8.4.1. GSM

ID:	10646	Date:	2/27/18

GPRS 850MHz

Limit		824.00	849.00	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.0316	848.9609		
Extreme (50C)		824.0316	848.9609	-25.1	-0.030
Extreme (40C)		824.0316	848.9609	-26.1	-0.031
Extreme (30C)		824.0316	848.9609	-17.6	-0.021
Extreme (10C)		824.0316	848.9609	-17.3	-0.021
Extreme (0C)		824.0316	848.9609	-17.4	-0.021
Extreme (-10C)		824.0316	848.9609	-22.6	-0.027
Extreme (-20C)		824.0316	848.9609	-16.2	-0.019
Extreme (-30C)		824.0316	848.9609	-17.7	-0.021
20C	15%	824.0316	848.9609	21.7	0.026
	-15%	824.0316	848.9609	-18.8	-0.022
	End Point	824.0316	848.9609	20.2	0.024

GPRS 1900MHz

Limit		1850.00	1910.00	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.0387	1909.9608		
Extreme (50C)		1850.0387	1909.9608	-36.5	-0.019
Extreme (40C)		1850.0387	1909.9608	-33.5	-0.018
Extreme (30C)		1850.0387	1909.9608	-34.0	-0.018
Extreme (10C)		1850.0387	1909.9608	-37.9	-0.020
Extreme (0C)		1850.0387	1909.9607	-39.8	-0.021
Extreme (-10C)		1850.0387	1909.9607	-47.9	-0.026
Extreme (-20C)		1850.0387	1909.9607	-48.3	-0.026
Extreme (-30C)		1850.0386	1909.9607	-60.7	-0.032
20C	15%	1850.0387	1909.9607	-42.1	-0.022
	-15%	1850.0387	1909.9607	-40.7	-0.022
	End Point	1850.0387	1909.9607	-38.6	-0.021

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.4.2. CDMA

ID:	44366	Date:	4/4/18

CDMA 1xRTT BC0

Limit		824.00	849.00	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.0390	848.9710		
Extreme (50C)		824.0390	848.9710	-31.8	-0.038
Extreme (40C)		824.0389	848.9709	-52.2	-0.062
Extreme (30C)		824.0390	848.9710	-46.2	-0.055
Extreme (10C)		824.0390	848.9710	-39.6	-0.047
Extreme (0C)		824.0390	848.9710	-22.3	-0.027
Extreme (-10C)		824.0390	848.9710	-24.0	-0.029
Extreme (-20C)		824.0390	848.9710	-17.9	-0.021
Extreme (-30C)		824.0390	848.9710	-16.3	-0.020
20C	15%	824.0390	848.9710	-5.8	-0.007
	-15%	824.0390	848.9710	7.3	0.009
	End Point	824.0390	848.9710	8.2	0.010

CDMA 1xRTT BC1

Limit		1850	1910	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.5310	1909.4640		
Extreme (50C)		1850.5310	1909.4640	-42.8	-0.023
Extreme (40C)		1850.5310	1909.4640	-24.6	-0.013
Extreme (30C)		1850.5310	1909.4640	-31.4	-0.017
Extreme (10C)		1850.5310	1909.4640	-41.7	-0.022
Extreme (0C)		1850.5310	1909.4640	-44.2	-0.023
Extreme (-10C)		1850.5309	1909.4639	-54.3	-0.029
Extreme (-20C)		1850.5311	1909.4641	81.4	0.043
Extreme (-30C)		1850.5311	1909.4641	95.7	0.051
20C	15%	1850.5310	1909.4640	-38.6	-0.021
	-15%	1850.5310	1909.4640	-40.9	-0.022
	End Point	1850.5310	1909.4640	-39.0	-0.021

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

CDMA 1xRTT BC10

Limit		816	824	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	816.5423	823.4638		
Extreme (50C)		816.5423	823.4638	-10.5	-0.013
Extreme (40C)		816.5423	823.4638	-7.8	-0.010
Extreme (30C)		816.5423	823.4638	-8.8	-0.011
Extreme (10C)		816.5423	823.4638	7.0	0.009
Extreme (0C)		816.5423	823.4638	-8.9	-0.011
Extreme (-10C)		816.5423	823.4638	4.5	0.006
Extreme (-20C)		816.5423	823.4638	-8.8	-0.011
Extreme (-30C)		816.5423	823.4638	-6.6	-0.008
20C	15%	816.5423	823.4638	9.2	0.011
	-15%	816.5423	823.4638	-8.6	-0.010
	End Point	816.5423	823.4638	-10.0	-0.012

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

8.4.3. WCDMA

ID:	44410	Date:	2/28/18

WCDMA REL 99 BAND 2

Limit		1850.00	1910.00	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1850.1390	1909.8513		
Extreme (50C)		1850.1390	1909.8513	25.4	0.014
Extreme (40C)		1850.1389	1909.8513	-23.8	-0.013
Extreme (30C)		1850.1390	1909.8513	23.6	0.013
Extreme (10C)		1850.1389	1909.8512	-28.8	-0.015
Extreme (0C)		1850.1389	1909.8512	-27.2	-0.014
Extreme (-10C)		1850.1390	1909.8513	26.2	0.014
Extreme (-20C)		1850.1390	1909.8513	29.4	0.016
Extreme (-30C)		1850.1388	1909.8511	-168.4	-0.090
20C	15%	1850.1389	1909.8513	-24.9	-0.013
	-15%	1850.1389	1909.8512	-28.0	-0.015
	End Point	1850.1389	1909.8513	-24.8	-0.013

WCDMA REL 99 BAND 4

Limit		1710.00	1755.00	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	1710.1390	1754.8715		
Extreme (50C)		1710.1390	1754.8715	-19.9	-0.011
Extreme (40C)		1710.1390	1754.8715	18.4	0.011
Extreme (30C)		1710.1390	1754.8716	20.3	0.012
Extreme (10C)		1710.1390	1754.8716	20.2	0.012
Extreme (0C)		1710.1390	1754.8715	-19.6	-0.011
Extreme (-10C)		1710.1390	1754.8715	-22.2	-0.013
Extreme (-20C)		1710.1390	1754.8716	23.2	0.013
Extreme (-30C)		1710.1390	1754.8715	-21.5	-0.012
20C	15%	1710.1390	1754.8715	-26.1	-0.015
	-15%	1710.1390	1754.8715	19.0	0.011
	End Point	1710.1390	1754.8715	-27.1	-0.016

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

WCDMA REL 99 BAND 5

Limit		824.00	849.00	Delta (Hz)	Frequency Stability (ppm)
Condition		F low @ -13dBm	F high @ -13dBm		
Temperature	Voltage	(MHz)	(MHz)		
Normal (20C)	Normal	824.1297	848.8713		
Extreme (50C)		824.1297	848.8713	-14.7	-0.018
Extreme (40C)		824.1297	848.8713	-10.9	-0.013
Extreme (30C)		824.1297	848.8713	4.6	0.006
Extreme (10C)		824.1297	848.8713	-8.2	-0.010
Extreme (0C)		824.1297	848.8713	-8.4	-0.010
Extreme (-10C)		824.1297	848.8713	7.2	0.009
Extreme (-20C)		824.1297	848.8713	6.4	0.008
Extreme (-30C)		824.1297	848.8712	-54.6	-0.065
20C	15%	824.1297	848.8713	22.8	0.027
	-15%	824.1297	848.8713	8.6	0.010
	End Point	824.1297	848.8713	14.2	0.017

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

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.

