.9	-13.0	-38.9	
5.14	-62.4	V	3.0	-9.5	38.7	1.0	-47.2	-13.0	-34.2	
6.85	-63.5	V	3.0	-6.9	38.1	1.0	-44.0	-13.0	-31.0	
Mid Channel (1732.6MHz)										
3.47	-63.4	H	3.0	-14.1	38.5	1.0	-51.6	-13.0	-38.6	
5.20	-62.3	H	3.0	-9.0	38.7	1.0	-46.7	-13.0	-33.7	
6.93	-62.8	H	3.0	-5.7	38.1	1.0	-42.8	-13.0	-29.8	
3.47	-63.6	V	3.0	-14.4	38.5	1.0	-52.0	-13.0	-39.0	
5.20	-62.2	V	3.0	-9.3	38.7	1.0	-46.9	-13.0	-33.9	
6.93	-63.1	V	3.0	-6.3	38.1	1.0	-43.4	-13.0	-30.4	
High Channel (1752.6MHz)										
3.51	-63.8	H	3.0	-14.3	38.5	1.0	-51.8	-13.0	-38.8	
5.26	-63.1	H	3.0	-9.7	38.7	1.0	-47.4	-13.0	-34.4	
7.01	-62.7	H	3.0	-5.5	38.1	1.0	-42.5	-13.0	-29.5	
3.51	-63.8	V	3.0	-14.5	38.5	1.0	-52.1	-13.0	-39.1	
5.26	-62.8	V	3.0	-9.7	38.7	1.0	-47.4	-13.0	-34.4	
7.01	-62.7	V	3.0	-5.7	38.1	1.0	-42.8	-13.0	-29.8	

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UMTS HSDPA, 1700MHz BAND 4

High Frequency Substitution Measurement UL Fremont Radiated Chamber											
Company: Project #: Date: 04/05/17 Test Engineer: 39004 Configuration: EUT Only Mode: HSDPA 1700MHz											
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable											
Chamber		Pre-amplifier		Filter		Limit					
3m Chamber E		3m Chamber E		Filter		EIRP					
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes	
Low Channel (1712.4MHz)											
3.42	-63.7	H	3.0	-14.4	38.5	1.0	-51.9	-13.0	-38.9		
5.14	-62.6	H	3.0	-9.4	38.7	1.0	-47.1	-13.0	-34.1		
6.85	-62.9	H	3.0	-6.0	38.1	1.0	-43.1	-13.0	-30.1		
3.42	-63.4	V	3.0	-14.3	38.5	1.0	-51.8	-13.0	-38.8		
5.14	-62.3	V	3.0	-9.4	38.7	1.0	-47.1	-13.0	-34.1		
6.85	-63.3	V	3.0	-6.6	38.1	1.0	-43.8	-13.0	-30.8		
Mid Channel (1732.6MHz)											
3.47	-63.3	H	3.0	-14.0	38.5	1.0	-51.5	-13.0	-38.5		
5.20	-62.0	H	3.0	-8.7	38.7	1.0	-46.4	-13.0	-33.4		
6.93	-62.6	H	3.0	-5.5	38.1	1.0	-42.6	-13.0	-29.6		
3.47	-63.2	V	3.0	-14.0	38.5	1.0	-51.5	-13.0	-38.5		
5.20	-61.9	V	3.0	-8.9	38.7	1.0	-46.6	-13.0	-33.6		
6.93	-63.1	V	3.0	-6.3	38.1	1.0	-43.4	-13.0	-30.4		
High Channel (1752.6MHz)											
3.51	-63.6	H	3.0	-14.1	38.5	1.0	-51.6	-13.0	-38.6		
5.26	-62.8	H	3.0	-9.4	38.7	1.0	-47.0	-13.0	-34.0		
7.01	-62.4	H	3.0	-5.2	38.1	1.0	-42.3	-13.0	-29.3		
3.51	-63.2	V	3.0	-13.8	38.5	1.0	-51.4	-13.0	-38.4		
5.26	-62.9	V	3.0	-9.8	38.7	1.0	-47.4	-13.0	-34.4		
7.01	-62.5	V	3.0	-5.5	38.1	1.0	-42.6	-13.0	-29.6		
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11.2. FIELD STRENGTH OF SPURIOUS RADIATION, UAT 1

