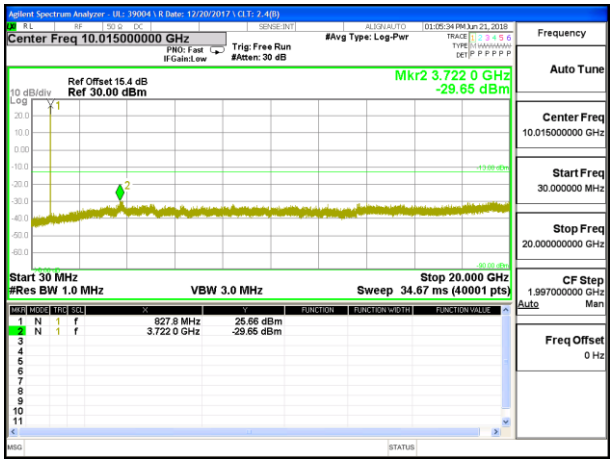
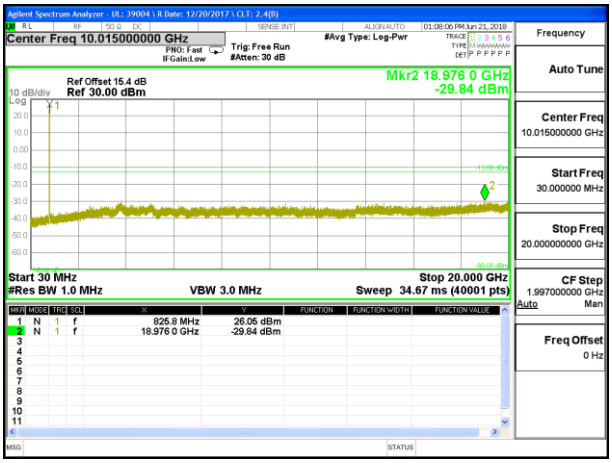
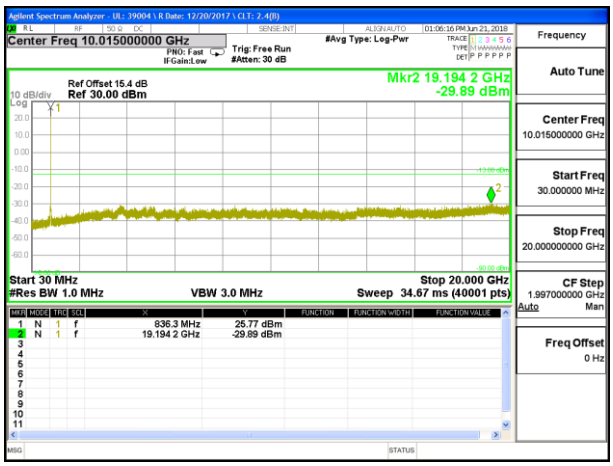
8.3.6. WCDMA BAND 5



WCDMA Band 5 Rel 99 Low Channel



WCDMA Band 5 HSDPA Low Channel



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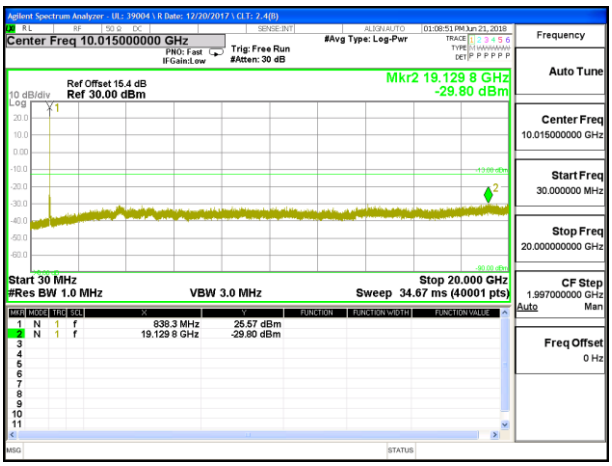

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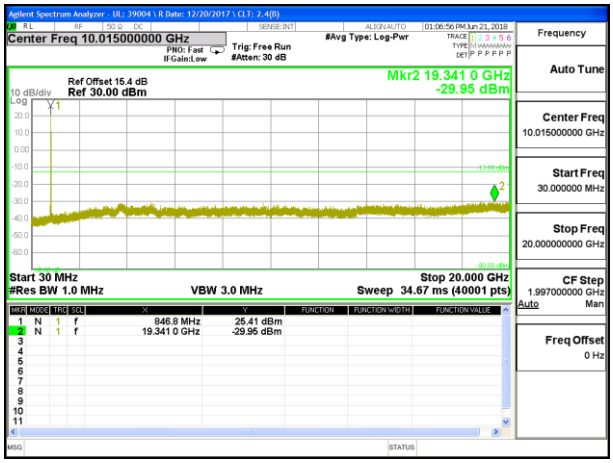

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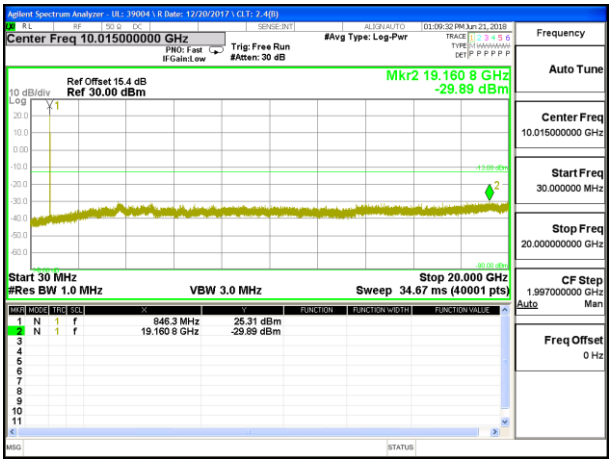

WCDMA Band 5 HSDPA High Channel

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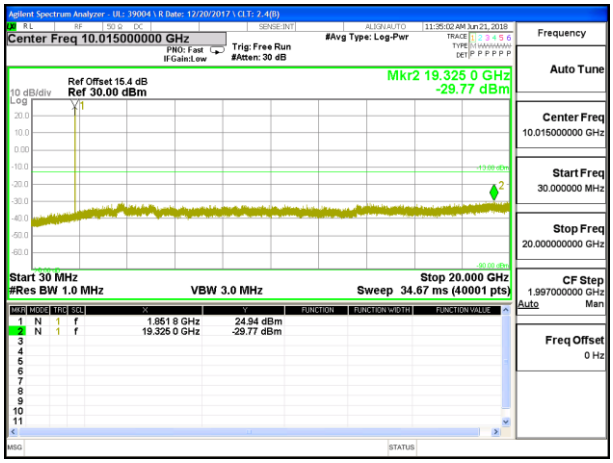
8.3.7. WCDMA BAND 2



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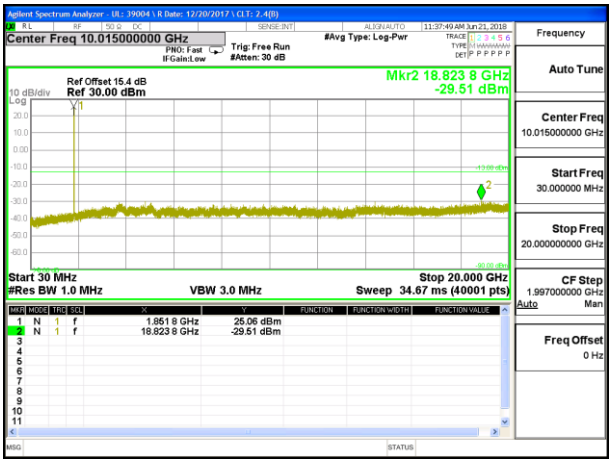

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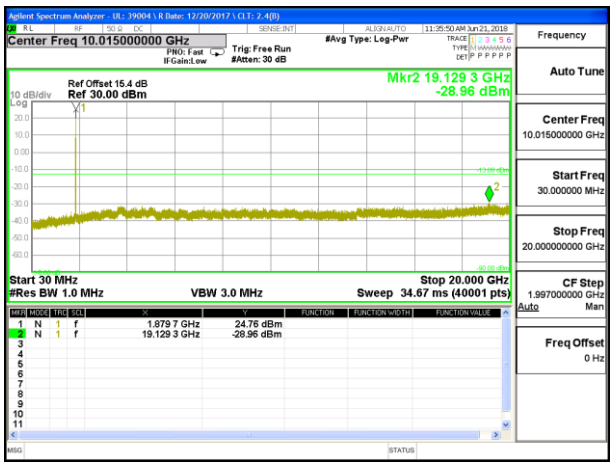

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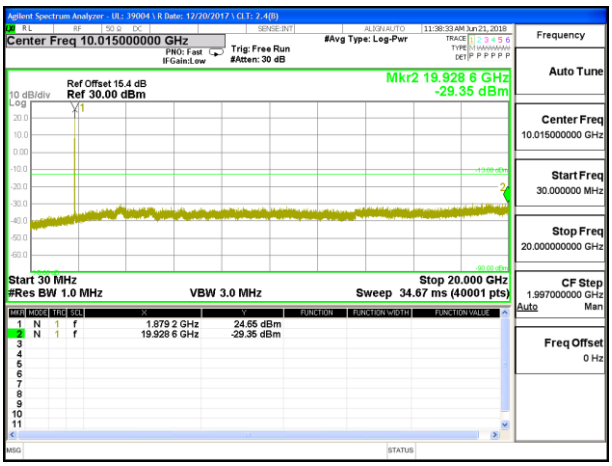
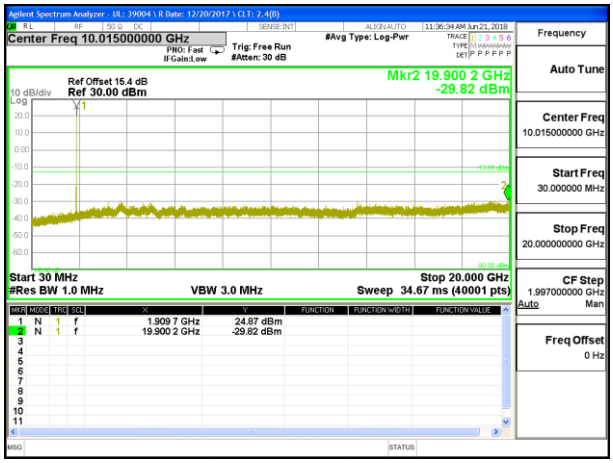


WCDMA Band 2 HSDPA Middle Channel



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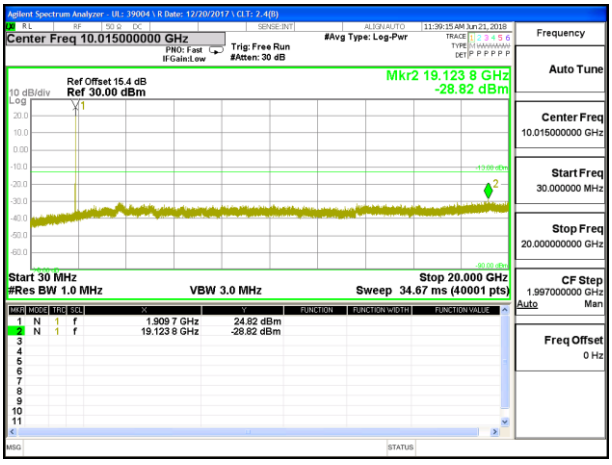

WCDMA Band 2 HSDPA High Channel

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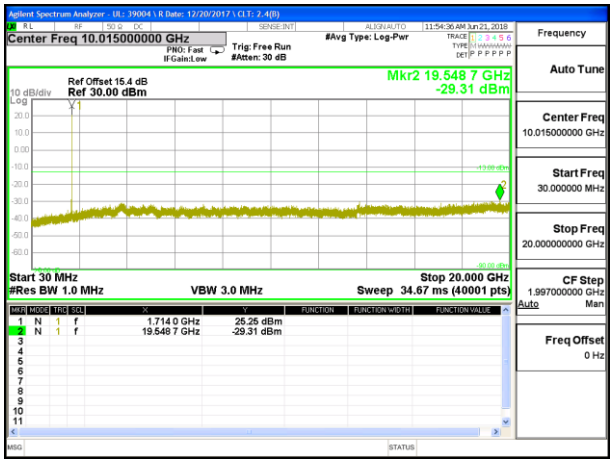
8.3.8. WCDMA BAND 4



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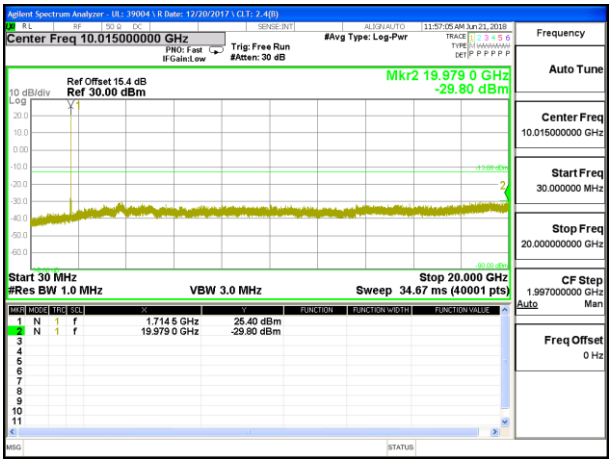
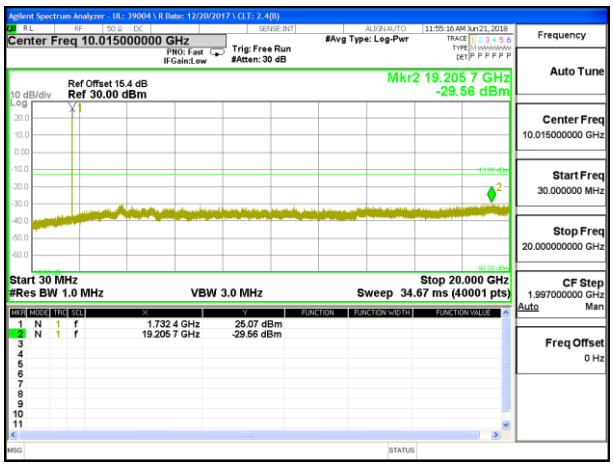