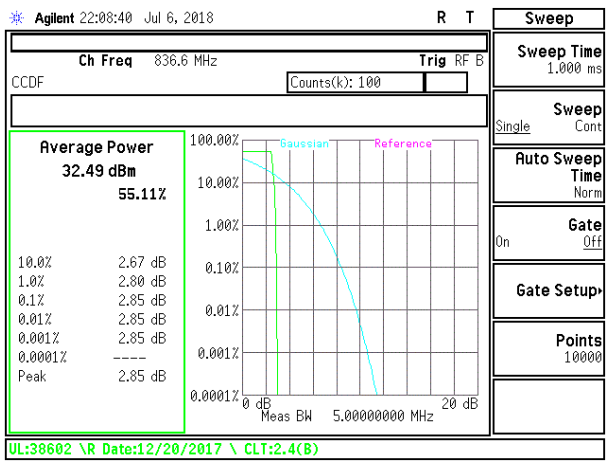
RESULT

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

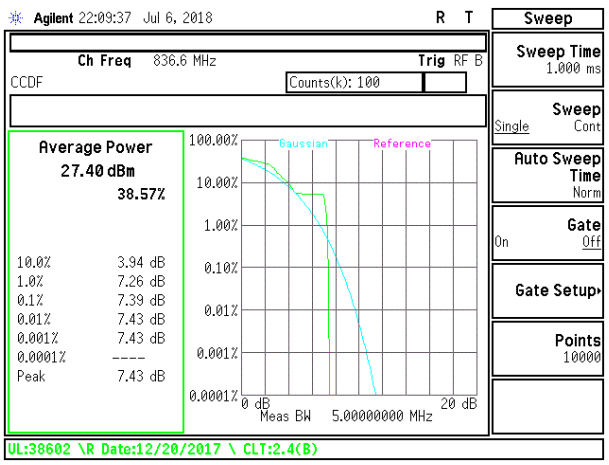
ID:	50820	**Date:**	5/9/18

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

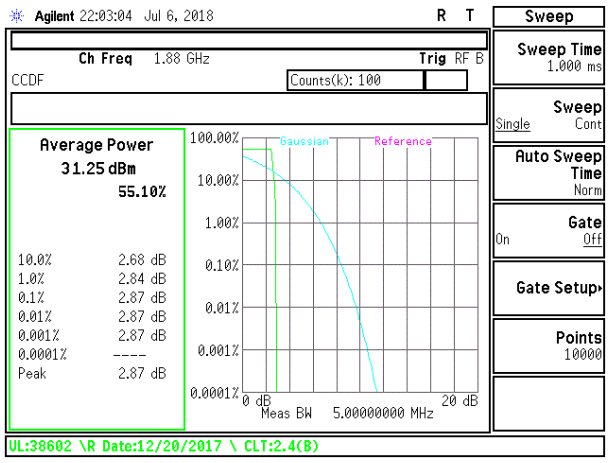
8.5.1. GSM Powers



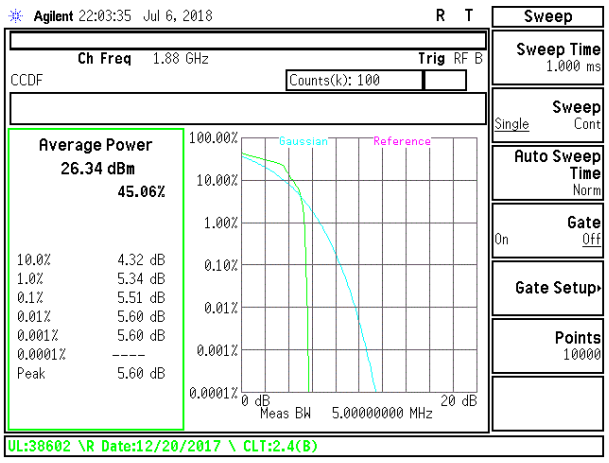
GSM 850MHz GPRS Middle Channel



GSM 850MHz EGPRS Middle Channel



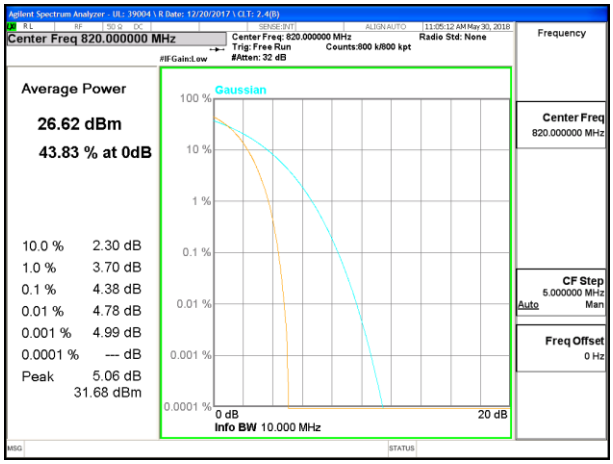
GSM 1900MHz GPRS Middle Channel



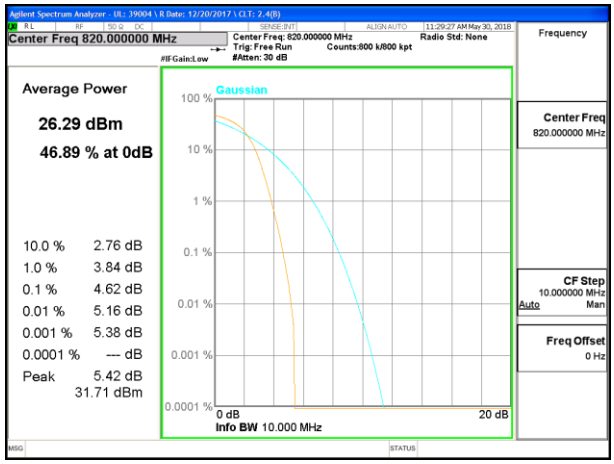
GSM 1900MHz EGPRS Middle Channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

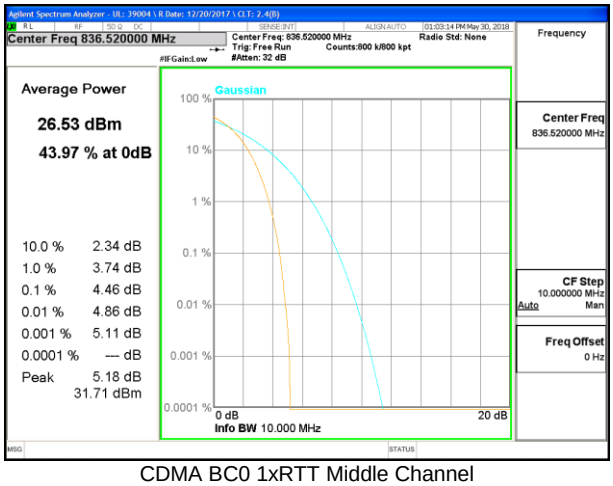
8.5.2. CDMA



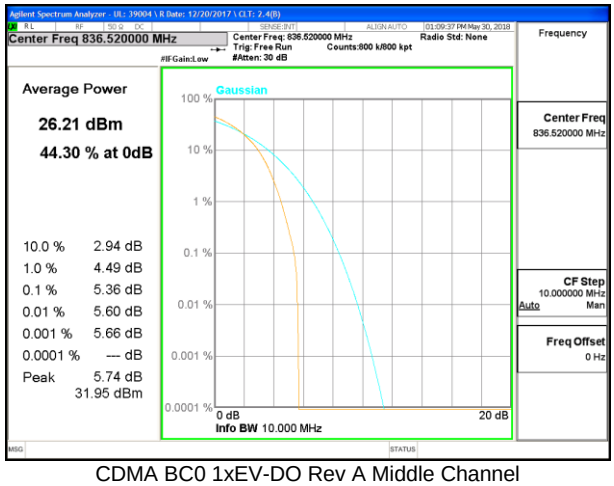
CDMA BC10 1xRTT Middle Channel



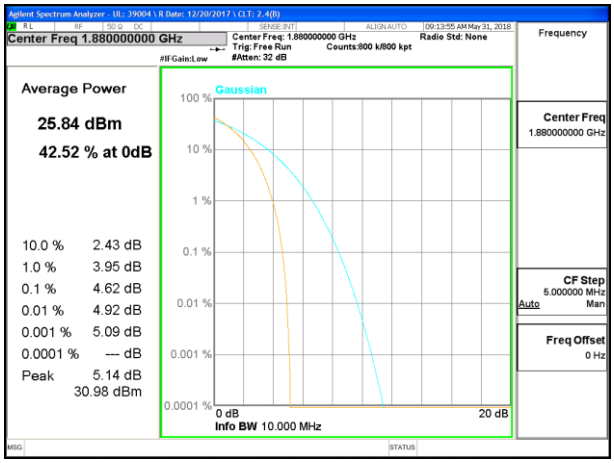
CDMA BC10 1xEV-DO Rev A Middle Channel



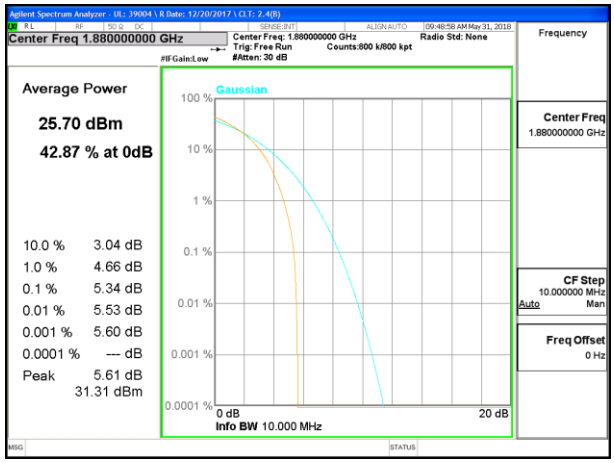
CDMA BC0 1xRTT Middle Channel



CDMA BC0 1xEV-DO Rev A Middle Channel



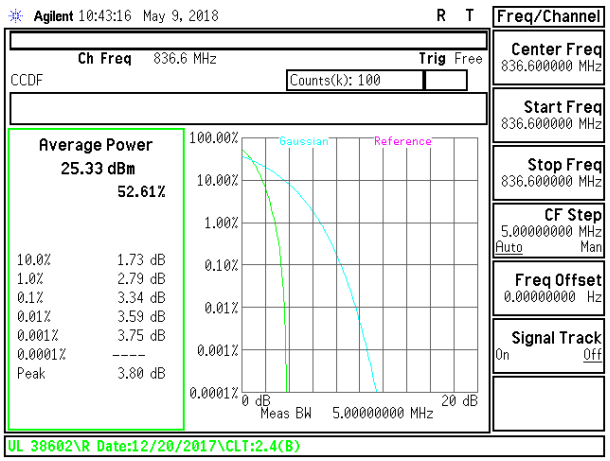
CDMA BC1 1xRTT Middle Channel



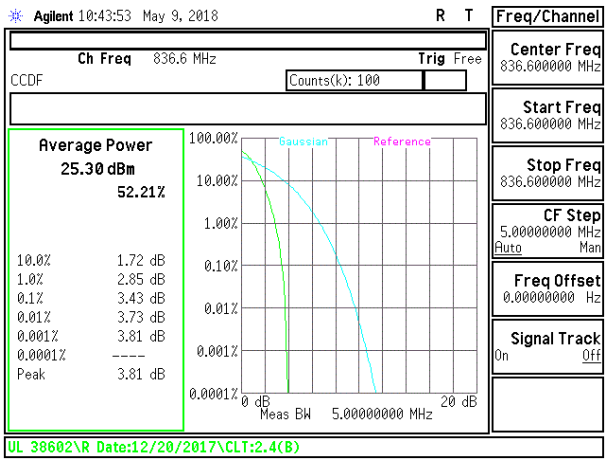
CDMA BC1 1xEV-DO Rev A Middle Channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