11.2.1. GSM

GPRS, 850MHz

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/14/17 Test Engineer: 31300 Configuration: EUT only Mode: GPRS 850MHz										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber 3m Chamber F		Pre-amplifier 3m Chamber F		Filter Filter		Limit EIRP				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)										
1.65	-69.1	H	3.0	-27.9	33.7	1.0	-60.6	-13.0	-47.6	
2.47	-69.3	H	3.0	-25.2	34.1	1.0	-58.3	-13.0	-45.3	
3.30	-69.4	H	3.0	-21.2	34.7	1.0	-54.8	-13.0	-41.8	
1.65	-69.7	V	3.0	-26.3	33.7	1.0	-59.0	-13.0	-46.0	
2.47	-69.7	V	3.0	-25.0	34.1	1.0	-58.1	-13.0	-45.1	
3.30	-69.8	V	3.0	-21.4	34.7	1.0	-55.0	-13.0	-42.0	
Mid Channel (836.6MHz)										
1.67	-68.5	H	3.0	-27.2	33.7	1.0	-59.9	-13.0	-46.9	
2.51	-66.6	H	3.0	-22.3	34.1	1.0	-55.4	-13.0	-42.4	
3.35	-66.3	H	3.0	-17.9	34.6	1.0	-51.5	-13.0	-38.5	
1.67	-68.3	V	3.0	-24.9	33.7	1.0	-57.6	-13.0	-44.6	
2.51	-66.6	V	3.0	-21.8	34.1	1.0	-54.9	-13.0	-41.9	
3.35	-66.3	V	3.0	-17.6	34.6	1.0	-51.2	-13.0	-38.2	
High Channel (848.8MHz)										
1.70	-67.0	H	3.0	-25.5	33.7	1.0	-58.1	-13.0	-45.1	
2.55	-69.4	H	3.0	-24.9	34.2	1.0	-58.1	-13.0	-45.1	
3.40	-69.5	H	3.0	-20.9	34.6	1.0	-54.5	-13.0	-41.5	
1.70	-68.0	V	3.0	-24.6	33.7	1.0	-57.2	-13.0	-44.2	
2.55	-69.8	V	3.0	-24.8	34.2	1.0	-58.0	-13.0	-45.0	
3.40	-69.6	V	3.0	-20.8	34.6	1.0	-54.4	-13.0	-41.4	
Rev. 03.19.15										

EGPRS, 850MHz

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/14/17 Test Engineer: 31300 Configuration: EUT only Mode: EGPRS 850MHz										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber F		3m Chamber F		Filter		EIRP				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.2MHz)										
1.65	-72.1	H	3.0	-31.0	33.7	1.0	-63.7	-13.0	-50.7	
2.47	-72.8	H	3.0	-28.7	34.1	1.0	-61.8	-13.0	-48.8	
3.30	-72.2	H	3.0	-23.9	34.7	1.0	-57.6	-13.0	-44.6	
1.65	-73.0	V	3.0	-29.5	33.7	1.0	-62.3	-13.0	-49.3	
2.47	-72.4	V	3.0	-27.7	34.1	1.0	-60.8	-13.0	-47.8	
3.30	-72.4	V	3.0	-23.9	34.7	1.0	-57.5	-13.0	-44.5	
Mid Channel (836.6MHz)										
1.67	-69.9	H	3.0	-28.6	33.7	1.0	-61.3	-13.0	-48.3	
2.51	-69.2	H	3.0	-25.0	34.1	1.0	-58.1	-13.0	-45.1	
3.35	-69.9	H	3.0	-21.5	34.6	1.0	-55.1	-13.0	-42.1	
1.67	-69.9	V	3.0	-26.5	33.7	1.0	-59.2	-13.0	-46.2	
2.51	-69.3	V	3.0	-24.5	34.1	1.0	-57.6	-13.0	-44.6	
3.35	-69.6	V	3.0	-20.9	34.6	1.0	-54.6	-13.0	-41.6	
High Channel (848.8MHz)										
1.70	-69.4	H	3.0	-27.9	33.7	1.0	-60.6	-13.0	-47.6	
2.55	-69.2	H	3.0	-24.7	34.2	1.0	-57.9	-13.0	-44.9	
3.40	-69.9	H	3.0	-21.3	34.6	1.0	-54.9	-13.0	-41.9	
1.70	-69.4	V	3.0	-25.9	33.7	1.0	-58.6	-13.0	-45.6	
2.55	-69.4	V	3.0	-24.3	34.2	1.0	-57.5	-13.0	-44.5	
3.40	-69.5	V	3.0	-20.6	34.6	1.0	-54.2	-13.0	-41.2	
Rev. 03.19.15										

GPRS, 1900MHz

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/15/17 Test Engineer: 30568 Configuration: EUT only Mode: GPRS 1900MHz										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber F		3m Chamber F		Filter		EIRP				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)										
3.70	-65.2	H	3.0	-15.4	34.4	1.0	-48.8	-13.0	-35.8	
5.55	-65.9	H	3.0	-12.5	34.1	1.0	-45.6	-13.0	-32.6	
7.40	-66.5	H	3.0	-10.2	33.6	1.0	-42.8	-13.0	-29.8	
3.70	-65.6	V	3.0	-15.7	34.4	1.0	-49.1	-13.0	-36.1	
5.55	-66.3	V	3.0	-12.7	34.1	1.0	-45.8	-13.0	-32.8	
7.40	-66.1	V	3.0	-10.0	33.6	1.0	-42.6	-13.0	-29.6	
Mid Channel (1880.0)										
3.76	-64.7	H	3.0	-14.7	34.4	1.0	-48.1	-13.0	-35.1	
5.64	-66.0	H	3.0	-12.4	34.1	1.0	-45.5	-13.0	-32.5	
7.52	-66.4	H	3.0	-9.9	33.5	1.0	-42.5	-13.0	-29.5	
3.76	-63.7	V	3.0	-13.7	34.4	1.0	-47.1	-13.0	-34.1	
5.64	-65.2	V	3.0	-11.4	34.1	1.0	-44.6	-13.0	-31.6	
7.52	-66.5	V	3.0	-10.2	33.5	1.0	-42.7	-13.0	-29.7	
High Channel (1909.8MHz)										
3.82	-64.8	H	3.0	-14.6	34.4	1.0	-47.9	-13.0	-34.9	
5.73	-65.7	H	3.0	-12.0	34.1	1.0	-45.1	-13.0	-32.1	
7.54	-66.1	H	3.0	-9.6	33.5	1.0	-42.1	-13.0	-29.1	
3.82	-64.8	V	3.0	-14.5	34.4	1.0	-47.9	-13.0	-34.9	
5.73	-65.6	V	3.0	-11.8	34.1	1.0	-44.9	-13.0	-31.9	
7.54	-66.6	V	3.0	-10.3	33.5	1.0	-42.8	-13.0	-29.8	
Rev. 03.19.15										