WCDMA Band 4 HSDPA Low Channel



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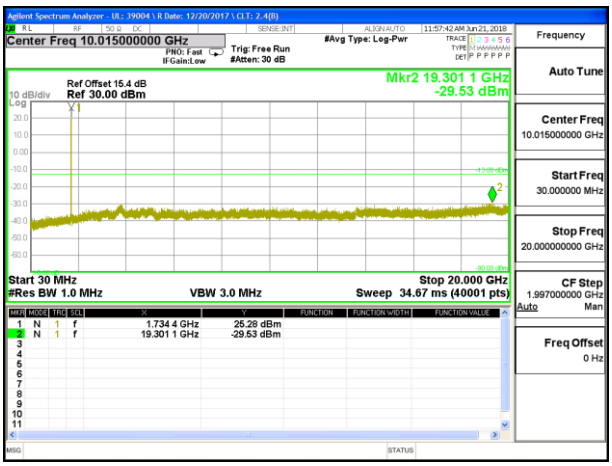
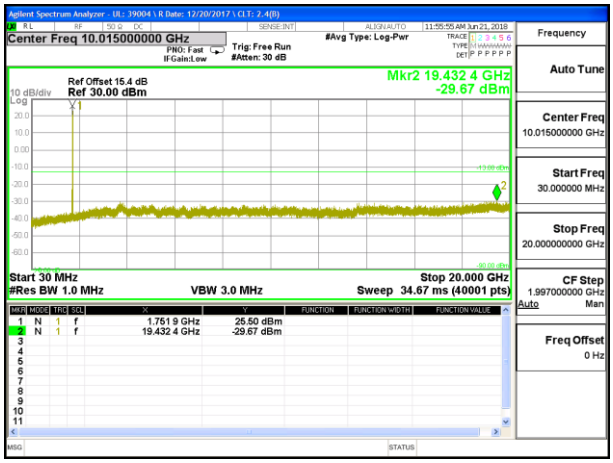
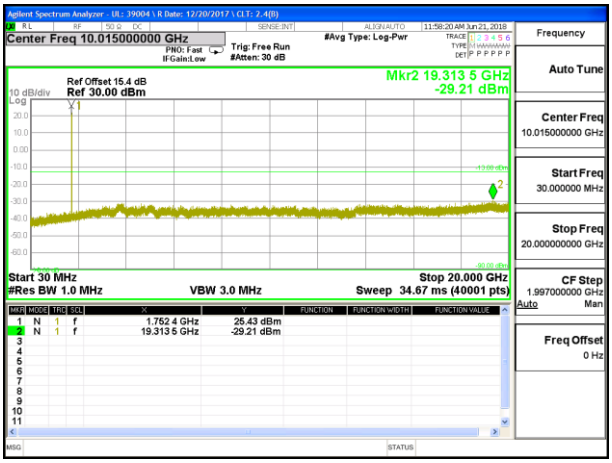


WCDMA Band 4 HSDPA Middle Channel



WCDMA Band 4 Rel 99 High Channel



WCDMA Band 4 HSDPA High Channel

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8.4. 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, §90.213
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.

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°C to +50°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 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

See the following pages.

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8.4.1. GSM

ID:	12492	Date:	3/16/18

GPRS 850MHz

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.2460	848.9620		
Extreme (50C)		824.2460	848.9620	-29.2	-0.035
Extreme (40C)		824.2460	848.9620	-28.8	-0.034
Extreme (30C)		824.2460	848.9620	-29.7	-0.035
Extreme (10C)		824.2460	848.9620	-29.1	-0.035
Extreme (0C)		824.2460	848.9620	-27.5	-0.033
Extreme (-10C)		824.2460	848.9620	-33.3	-0.040
Extreme (-20C)		824.2460	848.9620	-26.2	-0.031
Extreme (-30C)		824.2460	848.9620	35.7	0.043
20C	15%	824.2460	848.9620	-37.5	-0.045
	-15%	824.2460	848.9620	-20.9	-0.025
	End Point	824.2460	848.9620	-19.8	-0.024

GPRS 1900MHz

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.0630	1909.9380		
Extreme (50C)		1850.0631	1909.9381	59.9	0.032
Extreme (40C)		1850.0631	1909.9381	50.5	0.027
Extreme (30C)		1850.0630	1909.9380	-33.7	-0.018
Extreme (10C)		1850.0629	1909.9379	-52.9	-0.028
Extreme (0C)		1850.0630	1909.9380	-31.2	-0.017
Extreme (-10C)		1850.0630	1909.9380	47.6	0.025
Extreme (-20C)		1850.0631	1909.9381	105.2	0.056
Extreme (-30C)		1850.0631	1909.9381	106.3	0.057
20C	15%	1850.0633	1909.9383	312.1	0.166
	-15%	1850.0628	1909.9378	-249.2	-0.133
	End Point	1850.0633	1909.9383	339.0	0.180

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8.4.2. CDMA

ID:	12482	Date:	3/17/18

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	816.6010	823.4160		
Extreme (50C)		816.6010	823.4160	26.4	0.032
Extreme (40C)		816.6010	823.4160	-34.6	-0.042
Extreme (30C)		816.6010	823.4160	-33.6	-0.041
Extreme (10C)		816.6010	823.4160	-27.6	-0.034
Extreme (0C)		816.6010	823.4160	20.1	0.024
Extreme (-10C)		816.6010	823.4160	-28.7	-0.035
Extreme (-20C)		816.6010	823.4160	19.2	0.023
Extreme (-30C)		816.6010	823.4160	-16.3	-0.020
20C	15%	816.6010	823.4160	-18.8	-0.023
	-15%	816.6010	823.4160	20.5	0.025
	End Point	816.6010	823.4160	29.0	0.035

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	824.0200	848.9910		
Extreme (50C)		824.0200	848.9910	41.8	0.050
Extreme (40C)		824.0200	848.9910	8.1	0.010
Extreme (30C)		824.0200	848.9910	9.3	0.011
Extreme (10C)		824.0200	848.9910	-9.6	-0.011
Extreme (0C)		824.0200	848.9910	-9.8	-0.012
Extreme (-10C)		824.0200	848.9910	7.7	0.009
Extreme (-20C)		824.0200	848.9910	-7.9	-0.009
Extreme (-30C)		824.0200	848.9910	6.4	0.008
20C	15%	824.0200	848.9910	10.5	0.013
	-15%	824.0200	848.9910	12.2	0.015
	End Point	824.0200	848.9910	10.6	0.013

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CDMA 1xRTT BC1

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm (MHz)	F high @ -13dBm (MHz)		
Temperature	Voltage				
Normal (20C)	Normal	1850.5690	1909.4280		
Extreme (50C)		1850.5690	1909.4280	47.7	0.025
Extreme (40C)		1850.5691	1909.4281	57.1	0.030
Extreme (30C)		1850.5690	1909.4280	-42.3	-0.023
Extreme (10C)		1850.5690	1909.4280	-40.6	-0.022
Extreme (0C)		1850.5690	1909.4280	47.8	0.025
Extreme (-10C)		1850.5689	1909.4279	-130.7	-0.070
Extreme (-20C)		1850.5689	1909.4279	-115.1	-0.061
Extreme (-30C)		1850.5689	1909.4279	-133.3	-0.071
20C	15%	1850.5690	1909.4280	-44.2	-0.023
	-15%	1850.5690	1909.4280	-38.5	-0.020
	End Point	1850.5690	1909.4280	-39.2	-0.021

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8.4.3. WCDMA

ID:	12492	Date:	3/15/18

WCDMA REL 99 BAND 5

Limit		824	849	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.1870	848.8230		
Extreme (50C)		824.1870	848.8230	-6.6	-0.008
Extreme (40C)		824.1870	848.8230	-19.3	-0.023
Extreme (30C)		824.1870	848.8230	-30.0	-0.036
Extreme (10C)		824.1870	848.8230	-6.9	-0.008
Extreme (0C)		824.1870	848.8230	8.0	0.010
Extreme (-10C)		824.1870	848.8230	6.4	0.008
Extreme (-20C)		824.1871	848.8231	64.3	0.077
Extreme (-30C)		824.1870	848.8230	-16.2	-0.019
20C	15%	824.1871	848.8231	65.7	0.079
	-15%	824.1871	848.8231	71.6	0.086
	End Point	824.1871	848.8231	64.4	0.077

WCDMA REL 99 BAND 2

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.1910	1909.8020		
Extreme (50C)		1850.1910	1909.8020	33.1	0.018
Extreme (40C)		1850.1910	1909.8020	29.0	0.015
Extreme (30C)		1850.1910	1909.8020	29.8	0.016
Extreme (10C)		1850.1910	1909.8020	26.5	0.014
Extreme (0C)		1850.1910	1909.8020	-25.6	-0.014
Extreme (-10C)		1850.1911	1909.8021	60.7	0.032
Extreme (-20C)		1850.1910	1909.8020	22.9	0.012
Extreme (-30C)		1850.1910	1909.8020	-39.0	-0.021
20C	15%	1850.1910	1909.8020	-15.2	-0.008
	-15%	1850.1910	1909.8020	-17.3	-0.009
	End Point	1850.1910	1909.8020	-15.1	-0.008

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WCDMA REL 99 BAND 4

Limit		1710	1755	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.2000	1754.8130		
Extreme (50C)		1710.2000	1754.8130	30.7	0.018
Extreme (40C)		1710.2001	1754.8131	128.1	0.074
Extreme (30C)		1710.2001	1754.8131	98.2	0.057
Extreme (10C)		1710.1999	1754.8129	-61.9	-0.036
Extreme (0C)		1710.2000	1754.8130	48.4	0.028
Extreme (-10C)		1710.2000	1754.8130	17.0	0.010
Extreme (-20C)		1710.2000	1754.8130	22.9	0.013
Extreme (-30C)		1710.2000	1754.8130	18.1	0.010
20C	15%	1710.2000	1754.8130	24.7	0.014
	-15%	1710.2000	1754.8130	24.8	0.014
	End Point	1710.2000	1754.8130	25.7	0.015

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8.5. PEAK-TO-AVERAGE POWER RATIO

LIMIT

In addition, the peak-to-average power ratio (PAPR) of the transmitter shall not exceed 13 dB for more than 0.1% of the time and shall use a signal corresponding to the highest PAPR during periods of continuous transmission.

RESULT

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

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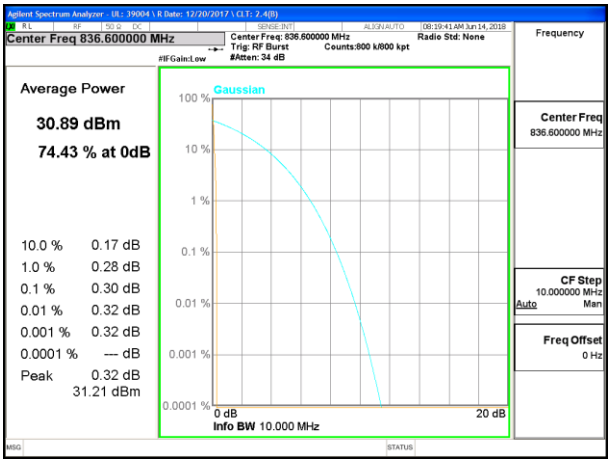
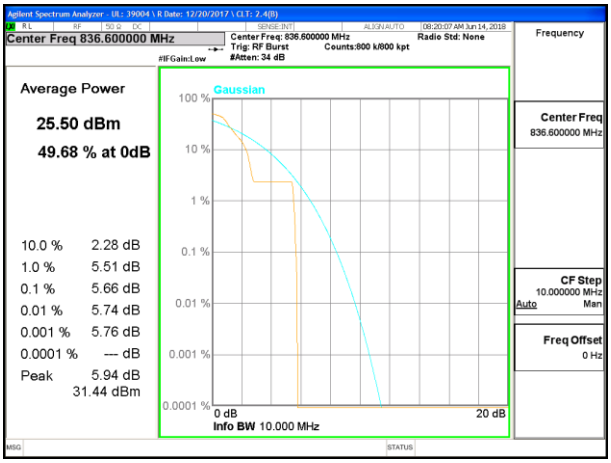
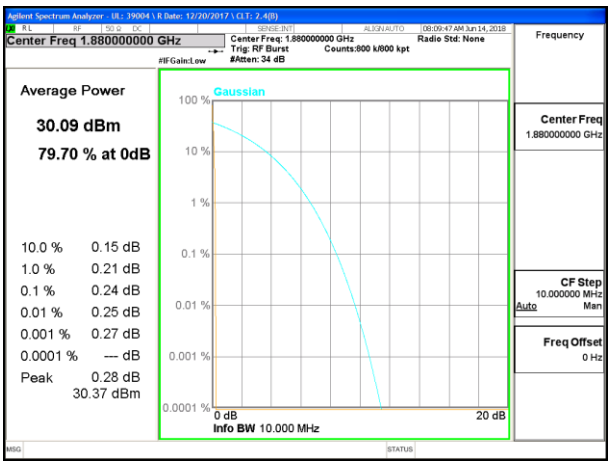
8.5.1. GSM