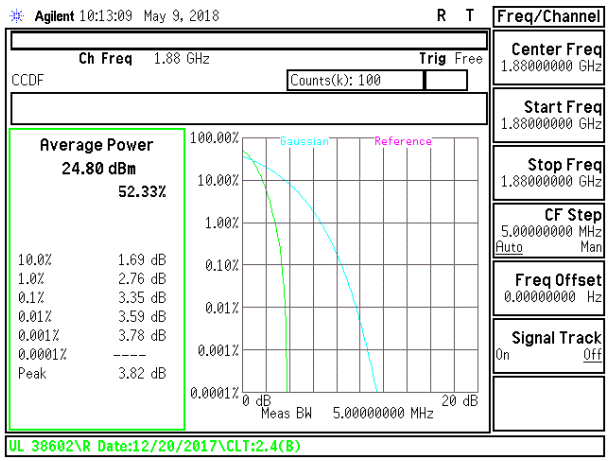
8.5.3. WCDMA



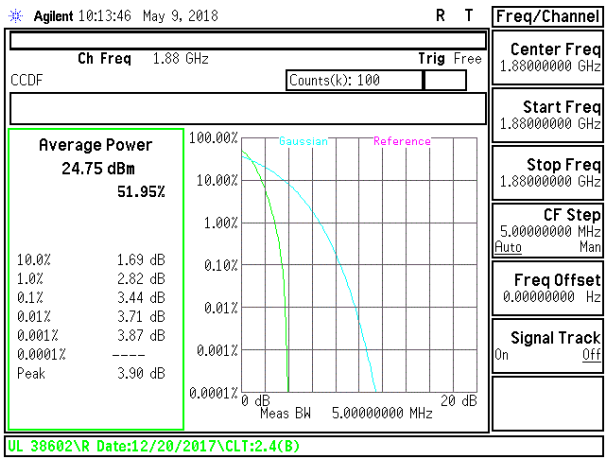
WCDMA Band 5 Rel 99 Middle Channel



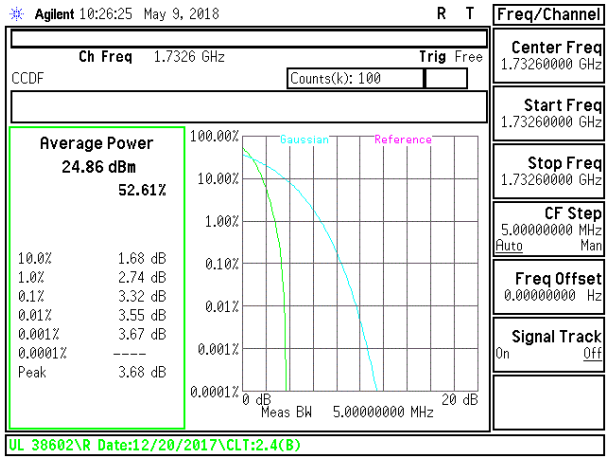
WCDMA Band 5 HSDPA Middle Channel



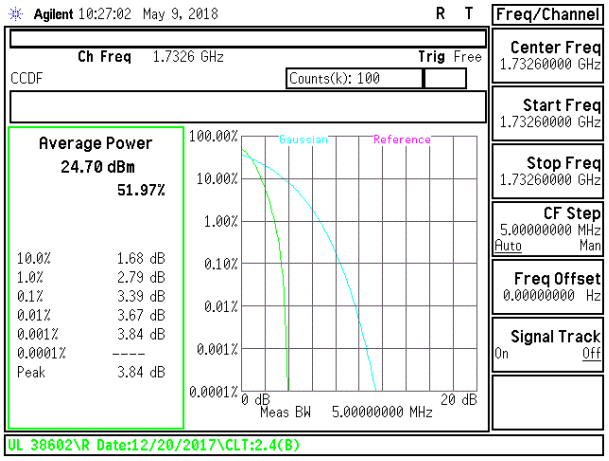
WCDMA Band 2 Rel 99 Middle Channel



WCDMA Band 2 HSDPA Middle Channel



WCDMA Band 4 Rel 99 Middle Channel



WCDMA Band 4 HSDPA Middle Channel

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9. RADIATED TEST RESULTS

9.1. FIELD STRENGTH OF SPURIOUS RADIATION (Ant 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(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

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.1.1. GSM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/06/18
Test Engineer: 10649
Configuration: EUT only
Mode: GPRS 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 (824.2MHz)										
1.65	-49.9	H	3.0	-7.4	37.8	1.0	-44.3	-13.0	-31.3	
2.47	-64.4	H	3.0	-19.4	38.5	1.0	-56.9	-13.0	-43.9	
3.30	-64.6	H	3.0	-15.6	38.5	1.0	-53.1	-13.0	-40.1	
1.65	-56.4	V	3.0	-14.2	37.8	1.0	-51.1	-13.0	-38.1	
2.47	-64.6	V	3.0	-19.4	38.5	1.0	-56.9	-13.0	-43.9	
3.30	-63.5	V	3.0	-14.8	38.5	1.0	-52.3	-13.0	-39.3	
Mid Channel (836.6MHz)										
1.67	-52.6	H	3.0	-10.1	37.8	1.0	-46.9	-13.0	-33.9	
2.51	-63.9	H	3.0	-18.7	38.6	1.0	-56.3	-13.0	-43.3	
3.35	-65.2	H	3.0	-16.1	38.5	1.0	-53.6	-13.0	-40.6	
1.67	-56.1	V	3.0	-13.9	37.8	1.0	-50.7	-13.0	-37.7	
2.51	-64.1	V	3.0	-18.7	38.6	1.0	-56.3	-13.0	-43.3	
3.35	-64.9	V	3.0	-16.1	38.5	1.0	-53.5	-13.0	-40.5	
High Channel (848.8MHz)										
1.70	-47.2	H	3.0	-4.7	37.9	1.0	-41.5	-13.0	-28.5	
2.55	-64.7	H	3.0	-19.2	38.6	1.0	-56.8	-13.0	-43.8	
3.40	-64.7	H	3.0	-15.5	38.5	1.0	-53.0	-13.0	-40.0	
1.70	-50.3	V	3.0	-8.0	37.9	1.0	-44.8	-13.0	-31.8	
2.55	-64.4	V	3.0	-18.8	38.6	1.0	-56.3	-13.0	-43.3	
3.40	-65.3	V	3.0	-16.3	38.5	1.0	-53.8	-13.0	-40.8	

Rev. 03.19.15

GSM 850MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10649
Configuration: EUT only
Mode: EGPRS 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 (824.2MHz)										
1.65	-50.9	H	3.0	-8.4	37.8	1.0	-45.2	-13.0	-32.2	
2.47	-64.8	H	3.0	-19.8	38.5	1.0	-57.2	-13.0	-44.2	
3.30	-64.1	H	3.0	-15.1	38.5	1.0	-52.6	-13.0	-39.6	
1.65	-54.2	V	3.0	-12.1	37.8	1.0	-48.9	-13.0	-35.9	
2.47	-64.1	V	3.0	-19.0	38.5	1.0	-56.4	-13.0	-43.4	
3.30	-64.2	V	3.0	-15.6	38.5	1.0	-53.0	-13.0	-40.0	
Mid Channel (836.6MHz)										
1.67	-52.3	H	3.0	-9.8	37.8	1.0	-46.6	-13.0	-33.6	
2.51	-64.7	H	3.0	-19.5	38.6	1.0	-57.1	-13.0	-44.1	
3.35	-64.7	H	3.0	-15.6	38.5	1.0	-53.1	-13.0	-40.1	
1.67	-57.5	V	3.0	-15.3	37.8	1.0	-52.1	-13.0	-39.1	
2.51	-64.6	V	3.0	-19.2	38.6	1.0	-56.8	-13.0	-43.8	
3.35	-64.8	V	3.0	-15.9	38.5	1.0	-53.4	-13.0	-40.4	
High Channel (848.8MHz)										
1.70	-47.2	H	3.0	-4.6	37.9	1.0	-41.5	-13.0	-28.5	
2.55	-64.9	H	3.0	-19.4	38.6	1.0	-57.0	-13.0	-44.0	
3.40	-64.4	H	3.0	-15.2	38.5	1.0	-52.7	-13.0	-39.7	
1.70	-51.1	V	3.0	-8.7	37.9	1.0	-45.5	-13.0	-32.5	
2.55	-64.1	V	3.0	-18.5	38.6	1.0	-56.1	-13.0	-43.1	
3.40	-65.3	V	3.0	-16.3	38.5	1.0	-53.8	-13.0	-40.8	