EGPRS, 1900MHz

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/15/17
Test Engineer: 30568
Configuration: EUT only
Mode: EGPRS 1900MHz

Test Equipment:
 Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
 3m Chamber F

Pre-amplifier
 3m Chamber F

Filter
 Filter

Limit
 EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1850.2MHz)										
3.70	-65.3	H	3.0	-15.6	34.4	1.0	-49.0	-13.0	-36.0	
5.55	-66.1	H	3.0	-12.7	34.1	1.0	-45.8	-13.0	-32.8	
7.40	-66.2	H	3.0	-9.9	33.6	1.0	-42.5	-13.0	-29.5	
3.70	-64.6	V	3.0	-14.7	34.4	1.0	-48.2	-13.0	-35.2	
5.55	-65.5	V	3.0	-11.9	34.1	1.0	-45.0	-13.0	-32.0	
7.40	-65.8	V	3.0	-9.7	33.6	1.0	-42.3	-13.0	-29.3	
Mid Channel (1880.0)										
3.76	-64.8	H	3.0	-14.8	34.4	1.0	-48.2	-13.0	-35.2	
5.64	-66.6	H	3.0	-13.0	34.1	1.0	-46.1	-13.0	-33.1	
7.52	-66.6	H	3.0	-10.1	33.5	1.0	-42.6	-13.0	-29.6	
3.76	-64.7	V	3.0	-14.6	34.4	1.0	-48.0	-13.0	-35.0	
5.64	-65.5	V	3.0	-11.8	34.1	1.0	-44.9	-13.0	-31.9	
7.52	-66.1	V	3.0	-9.8	33.5	1.0	-42.3	-13.0	-29.3	
High Channel (1909.8MHz)										
3.82	-64.4	H	3.0	-14.2	34.4	1.0	-47.6	-13.0	-34.6	
5.73	-65.4	H	3.0	-11.7	34.1	1.0	-44.8	-13.0	-31.8	
7.54	-66.2	H	3.0	-9.7	33.5	1.0	-42.2	-13.0	-29.2	
3.82	-64.6	V	3.0	-14.3	34.4	1.0	-47.7	-13.0	-34.7	
5.73	-65.8	V	3.0	-12.0	34.1	1.0	-45.0	-13.0	-32.0	
7.54	-66.6	V	3.0	-10.3	33.5	1.0	-42.8	-13.0	-29.8	

Rev. 03.19.15

11.2.2. CDMA2000

CDMA2000 1xRTT, 850MHz BC0

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/15/17

Test Engineer: 30568

Configuration: EUT Only

Mode: 1xRTT 850MHz

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
 3m Chamber F

Pre-amplifier
 3m Chamber F

Filter
 Filter

Limit
 EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (824.7MHz)										
1.65	-64.4	H	3.0	-23.2	33.7	1.0	-55.9	-13.0	-42.9	
2.47	-66.3	H	3.0	-22.2	34.1	1.0	-55.3	-13.0	-42.3	
3.30	-66.0	H	3.0	-17.8	34.7	1.0	-51.4	-13.0	-38.4	
1.65	-65.9	V	3.0	-22.5	33.7	1.0	-55.2	-13.0	-42.2	
2.47	-66.3	V	3.0	-21.6	34.1	1.0	-54.7	-13.0	-41.7	
3.30	-65.4	V	3.0	-16.9	34.7	1.0	-50.5	-13.0	-37.5	
Mid Channel (836.52MHz)										
1.67	-65.6	H	3.0	-24.3	33.7	1.0	-57.0	-13.0	-44.0	
2.51	-65.9	H	3.0	-21.7	34.1	1.0	-54.8	-13.0	-41.8	
3.35	-66.4	H	3.0	-17.9	34.6	1.0	-51.6	-13.0	-38.6	
1.67	-66.5	V	3.0	-23.1	33.7	1.0	-55.8	-13.0	-42.8	
2.51	-65.6	V	3.0	-20.8	34.1	1.0	-53.9	-13.0	-40.9	
3.35	-65.8	V	3.0	-17.1	34.6	1.0	-50.7	-13.0	-37.7	
High Channel (848.31MHz)										
1.70	-65.6	H	3.0	-24.1	33.7	1.0	-56.7	-13.0	-43.7	
2.54	-65.4	H	3.0	-21.0	34.1	1.0	-54.1	-13.0	-41.1	
3.39	-65.4	H	3.0	-16.8	34.6	1.0	-50.4	-13.0	-37.4	
1.70	-66.1	V	3.0	-22.6	33.7	1.0	-55.3	-13.0	-42.3	
2.54	-65.4	V	3.0	-20.4	34.1	1.0	-53.5	-13.0	-40.5	
3.39	-66.2	V	3.0	-17.4	34.6	1.0	-51.0	-13.0	-38.0	