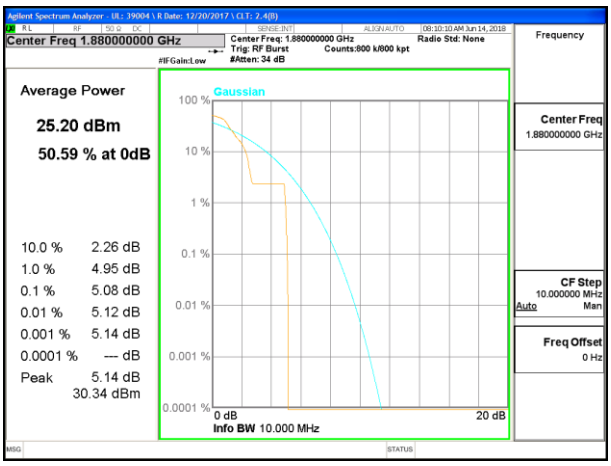
GSM 850MHz GPRS Middle Channel



GSM 850MHz EGPRS Middle Channel



GSM 1900MHz GPRS Middle Channel



GSM 1900MHz EGPRS Middle Channel

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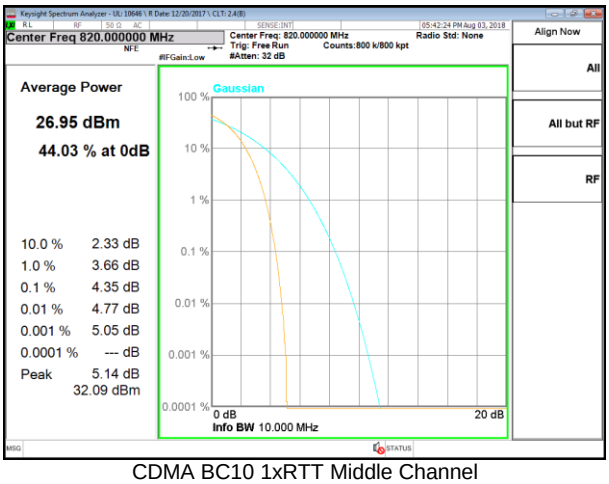
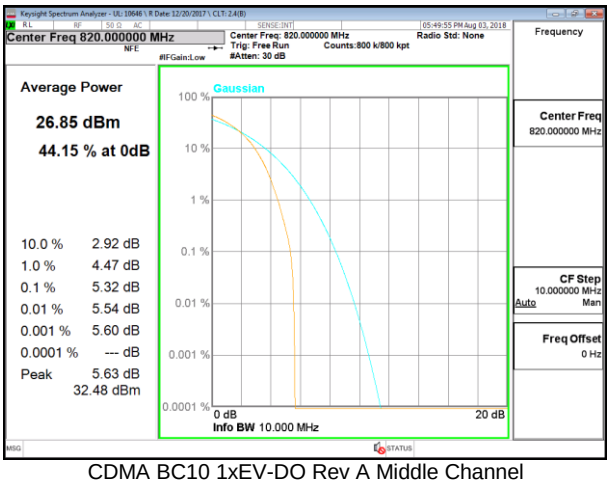
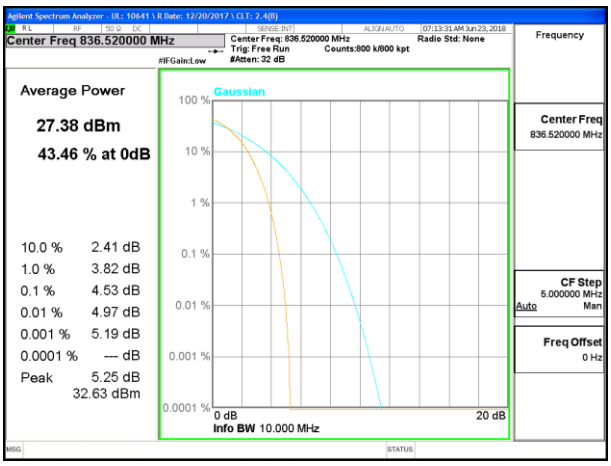
8.5.2. CDMA



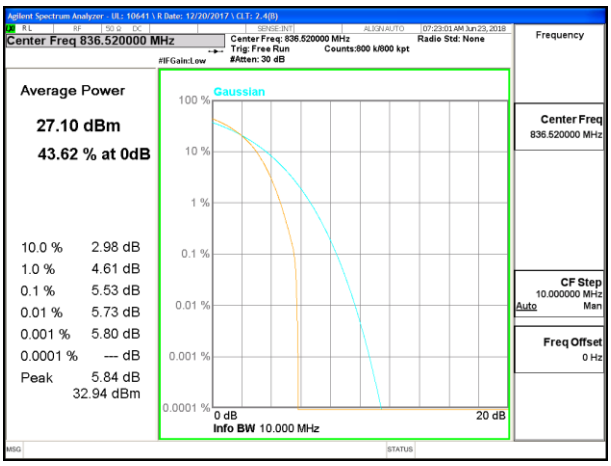
CDMA BC10 1xRTT Middle Channel



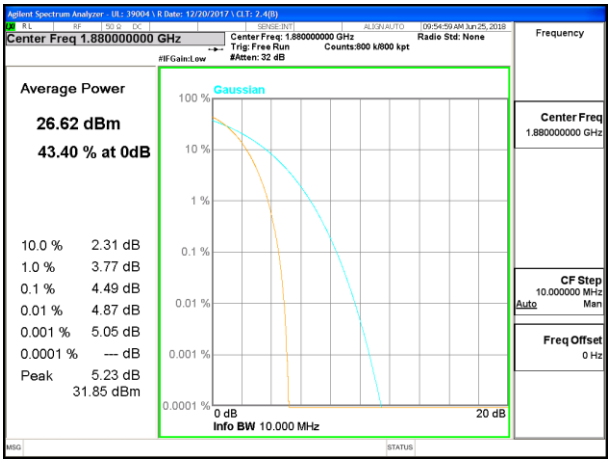
CDMA BC10 1xEV-DO Rev A Middle Channel



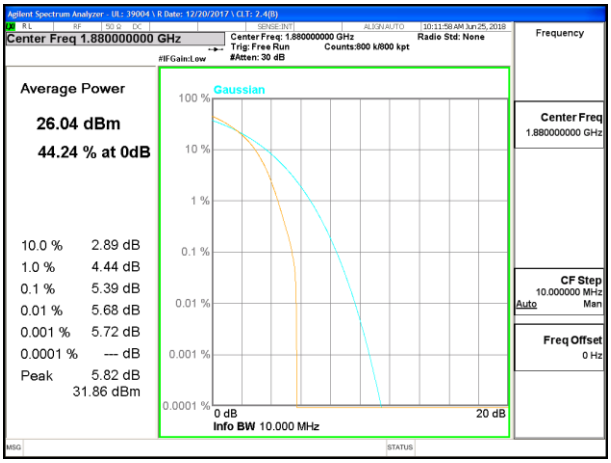
CDMA BC0 1xRTT Middle Channel



CDMA BC0 1xEV-DO Rev A Middle Channel



CDMA BC1 1xRTT Middle Channel



CDMA BC1 1xEV-DO Rev A Middle Channel

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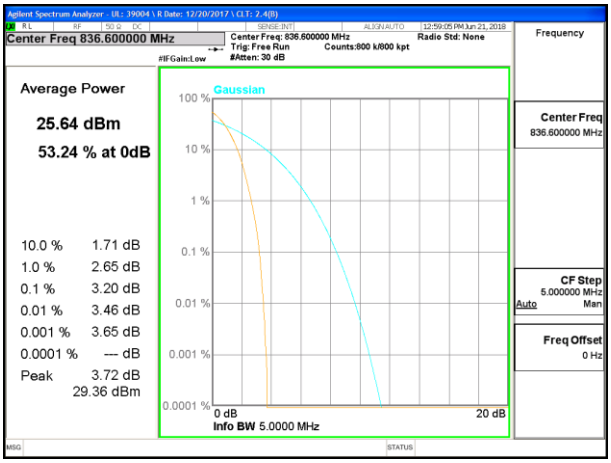
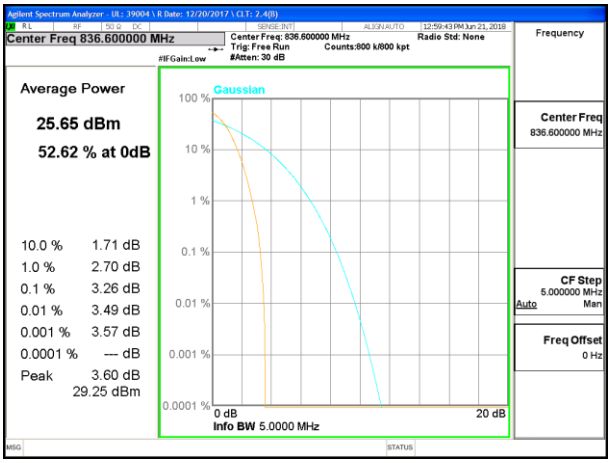
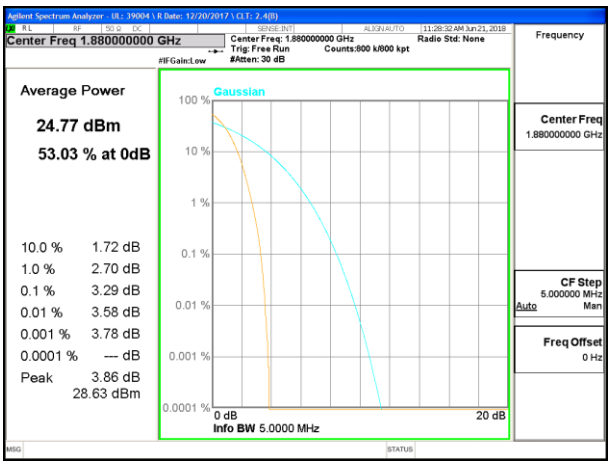
8.5.3. WCDMA



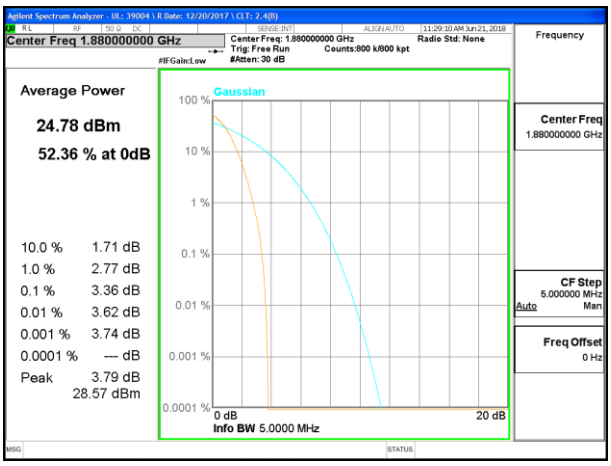
WCDMA Band 5 Rel 99 Middle Channel



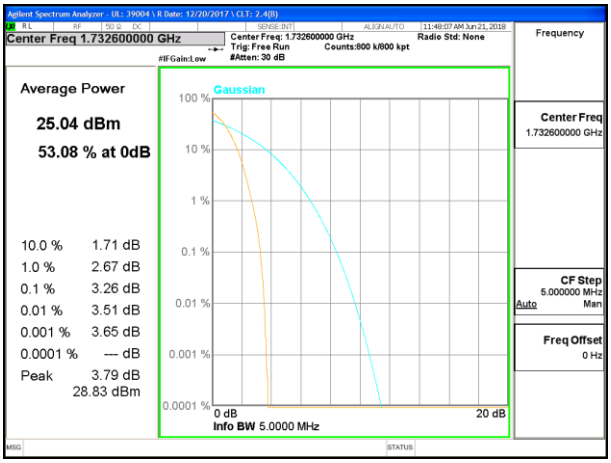
WCDMA Band 5 HSDPA Middle Channel



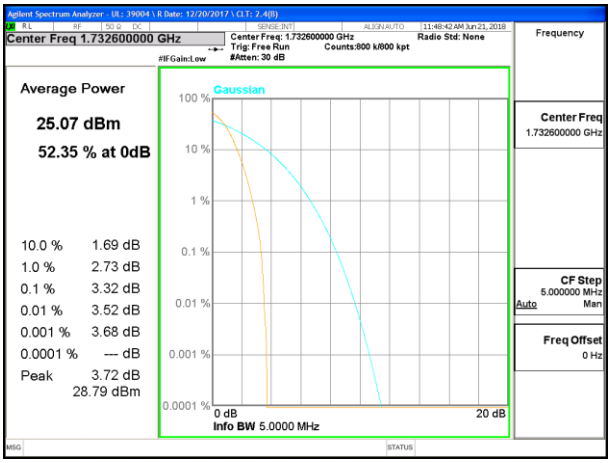
WCDMA Band 2 Rel 99 Middle Channel



WCDMA Band 2 HSDPA Middle Channel



WCDMA Band 4 Rel 99 Middle Channel



WCDMA Band 4 HSDPA Middle Channel

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9. RADIATED TEST RESULTS

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(a), §24.238(a), §27.53 (h), §90.691
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.

RSS132§5.5
Mobile and base station equipment shall comply with the limits in (i) and (ii) below.

(i) 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 log10p (watts).

(ii) After the first 1.0 MHz immediately outside and adjacent to each of the sub-bands, the power of emissions in any100 kHz bandwidth shall be attenuated (in dB) below the transmitter output power P (dBW) by at least43 + 10 log10 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 log10p(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 log10p (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,Footnote2 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 least43 + 10 log10 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 log10 p (watts) dB.