Rev. 03.19.15

GSM 850MHz EGPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10649
Configuration: EUT only
Mode: GPRS 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 (1850.2MHz)										
3.70	-63.0	H	3.0	-13.1	38.6	1.0	-50.7	-13.0	-37.7	
5.55	-64.5	H	3.0	-10.4	38.6	1.0	-48.0	-13.0	-35.0	
7.40	-66.0	H	3.0	-8.3	37.8	1.0	-45.1	-13.0	-32.1	
3.70	-62.7	V	3.0	-12.8	38.6	1.0	-50.4	-13.0	-37.4	
5.55	-64.6	V	3.0	-10.9	38.6	1.0	-48.5	-13.0	-35.5	
7.40	-64.3	V	3.0	-6.9	37.8	1.0	-43.7	-13.0	-30.7	
Mid Channel (1880.0)										
3.76	-61.0	H	3.0	-10.9	38.6	1.0	-48.5	-13.0	-35.5	
5.64	-62.4	H	3.0	-8.2	38.5	1.0	-45.7	-13.0	-32.7	
7.52	-66.0	H	3.0	-8.2	37.7	1.0	-44.9	-13.0	-31.9	
3.76	-61.4	V	3.0	-11.3	38.6	1.0	-49.0	-13.0	-36.0	
5.64	-63.4	V	3.0	-9.4	38.5	1.0	-47.0	-13.0	-34.0	
7.52	-65.5	V	3.0	-7.9	37.7	1.0	-44.7	-13.0	-31.7	
High Channel (1909.8MHz)										
3.82	-61.5	H	3.0	-11.3	38.7	1.0	-48.9	-13.0	-35.9	
5.73	-63.7	H	3.0	-9.3	38.5	1.0	-46.8	-13.0	-33.8	
7.54	-65.7	H	3.0	-7.8	37.7	1.0	-44.6	-13.0	-31.6	
3.82	-62.2	V	3.0	-12.0	38.7	1.0	-49.6	-13.0	-36.6	
5.73	-63.9	V	3.0	-9.8	38.5	1.0	-47.3	-13.0	-34.3	
7.54	-65.8	V	3.0	-8.2	37.7	1.0	-44.9	-13.0	-31.9	

Rev. 03.19.15

GSM 1900MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10649
Configuration: EUT only
Mode: EGPRS 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 (1850.2MHz)										
3.70	-62.7	H	3.0	-12.8	38.6	1.0	-50.4	-13.0	-37.4	
5.55	-64.0	H	3.0	-10.0	38.6	1.0	-47.6	-13.0	-34.6	
7.40	-64.4	H	3.0	-6.8	37.8	1.0	-43.6	-13.0	-30.6	
3.70	-61.7	V	3.0	-11.8	38.6	1.0	-49.4	-13.0	-36.4	
5.55	-64.4	V	3.0	-10.7	38.6	1.0	-48.2	-13.0	-35.2	
7.40	-66.3	V	3.0	-8.8	37.8	1.0	-45.7	-13.0	-32.7	
Mid Channel (1880.0)										
3.76	-61.7	H	3.0	-11.6	38.6	1.0	-49.2	-13.0	-36.2	
5.64	-64.2	H	3.0	-10.0	38.5	1.0	-47.5	-13.0	-34.5	
7.52	-66.1	H	3.0	-8.3	37.7	1.0	-45.1	-13.0	-32.1	
3.76	-62.1	V	3.0	-12.0	38.6	1.0	-49.6	-13.0	-36.6	
5.64	-63.2	V	3.0	-9.2	38.5	1.0	-46.8	-13.0	-33.8	
7.52	-66.2	V	3.0	-8.6	37.7	1.0	-45.4	-13.0	-32.4	
High Channel (1909.8MHz)										
3.82	-61.4	H	3.0	-11.1	38.7	1.0	-48.8	-13.0	-35.8	
5.73	-64.4	H	3.0	-10.0	38.5	1.0	-47.5	-13.0	-34.5	
7.54	-66.3	H	3.0	-8.5	37.7	1.0	-45.2	-13.0	-32.2	
3.82	-61.6	V	3.0	-11.4	38.7	1.0	-49.0	-13.0	-36.0	
5.73	-64.6	V	3.0	-10.4	38.5	1.0	-47.9	-13.0	-34.9	
7.54	-65.8	V	3.0	-8.2	37.7	1.0	-44.9	-13.0	-31.9	

Rev. 03.19.15

GSM 1900MHz EGPRS

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.1.2. CDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12491
Configuration: EUT only
Mode: 1xRTT 800MHz

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 (817.25MHz)										
1.63	-66.3	H	3.0	-24.8	37.8	1.0	-61.7	-13.0	-48.7	
2.45	-69.0	H	3.0	-25.9	36.7	1.0	-61.6	-13.0	-48.6	
3.27	-67.3	H	3.0	-21.4	36.5	1.0	-56.9	-13.0	-43.9	
1.63	-66.5	V	3.0	-24.7	37.8	1.0	-61.6	-13.0	-48.6	
2.45	-67.5	V	3.0	-23.6	36.7	1.0	-59.4	-13.0	-46.4	
3.27	-68.2	V	3.0	-22.4	36.5	1.0	-57.9	-13.0	-44.9	
Mid Channel (820MHz)										
1.64	-65.6	H	3.0	-24.1	37.8	1.0	-61.0	-13.0	-48.0	
2.46	-67.8	H	3.0	-24.6	36.7	1.0	-60.3	-13.0	-47.3	
3.28	-68.2	H	3.0	-22.3	36.5	1.0	-57.9	-13.0	-44.9	
1.64	-66.7	V	3.0	-25.0	37.8	1.0	-61.8	-13.0	-48.8	
2.46	-67.5	V	3.0	-23.6	36.7	1.0	-59.3	-13.0	-46.3	
3.28	-68.2	V	3.0	-22.3	36.5	1.0	-57.8	-13.0	-44.8	
High Channel (822.75MHz)										
1.65	-66.9	H	3.0	-25.4	37.8	1.0	-62.3	-13.0	-49.3	
2.47	-66.9	H	3.0	-23.8	36.6	1.0	-59.4	-13.0	-46.4	
3.29	-69.0	H	3.0	-23.1	36.5	1.0	-58.7	-13.0	-45.7	
1.65	-66.2	V	3.0	-24.4	37.8	1.0	-61.3	-13.0	-48.3	
2.47	-67.3	V	3.0	-23.3	36.6	1.0	-58.9	-13.0	-45.9	
3.29	-68.3	V	3.0	-22.5	36.5	1.0	-58.0	-13.0	-45.0	

Rev. 03.19.15

CDMA BC10 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12491
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 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	-65.3	H	3.0	-23.9	37.8	1.0	-60.8	-13.0	-47.8	
2.45	-66.7	H	3.0	-23.6	36.7	1.0	-59.3	-13.0	-46.3	
3.27	-67.3	H	3.0	-21.5	36.5	1.0	-57.0	-13.0	-44.0	
1.63	-65.1	V	3.0	-23.4	37.8	1.0	-60.2	-13.0	-47.2	
2.45	-67.2	V	3.0	-23.3	36.7	1.0	-59.1	-13.0	-46.1	
3.27	-67.8	V	3.0	-22.0	36.5	1.0	-57.6	-13.0	-44.6	
Mid Channel (820MHz)										
1.64	-65.5	H	3.0	-24.1	37.8	1.0	-60.9	-13.0	-47.9	
2.46	-67.6	H	3.0	-24.5	36.7	1.0	-60.2	-13.0	-47.2	
3.28	-65.6	H	3.0	-19.7	36.5	1.0	-55.2	-13.0	-42.2	
1.64	-66.7	V	3.0	-24.9	37.8	1.0	-61.8	-13.0	-48.8	
2.46	-67.0	V	3.0	-23.1	36.7	1.0	-58.8	-13.0	-45.8	
3.28	-67.6	V	3.0	-21.8	36.5	1.0	-57.3	-13.0	-44.3	
High Channel (822.75MHz)										
1.65	-66.5	H	3.0	-25.0	37.8	1.0	-61.9	-13.0	-48.9	
2.47	-66.4	H	3.0	-23.3	36.6	1.0	-58.8	-13.0	-45.8	
3.29	-68.6	H	3.0	-22.7	36.5	1.0	-58.2	-13.0	-45.2	
1.65	-67.4	V	3.0	-25.6	37.8	1.0	-62.5	-13.0	-49.5	
2.47	-67.8	V	3.0	-23.8	36.6	1.0	-59.4	-13.0	-46.4	
3.29	-69.1	V	3.0	-23.2	36.5	1.0	-58.7	-13.0	-45.7	

Rev. 03.19.15

CDMA BC10 1xEV-DO Rev A

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12491
Configuration: EUT Only
Mode: 1xRTT 850MHz