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EVDO-Rev A, 850MHz BC0

High Frequency Substitution Measurement UL Fremont Radiated Chamber											
Company: Project #: 11708541 Date: 06/13/17 Test Engineer: 31300 Configuration: EUT only Mode: Rev 0/A 850MHz											
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable											
Chamber		Pre-amplifier		Filter		Limit					
3m Chamber F		3m Chamber F		Filter		EIRP					
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes	
Low Channel (824.7MHz)											
1.65	-71.9	H	3.0	-30.7	33.7	1.0	-63.5	-13.0	-50.5		
2.47	-72.6	H	3.0	-28.5	34.1	1.0	-61.6	-13.0	-48.6		
3.30	-72.8	H	3.0	-24.6	34.7	1.0	-58.2	-13.0	-45.2		
1.65	-71.5	V	3.0	-28.1	33.7	1.0	-60.8	-13.0	-47.8		
2.47	-72.6	V	3.0	-27.8	34.1	1.0	-61.0	-13.0	-48.0		
3.30	-72.8	V	3.0	-24.3	34.7	1.0	-58.0	-13.0	-45.0		
Mid Channel (836.52MHz)											
1.67	-72.2	H	3.0	-30.9	33.7	1.0	-63.6	-13.0	-50.6		
2.51	-72.3	H	3.0	-28.1	34.1	1.0	-61.2	-13.0	-48.2		
3.35	-73.0	H	3.0	-24.5	34.6	1.0	-58.2	-13.0	-45.2		
1.67	-71.5	V	3.0	-28.1	33.7	1.0	-60.8	-13.0	-47.8		
2.51	-72.4	V	3.0	-27.5	34.1	1.0	-60.6	-13.0	-47.6		
3.35	-72.8	V	3.0	-24.2	34.6	1.0	-57.8	-13.0	-44.8		
High Channel (848.31MHz)											
1.70	-71.6	H	3.0	-30.1	33.7	1.0	-62.7	-13.0	-49.7		
2.54	-72.7	H	3.0	-28.3	34.1	1.0	-61.4	-13.0	-48.4		
3.39	-73.2	H	3.0	-24.6	34.6	1.0	-58.2	-13.0	-45.2		
1.70	-71.6	V	3.0	-28.2	33.7	1.0	-60.9	-13.0	-47.9		
2.54	-72.6	V	3.0	-27.6	34.1	1.0	-60.8	-13.0	-47.8		
3.39	-72.8	V	3.0	-24.0	34.6	1.0	-57.6	-13.0	-44.6		
Rev. 03.19.15											

CDMA2000 1xRTT, 1900MHz BC1

High Frequency Substitution Measurement UL Fremont Radiated Chamber											
Company: Project #: Date: 04/15/17 Test Engineer: 30568 Configuration: EUT only Mode: 1xRTT 1900MHz											
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable											
Chamber			Pre-amplifier			Filter			Limit		
3m Chamber F			3m Chamber F			Filter			EIRP		
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes	
Low Channel (1851.25MHz)											
3.70	-64.9	H	3.0	-15.2	34.4	1.0	-48.6	-13.0	-35.6		
5.55	-65.7	H	3.0	-12.2	34.1	1.0	-45.4	-13.0	-32.4		
7.41	-65.9	H	3.0	-9.6	33.6	1.0	-42.2	-13.0	-29.2		
3.70	-65.3	V	3.0	-15.5	34.4	1.0	-48.9	-13.0	-35.9		
5.55	-65.8	V	3.0	-12.1	34.1	1.0	-45.3	-13.0	-32.3		
7.41	-65.5	V	3.0	-9.3	33.6	1.0	-41.9	-13.0	-28.9		
Mid Channel (1880MHz)											
3.76	-63.8	H	3.0	-13.9	34.4	1.0	-47.3	-13.0	-34.3		
5.64	-66.7	H	3.0	-13.1	34.1	1.0	-46.3	-13.0	-33.3		
7.52	-65.8	H	3.0	-9.3	33.5	1.0	-41.8	-13.0	-28.8		
3.76	-64.8	V	3.0	-14.8	34.4	1.0	-48.2	-13.0	-35.2		
5.64	-66.3	V	3.0	-12.5	34.1	1.0	-45.6	-13.0	-32.6		
7.52	-66.6	V	3.0	-10.3	33.5	1.0	-42.8	-13.0	-29.8		
High Channel (1908.75MHz)											
3.82	-64.7	H	3.0	-14.5	34.4	1.0	-47.8	-13.0	-34.8		
5.73	-65.7	H	3.0	-12.0	34.1	1.0	-45.1	-13.0	-32.1		
7.64	-66.8	H	3.0	-10.2	33.4	1.0	-42.6	-13.0	-29.6		
3.82	-64.8	V	3.0	-14.6	34.4	1.0	-47.9	-13.0	-34.9		
5.73	-65.0	V	3.0	-11.1	34.1	1.0	-44.2	-13.0	-31.2		
7.64	-66.0	V	3.0	-9.5	33.4	1.0	-42.0	-13.0	-29.0		
Rev. 03.19.15											

EVDO-Rev A, 1900MHz BC1

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #: 11708541
Date: 06/13/17
Test Engineer: 31300
Configuration: EUT only
Mode: Rev 0/A 1900MHz