TEST PROCEDURE

KDB 971168 D01 Section 7

RESULTS

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9.1. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 1

9.1.1. GSM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/17/18
Test Engineer: 19459
Configuration: EUT only
Mode: GPRS 850MHz

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-66.0	H	3.0	-24.2	36.5	1.0	-59.7	-13.0	-46.7	
2.47	-67.2	H	3.0	-21.5	35.2	1.0	-55.7	-13.0	-42.7	
3.30	-67.3	H	3.0	-18.5	34.6	1.0	-52.1	-13.0	-39.1	
1.65	-67.2	V	3.0	-24.6	36.5	1.0	-60.1	-13.0	-47.1	
2.47	-67.3	V	3.0	-21.5	35.2	1.0	-55.7	-13.0	-42.7	
3.30	-67.1	V	3.0	-17.6	34.6	1.0	-51.2	-13.0	-38.2	
Mid Channel (836.6MHz)										
1.67	-64.4	H	3.0	-22.5	36.5	1.0	-58.0	-13.0	-45.0	
2.51	-64.1	H	3.0	-18.2	35.1	1.0	-52.3	-13.0	-39.3	
3.35	-67.5	H	3.0	-18.5	34.6	1.0	-52.1	-13.0	-39.1	
1.67	-67.1	V	3.0	-24.3	36.5	1.0	-59.8	-13.0	-46.8	
2.51	-64.5	V	3.0	-18.6	35.1	1.0	-52.7	-13.0	-39.7	
3.35	-68.0	V	3.0	-18.4	34.6	1.0	-52.0	-13.0	-39.0	
High Channel (848.8MHz)										
1.70	-65.3	H	3.0	-23.1	36.4	1.0	-58.5	-13.0	-45.5	
2.55	-66.1	H	3.0	-20.0	35.1	1.0	-54.1	-13.0	-41.1	
3.40	-67.4	H	3.0	-18.2	34.5	1.0	-51.7	-13.0	-38.7	
1.70	-65.3	V	3.0	-22.3	36.4	1.0	-57.7	-13.0	-44.7	
2.55	-66.3	V	3.0	-20.1	35.1	1.0	-54.3	-13.0	-41.3	
3.40	-68.4	V	3.0	-18.7	34.5	1.0	-52.2	-13.0	-39.2	

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GSM 850MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/17/18
Test Engineer: 19459
Configuration: EUT only
Mode: EGPRS 850MHz

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-65.6	H	3.0	-23.8	36.5	1.0	-59.3	-13.0	-46.3	
2.47	-66.8	H	3.0	-21.1	35.2	1.0	-55.2	-13.0	-42.2	
3.30	-66.7	H	3.0	-17.9	34.6	1.0	-51.5	-13.0	-38.5	
1.65	-66.8	V	3.0	-24.2	36.5	1.0	-59.7	-13.0	-46.7	
2.47	-66.8	V	3.0	-21.0	35.2	1.0	-55.2	-13.0	-42.2	
3.30	-66.7	V	3.0	-17.2	34.6	1.0	-50.8	-13.0	-37.8	
Mid Channel (836.6MHz)										
1.67	-64.1	H	3.0	-22.1	36.5	1.0	-57.6	-13.0	-44.6	
2.51	-63.7	H	3.0	-17.8	35.1	1.0	-51.9	-13.0	-38.9	
3.35	-67.1	H	3.0	-18.1	34.6	1.0	-51.7	-13.0	-38.7	
1.67	-66.7	V	3.0	-23.9	36.5	1.0	-59.4	-13.0	-46.4	
2.51	-64.1	V	3.0	-18.2	35.1	1.0	-52.3	-13.0	-39.3	
3.35	-67.6	V	3.0	-18.0	34.6	1.0	-51.5	-13.0	-38.5	
High Channel (848.8MHz)										
1.70	-64.7	H	3.0	-22.5	36.4	1.0	-57.9	-13.0	-44.9	
2.55	-65.6	H	3.0	-19.6	35.1	1.0	-53.7	-13.0	-40.7	
3.40	-66.9	H	3.0	-17.8	34.5	1.0	-51.3	-13.0	-38.3	
1.70	-64.8	V	3.0	-21.8	36.4	1.0	-57.2	-13.0	-44.2	
2.55	-65.9	V	3.0	-19.7	35.1	1.0	-53.8	-13.0	-40.8	
3.40	-68.0	V	3.0	-18.3	34.5	1.0	-51.8	-13.0	-38.8	

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GSM 850MHz EGPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/16/18
Test Engineer: 19459
Configuration: EUT only
Mode: GPRS 1900MHz

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-66.6	H	3.0	-16.7	34.1	1.0	-49.8	-13.0	-36.8	
5.55	-66.1	H	3.0	-12.1	33.3	1.0	-44.4	-13.0	-31.4	
7.40	-68.5	H	3.0	-11.1	33.1	1.0	-43.2	-13.0	-30.2	
3.70	-66.0	V	3.0	-15.6	34.1	1.0	-48.8	-13.0	-35.8	
5.55	-66.4	V	3.0	-12.5	33.3	1.0	-44.8	-13.0	-31.8	
7.40	-69.3	V	3.0	-11.9	33.1	1.0	-44.0	-13.0	-31.0	
Mid Channel (1880.0)										
3.76	-66.2	H	3.0	-16.1	34.1	1.0	-49.1	-13.0	-36.1	
5.64	-66.8	H	3.0	-12.7	33.3	1.0	-45.0	-13.0	-32.0	
7.52	-67.7	H	3.0	-10.2	33.0	1.0	-42.2	-13.0	-29.2	
3.76	-65.6	V	3.0	-15.2	34.1	1.0	-48.3	-13.0	-35.3	
5.64	-67.8	V	3.0	-13.8	33.3	1.0	-46.0	-13.0	-33.0	
7.52	-69.2	V	3.0	-11.6	33.0	1.0	-43.6	-13.0	-30.6	
High Channel (1909.8MHz)										
3.82	-66.1	H	3.0	-15.8	34.0	1.0	-48.8	-13.0	-35.8	
5.73	-66.7	H	3.0	-12.4	33.3	1.0	-44.7	-13.0	-31.7	
7.54	-67.7	H	3.0	-10.0	33.0	1.0	-42.1	-13.0	-29.1	
3.82	-65.9	V	3.0	-15.3	34.0	1.0	-48.3	-13.0	-35.3	
5.73	-65.5	V	3.0	-11.2	33.3	1.0	-43.5	-13.0	-30.5	
7.54	-69.1	V	3.0	-11.4	33.0	1.0	-43.5	-13.0	-30.5	

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GSM 1900MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/17/18
Test Engineer: 19459
Configuration: EUT only
Mode: EGPRS 1900MHz

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-66.3	H	3.0	-16.3	34.1	1.0	-49.5	-13.0	-36.5	
5.55	-65.8	H	3.0	-11.8	33.3	1.0	-44.1	-13.0	-31.1	
7.40	-68.2	H	3.0	-10.7	33.1	1.0	-42.8	-13.0	-29.8	
3.70	-65.6	V	3.0	-15.3	34.1	1.0	-48.4	-13.0	-35.4	
5.55	-66.2	V	3.0	-12.3	33.3	1.0	-44.6	-13.0	-31.6	
7.40	-68.8	V	3.0	-11.4	33.1	1.0	-43.4	-13.0	-30.4	
Mid Channel (1880.0)										
3.76	-65.8	H	3.0	-15.7	34.1	1.0	-48.8	-13.0	-35.8	
5.64	-66.5	H	3.0	-12.3	33.3	1.0	-44.6	-13.0	-31.6	
7.52	-67.4	H	3.0	-9.8	33.0	1.0	-41.8	-13.0	-28.8	
3.76	-65.3	V	3.0	-14.8	34.1	1.0	-47.9	-13.0	-34.9	
5.64	-67.5	V	3.0	-13.4	33.3	1.0	-45.7	-13.0	-32.7	
7.52	-68.8	V	3.0	-11.2	33.0	1.0	-43.3	-13.0	-30.3	
High Channel (1909.8MHz)										
3.82	-65.7	H	3.0	-15.5	34.0	1.0	-48.5	-13.0	-35.5	
5.73	-66.4	H	3.0	-12.0	33.3	1.0	-44.3	-13.0	-31.3	
7.54	-67.4	H	3.0	-9.8	33.0	1.0	-41.8	-13.0	-28.8	
3.82	-65.5	V	3.0	-15.0	34.0	1.0	-48.0	-13.0	-35.0	
5.73	-65.1	V	3.0	-10.9	33.3	1.0	-43.2	-13.0	-30.2	
7.54	-68.7	V	3.0	-11.1	33.0	1.0	-43.1	-13.0	-30.1	

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GSM 1900MHz EGPRS

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9.1.2. CDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: 1xRTT 800MHz

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

Chamber: 3m Chamber E | Pre-amplifer: 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 (817.25MHz)										
1.63	-65.8	H	3.0	-23.3	37.8	1.0	-60.2	-13.0	-47.2	
2.45	-68.4	H	3.0	-23.5	38.4	1.0	-60.9	-13.0	-47.9	
3.27	-69.1	H	3.0	-20.2	38.5	1.0	-57.6	-13.0	-44.6	
1.63	-66.6	V	3.0	-24.5	37.8	1.0	-61.4	-13.0	-48.4	
2.45	-66.9	V	3.0	-21.8	38.4	1.0	-59.2	-13.0	-46.2	
3.27	-68.6	V	3.0	-20.0	38.5	1.0	-57.5	-13.0	-44.5	
Mid Channel (820MHz)										
1.64	-65.8	H	3.0	-23.3	37.8	1.0	-60.2	-13.0	-47.2	
2.46	-68.5	H	3.0	-23.6	38.4	1.0	-61.0	-13.0	-48.0	
3.28	-68.6	H	3.0	-19.7	38.5	1.0	-57.1	-13.0	-44.1	
1.64	-66.1	V	3.0	-24.0	37.8	1.0	-60.9	-13.0	-47.9	
2.46	-67.9	V	3.0	-22.8	38.4	1.0	-60.2	-13.0	-47.2	
3.28	-69.8	V	3.0	-21.1	38.5	1.0	-58.6	-13.0	-45.6	
High Channel (822.75MHz)										
1.65	-66.2	H	3.0	-23.8	37.8	1.0	-60.6	-13.0	-47.6	
2.47	-67.4	H	3.0	-22.4	38.5	1.0	-59.8	-13.0	-46.8	
3.29	-69.0	H	3.0	-20.1	38.5	1.0	-57.6	-13.0	-44.6	
1.65	-66.4	V	3.0	-24.2	37.8	1.0	-61.1	-13.0	-48.1	
2.47	-68.4	V	3.0	-23.3	38.5	1.0	-60.7	-13.0	-47.7	
3.29	-68.9	V	3.0	-20.2	38.5	1.0	-57.7	-13.0	-44.7	

Rev. 03.19.15

CDMA BC10 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: Rev 0/A, 800MHz

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

Chamber: 3m Chamber E | Pre-amplifer: 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 (817.25MHz)										
1.63	-65.3	H	3.0	-22.9	37.8	1.0	-59.7	-13.0	-46.7	
2.45	-68.2	H	3.0	-23.3	38.4	1.0	-60.7	-13.0	-47.7	
3.27	-68.8	H	3.0	-19.9	38.5	1.0	-57.4	-13.0	-44.4	
1.63	-66.1	V	3.0	-24.1	37.8	1.0	-60.9	-13.0	-47.9	
2.45	-66.5	V	3.0	-21.5	38.4	1.0	-58.9	-13.0	-45.9	
3.27	-68.3	V	3.0	-19.7	38.5	1.0	-57.1	-13.0	-44.1	
Mid Channel (820MHz)										
1.64	-65.4	H	3.0	-23.0	37.8	1.0	-59.8	-13.0	-46.8	
2.46	-68.2	H	3.0	-23.2	38.4	1.0	-60.7	-13.0	-47.7	
3.28	-68.2	H	3.0	-19.3	38.5	1.0	-56.8	-13.0	-43.8	
1.64	-65.8	V	3.0	-23.7	37.8	1.0	-60.5	-13.0	-47.5	
2.46	-67.6	V	3.0	-22.5	38.4	1.0	-59.9	-13.0	-46.9	
3.28	-69.4	V	3.0	-20.8	38.5	1.0	-58.3	-13.0	-45.3	
High Channel (822.75MHz)										
1.65	-65.9	H	3.0	-23.4	37.8	1.0	-60.3	-13.0	-47.3	
2.47	-67.1	H	3.0	-22.1	38.5	1.0	-59.6	-13.0	-46.6	
3.29	-68.7	H	3.0	-19.8	38.5	1.0	-57.2	-13.0	-44.2	
1.65	-65.8	V	3.0	-23.7	37.8	1.0	-60.5	-13.0	-47.5	
2.47	-68.1	V	3.0	-22.9	38.5	1.0	-60.4	-13.0	-47.4	
3.29	-68.5	V	3.0	-19.9	38.5	1.0	-57.3	-13.0	-44.3	

Rev. 03.19.15

CDMA BC10 1xEV-DO Rev A

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: 1xRTT 850MHz

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

Chamber: 3m Chamber E | Pre-amplifer: 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	-69.4	H	3.0	-27.0	37.8	1.0	-63.8	-13.0	-50.8	
2.47	-71.1	H	3.0	-26.1	38.5	1.0	-63.6	-13.0	-50.6	
3.30	-71.7	H	3.0	-22.8	38.5	1.0	-60.2	-13.0	-47.2	
1.65	-68.8	V	3.0	-26.7	37.8	1.0	-63.5	-13.0	-50.5	
2.47	-70.8	V	3.0	-25.6	38.5	1.0	-63.1	-13.0	-50.1	
3.30	-71.0	V	3.0	-22.3	38.5	1.0	-59.8	-13.0	-46.8	
Mid Channel (836.52MHz)										
1.67	-68.7	H	3.0	-26.2	37.8	1.0	-63.1	-13.0	-50.1	
2.51	-71.4	H	3.0	-26.1	38.6	1.0	-63.7	-13.0	-50.7	
3.35	-71.8	H	3.0	-22.7	38.5	1.0	-60.2	-13.0	-47.2	
1.67	-70.3	V	3.0	-28.0	37.8	1.0	-64.9	-13.0	-51.9	
2.51	-71.7	V	3.0	-26.3	38.6	1.0	-63.9	-13.0	-50.9	
3.35	-71.6	V	3.0	-22.8	38.5	1.0	-60.3	-13.0	-47.3	
High Channel (848.31MHz)										
1.70	-70.4	H	3.0	-27.9	37.9	1.0	-64.7	-13.0	-51.7	
2.54	-71.5	H	3.0	-26.1	38.6	1.0	-63.7	-13.0	-50.7	
3.39	-72.0	H	3.0	-22.9	38.5	1.0	-60.4	-13.0	-47.4	
1.70	-71.0	V	3.0	-28.6	37.9	1.0	-65.4	-13.0	-52.4	
2.54	-71.4	V	3.0	-25.8	38.6	1.0	-63.4	-13.0	-50.4	
3.39	-72.5	V	3.0	-23.6	38.5	1.0	-61.1	-13.0	-48.1	