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 (824.7MHz)										
1.65	-64.8	H	3.0	-23.4	37.8	1.0	-60.2	-13.0	-47.2	
2.47	-66.4	H	3.0	-23.3	36.6	1.0	-58.9	-13.0	-45.9	
3.30	-67.4	H	3.0	-21.5	36.5	1.0	-57.0	-13.0	-44.0	
1.65	-66.1	V	3.0	-24.3	37.8	1.0	-61.2	-13.0	-48.2	
2.47	-66.9	V	3.0	-22.9	36.6	1.0	-58.5	-13.0	-45.5	
3.30	-68.1	V	3.0	-22.1	36.5	1.0	-57.7	-13.0	-44.7	
Mid Channel (836.52MHz)										
1.67	-66.3	H	3.0	-24.8	37.8	1.0	-61.7	-13.0	-48.7	
2.51	-67.3	H	3.0	-24.1	36.4	1.0	-59.4	-13.0	-46.4	
3.35	-68.5	H	3.0	-22.4	36.5	1.0	-57.9	-13.0	-44.9	
1.67	-67.1	V	3.0	-25.3	37.8	1.0	-62.2	-13.0	-49.2	
2.51	-66.8	V	3.0	-22.6	36.4	1.0	-57.9	-13.0	-44.9	
3.35	-68.0	V	3.0	-22.0	36.5	1.0	-57.4	-13.0	-44.4	
High Channel (848.31MHz)										
1.70	-67.2	H	3.0	-25.7	37.8	1.0	-62.5	-13.0	-49.5	
2.54	-67.1	H	3.0	-23.7	36.4	1.0	-59.1	-13.0	-46.1	
3.39	-67.3	H	3.0	-21.1	36.4	1.0	-56.6	-13.0	-43.6	
1.70	-66.9	V	3.0	-25.1	37.8	1.0	-62.0	-13.0	-49.0	
2.54	-67.5	V	3.0	-23.2	36.4	1.0	-58.6	-13.0	-45.6	
3.39	-68.2	V	3.0	-22.1	36.4	1.0	-57.5	-13.0	-44.5	

Rev. 03.19.15

CDMA BC0 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12491
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 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 (824.7MHz)										
1.65	-64.3	H	3.0	-22.8	37.8	1.0	-59.7	-13.0	-46.7	
2.47	-65.8	H	3.0	-22.6	36.6	1.0	-58.2	-13.0	-45.2	
3.30	-67.3	H	3.0	-21.4	36.5	1.0	-56.9	-13.0	-43.9	
1.65	-66.3	V	3.0	-24.5	37.8	1.0	-61.3	-13.0	-48.3	
2.47	-66.6	V	3.0	-22.6	36.6	1.0	-58.1	-13.0	-45.1	
3.30	-68.2	V	3.0	-22.3	36.5	1.0	-57.8	-13.0	-44.8	
Mid Channel (836.52MHz)										
1.67	-66.4	H	3.0	-25.0	37.8	1.0	-61.8	-13.0	-48.8	
2.51	-67.1	H	3.0	-23.9	36.4	1.0	-59.3	-13.0	-46.3	
3.35	-68.3	H	3.0	-22.3	36.5	1.0	-57.8	-13.0	-44.8	
1.67	-66.9	V	3.0	-25.1	37.8	1.0	-61.9	-13.0	-48.9	
2.51	-67.9	V	3.0	-23.7	36.4	1.0	-59.0	-13.0	-46.0	
3.35	-67.2	V	3.0	-21.2	36.5	1.0	-56.7	-13.0	-43.7	
High Channel (848.31MHz)										
1.70	-67.7	H	3.0	-26.2	37.8	1.0	-63.0	-13.0	-50.0	
2.54	-67.3	H	3.0	-23.9	36.4	1.0	-59.3	-13.0	-46.3	
3.39	-68.7	H	3.0	-22.6	36.4	1.0	-58.0	-13.0	-45.0	
1.70	-67.5	V	3.0	-25.7	37.8	1.0	-62.5	-13.0	-49.5	
2.54	-66.2	V	3.0	-21.9	36.4	1.0	-57.3	-13.0	-44.3	
3.39	-67.6	V	3.0	-21.4	36.4	1.0	-56.8	-13.0	-43.8	

Rev. 03.19.15

CDMA BC0 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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/16/18
Test Engineer: 12482
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	-65.2	H	3.0	-18.4	36.2	1.0	-53.6	-13.0	-40.6	
5.55	-67.2	H	3.0	-16.9	36.1	1.0	-52.0	-13.0	-39.0	
7.41	-70.6	H	3.0	-17.5	35.2	1.0	-51.7	-13.0	-38.7	
3.70	-64.4	V	3.0	-17.3	36.2	1.0	-52.5	-13.0	-39.5	
5.55	-68.7	V	3.0	-18.6	36.1	1.0	-53.7	-13.0	-40.7	
7.41	-70.5	V	3.0	-17.4	35.2	1.0	-51.7	-13.0	-38.7	
Mid Channel (1880MHz)										
3.76	-67.0	H	3.0	-20.1	36.2	1.0	-55.3	-13.0	-42.3	
5.64	-69.4	H	3.0	-19.0	36.1	1.0	-54.1	-13.0	-41.1	
7.52	-69.1	H	3.0	-15.9	35.1	1.0	-50.0	-13.0	-37.0	
3.76	-62.4	V	3.0	-15.1	36.2	1.0	-50.2	-13.0	-37.2	
5.64	-68.4	V	3.0	-18.1	36.1	1.0	-53.2	-13.0	-40.2	
7.52	-69.9	V	3.0	-16.8	35.1	1.0	-50.9	-13.0	-37.9	
High Channel (1908.75MHz)										
3.82	-68.3	H	3.0	-21.3	36.1	1.0	-56.4	-13.0	-43.4	
5.73	-68.2	H	3.0	-17.6	36.1	1.0	-52.6	-13.0	-39.6	
7.64	-70.7	H	3.0	-17.4	35.0	1.0	-51.5	-13.0	-38.5	
3.82	-67.9	V	3.0	-20.4	36.1	1.0	-55.5	-13.0	-42.5	
5.73	-68.3	V	3.0	-17.9	36.1	1.0	-52.9	-13.0	-39.9	
7.64	-70.0	V	3.0	-16.8	35.0	1.0	-50.8	-13.0	-37.8	

Rev. 03.19.15

CDMA BC1 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12491
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	-68.0	H	3.0	-21.3	36.2	1.0	-56.5	-13.0	-43.5	
5.55	-67.6	H	3.0	-17.3	36.1	1.0	-52.4	-13.0	-39.4	
7.41	-69.5	H	3.0	-16.4	35.2	1.0	-50.6	-13.0	-37.6	
3.70	-69.2	V	3.0	-22.1	36.2	1.0	-57.3	-13.0	-44.3	
5.55	-67.5	V	3.0	-17.4	36.1	1.0	-52.5	-13.0	-39.5	
7.41	-69.9	V	3.0	-16.8	35.2	1.0	-51.1	-13.0	-38.1	
Mid Channel (1880MHz)										
3.76	-66.7	H	3.0	-19.8	36.2	1.0	-55.0	-13.0	-42.0	
5.64	-67.7	H	3.0	-17.2	36.1	1.0	-52.3	-13.0	-39.3	
7.52	-69.3	H	3.0	-16.1	35.1	1.0	-50.2	-13.0	-37.2	
3.76	-64.1	V	3.0	-16.8	36.2	1.0	-52.0	-13.0	-39.0	
5.64	-67.7	V	3.0	-17.4	36.1	1.0	-52.5	-13.0	-39.5	
7.52	-69.0	V	3.0	-15.9	35.1	1.0	-50.0	-13.0	-37.0	
High Channel (1908.75MHz)										
3.82	-68.2	H	3.0	-21.2	36.1	1.0	-56.4	-13.0	-43.4	
5.73	-68.4	H	3.0	-17.8	36.1	1.0	-52.9	-13.0	-39.9	
7.64	-69.9	H	3.0	-16.6	35.0	1.0	-50.6	-13.0	-37.6	
3.82	-66.7	V	3.0	-19.2	36.1	1.0	-54.3	-13.0	-41.3	
5.73	-66.9	V	3.0	-16.4	36.1	1.0	-51.5	-13.0	-38.5	
7.64	-69.6	V	3.0	-16.4	35.0	1.0	-50.4	-13.0	-37.4	