Test Equipment:
Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber E	3m Chamber E	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1851.25MHz)										
3.70	-71.1	H	3.0	-21.1	38.6	1.0	-58.8	-13.0	-45.8	
5.55	-71.9	H	3.0	-17.8	38.6	1.0	-55.4	-13.0	-42.4	
7.41	-73.3	H	3.0	-15.7	37.8	1.0	-52.5	-13.0	-39.5	
3.70	-71.2	V	3.0	-21.3	38.6	1.0	-58.9	-13.0	-45.9	
5.55	-72.6	V	3.0	-18.9	38.6	1.0	-56.5	-13.0	-43.5	
7.41	-72.9	V	3.0	-15.4	37.8	1.0	-52.2	-13.0	-39.2	
Mid Channel (1880MHz)										
3.76	-71.2	H	3.0	-21.1	38.6	1.0	-58.7	-13.0	-45.7	
5.64	-72.6	H	3.0	-18.3	38.5	1.0	-55.9	-13.0	-42.9	
7.52	-73.5	H	3.0	-15.7	37.7	1.0	-52.4	-13.0	-39.4	
3.76	-70.4	V	3.0	-20.3	38.6	1.0	-57.9	-13.0	-44.9	
5.64	-72.7	V	3.0	-18.8	38.5	1.0	-56.3	-13.0	-43.3	
7.52	-73.6	V	3.0	-16.0	37.7	1.0	-52.8	-13.0	-39.8	
High Channel (1908.75MHz)										
3.82	-70.9	H	3.0	-20.6	38.7	1.0	-58.3	-13.0	-45.3	
5.73	-72.8	H	3.0	-18.4	38.5	1.0	-55.9	-13.0	-42.9	
7.64	-73.8	H	3.0	-15.9	37.7	1.0	-52.5	-13.0	-39.5	
3.82	-70.4	V	3.0	-20.2	38.7	1.0	-57.8	-13.0	-44.8	
5.73	-72.7	V	3.0	-18.6	38.5	1.0	-56.1	-13.0	-43.1	
7.64	-73.9	V	3.0	-16.1	37.7	1.0	-52.8	-13.0	-39.8	

Rev. 03.19.15

CDMA2000 1xRTT, 800MHz BC10

High Frequency Substitution Measurement UL Fremont Radiated Chamber											
Company: Project #: Date: 04/15/17 Test Engineer: 30568 Configuration: EUT only Mode: 1xRTT 800MHz											
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable											
Chamber		Pre-amplifier		Filter		Limit					
3m Chamber F		3m Chamber F		Filter		EIRP					
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes	
Low Channel (817.25MHz)											
1.63	-67.1	H	3.0	-26.1	33.7	1.0	-58.8	-13.0	-45.8		
2.45	-66.7	H	3.0	-22.6	34.1	1.0	-55.7	-13.0	-42.7		
3.27	-65.4	H	3.0	-17.3	34.7	1.0	-50.9	-13.0	-37.9		
1.63	-66.9	V	3.0	-23.5	33.7	1.0	-56.3	-13.0	-43.3		
2.45	-66.3	V	3.0	-21.6	34.1	1.0	-54.7	-13.0	-41.7		
3.27	-66.1	V	3.0	-17.7	34.7	1.0	-51.4	-13.0	-38.4		
Mid Channel (820MHz)											
1.64	-66.0	H	3.0	-24.9	33.7	1.0	-57.6	-13.0	-44.6		
2.46	-65.5	H	3.0	-21.4	34.1	1.0	-54.5	-13.0	-41.5		
3.28	-66.2	H	3.0	-18.1	34.7	1.0	-51.7	-13.0	-38.7		
1.64	-66.6	V	3.0	-23.2	33.7	1.0	-56.0	-13.0	-43.0		
2.46	-66.6	V	3.0	-21.8	34.1	1.0	-55.0	-13.0	-42.0		
3.28	-66.1	V	3.0	-17.7	34.7	1.0	-51.4	-13.0	-38.4		
High Channel (822.75MHz)											
1.65	-65.7	H	3.0	-24.5	33.7	1.0	-57.2	-13.0	-44.2		
2.47	-65.9	H	3.0	-21.8	34.1	1.0	-54.9	-13.0	-41.9		
3.29	-65.7	H	3.0	-17.5	34.7	1.0	-51.2	-13.0	-38.2		
1.65	-66.2	V	3.0	-22.8	33.7	1.0	-55.5	-13.0	-42.5		
2.47	-66.0	V	3.0	-21.3	34.1	1.0	-54.4	-13.0	-41.4		
3.29	-65.6	V	3.0	-17.2	34.7	1.0	-50.8	-13.0	-37.8		
Rev. 03.19.15											

EVDO-Rev A, 800MHz BC10

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #: 11708541
Date: 06/13/17
Test Engineer: 31300
Configuration: EUT only
Mode: Rev O/A, 800MHz

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber G	3m Chamber G	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (817.25MHz)										
1.63	-70.6	H	3.0	-29.1	37.8	1.0	-66.0	-13.0	-53.0	
2.45	-72.7	H	3.0	-29.6	36.7	1.0	-65.4	-13.0	-52.4	
3.27	-72.8	H	3.0	-26.9	36.5	1.0	-62.4	-13.0	-49.4	
1.63	-71.9	V	3.0	-30.1	37.8	1.0	-67.0	-13.0	-54.0	
2.45	-72.6	V	3.0	-28.7	36.7	1.0	-64.5	-13.0	-51.5	
3.27	-72.7	V	3.0	-26.9	36.5	1.0	-62.4	-13.0	-49.4	
Mid Channel (820MHz)										
1.64	-71.1	H	3.0	-29.7	37.8	1.0	-66.5	-13.0	-53.5	
2.46	-72.2	H	3.0	-29.1	36.7	1.0	-64.8	-13.0	-51.8	
3.28	-72.5	H	3.0	-26.6	36.5	1.0	-62.1	-13.0	-49.1	
1.64	-71.9	V	3.0	-30.1	37.8	1.0	-67.0	-13.0	-54.0	
2.46	-72.5	V	3.0	-28.6	36.7	1.0	-64.2	-13.0	-51.2	
3.28	-72.6	V	3.0	-26.7	36.5	1.0	-62.2	-13.0	-49.2	
High Channel (822.75MHz)										
1.65	-72.0	H	3.0	-30.6	37.8	1.0	-67.4	-13.0	-54.4	
2.47	-72.3	H	3.0	-29.1	36.6	1.0	-64.7	-13.0	-51.7	
3.29	-72.4	H	3.0	-26.4	36.5	1.0	-62.0	-13.0	-49.0	
1.65	-72.1	V	3.0	-30.3	37.8	1.0	-67.1	-13.0	-54.1	
2.47	-72.8	V	3.0	-28.8	36.6	1.0	-64.4	-13.0	-51.4	
3.29	-72.5	V	3.0	-26.7	36.5	1.0	-62.2	-13.0	-49.2	