Rev. 03.19.15

CDMA BC0 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: Rev 0/A 850MHz

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

Chamber: 3m Chamber E | Pre-amplifer: 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	-70.2	H	3.0	-27.7	37.8	1.0	-64.5	-13.0	-51.5	
2.47	-72.3	H	3.0	-27.3	38.5	1.0	-64.8	-13.0	-51.8	
3.30	-71.8	H	3.0	-22.9	38.5	1.0	-60.3	-13.0	-47.3	
1.65	-69.0	V	3.0	-26.8	37.8	1.0	-63.7	-13.0	-50.7	
2.47	-70.8	V	3.0	-25.6	38.5	1.0	-63.0	-13.0	-50.0	
3.30	-71.3	V	3.0	-22.6	38.5	1.0	-60.1	-13.0	-47.1	
Mid Channel (836.52MHz)										
1.67	-69.5	H	3.0	-27.0	37.8	1.0	-63.9	-13.0	-50.9	
2.51	-69.8	H	3.0	-24.6	38.6	1.0	-62.2	-13.0	-49.2	
3.35	-71.2	H	3.0	-22.1	38.5	1.0	-59.6	-13.0	-46.6	
1.67	-68.8	V	3.0	-26.5	37.8	1.0	-63.4	-13.0	-50.4	
2.51	-71.4	V	3.0	-26.0	38.6	1.0	-63.6	-13.0	-50.6	
3.35	-71.9	V	3.0	-23.1	38.5	1.0	-60.6	-13.0	-47.6	
High Channel (848.31MHz)										
1.70	-68.7	H	3.0	-26.2	37.9	1.0	-63.0	-13.0	-50.0	
2.54	-71.8	H	3.0	-26.4	38.6	1.0	-64.0	-13.0	-51.0	
3.39	-70.8	H	3.0	-21.6	38.5	1.0	-59.1	-13.0	-46.1	
1.70	-69.4	V	3.0	-27.0	37.9	1.0	-63.9	-13.0	-50.9	
2.54	-71.6	V	3.0	-26.0	38.6	1.0	-63.6	-13.0	-50.6	
3.39	-72.6	V	3.0	-23.7	38.5	1.0	-61.2	-13.0	-48.2	

Rev. 03.19.15

CDMA BC0 1xEV-DO Rev A

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: 1xRTT 1900MHz

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

Chamber: 3m Chamber E | Pre-amplifer: 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 (1851.25MHz)										
3.70	-65.7	H	3.0	-15.7	38.6	1.0	-53.4	-13.0	-40.4	
5.55	-67.1	H	3.0	-13.0	38.6	1.0	-50.6	-13.0	-37.6	
7.41	-67.1	H	3.0	-9.4	37.8	1.0	-46.2	-13.0	-33.2	
3.70	-66.2	V	3.0	-16.3	38.6	1.0	-53.9	-13.0	-40.9	
5.55	-67.2	V	3.0	-13.5	38.6	1.0	-51.0	-13.0	-38.0	
7.41	-67.5	V	3.0	-10.0	37.8	1.0	-46.8	-13.0	-33.8	
Mid Channel (1880MHz)										
3.76	-67.5	H	3.0	-17.4	38.6	1.0	-55.1	-13.0	-42.1	
5.64	-67.5	H	3.0	-13.3	38.5	1.0	-50.8	-13.0	-37.8	
7.52	-67.9	H	3.0	-10.1	37.7	1.0	-46.8	-13.0	-33.8	
3.76	-66.6	V	3.0	-16.5	38.6	1.0	-54.2	-13.0	-41.2	
5.64	-68.1	V	3.0	-14.1	38.5	1.0	-51.7	-13.0	-38.7	
7.52	-67.7	V	3.0	-10.0	37.7	1.0	-46.8	-13.0	-33.8	
High Channel (1908.75MHz)										
3.82	-67.0	H	3.0	-16.7	38.7	1.0	-54.4	-13.0	-41.4	
5.73	-67.3	H	3.0	-12.9	38.5	1.0	-50.4	-13.0	-37.4	
7.64	-67.6	H	3.0	-9.6	37.7	1.0	-46.3	-13.0	-33.3	
3.82	-65.9	V	3.0	-15.7	38.7	1.0	-53.3	-13.0	-40.3	
5.73	-67.6	V	3.0	-13.5	38.5	1.0	-51.0	-13.0	-38.0	
7.64	-67.2	V	3.0	-9.5	37.7	1.0	-46.1	-13.0	-33.1	

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CDMA BC1 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: Rev 0/A 1900MHz

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

Chamber: 3m Chamber E | Pre-amplifer: 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 (1851.25MHz)										
3.70	-65.9	H	3.0	-15.9	38.6	1.0	-53.5	-13.0	-40.5	
5.55	-66.6	H	3.0	-12.6	38.6	1.0	-50.1	-13.0	-37.1	
7.41	-66.7	H	3.0	-9.0	37.8	1.0	-45.8	-13.0	-32.8	
3.70	-65.9	V	3.0	-16.0	38.6	1.0	-53.6	-13.0	-40.6	
5.55	-66.8	V	3.0	-13.0	38.6	1.0	-50.6	-13.0	-37.6	
7.41	-67.3	V	3.0	-9.8	37.8	1.0	-46.6	-13.0	-33.6	
Mid Channel (1880MHz)										
3.76	-67.1	H	3.0	-17.0	38.6	1.0	-54.6	-13.0	-41.6	
5.64	-67.3	H	3.0	-13.0	38.5	1.0	-50.6	-13.0	-37.6	
7.52	-67.4	H	3.0	-9.6	37.7	1.0	-46.4	-13.0	-33.4	
3.76	-66.1	V	3.0	-16.1	38.6	1.0	-53.7	-13.0	-40.7	
5.64	-67.6	V	3.0	-13.7	38.5	1.0	-51.2	-13.0	-38.2	
7.52	-67.2	V	3.0	-9.8	37.7	1.0	-46.3	-13.0	-33.3	
High Channel (1908.75MHz)										
3.82	-66.5	H	3.0	-16.3	38.7	1.0	-53.9	-13.0	-40.9	
5.73	-66.9	H	3.0	-12.5	38.5	1.0	-50.0	-13.0	-37.0	
7.64	-67.2	H	3.0	-9.2	37.7	1.0	-45.9	-13.0	-32.9	
3.82	-65.6	V	3.0	-15.4	38.7	1.0	-53.0	-13.0	-40.0	
5.73	-67.2	V	3.0	-13.0	38.5	1.0	-50.5	-13.0	-37.5	
7.64	-66.8	V	3.0	-9.0	37.7	1.0	-45.7	-13.0	-32.7	

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CDMA BC1 1xEV-DO Rev A

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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9.1.3. WCDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: REL 99, 850MHz

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

Chamber	Pre-amplifer	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 (826.4MHz)										
1.65	-68.9	H	3.0	-26.4	37.8	1.0	-63.2	-13.0	-50.2	
2.48	-67.9	H	3.0	-22.8	38.5	1.0	-60.3	-13.0	-47.3	
3.31	-66.7	H	3.0	-17.8	38.5	1.0	-55.2	-13.0	-42.2	
1.65	-68.5	V	3.0	-26.3	37.8	1.0	-63.2	-13.0	-50.2	
2.48	-68.0	V	3.0	-22.8	38.5	1.0	-60.3	-13.0	-47.3	
3.31	-66.5	V	3.0	-17.8	38.5	1.0	-55.3	-13.0	-42.3	
Mid Channel (836.6MHz)										
1.67	-68.7	H	3.0	-26.2	37.8	1.0	-63.0	-13.0	-50.0	
2.51	-67.6	H	3.0	-22.4	38.6	1.0	-59.9	-13.0	-46.9	
3.35	-65.8	H	3.0	-16.7	38.5	1.0	-54.2	-13.0	-41.2	
1.67	-69.1	V	3.0	-26.8	37.8	1.0	-63.6	-13.0	-50.6	
2.51	-68.2	V	3.0	-22.9	38.6	1.0	-60.4	-13.0	-47.4	
3.35	-65.5	V	3.0	-16.7	38.5	1.0	-54.2	-13.0	-41.2	
High Channel (846.6MHz)										
1.69	-68.7	H	3.0	-26.1	37.9	1.0	-63.0	-13.0	-50.0	
2.54	-67.5	H	3.0	-22.1	38.6	1.0	-59.7	-13.0	-46.7	
3.39	-66.7	H	3.0	-17.5	38.5	1.0	-55.1	-13.0	-42.1	
1.69	-68.9	V	3.0	-26.5	37.9	1.0	-63.3	-13.0	-50.3	
2.54	-67.8	V	3.0	-22.3	38.6	1.0	-59.8	-13.0	-46.8	
3.39	-66.9	V	3.0	-18.0	38.5	1.0	-55.5	-13.0	-42.5	

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WCDMA Band 5 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: HSDPA 850MHz

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

Chamber	Pre-amplifer	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 (826.4MHz)										
1.65	-68.2	H	3.0	-25.7	37.8	1.0	-62.6	-13.0	-49.6	
2.48	-67.4	H	3.0	-22.4	38.5	1.0	-59.9	-13.0	-46.9	
3.31	-66.4	H	3.0	-17.4	38.5	1.0	-54.9	-13.0	-41.9	
1.65	-67.8	V	3.0	-25.6	37.8	1.0	-62.5	-13.0	-49.5	
2.48	-67.4	V	3.0	-22.2	38.5	1.0	-59.7	-13.0	-46.7	
3.31	-65.9	V	3.0	-17.2	38.5	1.0	-54.7	-13.0	-41.7	
Mid Channel (836.6MHz)										
1.67	-68.2	H	3.0	-25.7	37.8	1.0	-62.5	-13.0	-49.5	
2.51	-67.0	H	3.0	-21.8	38.6	1.0	-59.4	-13.0	-46.4	
3.35	-65.2	H	3.0	-16.1	38.5	1.0	-53.6	-13.0	-40.6	
1.67	-68.5	V	3.0	-26.2	37.8	1.0	-63.1	-13.0	-50.1	
2.51	-67.7	V	3.0	-22.3	38.6	1.0	-59.9	-13.0	-46.9	
3.35	-65.1	V	3.0	-16.3	38.5	1.0	-53.8	-13.0	-40.8	
High Channel (846.6MHz)										
1.69	-68.3	H	3.0	-25.8	37.9	1.0	-62.6	-13.0	-49.6	
2.54	-67.0	H	3.0	-21.6	38.6	1.0	-59.1	-13.0	-46.1	
3.39	-66.2	H	3.0	-17.0	38.5	1.0	-54.5	-13.0	-41.5	
1.69	-68.3	V	3.0	-25.9	37.9	1.0	-62.8	-13.0	-49.8	
2.54	-67.2	V	3.0	-21.7	38.6	1.0	-59.3	-13.0	-46.3	
3.39	-66.4	V	3.0	-17.4	38.5	1.0	-54.9	-13.0	-41.9	

Rev. 03.19.15

WCDMA Band 5 HSDPA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: REL 99, 1900MHz

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

Chamber	Pre-amplifer	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	-66.9	H	3.0	-17.1	34.4	1.0	-50.6	-13.0	-37.6	
5.56	-67.2	H	3.0	-13.8	34.1	1.0	-46.9	-13.0	-33.9	
7.41	-65.9	H	3.0	-9.6	33.6	1.0	-42.2	-13.0	-29.2	
3.70	-67.9	V	3.0	-18.0	34.4	1.0	-51.4	-13.0	-38.4	
5.55	-67.5	V	3.0	-13.8	34.1	1.0	-47.0	-13.0	-34.0	
7.42	-66.0	V	3.0	-9.8	33.6	1.0	-42.4	-13.0	-29.4	
Mid Channel (1880MHz)										
3.76	-67.9	H	3.0	-17.9	34.4	1.0	-51.3	-13.0	-38.3	
5.64	-67.2	H	3.0	-13.6	34.1	1.0	-46.7	-13.0	-33.7	
7.52	-66.4	H	3.0	-10.0	33.5	1.0	-42.5	-13.0	-29.5	
3.76	-66.5	V	3.0	-16.4	34.4	1.0	-49.8	-13.0	-36.8	
5.64	-67.1	V	3.0	-13.4	34.1	1.0	-46.5	-13.0	-33.5	
7.52	-66.3	V	3.0	-10.0	33.5	1.0	-42.5	-13.0	-29.5	
High Channel (1907.6MHz)										
3.81	-68.4	H	3.0	-18.2	34.4	1.0	-51.6	-13.0	-38.6	
5.72	-67.4	H	3.0	-13.7	34.1	1.0	-46.8	-13.0	-33.8	
7.66	-66.4	H	3.0	-9.7	33.4	1.0	-42.1	-13.0	-29.1	
3.82	-67.4	V	3.0	-17.1	34.4	1.0	-50.5	-13.0	-37.5	
5.72	-67.1	V	3.0	-13.3	34.1	1.0	-46.4	-13.0	-33.4	
7.63	-66.2	V	3.0	-9.8	33.4	1.0	-42.2	-13.0	-29.2	

Rev. 03.19.15

WCDMA Band 2 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: HSDPA 1900MHz

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

Chamber	Pre-amplifer	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	-66.2	H	3.0	-16.5	34.4	1.0	-49.9	-13.0	-36.9	
5.56	-66.5	H	3.0	-13.1	34.1	1.0	-46.2	-13.0	-33.2	
7.41	-65.4	H	3.0	-9.1	33.6	1.0	-41.7	-13.0	-28.7	
3.70	-67.3	V	3.0	-17.4	34.4	1.0	-50.8	-13.0	-37.8	
5.56	-66.8	V	3.0	-13.2	34.1	1.0	-46.3	-13.0	-33.3	
7.41	-65.3	V	3.0	-9.2	33.6	1.0	-41.8	-13.0	-28.8	
Mid Channel (1880MHz)										
3.76	-67.3	H	3.0	-17.3	34.4	1.0	-50.7	-13.0	-37.7	
5.64	-66.5	H	3.0	-12.9	34.1	1.0	-46.0	-13.0	-33.0	
7.52	-65.5	H	3.0	-8.0	33.5	1.0	-41.5	-13.0	-28.5	
3.76	-65.8	V	3.0	-15.8	34.4	1.0	-49.2	-13.0	-36.2	
5.64	-66.7	V	3.0	-12.9	34.1	1.0	-46.1	-13.0	-33.1	
7.52	-65.6	V	3.0	-8.3	33.5	1.0	-41.8	-13.0	-28.8	
High Channel (1907.6MHz)										
3.81	-67.6	H	3.0	-17.4	34.4	1.0	-50.8	-13.0	-37.8	
5.72	-66.8	H	3.0	-13.1	34.1	1.0	-46.2	-13.0	-33.2	
7.66	-65.5	H	3.0	-8.8	33.4	1.0	-41.3	-13.0	-28.3	
3.81	-66.7	V	3.0	-16.5	34.4	1.0	-49.8	-13.0	-36.8	
5.72	-66.5	V	3.0	-12.6	34.1	1.0	-45.7	-13.0	-32.7	
7.66	-65.7	V	3.0	-9.2	33.4	1.0	-41.6	-13.0	-28.6	