Rev. 03.19.15

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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.1.3. WCDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10646
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	-63.9	H	3.0	-21.4	37.8	1.0	-58.3	-13.0	-45.3	
2.48	-65.1	H	3.0	-20.1	38.5	1.0	-57.6	-13.0	-44.6	
3.31	-65.1	H	3.0	-16.1	38.5	1.0	-53.6	-13.0	-40.6	
1.65	-63.7	V	3.0	-21.5	37.8	1.0	-58.4	-13.0	-45.4	
2.48	-64.4	V	3.0	-19.2	38.5	1.0	-56.7	-13.0	-43.7	
3.31	-64.7	V	3.0	-16.0	38.5	1.0	-53.5	-13.0	-40.5	
Mid Channel (836.6MHz)										
1.67	-64.4	H	3.0	-21.9	37.8	1.0	-58.8	-13.0	-45.8	
2.51	-63.8	H	3.0	-18.6	38.6	1.0	-56.2	-13.0	-43.2	
3.35	-65.5	H	3.0	-16.4	38.5	1.0	-53.9	-13.0	-40.9	
1.67	-64.2	V	3.0	-22.0	37.8	1.0	-58.8	-13.0	-45.8	
2.51	-65.1	V	3.0	-19.7	38.6	1.0	-57.3	-13.0	-44.3	
3.35	-64.4	V	3.0	-15.6	38.5	1.0	-53.1	-13.0	-40.1	
High Channel (846.6MHz)										
1.69	-62.7	H	3.0	-20.2	37.9	1.0	-57.1	-13.0	-44.1	
2.54	-64.1	H	3.0	-18.7	38.6	1.0	-56.3	-13.0	-43.3	
3.39	-65.7	H	3.0	-16.5	38.5	1.0	-54.0	-13.0	-41.0	
1.69	-64.1	V	3.0	-21.8	37.9	1.0	-58.6	-13.0	-45.6	
2.54	-64.4	V	3.0	-18.9	38.6	1.0	-56.4	-13.0	-43.4	
3.39	-64.4	V	3.0	-15.4	38.5	1.0	-52.9	-13.0	-39.9	

Rev. 03.19.15

WCDMA Band 5 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10646
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	-63.2	H	3.0	-20.8	37.8	1.0	-57.6	-13.0	-44.6	
2.48	-63.9	H	3.0	-18.8	38.5	1.0	-56.3	-13.0	-43.3	
3.31	-64.8	H	3.0	-15.8	38.5	1.0	-53.3	-13.0	-40.3	
1.65	-63.9	V	3.0	-21.8	37.8	1.0	-58.6	-13.0	-45.6	
2.48	-64.7	V	3.0	-19.4	38.5	1.0	-56.9	-13.0	-43.9	
3.31	-64.9	V	3.0	-16.2	38.5	1.0	-53.7	-13.0	-40.7	
Mid Channel (836.6MHz)										
1.67	-64.2	H	3.0	-21.7	37.8	1.0	-58.5	-13.0	-45.5	
2.51	-64.8	H	3.0	-19.6	38.6	1.0	-57.2	-13.0	-44.2	
3.35	-64.7	H	3.0	-15.6	38.5	1.0	-53.1	-13.0	-40.1	
1.67	-64.1	V	3.0	-21.8	37.8	1.0	-58.7	-13.0	-45.7	
2.51	-65.8	V	3.0	-20.4	38.6	1.0	-58.0	-13.0	-45.0	
3.35	-65.2	V	3.0	-16.4	38.5	1.0	-53.9	-13.0	-40.9	
High Channel (846.6MHz)										
1.69	-64.1	H	3.0	-21.6	37.9	1.0	-58.4	-13.0	-45.4	
2.54	-65.1	H	3.0	-19.7	38.6	1.0	-57.2	-13.0	-44.2	
3.39	-66.1	H	3.0	-16.9	38.5	1.0	-54.4	-13.0	-41.4	
1.69	-64.2	V	3.0	-21.9	37.9	1.0	-58.7	-13.0	-45.7	
2.54	-64.5	V	3.0	-19.0	38.6	1.0	-56.6	-13.0	-43.6	
3.39	-65.1	V	3.0	-16.2	38.5	1.0	-53.7	-13.0	-40.7	

Rev. 03.19.15

WCDMA Band 5 HSDPA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10646
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	-65.4	H	3.0	-16.2	38.5	1.0	-53.7	-13.0	-40.7	
5.14	-63.6	H	3.0	-10.5	38.7	1.0	-48.2	-13.0	-35.2	
6.85	-65.0	H	3.0	-8.1	38.1	1.0	-45.2	-13.0	-32.2	
8.56	-65.3	H	3.0	-6.3	37.1	1.0	-42.3	-13.0	-29.3	
3.42	-64.9	V	3.0	-15.8	38.5	1.0	-53.4	-13.0	-40.4	
5.14	-62.8	V	3.0	-9.9	38.7	1.0	-47.6	-13.0	-34.6	
6.85	-65.2	V	3.0	-8.6	38.1	1.0	-45.7	-13.0	-32.7	
8.56	-65.7	V	3.0	-6.7	37.1	1.0	-42.8	-13.0	-29.8	
Mid Channel (1732.6MHz)										
3.47	-64.8	H	3.0	-15.4	38.5	1.0	-52.9	-13.0	-39.9	
5.20	-63.0	H	3.0	-9.7	38.7	1.0	-47.4	-13.0	-34.4	
6.93	-64.9	H	3.0	-7.9	38.1	1.0	-45.0	-13.0	-32.0	
8.66	-65.5	H	3.0	-6.3	37.0	1.0	-42.3	-13.0	-29.3	
3.47	-65.2	V	3.0	-16.0	38.5	1.0	-53.5	-13.0	-40.5	
5.20	-63.2	V	3.0	-10.3	38.7	1.0	-47.9	-13.0	-34.9	
6.93	-64.1	V	3.0	-7.3	38.1	1.0	-44.4	-13.0	-31.4	
8.66	-66.4	V	3.0	-7.4	37.0	1.0	-43.4	-13.0	-30.4	
High Channel (1752.6MHz)										
3.51	-64.9	H	3.0	-15.4	38.5	1.0	-53.0	-13.0	-40.0	
5.26	-64.6	H	3.0	-11.2	38.7	1.0	-48.8	-13.0	-35.8	
7.01	-64.5	H	3.0	-7.3	38.1	1.0	-44.4	-13.0	-31.4	
8.76	-66.4	H	3.0	-7.1	36.9	1.0	-43.0	-13.0	-30.0	
3.51	-64.9	V	3.0	-15.6	38.5	1.0	-53.1	-13.0	-40.1	
5.26	-64.7	V	3.0	-11.6	38.7	1.0	-49.3	-13.0	-36.3	
7.01	-65.0	V	3.0	-8.1	38.1	1.0	-45.1	-13.0	-32.1	
8.76	-66.0	V	3.0	-6.8	36.9	1.0	-42.7	-13.0	-29.7	

Rev. 03.19.15

WCDMA Band 2 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10646
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	-65.1	H	3.0	-15.9	38.5	1.0	-53.4	-13.0	-40.4	
5.14	-62.5	H	3.0	-9.3	38.7	1.0	-47.0	-13.0	-34.0	
6.85	-64.6	H	3.0	-7.7	38.1	1.0	-44.9	-13.0	-31.9	
8.56	-66.5	H	3.0	-7.4	37.1	1.0	-43.5	-13.0	-30.5	
3.42	-66.0	V	3.0	-17.0	38.5	1.0	-54.5	-13.0	-41.5	
5.14	-63.3	V	3.0	-10.4	38.7	1.0	-48.1	-13.0	-35.1	
6.85	-64.5	V	3.0	-7.9	38.1	1.0	-45.0	-13.0	-32.0	
8.56	-66.1	V	3.0	-7.2	37.1	1.0	-43.2	-13.0	-30.2	
Mid Channel (1732.6MHz)										
3.47	-65.3	H	3.0	-15.9	38.5	1.0	-53.4	-13.0	-40.4	
5.20	-63.8	H	3.0	-10.5	38.7	1.0	-48.2	-13.0	-35.2	
6.93	-65.2	H	3.0	-8.2	38.1	1.0	-45.3	-13.0	-32.3	
8.66	-66.1	H	3.0	-6.9	37.0	1.0	-42.9	-13.0	-29.9	
3.47	-65.5	V	3.0	-16.3	38.5	1.0	-53.8	-13.0	-40.8	
5.20	-63.4	V	3.0	-10.5	38.7	1.0	-48.2	-13.0	-35.2	
6.93	-64.3	V	3.0	-7.5	38.1	1.0	-44.6	-13.0	-31.6	
8.66	-65.9	V	3.0	-6.8	37.0	1.0	-42.8	-13.0	-29.8	
High Channel (1752.6MHz)										
3.51	-64.9	H	3.0	-15.4	38.5	1.0	-52.9	-13.0	-39.9	
5.26	-62.6	H	3.0	-9.1	38.7	1.0	-46.8	-13.0	-33.8	
7.01	-65.3	H	3.0	-8.1	38.1	1.0	-45.1	-13.0	-32.1	
8.76	-63.8	H	3.0	-4.5	36.9	1.0	-40.4	-13.0	-27.4	
3.51	-65.1	V	3.0	-15.7	38.5	1.0	-53.3	-13.0	-40.3	
5.26	-65.0	V	3.0	-11.9	38.7	1.0	-49.6	-13.0	-36.6	
7.01	-65.1	V	3.0	-8.2	38.1	1.0	-45.2	-13.0	-32.2	
8.76	-66.0	V	3.0	-6.8	36.9	1.0	-42.8	-13.0	-29.8	