Rev. 03.19.15

11.2.3. UMTS

UMTS REL 99, 850MHz BAND 5

High Frequency Substitution Measurement UL Fremont Radiated Chamber										
Company: Project #: Date: 04/15/17 Test Engineer: 30568 Configuration: EUT Only Mode: REL 99, 850MHz										
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable										
Chamber		Pre-amplifier		Filter		Limit				
3m Chamber F		3m Chamber F		Filter		EIRP				
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (826.4MHz)										
1.65	-72.1	H	3.0	-30.9	33.7	1.0	-63.6	-13.0	-50.6	
2.48	-72.1	H	3.0	-28.0	34.1	1.0	-61.1	-13.0	-48.1	
3.31	-71.9	H	3.0	-23.7	34.7	1.0	-57.3	-13.0	-44.3	
1.65	-72.6	V	3.0	-29.2	33.7	1.0	-61.9	-13.0	-48.9	
2.48	-72.6	V	3.0	-27.8	34.1	1.0	-61.0	-13.0	-48.0	
3.31	-72.2	V	3.0	-23.7	34.7	1.0	-57.4	-13.0	-44.4	
Mid Channel (836.6MHz)										
1.67	-73.0	H	3.0	-31.7	33.7	1.0	-64.4	-13.0	-51.4	
2.51	-71.8	H	3.0	-27.6	34.1	1.0	-60.7	-13.0	-47.7	
3.35	-72.3	H	3.0	-23.9	34.6	1.0	-57.5	-13.0	-44.5	
1.67	-73.0	V	3.0	-29.6	33.7	1.0	-62.3	-13.0	-49.3	
2.51	-71.4	V	3.0	-26.6	34.1	1.0	-59.7	-13.0	-46.7	
3.35	-72.7	V	3.0	-24.0	34.6	1.0	-57.6	-13.0	-44.6	
High Channel (846.6MHz)										
1.69	-72.7	H	3.0	-31.2	33.7	1.0	-63.9	-13.0	-50.9	
2.54	-72.3	H	3.0	-27.9	34.1	1.0	-61.1	-13.0	-48.1	
3.39	-72.4	H	3.0	-23.8	34.6	1.0	-57.4	-13.0	-44.4	
1.69	-72.5	V	3.0	-29.1	33.7	1.0	-61.8	-13.0	-48.8	
2.54	-72.3	V	3.0	-27.3	34.1	1.0	-60.5	-13.0	-47.5	
3.39	-72.1	V	3.0	-23.3	34.6	1.0	-56.9	-13.0	-43.9	
Rev. 03.19.15										

UMTS HSDPA, 850MHz BAND 5

High Frequency Substitution Measurement UL Fremont Radiated Chamber											
Company: Project #: Date: 04/14/17 Test Engineer: 31300 Configuration: EUT Only Mode: HSDPA 850MHz											
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable											
Chamber			Pre-amplifier			Filter			Limit		
3m Chamber F			3m Chamber F			Filter			EIRP		
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes	
Low Channel (826.4MHz)											
1.65	-72.3	H	3.0	-31.1	33.7	1.0	-63.8	-13.0	-50.8		
2.48	-72.2	H	3.0	-28.1	34.1	1.0	-61.2	-13.0	-48.2		
3.31	-72.6	H	3.0	-24.4	34.7	1.0	-58.0	-13.0	-45.0		
1.65	-72.8	V	3.0	-29.4	33.7	1.0	-62.1	-13.0	-49.1		
2.48	-72.5	V	3.0	-27.8	34.1	1.0	-60.9	-13.0	-47.9		
3.31	-72.2	V	3.0	-23.6	34.7	1.0	-57.3	-13.0	-44.3		
Mid Channel (836.6MHz)											
1.67	-73.0	H	3.0	-31.6	33.7	1.0	-64.3	-13.0	-51.3		
2.51	-72.0	H	3.0	-27.8	34.1	1.0	-60.9	-13.0	-47.9		
3.35	-72.9	H	3.0	-24.4	34.6	1.0	-58.1	-13.0	-45.1		
1.67	-72.5	V	3.0	-29.1	33.7	1.0	-61.7	-13.0	-48.7		
2.51	-72.0	V	3.0	-27.2	34.1	1.0	-60.3	-13.0	-47.3		
3.35	-72.0	V	3.0	-23.3	34.6	1.0	-56.9	-13.0	-43.9		
High Channel (846.6MHz)											
1.69	-72.2	H	3.0	-30.7	33.7	1.0	-63.4	-13.0	-50.4		
2.54	-72.6	H	3.0	-28.2	34.1	1.0	-61.3	-13.0	-48.3		
3.39	-72.8	H	3.0	-24.2	34.6	1.0	-57.8	-13.0	-44.8		
1.69	-72.5	V	3.0	-29.1	33.7	1.0	-61.7	-13.0	-48.7		
2.54	-71.7	V	3.0	-26.7	34.1	1.0	-59.8	-13.0	-46.8		
3.39	-71.7	V	3.0	-22.9	34.6	1.0	-56.5	-13.0	-43.5		
Rev. 03.19.15											