Rev. 03.19.15

WCDMA Band 2 HSDPA

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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High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: REL 99, 1700MHz

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

Chamber	Pre-amplifer	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	-67.3	H	3.0	-18.0	38.5	1.0	-55.5	-13.0	-42.5	
5.14	-67.5	H	3.0	-14.3	38.7	1.0	-52.0	-13.0	-39.0	
6.85	-67.0	H	3.0	-10.2	38.1	1.0	-47.3	-13.0	-34.3	
8.56	-66.0	H	3.0	-6.9	37.1	1.0	-43.0	-13.0	-30.0	
3.42	-66.2	V	3.0	-17.2	38.5	1.0	-54.7	-13.0	-41.7	
5.14	-67.6	V	3.0	-14.7	38.7	1.0	-52.4	-13.0	-39.4	
6.85	-66.6	V	3.0	-10.0	38.1	1.0	-47.1	-13.0	-34.1	
8.56	-67.0	V	3.0	-8.1	37.1	1.0	-44.1	-13.0	-31.1	
Mid Channel (1732.6MHz)										
3.47	-67.6	H	3.0	-18.2	38.5	1.0	-55.8	-13.0	-42.8	
5.20	-67.8	H	3.0	-14.6	38.7	1.0	-52.2	-13.0	-39.2	
6.93	-67.0	H	3.0	-10.0	38.1	1.0	-47.1	-13.0	-34.1	
8.66	-67.5	H	3.0	-8.3	37.0	1.0	-44.3	-13.0	-31.3	
3.47	-67.9	V	3.0	-18.7	38.5	1.0	-56.3	-13.0	-43.3	
5.20	-67.5	V	3.0	-14.5	38.7	1.0	-52.2	-13.0	-39.2	
6.93	-66.7	V	3.0	-9.9	38.1	1.0	-47.0	-13.0	-34.0	
8.66	-66.6	V	3.0	-7.5	37.0	1.0	-43.5	-13.0	-30.5	
High Channel (1752.6MHz)										
3.51	-67.2	H	3.0	-17.7	38.5	1.0	-55.3	-13.0	-42.3	
5.26	-67.3	H	3.0	-13.9	38.7	1.0	-51.6	-13.0	-38.6	
7.01	-65.8	H	3.0	-8.6	38.1	1.0	-45.7	-13.0	-32.7	
8.76	-66.9	H	3.0	-7.5	36.9	1.0	-43.5	-13.0	-30.5	
3.51	-67.5	V	3.0	-18.2	38.5	1.0	-55.7	-13.0	-42.7	
5.26	-67.1	V	3.0	-14.0	38.7	1.0	-51.7	-13.0	-38.7	
7.01	-65.5	V	3.0	-8.6	38.1	1.0	-45.6	-13.0	-32.6	
8.76	-67.8	V	3.0	-8.6	36.9	1.0	-44.5	-13.0	-31.5	

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WCDMA Band 4 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: HSDPA 1700MHz

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

Chamber	Pre-amplifer	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	-66.4	H	3.0	-17.1	38.5	1.0	-54.7	-13.0	-41.7	
5.14	-67.3	H	3.0	-14.1	38.7	1.0	-51.8	-13.0	-38.8	
6.85	-66.7	H	3.0	-9.8	38.1	1.0	-47.0	-13.0	-34.0	
8.56	-65.6	H	3.0	-6.6	37.1	1.0	-42.6	-13.0	-29.6	
3.42	-65.7	V	3.0	-16.7	38.5	1.0	-54.2	-13.0	-41.2	
5.14	-67.1	V	3.0	-14.3	38.7	1.0	-51.9	-13.0	-38.9	
6.85	-66.3	V	3.0	-9.7	38.1	1.0	-46.8	-13.0	-33.8	
8.56	-66.7	V	3.0	-7.7	37.1	1.0	-43.8	-13.0	-30.8	
Mid Channel (1732.6MHz)										
3.47	-67.3	H	3.0	-17.9	38.5	1.0	-55.4	-13.0	-42.4	
5.20	-67.5	H	3.0	-14.2	38.7	1.0	-51.9	-13.0	-38.9	
6.93	-66.5	H	3.0	-9.5	38.1	1.0	-46.6	-13.0	-33.6	
8.66	-67.2	H	3.0	-8.0	37.0	1.0	-44.0	-13.0	-31.0	
3.47	-67.6	V	3.0	-18.4	38.5	1.0	-55.9	-13.0	-42.9	
5.20	-67.0	V	3.0	-14.1	38.7	1.0	-51.7	-13.0	-38.7	
6.93	-66.4	V	3.0	-9.6	38.1	1.0	-46.7	-13.0	-33.7	
8.66	-66.2	V	3.0	-7.2	37.0	1.0	-43.2	-13.0	-30.2	
High Channel (1752.6MHz)										
3.51	-66.9	H	3.0	-17.4	38.5	1.0	-54.9	-13.0	-41.9	
5.26	-66.8	H	3.0	-13.4	38.7	1.0	-51.0	-13.0	-38.0	
7.01	-65.7	H	3.0	-8.5	38.1	1.0	-45.6	-13.0	-32.6	
8.76	-66.5	H	3.0	-7.2	36.9	1.0	-43.1	-13.0	-30.1	
3.51	-67.3	V	3.0	-18.0	38.5	1.0	-55.5	-13.0	-42.5	
5.26	-66.7	V	3.0	-13.7	38.7	1.0	-51.3	-13.0	-38.3	
7.01	-65.4	V	3.0	-8.4	38.1	1.0	-45.5	-13.0	-32.5	
8.76	-67.2	V	3.0	-8.0	36.9	1.0	-43.9	-13.0	-30.9	

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WCDMA Band 4 HSDPA

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
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9.2. FIELD STRENGTH OF SPURIOUS RADIATION, Ant 2

9.2.1. GSM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/16/18
Test Engineer: 19459
Configuration: EUT only
Mode: GPRS 850MHz

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-72.6	H	3.0	-30.9	36.5	1.0	-66.4	-13.0	-53.4	
2.47	-70.1	H	3.0	-24.4	35.2	1.0	-58.5	-13.0	-45.5	
3.30	-72.0	H	3.0	-23.2	34.6	1.0	-56.8	-13.0	-43.8	
1.65	-71.5	V	3.0	-28.9	36.5	1.0	-64.4	-13.0	-51.4	
2.47	-70.5	V	3.0	-24.8	35.2	1.0	-58.9	-13.0	-45.9	
3.30	-70.0	V	3.0	-20.5	34.6	1.0	-54.1	-13.0	-41.1	
Mid Channel (836.6MHz)										
1.67	-70.2	H	3.0	-28.3	36.5	1.0	-63.8	-13.0	-50.8	
2.51	-70.8	H	3.0	-24.9	35.1	1.0	-59.1	-13.0	-46.1	
3.35	-71.4	H	3.0	-22.4	34.6	1.0	-56.0	-13.0	-43.0	
1.67	-72.5	V	3.0	-29.7	36.5	1.0	-65.2	-13.0	-52.2	
2.51	-71.7	V	3.0	-25.8	35.1	1.0	-59.9	-13.0	-46.9	
3.35	-71.0	V	3.0	-21.4	34.6	1.0	-55.0	-13.0	-42.0	
High Channel (848.8MHz)										
1.70	-72.8	H	3.0	-30.6	36.4	1.0	-66.0	-13.0	-53.0	
2.55	-72.3	H	3.0	-26.2	35.1	1.0	-60.3	-13.0	-47.3	
3.40	-71.2	H	3.0	-22.1	34.5	1.0	-55.6	-13.0	-42.6	
1.70	-72.1	V	3.0	-29.1	36.4	1.0	-64.5	-13.0	-51.5	
2.55	-71.9	V	3.0	-25.7	35.1	1.0	-59.9	-13.0	-46.9	
3.40	-70.4	V	3.0	-20.7	34.5	1.0	-54.2	-13.0	-41.2	

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GSM 850MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/16/18
Test Engineer: 19459
Configuration: EUT only
Mode: EGPRS 850MHz

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-72.8	H	3.0	-31.0	36.5	1.0	-66.5	-13.0	-53.5	
2.47	-70.0	H	3.0	-24.3	35.2	1.0	-58.4	-13.0	-45.4	
3.30	-70.2	H	3.0	-21.4	34.6	1.0	-55.0	-13.0	-42.0	
1.65	-72.9	V	3.0	-30.3	36.5	1.0	-65.8	-13.0	-52.8	
2.47	-70.7	V	3.0	-25.0	35.2	1.0	-59.1	-13.0	-46.1	
3.30	-71.3	V	3.0	-21.8	34.6	1.0	-55.4	-13.0	-42.4	
Mid Channel (836.6MHz)										
1.67	-71.3	H	3.0	-29.3	36.5	1.0	-64.8	-13.0	-51.8	
2.51	-72.4	H	3.0	-26.4	35.1	1.0	-60.6	-13.0	-47.6	
3.35	-69.2	H	3.0	-20.2	34.6	1.0	-53.8	-13.0	-40.8	
1.67	-73.3	V	3.0	-30.5	36.5	1.0	-66.0	-13.0	-53.0	
2.51	-71.8	V	3.0	-25.9	35.1	1.0	-60.0	-13.0	-47.0	
3.35	-71.1	V	3.0	-21.5	34.6	1.0	-55.1	-13.0	-42.1	
High Channel (848.8MHz)										
1.70	-72.3	H	3.0	-30.1	36.4	1.0	-65.5	-13.0	-52.5	
2.55	-73.1	H	3.0	-27.0	35.1	1.0	-61.2	-13.0	-48.2	
3.40	-70.9	H	3.0	-21.8	34.5	1.0	-55.3	-13.0	-42.3	
1.70	-72.5	V	3.0	-29.4	36.4	1.0	-64.9	-13.0	-51.9	
2.55	-72.6	V	3.0	-26.5	35.1	1.0	-60.6	-13.0	-47.6	
3.40	-71.8	V	3.0	-22.1	34.5	1.0	-55.6	-13.0	-42.6	

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GSM 850MHz EGPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/16/18
Test Engineer: 19459
Configuration: EUT only
Mode: GPRS 1900MHz

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-69.8	H	3.0	-19.9	34.1	1.0	-53.0	-13.0	-40.0	
5.55	-70.9	H	3.0	-16.9	33.3	1.0	-49.2	-13.0	-36.2	
7.40	-73.4	H	3.0	-16.0	33.1	1.0	-48.0	-13.0	-35.0	
3.70	-69.6	V	3.0	-19.3	34.1	1.0	-52.4	-13.0	-39.4	
5.55	-72.7	V	3.0	-18.8	33.3	1.0	-51.1	-13.0	-38.1	
7.40	-75.0	V	3.0	-17.5	33.1	1.0	-49.6	-13.0	-36.6	
Mid Channel (1880.0)										
3.76	-71.5	H	3.0	-21.4	34.1	1.0	-54.5	-13.0	-41.5	
5.64	-70.9	H	3.0	-16.7	33.3	1.0	-49.0	-13.0	-36.0	
7.52	-73.2	H	3.0	-15.6	33.0	1.0	-47.7	-13.0	-34.7	
3.76	-68.3	V	3.0	-17.9	34.1	1.0	-51.0	-13.0	-38.0	
5.64	-70.5	V	3.0	-16.4	33.3	1.0	-48.7	-13.0	-35.7	
7.52	-71.8	V	3.0	-14.2	33.0	1.0	-46.3	-13.0	-33.3	
High Channel (1909.8MHz)										
3.82	-69.4	H	3.0	-19.1	34.0	1.0	-52.2	-13.0	-39.2	
5.73	-72.0	H	3.0	-17.7	33.3	1.0	-50.0	-13.0	-37.0	
7.54	-72.8	H	3.0	-15.2	33.0	1.0	-47.3	-13.0	-34.3	
3.82	-69.7	V	3.0	-19.2	34.0	1.0	-52.2	-13.0	-39.2	
5.73	-70.8	V	3.0	-16.5	33.3	1.0	-48.8	-13.0	-35.8	
7.54	-72.8	V	3.0	-15.2	33.0	1.0	-47.2	-13.0	-34.2	

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GSM 1900MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/16/18
Test Engineer: 19459
Configuration: EUT only
Mode: EGPRS 1900MHz

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

Chamber	Pre-amplifer	Filter	Limit
3m Chamber C	3m Chamber C	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	-71.0	H	3.0	-21.1	34.1	1.0	-54.2	-13.0	-41.2	
5.55	-71.0	H	3.0	-17.0	33.3	1.0	-49.3	-13.0	-36.3	
7.40	-73.8	H	3.0	-16.4	33.1	1.0	-48.4	-13.0	-35.4	
3.70	-70.1	V	3.0	-19.8	34.1	1.0	-52.9	-13.0	-39.9	
5.55	-72.2	V	3.0	-18.3	33.3	1.0	-50.6	-13.0	-37.6	
7.40	-73.1	V	3.0	-15.7	33.1	1.0	-47.8	-13.0	-34.8	
Mid Channel (1880.0)										
3.76	-69.9	H	3.0	-19.8	34.1	1.0	-52.8	-13.0	-39.8	
5.64	-71.1	H	3.0	-16.9	33.3	1.0	-49.2	-13.0	-36.2	
7.52	-72.7	H	3.0	-15.1	33.0	1.0	-47.2	-13.0	-34.2	
3.76	-69.1	V	3.0	-18.7	34.1	1.0	-51.7	-13.0	-38.7	
5.64	-71.4	V	3.0	-17.3	33.3	1.0	-49.6	-13.0	-36.6	
7.52	-70.8	V	3.0	-13.2	33.0	1.0	-45.2	-13.0	-32.2	
High Channel (1909.8MHz)										
3.82	-71.3	H	3.0	-21.0	34.0	1.0	-54.0	-13.0	-41.0	
5.73	-70.9	H	3.0	-16.6	33.3	1.0	-48.9	-13.0	-35.9	
7.54	-71.7	H	3.0	-14.1	33.0	1.0	-46.1	-13.0	-33.1	
3.82	-70.3	V	3.0	-19.7	34.0	1.0	-52.7	-13.0	-39.7	
5.73	-70.0	V	3.0	-15.8	33.3	1.0	-48.0	-13.0	-35.0	
7.54	-72.7	V	3.0	-15.1	33.0	1.0	-47.1	-13.0	-34.1	