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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/06/18
Test Engineer: 10646
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	-62.6	H	3.0	-12.7	38.6	1.0	-50.3	-13.0	-37.3	
5.56	-63.6	H	3.0	-9.5	38.6	1.0	-47.1	-13.0	-34.1	
7.41	-65.4	H	3.0	-7.7	37.8	1.0	-44.6	-13.0	-31.6	
3.70	-63.1	V	3.0	-13.2	38.6	1.0	-50.8	-13.0	-37.8	
5.55	-63.6	V	3.0	-9.8	38.6	1.0	-47.4	-13.0	-34.4	
7.42	-64.9	V	3.0	-7.4	37.8	1.0	-44.2	-13.0	-31.2	
Mid Channel (1880MHz)										
3.76	-62.3	H	3.0	-12.2	38.6	1.0	-49.9	-13.0	-36.9	
5.64	-64.9	H	3.0	-10.6	38.5	1.0	-48.2	-13.0	-35.2	
7.52	-66.1	H	3.0	-8.3	37.7	1.0	-45.0	-13.0	-32.0	
3.76	-62.9	V	3.0	-12.9	38.6	1.0	-50.5	-13.0	-37.5	
5.64	-64.9	V	3.0	-11.0	38.5	1.0	-48.5	-13.0	-35.5	
7.52	-65.0	V	3.0	-7.4	37.7	1.0	-44.1	-13.0	-31.1	
High Channel (1907.6MHz)										
3.81	-61.8	H	3.0	-11.6	38.7	1.0	-49.3	-13.0	-36.3	
5.72	-64.1	H	3.0	-9.7	38.5	1.0	-47.2	-13.0	-34.2	
7.66	-65.5	H	3.0	-7.5	37.7	1.0	-44.2	-13.0	-31.2	
3.82	-61.6	V	3.0	-11.4	38.7	1.0	-49.0	-13.0	-36.0	
5.72	-64.6	V	3.0	-10.5	38.5	1.0	-48.0	-13.0	-35.0	
7.63	-65.8	V	3.0	-8.0	37.7	1.0	-44.7	-13.0	-31.7	

Rev. 03.19.15

WCDMA Band 4 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10646
Configuration: EUT Only
Mode: HSDPA 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	-62.4	H	3.0	-12.5	38.6	1.0	-50.1	-13.0	-37.1	
5.56	-63.2	H	3.0	-9.1	38.6	1.0	-46.7	-13.0	-33.7	
7.41	-66.1	H	3.0	-8.4	37.8	1.0	-45.2	-13.0	-32.2	
9.26	-66.2	H	3.0	-6.3	36.6	1.0	-41.9	-13.0	-28.9	
3.70	-61.0	V	3.0	-11.1	38.6	1.0	-48.7	-13.0	-35.7	
5.56	-63.5	V	3.0	-9.7	38.6	1.0	-47.3	-13.0	-34.3	
7.41	-65.6	V	3.0	-8.1	37.8	1.0	-44.9	-13.0	-31.9	
9.26	-66.4	V	3.0	-6.6	36.6	1.0	-42.2	-13.0	-29.2	
Mid Channel (1880MHz)										
3.76	-61.6	H	3.0	-11.5	38.6	1.0	-49.1	-13.0	-36.1	
5.64	-63.3	H	3.0	-9.1	38.5	1.0	-46.6	-13.0	-33.6	
7.52	-65.3	H	3.0	-7.5	37.7	1.0	-44.2	-13.0	-31.2	
9.40	-66.2	H	3.0	-6.2	36.5	1.0	-41.7	-13.0	-28.7	
3.76	-61.5	V	3.0	-11.4	38.6	1.0	-49.1	-13.0	-36.1	
5.64	-63.8	V	3.0	-9.8	38.5	1.0	-47.4	-13.0	-34.4	
7.52	-65.4	V	3.0	-7.8	37.7	1.0	-44.5	-13.0	-31.5	
9.40	-66.5	V	3.0	-6.5	36.5	1.0	-42.0	-13.0	-29.0	
High Channel (1907.6MHz)										
3.82	-61.5	H	3.0	-11.2	38.7	1.0	-48.9	-13.0	-35.9	
5.72	-64.2	H	3.0	-9.8	38.5	1.0	-47.3	-13.0	-34.3	
7.63	-65.5	H	3.0	-7.6	37.7	1.0	-44.2	-13.0	-31.2	
9.54	-65.9	H	3.0	-5.7	36.4	1.0	-41.1	-13.0	-28.1	
3.82	-61.7	V	3.0	-11.5	38.7	1.0	-49.2	-13.0	-36.2	
5.72	-63.8	V	3.0	-9.7	38.5	1.0	-47.2	-13.0	-34.2	
7.63	-64.7	V	3.0	-6.9	37.7	1.0	-43.6	-13.0	-30.6	
9.54	-66.2	V	3.0	-6.0	36.4	1.0	-41.4	-13.0	-28.4	

Rev. 03.19.15

WCDMA Band 4 HSDPA

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.2. FIELD STRENGTH OF SPURIOUS RADIATION (Ant 2)

9.2.1. GSM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12482
Configuration: EUT only
Mode: GPRS 850MHz

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 (824.2MHz)										
1.65	-61.7	H	3.0	-20.2	37.8	1.0	-57.1	-13.0	-44.1	
2.47	-68.3	H	3.0	-25.1	36.6	1.0	-60.7	-13.0	-47.7	
3.30	-68.5	H	3.0	-22.5	36.5	1.0	-58.1	-13.0	-45.1	
1.65	-62.6	V	3.0	-20.9	37.8	1.0	-57.7	-13.0	-44.7	
2.47	-66.6	V	3.0	-22.6	36.6	1.0	-58.2	-13.0	-45.2	
3.30	-67.8	V	3.0	-21.9	36.5	1.0	-57.4	-13.0	-44.4	
Mid Channel (836.6MHz)										
1.67	-67.1	H	3.0	-25.6	37.8	1.0	-62.4	-13.0	-49.4	
2.51	-62.7	H	3.0	-19.5	36.4	1.0	-54.8	-13.0	-41.8	
3.35	-68.5	H	3.0	-22.5	36.5	1.0	-58.0	-13.0	-45.0	
1.67	-67.8	V	3.0	-26.1	37.8	1.0	-62.9	-13.0	-49.9	
2.51	-66.7	V	3.0	-22.5	36.4	1.0	-57.9	-13.0	-44.9	
3.35	-69.1	V	3.0	-23.0	36.5	1.0	-58.5	-13.0	-45.5	
High Channel (848.8MHz)										
1.70	-66.9	H	3.0	-25.4	37.8	1.0	-62.2	-13.0	-49.2	
2.55	-63.7	H	3.0	-20.4	36.4	1.0	-55.8	-13.0	-42.8	
3.40	-69.3	H	3.0	-23.2	36.4	1.0	-58.6	-13.0	-45.6	
1.70	-67.7	V	3.0	-25.9	37.8	1.0	-62.7	-13.0	-49.7	
2.55	-65.2	V	3.0	-20.9	36.4	1.0	-56.3	-13.0	-43.3	
3.40	-68.8	V	3.0	-22.6	36.4	1.0	-58.0	-13.0	-45.0	

Rev. 03.19.15

GSM 850MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12482
Configuration: EUT only
Mode: EGPRS 850MHz

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 (824.2MHz)										
1.65	-61.4	H	3.0	-20.0	37.8	1.0	-56.8	-13.0	-43.8	
2.47	-68.8	H	3.0	-25.7	36.6	1.0	-61.2	-13.0	-48.2	
3.30	-69.1	H	3.0	-23.2	36.5	1.0	-58.7	-13.0	-45.7	
1.65	-65.9	V	3.0	-24.1	37.8	1.0	-60.9	-13.0	-47.9	
2.47	-67.4	V	3.0	-23.4	36.6	1.0	-58.9	-13.0	-45.9	
3.30	-67.5	V	3.0	-21.6	36.5	1.0	-57.1	-13.0	-44.1	
Mid Channel (836.6MHz)										
1.67	-66.8	H	3.0	-25.3	37.8	1.0	-62.1	-13.0	-49.1	
2.51	-65.5	H	3.0	-22.3	36.4	1.0	-57.6	-13.0	-44.6	
3.35	-68.9	H	3.0	-22.9	36.5	1.0	-58.4	-13.0	-45.4	
1.67	-68.3	V	3.0	-26.5	37.8	1.0	-63.4	-13.0	-50.4	
2.51	-63.3	V	3.0	-19.0	36.4	1.0	-54.4	-13.0	-41.4	
3.35	-66.7	V	3.0	-20.7	36.5	1.0	-56.1	-13.0	-43.1	
High Channel (848.8MHz)										
1.70	-67.9	H	3.0	-26.4	37.8	1.0	-63.2	-13.0	-50.2	
2.55	-61.5	H	3.0	-18.1	36.4	1.0	-53.5	-13.0	-40.5	
3.40	-69.3	H	3.0	-23.1	36.4	1.0	-58.6	-13.0	-45.6	
1.70	-67.2	V	3.0	-26.4	37.8	1.0	-62.3	-13.0	-49.3	
2.55	-66.0	V	3.0	-21.7	36.4	1.0	-57.1	-13.0	-44.1	
3.40	-68.7	V	3.0	-22.5	36.4	1.0	-57.9	-13.0	-44.9	