UMTS REL 99, 1900MHz BAND 2

High Frequency Substitution Measurement UL Fremont Radiated Chamber											
Company: Project #: Date: 04/14/17 Test Engineer: 31300 Configuration: EUT Only Mode: REL 99, 1900MHz											
Test Equipment: Substitution: Horn T59 Substitution, and 8ft SMA Cable											
Chamber		Pre-amplifier		Filter		Limit					
3m Chamber F		3m Chamber F		Filter		EIRP					
Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes	
Low Channel (1852.4MHz)											
3.70	-71.2	H	3.0	-21.4	34.4	1.0	-54.8	-13.0	-41.8		
5.56	-72.7	H	3.0	-19.2	34.1	1.0	-52.3	-13.0	-39.3		
7.41	-72.6	H	3.0	-16.2	33.6	1.0	-48.8	-13.0	-35.8		
3.70	-71.7	V	3.0	-21.8	34.4	1.0	-55.2	-13.0	-42.2		
5.56	-72.3	V	3.0	-18.7	34.1	1.0	-51.8	-13.0	-38.8		
7.41	-72.4	V	3.0	-16.2	33.6	1.0	-48.8	-13.0	-35.8		
Mid Channel (1880MHz)											
3.76	-70.3	H	3.0	-20.3	34.4	1.0	-53.7	-13.0	-40.7		
5.64	-72.9	H	3.0	-19.3	34.1	1.0	-52.4	-13.0	-39.4		
7.52	-72.6	H	3.0	-16.2	33.5	1.0	-48.7	-13.0	-35.7		
3.76	-71.0	V	3.0	-20.9	34.4	1.0	-54.3	-13.0	-41.3		
5.64	-72.8	V	3.0	-19.0	34.1	1.0	-52.1	-13.0	-39.1		
7.52	-72.7	V	3.0	-16.4	33.5	1.0	-48.9	-13.0	-35.9		
High Channel (1907.6MHz)											
3.82	-70.8	H	3.0	-20.6	34.4	1.0	-54.0	-13.0	-41.0		
5.72	-71.9	H	3.0	-18.2	34.1	1.0	-51.3	-13.0	-38.3		
7.63	-73.1	H	3.0	-16.4	33.4	1.0	-48.9	-13.0	-35.9		
3.82	-71.0	V	3.0	-20.8	34.4	1.0	-54.2	-13.0	-41.2		
5.72	-72.3	V	3.0	-18.4	34.1	1.0	-51.5	-13.0	-38.5		
7.63	-73.2	V	3.0	-16.8	33.4	1.0	-49.2	-13.0	-36.2		
Rev. 03.19.15											

UMTS HSDPA, 1900MHz BAND 2

**High Frequency Substitution Measurement
UL Fremont Radiated Chamber**

Company:
Project #:
Date: 04/14/17
Test Engineer: 31300
Configuration: EUT Only
Mode: HSDPA 1900MHz

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber	Pre-amplifier	Filter	Limit
3m Chamber F	3m Chamber F	Filter	EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1852.4MHz)										
3.70	-71.7	H	3.0	-21.9	34.4	1.0	-55.4	-13.0	-42.4	
5.56	-72.7	H	3.0	-19.2	34.1	1.0	-52.3	-13.0	-39.3	
7.41	-72.5	H	3.0	-16.1	33.6	1.0	-48.7	-13.0	-35.7	
3.70	-71.3	V	3.0	-21.4	34.4	1.0	-54.9	-13.0	-41.9	
5.56	-72.1	V	3.0	-18.5	34.1	1.0	-51.6	-13.0	-38.6	
7.41	-72.4	V	3.0	-16.2	33.6	1.0	-48.8	-13.0	-35.8	
Mid Channel (1880MHz)										
3.76	-70.0	H	3.0	-20.0	34.4	1.0	-53.4	-13.0	-40.4	
5.64	-72.2	H	3.0	-18.6	34.1	1.0	-51.7	-13.0	-38.7	
7.52	-72.4	H	3.0	-15.9	33.5	1.0	-48.4	-13.0	-35.4	
3.76	-71.0	V	3.0	-20.9	34.4	1.0	-54.3	-13.0	-41.3	
5.64	-72.9	V	3.0	-19.1	34.1	1.0	-52.3	-13.0	-39.3	
7.52	-72.0	V	3.0	-15.8	33.5	1.0	-48.3	-13.0	-35.3	
High Channel (1907.6MHz)										
3.82	-70.2	H	3.0	-20.0	34.4	1.0	-53.4	-13.0	-40.4	
5.72	-72.3	H	3.0	-18.6	34.1	1.0	-51.7	-13.0	-38.7	
7.63	-73.2	H	3.0	-16.5	33.4	1.0	-49.0	-13.0	-36.0	
3.82	-70.8	V	3.0	-20.6	34.4	1.0	-53.9	-13.0	-40.9	
5.72	-72.5	V	3.0	-18.7	34.1	1.0	-51.8	-13.0	-38.8	
7.63	-73.1	V	3.0	-16.7	33.4	1.0	-49.1	-13.0	-36.1	