Rev. 03.19.15

GSM 1900MHz EGPRS

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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9.2.2. CDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT only
Mode: 1xRTT 800MHz

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

Chamber	Pre-amplifer	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	-70.6	H	3.0	-28.2	37.8	1.0	-65.0	-13.0	-52.0	
2.45	-69.9	H	3.0	-25.0	38.4	1.0	-62.4	-13.0	-49.4	
3.27	-68.5	H	3.0	-19.6	38.5	1.0	-57.0	-13.0	-44.0	
1.63	-71.7	V	3.0	-29.7	37.8	1.0	-66.5	-13.0	-53.5	
2.45	-70.4	V	3.0	-25.3	38.4	1.0	-62.7	-13.0	-49.7	
3.27	-68.5	V	3.0	-19.9	38.5	1.0	-57.4	-13.0	-44.4	
Mid Channel (820MHz)										
1.64	-72.1	H	3.0	-29.7	37.8	1.0	-66.5	-13.0	-53.5	
2.46	-71.9	H	3.0	-27.0	38.4	1.0	-64.4	-13.0	-51.4	
3.28	-69.1	H	3.0	-20.2	38.5	1.0	-57.6	-13.0	-44.6	
1.64	-72.1	V	3.0	-30.0	37.8	1.0	-66.9	-13.0	-53.9	
2.46	-71.1	V	3.0	-25.9	38.4	1.0	-63.4	-13.0	-50.4	
3.28	-69.8	V	3.0	-21.2	38.5	1.0	-58.7	-13.0	-45.7	
High Channel (822.75MHz)										
1.65	-72.3	H	3.0	-29.8	37.8	1.0	-66.7	-13.0	-53.7	
2.47	-71.6	H	3.0	-26.6	38.5	1.0	-64.1	-13.0	-51.1	
3.29	-69.5	H	3.0	-20.6	38.5	1.0	-58.1	-13.0	-45.1	
1.65	-71.7	V	3.0	-29.6	37.8	1.0	-66.4	-13.0	-53.4	
2.47	-70.0	V	3.0	-24.9	38.5	1.0	-62.3	-13.0	-49.3	
3.29	-70.1	V	3.0	-21.4	38.5	1.0	-58.9	-13.0	-45.9	

Rev. 03.19.15

CDMA BC10 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT only
Mode: Rev 0/A, 800MHz

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

Chamber	Pre-amplifer	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	-70.6	H	3.0	-28.1	37.8	1.0	-65.0	-13.0	-52.0	
2.45	-69.6	H	3.0	-24.7	38.4	1.0	-62.1	-13.0	-49.1	
3.27	-68.2	H	3.0	-19.3	38.5	1.0	-56.8	-13.0	-43.8	
1.63	-72.1	V	3.0	-30.0	37.8	1.0	-66.9	-13.0	-53.9	
2.45	-71.2	V	3.0	-26.2	38.4	1.0	-63.6	-13.0	-50.6	
3.27	-68.3	V	3.0	-19.7	38.5	1.0	-57.2	-13.0	-44.2	
Mid Channel (820MHz)										
1.64	-71.3	H	3.0	-28.9	37.8	1.0	-65.7	-13.0	-52.7	
2.46	-70.5	H	3.0	-25.5	38.4	1.0	-63.0	-13.0	-50.0	
3.28	-68.9	H	3.0	-20.0	38.5	1.0	-57.5	-13.0	-44.5	
1.64	-72.3	V	3.0	-30.2	37.8	1.0	-67.1	-13.0	-54.1	
2.46	-71.4	V	3.0	-26.3	38.4	1.0	-63.7	-13.0	-50.7	
3.28	-68.2	V	3.0	-19.6	38.5	1.0	-57.1	-13.0	-44.1	
High Channel (822.75MHz)										
1.65	-71.5	H	3.0	-29.1	37.8	1.0	-65.9	-13.0	-52.9	
2.47	-70.1	H	3.0	-25.1	38.5	1.0	-62.5	-13.0	-49.5	
3.29	-68.9	H	3.0	-20.0	38.5	1.0	-57.4	-13.0	-44.4	
1.65	-71.6	V	3.0	-29.5	37.8	1.0	-66.3	-13.0	-53.3	
2.47	-70.8	V	3.0	-25.6	38.5	1.0	-63.1	-13.0	-50.1	
3.29	-68.0	V	3.0	-19.3	38.5	1.0	-56.8	-13.0	-43.8	

Rev. 03.19.15

CDMA BC10 1xEV-DO Rev A

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: 1xRTT 850MHz

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

Chamber	Pre-amplifer	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 (824.7MHz)										
1.65	-71.3	H	3.0	-28.8	37.8	1.0	-65.7	-13.0	-52.7	
2.47	-70.5	H	3.0	-25.5	38.5	1.0	-63.0	-13.0	-50.0	
3.30	-68.9	H	3.0	-20.0	38.5	1.0	-57.4	-13.0	-44.4	
1.65	-69.0	V	3.0	-26.9	37.8	1.0	-63.7	-13.0	-50.7	
2.47	-70.0	V	3.0	-24.9	38.5	1.0	-62.3	-13.0	-49.3	
3.30	-68.4	V	3.0	-19.7	38.5	1.0	-57.2	-13.0	-44.2	
Mid Channel (836.52MHz)										
1.67	-70.6	H	3.0	-28.1	37.8	1.0	-65.0	-13.0	-52.0	
2.51	-70.1	H	3.0	-24.8	38.6	1.0	-62.4	-13.0	-49.4	
3.35	-68.7	H	3.0	-20.6	38.5	1.0	-58.1	-13.0	-45.1	
1.67	-71.2	V	3.0	-29.0	37.8	1.0	-65.8	-13.0	-52.8	
2.51	-70.1	V	3.0	-24.7	38.6	1.0	-62.3	-13.0	-49.3	
3.35	-68.7	V	3.0	-19.9	38.5	1.0	-57.4	-13.0	-44.4	
High Channel (848.31MHz)										
1.70	-70.2	H	3.0	-27.7	37.9	1.0	-64.5	-13.0	-51.5	
2.54	-71.0	H	3.0	-25.6	38.6	1.0	-63.1	-13.0	-50.1	
3.39	-68.8	H	3.0	-19.6	38.5	1.0	-57.1	-13.0	-44.1	
1.70	-72.6	V	3.0	-30.2	37.9	1.0	-67.1	-13.0	-54.1	
2.54	-71.1	V	3.0	-25.6	38.6	1.0	-63.2	-13.0	-50.2	
3.39	-68.7	V	3.0	-19.7	38.5	1.0	-57.2	-13.0	-44.2	

Rev. 03.19.15

CDMA BC0 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT only
Mode: Rev 0/A 850MHz

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

Chamber	Pre-amplifer	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 (824.7MHz)										
1.65	-72.5	H	3.0	-30.0	37.8	1.0	-66.9	-13.0	-53.9	
2.47	-70.1	H	3.0	-25.1	38.5	1.0	-62.5	-13.0	-49.5	
3.30	-68.5	H	3.0	-19.6	38.5	1.0	-57.0	-13.0	-44.0	
1.65	-71.2	V	3.0	-29.0	37.8	1.0	-65.9	-13.0	-52.9	
2.47	-70.4	V	3.0	-25.2	38.5	1.0	-62.7	-13.0	-49.7	
3.30	-69.7	V	3.0	-21.0	38.5	1.0	-58.5	-13.0	-45.5	
Mid Channel (836.52MHz)										
1.67	-72.2	H	3.0	-29.7	37.8	1.0	-66.5	-13.0	-53.5	
2.51	-70.0	H	3.0	-24.7	38.6	1.0	-62.3	-13.0	-49.3	
3.35	-68.3	H	3.0	-19.2	38.5	1.0	-56.7	-13.0	-43.7	
1.67	-71.5	V	3.0	-29.2	37.8	1.0	-66.1	-13.0	-53.1	
2.51	-70.5	V	3.0	-25.1	38.6	1.0	-62.7	-13.0	-49.7	
3.35	-68.6	V	3.0	-19.8	38.5	1.0	-57.3	-13.0	-44.3	
High Channel (848.31MHz)										
1.70	-70.0	H	3.0	-27.5	37.9	1.0	-64.3	-13.0	-51.3	
2.54	-68.7	H	3.0	-23.3	38.6	1.0	-60.8	-13.0	-47.8	
3.39	-68.4	H	3.0	-19.3	38.5	1.0	-56.8	-13.0	-43.8	
1.70	-72.2	V	3.0	-29.8	37.9	1.0	-66.6	-13.0	-53.6	
2.54	-72.3	V	3.0	-26.8	38.6	1.0	-64.4	-13.0	-51.4	
3.39	-68.7	V	3.0	-19.8	38.5	1.0	-57.3	-13.0	-44.3	

Rev. 03.19.15

CDMA BC0 1xEV-DO Rev A

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High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT only
Mode: 1xRTT 1900MHz

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

Chamber	Pre-amplifer	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 (1851.25MHz)										
3.70	-70.5	H	3.0	-23.7	36.2	1.0	-59.0	-13.0	-46.0	
5.55	-70.7	H	3.0	-20.3	36.1	1.0	-55.5	-13.0	-42.5	
7.41	-69.5	H	3.0	-16.4	35.2	1.0	-50.6	-13.0	-37.6	
3.70	-69.3	V	3.0	-22.2	36.2	1.0	-57.4	-13.0	-44.4	
5.55	-70.4	V	3.0	-20.3	36.1	1.0	-55.4	-13.0	-42.4	
7.41	-69.7	V	3.0	-16.7	35.2	1.0	-50.9	-13.0	-37.9	
Mid Channel (1880MHz)										
3.76	-70.6	H	3.0	-23.7	36.2	1.0	-58.9	-13.0	-45.9	
5.64	-70.1	H	3.0	-19.6	36.1	1.0	-54.7	-13.0	-41.7	
7.52	-68.3	H	3.0	-15.1	35.1	1.0	-49.3	-13.0	-36.3	
3.76	-68.5	V	3.0	-21.2	36.2	1.0	-56.4	-13.0	-43.4	
5.64	-69.8	V	3.0	-19.6	36.1	1.0	-54.7	-13.0	-41.7	
7.52	-69.7	V	3.0	-16.6	35.1	1.0	-50.7	-13.0	-37.7	
High Channel (1908.75MHz)										
3.82	-70.4	H	3.0	-23.4	36.1	1.0	-58.5	-13.0	-45.5	
5.73	-70.3	H	3.0	-19.6	36.1	1.0	-54.7	-13.0	-41.7	
7.64	-70.6	H	3.0	-17.3	35.0	1.0	-51.3	-13.0	-38.3	
3.82	-70.5	V	3.0	-23.0	36.1	1.0	-58.1	-13.0	-45.1	
5.73	-70.8	V	3.0	-20.3	36.1	1.0	-55.4	-13.0	-42.4	
7.64	-69.8	V	3.0	-16.5	35.0	1.0	-50.6	-13.0	-37.6	

Rev. 03.19.15

CDMA BC1 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT only
Mode: Rev 0/A 1900MHz

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

Chamber	Pre-amplifer	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 (1851.25MHz)										
3.70	-70.1	H	3.0	-23.3	36.2	1.0	-58.6	-13.0	-45.6	
5.55	-70.2	H	3.0	-19.9	36.1	1.0	-55.0	-13.0	-42.0	
7.41	-69.2	H	3.0	-16.1	35.2	1.0	-50.3	-13.0	-37.3	
3.70	-68.8	V	3.0	-21.7	36.2	1.0	-56.9	-13.0	-43.9	
5.55	-69.9	V	3.0	-19.8	36.1	1.0	-54.9	-13.0	-41.9	
7.41	-69.1	V	3.0	-16.1	35.2	1.0	-50.3	-13.0	-37.3	
Mid Channel (1880MHz)										
3.76	-70.2	H	3.0	-23.3	36.2	1.0	-58.5	-13.0	-45.5	
5.64	-69.6	H	3.0	-19.2	36.1	1.0	-54.3	-13.0	-41.3	
7.52	-67.9	H	3.0	-14.7	35.1	1.0	-48.8	-13.0	-35.8	
3.76	-68.1	V	3.0	-20.8	36.2	1.0	-56.0	-13.0	-43.0	
5.64	-69.4	V	3.0	-19.1	36.1	1.0	-54.2	-13.0	-41.2	
7.52	-69.2	V	3.0	-16.1	35.1	1.0	-50.3	-13.0	-37.3	
High Channel (1908.75MHz)										
3.82	-69.9	H	3.0	-22.9	36.1	1.0	-58.1	-13.0	-45.1	
5.73	-69.8	H	3.0	-19.2	36.1	1.0	-54.2	-13.0	-41.2	
7.64	-70.1	H	3.0	-16.8	35.0	1.0	-50.9	-13.0	-37.9	
3.82	-69.9	V	3.0	-22.4	36.1	1.0	-57.6	-13.0	-44.6	
5.73	-70.3	V	3.0	-19.9	36.1	1.0	-54.9	-13.0	-41.9	
7.64	-69.3	V	3.0	-16.1	35.0	1.0	-50.1	-13.0	-37.1	

Rev. 03.19.15

CDMA BC1 1xEV-DO Rev A

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
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9.2.3. WCDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: REL 99, 850MHz