Rev. 03.19.15

UMTS REL 99, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/14/17
Test Engineer: 31300
Configuration: EUT Only
Mode: REL 99, 1700MHz

Test Equipment:
 Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
 3m Chamber F

Pre-amplifier
 3m Chamber F

Filter
 Filter

Limit
 EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.4MHz)										
3.42	-73.7	H	3.0	-25.0	34.6	1.0	-58.6	-13.0	-45.6	
5.14	-72.6	H	3.0	-19.9	34.2	1.0	-53.0	-13.0	-40.0	
6.85	-73.0	H	3.0	-17.4	33.9	1.0	-50.4	-13.0	-37.4	
3.42	-73.2	V	3.0	-24.3	34.6	1.0	-57.9	-13.0	-44.9	
5.14	-72.8	V	3.0	-19.8	34.2	1.0	-52.9	-13.0	-39.9	
6.85	-73.0	V	3.0	-17.6	33.9	1.0	-50.5	-13.0	-37.5	
Mid Channel (1732.6MHz)										
3.47	-72.5	H	3.0	-23.7	34.6	1.0	-57.2	-13.0	-44.2	
5.20	-71.8	H	3.0	-19.0	34.2	1.0	-52.2	-13.0	-39.2	
6.93	-72.0	H	3.0	-16.4	33.9	1.0	-49.3	-13.0	-36.3	
3.47	-72.9	V	3.0	-23.8	34.6	1.0	-57.4	-13.0	-44.4	
5.20	-72.1	V	3.0	-18.9	34.2	1.0	-52.1	-13.0	-39.1	
6.93	-72.5	V	3.0	-17.0	33.9	1.0	-49.9	-13.0	-36.9	
High Channel (1752.6MHz)										
3.51	-73.5	H	3.0	-24.4	34.5	1.0	-58.0	-13.0	-45.0	
5.26	-72.0	H	3.0	-19.0	34.2	1.0	-52.2	-13.0	-39.2	
7.01	-73.1	H	3.0	-17.3	33.9	1.0	-50.2	-13.0	-37.2	
3.51	-73.5	V	3.0	-24.3	34.5	1.0	-57.9	-13.0	-44.9	
5.26	-72.2	V	3.0	-19.0	34.2	1.0	-52.2	-13.0	-39.2	
7.01	-73.2	V	3.0	-17.6	33.9	1.0	-50.5	-13.0	-37.5	

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UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
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UMTS HSDPA, 1700MHz BAND 4

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:

Project #:

Date: 04/14/17

Test Engineer: 31300

Configuration: EUT Only

Mode: HSDPA 1700MHz

Test Equipment:

Substitution: Horn T59 Substitution, and 8ft SMA Cable

Chamber
3m Chamber F

Pre-amplifier
3m Chamber F

Filter
Filter

Limit
EIRP

Frequency (GHz)	SA reading (dBm)	Ant. Pol. (H/V)	Distance	EIRP @ TX Ant End (dBm)	Preamp	Attenuator	EIRP	Limit	Delta	Notes
Low Channel (1712.4MHz)										
3.42	-72.9	H	3.0	-24.2	34.6	1.0	-57.8	-13.0	-44.8	
5.14	-72.6	H	3.0	-19.8	34.2	1.0	-53.0	-13.0	-40.0	
6.85	-72.7	H	3.0	-17.1	33.9	1.0	-50.1	-13.0	-37.1	
3.42	-72.8	V	3.0	-23.9	34.6	1.0	-57.5	-13.0	-44.5	
5.14	-72.6	V	3.0	-19.5	34.2	1.0	-52.7	-13.0	-39.7	
6.85	-73.0	V	3.0	-17.6	33.9	1.0	-50.6	-13.0	-37.6	
Mid Channel (1732.6MHz)										
3.47	-73.1	H	3.0	-24.3	34.6	1.0	-57.8	-13.0	-44.8	
5.20	-71.8	H	3.0	-18.9	34.2	1.0	-52.1	-13.0	-39.1	
6.93	-71.5	H	3.0	-15.8	33.9	1.0	-48.8	-13.0	-35.8	
3.47	-73.5	V	3.0	-24.4	34.6	1.0	-58.0	-13.0	-45.0	
5.20	-71.7	V	3.0	-18.5	34.2	1.0	-51.7	-13.0	-38.7	
6.93	-72.4	V	3.0	-16.9	33.9	1.0	-49.8	-13.0	-36.8	
High Channel (1752.6MHz)										
3.51	-73.2	H	3.0	-24.1	34.5	1.0	-57.7	-13.0	-44.7	
5.26	-71.9	H	3.0	-19.0	34.2	1.0	-52.1	-13.0	-39.1	
7.01	-72.9	H	3.0	-17.1	33.9	1.0	-50.0	-13.0	-37.0	
3.51	-73.5	V	3.0	-24.3	34.5	1.0	-57.9	-13.0	-44.9	
5.26	-72.1	V	3.0	-18.9	34.2	1.0	-52.0	-13.0	-39.0	
7.01	-72.9	V	3.0	-17.3	33.9	1.0	-50.2	-13.0	-37.2	

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