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

Chamber	Pre-amplifer	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 (826.4MHz)										
1.65	-72.7	H	3.0	-30.2	37.8	1.0	-67.1	-13.0	-54.1	
2.48	-69.7	H	3.0	-24.7	38.5	1.0	-62.2	-13.0	-49.2	
3.31	-68.6	H	3.0	-19.7	38.5	1.0	-57.1	-13.0	-44.1	
1.65	-72.1	V	3.0	-30.0	37.8	1.0	-66.8	-13.0	-53.8	
2.48	-70.3	V	3.0	-25.0	38.5	1.0	-62.5	-13.0	-49.5	
3.31	-69.3	V	3.0	-20.6	38.5	1.0	-58.1	-13.0	-45.1	
Mid Channel (836.6MHz)										
1.67	-72.5	H	3.0	-30.0	37.8	1.0	-66.8	-13.0	-53.8	
2.51	-71.6	H	3.0	-26.3	38.6	1.0	-63.9	-13.0	-50.9	
3.35	-69.1	H	3.0	-20.0	38.5	1.0	-57.5	-13.0	-44.5	
1.67	-71.5	V	3.0	-29.2	37.8	1.0	-66.1	-13.0	-53.1	
2.51	-70.6	V	3.0	-25.2	38.6	1.0	-62.8	-13.0	-49.8	
3.35	-68.0	V	3.0	-19.2	38.5	1.0	-56.7	-13.0	-43.7	
High Channel (846.6MHz)										
1.69	-71.3	H	3.0	-28.8	37.9	1.0	-65.6	-13.0	-52.6	
2.54	-71.7	H	3.0	-26.3	38.6	1.0	-63.8	-13.0	-50.8	
3.39	-70.8	H	3.0	-21.6	38.5	1.0	-59.1	-13.0	-46.1	
1.69	-72.1	V	3.0	-29.7	37.9	1.0	-66.6	-13.0	-53.6	
2.54	-71.8	V	3.0	-26.3	38.6	1.0	-63.8	-13.0	-50.8	
3.39	-69.8	V	3.0	-20.8	38.5	1.0	-58.3	-13.0	-45.3	

Rev. 03.19.15

WCDMA Band 5 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: HSDPA 850MHz

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

Chamber	Pre-amplifer	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 (826.4MHz)										
1.65	-72.6	H	3.0	-30.1	37.8	1.0	-66.9	-13.0	-53.9	
2.48	-71.8	H	3.0	-26.8	38.5	1.0	-64.3	-13.0	-51.3	
3.31	-67.5	H	3.0	-18.5	38.5	1.0	-56.0	-13.0	-43.0	
1.65	-71.7	V	3.0	-29.5	37.8	1.0	-66.4	-13.0	-53.4	
2.48	-71.8	V	3.0	-26.5	38.5	1.0	-64.0	-13.0	-51.0	
3.31	-69.4	V	3.0	-20.7	38.5	1.0	-58.2	-13.0	-45.2	
Mid Channel (836.6MHz)										
1.67	-71.7	H	3.0	-29.2	37.8	1.0	-66.1	-13.0	-53.1	
2.51	-70.5	H	3.0	-25.3	38.6	1.0	-62.9	-13.0	-49.9	
3.35	-69.1	H	3.0	-20.0	38.5	1.0	-57.5	-13.0	-44.5	
1.67	-71.0	V	3.0	-28.8	37.8	1.0	-65.6	-13.0	-52.6	
2.51	-71.4	V	3.0	-26.0	38.6	1.0	-63.6	-13.0	-50.6	
3.35	-70.6	V	3.0	-21.8	38.5	1.0	-59.3	-13.0	-46.3	
High Channel (846.6MHz)										
1.69	-72.8	H	3.0	-30.2	37.9	1.0	-67.1	-13.0	-54.1	
2.54	-71.7	H	3.0	-26.3	38.6	1.0	-63.9	-13.0	-50.9	
3.39	-70.6	H	3.0	-21.4	38.5	1.0	-58.9	-13.0	-45.9	
1.69	-72.7	V	3.0	-30.3	37.9	1.0	-67.2	-13.0	-54.2	
2.54	-71.6	V	3.0	-26.0	38.6	1.0	-63.6	-13.0	-50.6	
3.39	-70.6	V	3.0	-21.6	38.5	1.0	-59.1	-13.0	-46.1	

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WCDMA Band 5 HSDPA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: REL 99, 1900MHz

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

Chamber	Pre-amplifer	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	-71.9	H	3.0	-21.9	38.6	1.0	-59.6	-13.0	-46.6	
5.56	-71.2	H	3.0	-17.2	38.6	1.0	-54.7	-13.0	-41.7	
7.41	-67.8	H	3.0	-10.1	37.8	1.0	-47.0	-13.0	-34.0	
3.70	-70.3	V	3.0	-20.4	38.6	1.0	-58.0	-13.0	-45.0	
5.55	-71.3	V	3.0	-17.6	38.6	1.0	-55.2	-13.0	-42.2	
7.42	-69.4	V	3.0	-11.9	37.8	1.0	-48.8	-13.0	-35.8	
Mid Channel (1880MHz)										
3.76	-71.0	H	3.0	-20.9	38.6	1.0	-58.5	-13.0	-45.5	
5.64	-71.6	H	3.0	-17.4	38.5	1.0	-54.9	-13.0	-41.9	
7.52	-70.1	H	3.0	-12.3	37.7	1.0	-49.0	-13.0	-36.0	
3.76	-71.1	V	3.0	-21.1	38.6	1.0	-58.7	-13.0	-45.7	
5.64	-70.4	V	3.0	-16.5	38.5	1.0	-54.0	-13.0	-41.0	
7.52	-70.0	V	3.0	-12.3	37.7	1.0	-49.1	-13.0	-36.1	
High Channel (1907.6MHz)										
3.81	-71.7	H	3.0	-21.5	38.7	1.0	-59.1	-13.0	-46.1	
5.72	-70.2	H	3.0	-15.8	38.5	1.0	-53.3	-13.0	-40.3	
7.66	-69.8	H	3.0	-11.8	37.7	1.0	-48.5	-13.0	-35.5	
3.82	-70.9	V	3.0	-20.7	38.7	1.0	-58.3	-13.0	-45.3	
5.72	-71.3	V	3.0	-17.2	38.5	1.0	-54.7	-13.0	-41.7	
7.63	-68.6	V	3.0	-10.8	37.7	1.0	-47.5	-13.0	-34.5	

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WCDMA Band 2 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: HSDPA 1900MHz

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

Chamber	Pre-amplifer	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	-71.3	H	3.0	-21.5	34.4	1.0	-54.9	-13.0	-41.9	
5.56	-70.7	H	3.0	-17.2	34.1	1.0	-50.4	-13.0	-37.4	
7.41	-68.9	H	3.0	-12.6	33.6	1.0	-45.2	-13.0	-32.2	
3.70	-72.2	V	3.0	-22.3	34.4	1.0	-55.8	-13.0	-42.8	
5.56	-71.0	V	3.0	-17.3	34.1	1.0	-50.4	-13.0	-37.4	
7.41	-68.5	V	3.0	-12.4	33.6	1.0	-45.0	-13.0	-32.0	
Mid Channel (1880MHz)										
3.76	-71.8	H	3.0	-21.8	34.4	1.0	-55.2	-13.0	-42.2	
5.64	-72.1	H	3.0	-18.5	34.1	1.0	-51.6	-13.0	-38.6	
7.52	-69.1	H	3.0	-12.6	33.5	1.0	-45.1	-13.0	-32.1	
3.76	-71.6	V	3.0	-21.5	34.4	1.0	-54.9	-13.0	-41.9	
5.64	-70.6	V	3.0	-16.9	34.1	1.0	-50.0	-13.0	-37.0	
7.52	-69.5	V	3.0	-13.2	33.5	1.0	-45.8	-13.0	-32.8	
High Channel (1907.6MHz)										
3.81	-71.4	H	3.0	-21.2	34.4	1.0	-54.6	-13.0	-41.6	
5.72	-70.2	H	3.0	-16.5	34.1	1.0	-49.6	-13.0	-36.6	
7.66	-68.3	H	3.0	-11.6	33.4	1.0	-44.0	-13.0	-31.0	
3.81	-70.8	V	3.0	-20.6	34.4	1.0	-54.0	-13.0	-41.0	
5.72	-71.1	V	3.0	-17.2	34.1	1.0	-50.3	-13.0	-37.3	
7.66	-68.5	V	3.0	-12.0	33.4	1.0	-44.4	-13.0	-31.4	

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WCDMA Band 2 HSDPA

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
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High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: REL 99, 1700MHz

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

Chamber	Pre-amplifer	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	-70.5	H	3.0	-21.2	38.5	1.0	-58.7	-13.0	-45.7	
5.14	-72.7	H	3.0	-19.5	38.7	1.0	-57.2	-13.0	-44.2	
6.85	-69.6	H	3.0	-12.7	38.1	1.0	-49.8	-13.0	-36.8	
8.56	-69.8	H	3.0	-10.8	37.1	1.0	-46.8	-13.0	-33.8	
3.42	-71.0	V	3.0	-21.9	38.5	1.0	-59.4	-13.0	-46.4	
5.14	-72.3	V	3.0	-19.4	38.7	1.0	-57.1	-13.0	-44.1	
6.85	-70.2	V	3.0	-13.5	38.1	1.0	-50.7	-13.0	-37.7	
8.56	-71.0	V	3.0	-12.1	37.1	1.0	-48.1	-13.0	-35.1	
Mid Channel (1732.6MHz)										
3.47	-70.9	H	3.0	-21.5	38.5	1.0	-59.0	-13.0	-46.0	
5.20	-72.2	H	3.0	-18.9	38.7	1.0	-56.6	-13.0	-43.6	
6.93	-70.7	H	3.0	-13.7	38.1	1.0	-50.8	-13.0	-37.8	
8.66	-71.0	H	3.0	-11.8	37.0	1.0	-47.8	-13.0	-34.8	
3.47	-69.3	V	3.0	-20.1	38.5	1.0	-57.6	-13.0	-44.6	
5.20	-72.0	V	3.0	-19.0	38.7	1.0	-56.7	-13.0	-43.7	
6.93	-70.0	V	3.0	-13.2	38.1	1.0	-50.3	-13.0	-37.3	
8.66	-68.6	V	3.0	-9.5	37.0	1.0	-45.5	-13.0	-32.5	
High Channel (1752.6MHz)										
3.51	-70.5	H	3.0	-21.1	38.5	1.0	-58.6	-13.0	-45.6	
5.26	-72.0	H	3.0	-18.5	38.7	1.0	-56.2	-13.0	-43.2	
7.01	-69.6	H	3.0	-12.3	38.1	1.0	-49.4	-13.0	-36.4	
8.76	-68.7	H	3.0	-9.4	36.9	1.0	-45.3	-13.0	-32.3	
3.51	-71.4	V	3.0	-22.0	38.5	1.0	-59.6	-13.0	-46.6	
5.26	-70.5	V	3.0	-17.4	38.7	1.0	-55.0	-13.0	-42.0	
7.01	-70.7	V	3.0	-13.8	38.1	1.0	-50.8	-13.0	-37.8	
8.76	-69.5	V	3.0	-10.3	36.9	1.0	-46.2	-13.0	-33.2	

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WCDMA Band 4 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 06/21/18
Test Engineer: 44366
Configuration: EUT Only
Mode: HSDPA 1700MHz

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

Chamber	Pre-amplifer	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	-70.4	H	3.0	-21.1	38.5	1.0	-58.7	-13.0	-45.7	
5.14	-72.0	H	3.0	-18.8	38.7	1.0	-56.5	-13.0	-43.5	
6.85	-68.9	H	3.0	-12.1	38.1	1.0	-49.2	-13.0	-36.2	
8.56	-69.2	H	3.0	-10.1	37.1	1.0	-46.2	-13.0	-33.2	
3.42	-70.5	V	3.0	-21.4	38.5	1.0	-59.0	-13.0	-46.0	
5.14	-71.9	V	3.0	-19.1	38.7	1.0	-56.8	-13.0	-43.8	
6.85	-69.5	V	3.0	-12.9	38.1	1.0	-50.0	-13.0	-37.0	
8.56	-69.9	V	3.0	-11.0	37.1	1.0	-47.0	-13.0	-34.0	
Mid Channel (1732.6MHz)										
3.47	-71.9	H	3.0	-22.6	38.5	1.0	-60.1	-13.0	-47.1	
5.20	-71.2	H	3.0	-17.9	38.7	1.0	-55.6	-13.0	-42.6	
6.93	-69.1	H	3.0	-12.0	38.1	1.0	-49.1	-13.0	-36.1	
8.66	-68.1	H	3.0	-8.9	37.0	1.0	-44.9	-13.0	-31.9	
3.47	-69.9	V	3.0	-20.7	38.5	1.0	-58.2	-13.0	-45.2	
5.20	-72.5	V	3.0	-19.6	38.7	1.0	-57.2	-13.0	-44.2	
6.93	-70.6	V	3.0	-13.8	38.1	1.0	-50.9	-13.0	-37.9	
8.66	-70.7	V	3.0	-11.6	37.0	1.0	-47.6	-13.0	-34.6	
High Channel (1752.6MHz)										
3.51	-70.4	H	3.0	-20.9	38.5	1.0	-58.5	-13.0	-45.5	
5.26	-72.4	H	3.0	-18.9	38.7	1.0	-56.6	-13.0	-43.6	
7.01	-69.1	H	3.0	-11.9	38.1	1.0	-49.0	-13.0	-36.0	
8.76	-69.4	H	3.0	-10.0	36.9	1.0	-46.0	-13.0	-33.0	
3.51	-70.5	V	3.0	-21.2	38.5	1.0	-58.7	-13.0	-45.7	
5.26	-72.2	V	3.0	-19.1	38.7	1.0	-56.8	-13.0	-43.8	
7.01	-69.7	V	3.0	-12.7	38.1	1.0	-49.8	-13.0	-36.8	
8.76	-70.7	V	3.0	-11.5	36.9	1.0	-47.5	-13.0	-34.5	

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WCDMA Band 4 HSDPA

END OF REPORT

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10. SETUP PHOTOS

Please refer to 12258201-EP1V1

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