Rev. 03.19.15

GSM 850MHz EGPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12482
Configuration: EUT only
Mode: GPRS 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 (1850.2MHz)										
3.70	-61.7	H	3.0	-14.9	36.2	1.0	-50.1	-13.0	-37.1	
5.55	-68.4	H	3.0	-18.1	36.1	1.0	-53.2	-13.0	-40.2	
7.40	-70.2	H	3.0	-17.2	35.2	1.0	-51.4	-13.0	-38.4	
3.70	-62.3	V	3.0	-15.1	36.2	1.0	-50.3	-13.0	-37.3	
5.55	-67.8	V	3.0	-17.6	36.1	1.0	-52.8	-13.0	-39.8	
7.40	-71.0	V	3.0	-17.9	35.2	1.0	-52.2	-13.0	-39.2	
Mid Channel (1880.0)										
3.76	-58.7	H	3.0	-11.8	36.2	1.0	-47.0	-13.0	-34.0	
5.64	-68.3	H	3.0	-17.9	36.1	1.0	-52.9	-13.0	-39.9	
7.52	-70.5	H	3.0	-17.4	35.1	1.0	-51.5	-13.0	-38.5	
3.76	-60.2	V	3.0	-12.9	36.2	1.0	-48.1	-13.0	-35.1	
5.64	-66.0	V	3.0	-15.7	36.1	1.0	-50.8	-13.0	-37.8	
7.52	-70.6	V	3.0	-17.5	35.1	1.0	-51.7	-13.0	-38.7	
High Channel (1909.8MHz)										
3.82	-57.4	H	3.0	-10.4	36.1	1.0	-45.5	-13.0	-32.5	
5.73	-68.7	H	3.0	-18.1	36.1	1.0	-53.2	-13.0	-40.2	
7.54	-70.4	H	3.0	-17.2	35.1	1.0	-51.3	-13.0	-38.3	
3.82	-60.6	V	3.0	-13.1	36.1	1.0	-48.3	-13.0	-35.3	
5.73	-67.3	V	3.0	-16.9	36.1	1.0	-51.9	-13.0	-38.9	
7.54	-69.8	V	3.0	-16.7	35.1	1.0	-50.8	-13.0	-37.8	

Rev. 03.19.15

GSM 1900MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12482
Configuration: EUT only
Mode: EGPRS 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 (1850.2MHz)										
3.70	-63.1	H	3.0	-16.3	36.2	1.0	-51.5	-13.0	-38.5	
5.55	-67.4	H	3.0	-17.1	36.1	1.0	-52.2	-13.0	-39.2	
7.40	-70.0	H	3.0	-16.9	35.2	1.0	-51.1	-13.0	-38.1	
3.70	-62.6	V	3.0	-15.5	36.2	1.0	-50.7	-13.0	-37.7	
5.55	-68.2	V	3.0	-18.1	36.1	1.0	-53.3	-13.0	-40.3	
7.40	-69.3	V	3.0	-16.3	35.2	1.0	-50.6	-13.0	-37.6	
Mid Channel (1880.0)										
3.76	-60.1	H	3.0	-13.2	36.2	1.0	-48.4	-13.0	-35.4	
5.64	-69.0	H	3.0	-18.5	36.1	1.0	-53.6	-13.0	-40.6	
7.52	-69.2	H	3.0	-16.0	35.1	1.0	-50.2	-13.0	-37.2	
3.76	-61.5	V	3.0	-14.2	36.2	1.0	-49.4	-13.0	-36.4	
5.64	-69.3	V	3.0	-19.0	36.1	1.0	-54.1	-13.0	-41.1	
7.52	-71.1	V	3.0	-18.0	35.1	1.0	-52.1	-13.0	-39.1	
High Channel (1909.8MHz)										
3.82	-57.7	H	3.0	-10.7	36.1	1.0	-45.8	-13.0	-32.8	
5.73	-68.5	H	3.0	-17.8	36.1	1.0	-52.9	-13.0	-39.9	
7.54	-71.4	H	3.0	-18.2	35.1	1.0	-52.3	-13.0	-39.3	
3.82	-61.0	V	3.0	-13.5	36.1	1.0	-48.6	-13.0	-35.6	
5.73	-68.2	V	3.0	-17.8	36.1	1.0	-52.9	-13.0	-39.9	
7.54	-70.6	V	3.0	-17.5	35.1	1.0	-51.6	-13.0	-38.6	

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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.2.2. CDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/18/18
Test Engineer: 12491
Configuration: EUT only
Mode: 1xRTT 800MHz

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 (817.25MHz)										
1.63	-66.4	H	3.0	-25.0	37.8	1.0	-61.9	-13.0	-48.9	
2.45	-66.8	H	3.0	-23.7	36.7	1.0	-59.5	-13.0	-46.5	
3.27	-67.9	H	3.0	-22.1	36.5	1.0	-57.6	-13.0	-44.6	
1.63	-65.4	V	3.0	-23.6	37.8	1.0	-60.5	-13.0	-47.5	
2.45	-62.6	V	3.0	-18.8	36.7	1.0	-54.5	-13.0	-41.5	
3.27	-68.1	V	3.0	-22.3	36.5	1.0	-57.8	-13.0	-44.8	
Mid Channel (820MHz)										
1.64	-65.1	H	3.0	-23.7	37.8	1.0	-60.5	-13.0	-47.5	
2.46	-67.8	H	3.0	-24.7	36.7	1.0	-60.3	-13.0	-47.3	
3.28	-67.3	H	3.0	-21.5	36.5	1.0	-57.0	-13.0	-44.0	
1.64	-66.0	V	3.0	-24.3	37.8	1.0	-61.1	-13.0	-48.1	
2.46	-65.7	V	3.0	-21.8	36.7	1.0	-57.4	-13.0	-44.4	
3.28	-68.4	V	3.0	-22.6	36.5	1.0	-58.1	-13.0	-45.1	
High Channel (822.75MHz)										
1.65	-66.0	H	3.0	-24.5	37.8	1.0	-61.4	-13.0	-48.4	
2.47	-67.0	H	3.0	-23.8	36.6	1.0	-59.4	-13.0	-46.4	
3.29	-67.1	H	3.0	-21.2	36.5	1.0	-56.7	-13.0	-43.7	
1.65	-66.6	V	3.0	-24.9	37.8	1.0	-61.7	-13.0	-48.7	
2.47	-67.1	V	3.0	-23.1	36.6	1.0	-58.7	-13.0	-45.7	
3.29	-67.7	V	3.0	-21.8	36.5	1.0	-57.4	-13.0	-44.4	

Rev. 03.19.15

CDMA BC10 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/05/18
Test Engineer: 12491
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	-60.1	H	3.0	-17.7	37.8	1.0	-54.5	-13.0	-41.5	
2.45	-65.7	H	3.0	-20.8	38.4	1.0	-58.2	-13.0	-45.2	
3.27	-65.6	H	3.0	-16.7	38.5	1.0	-54.2	-13.0	-41.2	
1.63	-59.6	V	3.0	-17.6	37.8	1.0	-54.4	-13.0	-41.4	
2.45	-65.8	V	3.0	-20.8	38.4	1.0	-58.2	-13.0	-45.2	
3.27	-66.0	V	3.0	-17.4	38.5	1.0	-54.8	-13.0	-41.8	
Mid Channel (820MHz)										
1.64	-58.8	H	3.0	-16.3	37.8	1.0	-53.2	-13.0	-40.2	
2.46	-64.1	H	3.0	-19.2	38.4	1.0	-56.6	-13.0	-43.6	
3.28	-65.2	H	3.0	-16.3	38.5	1.0	-53.8	-13.0	-40.8	
1.64	-58.5	V	3.0	-16.4	37.8	1.0	-53.3	-13.0	-40.3	
2.46	-64.8	V	3.0	-19.7	38.4	1.0	-57.1	-13.0	-44.1	
3.28	-66.0	V	3.0	-17.3	38.5	1.0	-54.8	-13.0	-41.8	
High Channel (822.75MHz)										
1.65	-65.4	H	3.0	-23.0	37.8	1.0	-59.8	-13.0	-46.8	
2.47	-65.5	H	3.0	-20.5	38.5	1.0	-58.0	-13.0	-45.0	
3.29	-65.9	H	3.0	-17.0	38.5	1.0	-54.4	-13.0	-41.4	
1.65	-62.8	V	3.0	-20.6	37.8	1.0	-57.5	-13.0	-44.5	
2.47	-66.3	V	3.0	-21.1	38.5	1.0	-58.6	-13.0	-45.6	
3.29	-65.6	V	3.0	-16.9	38.5	1.0	-54.4	-13.0	-41.4	

Rev. 03.19.15

CDMA BC10 1xEV-DO Rev A

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/18/18
Test Engineer: 12491
Configuration: EUT Only
Mode: 1xRTT 850MHz

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 (824.7MHz)										
1.65	-65.6	H	3.0	-24.2	37.8	1.0	-61.0	-13.0	-48.0	
2.47	-66.6	H	3.0	-23.5	36.6	1.0	-59.1	-13.0	-46.1	
3.30	-67.1	H	3.0	-21.2	36.5	1.0	-56.7	-13.0	-43.7	
1.65	-66.9	V	3.0	-25.2	37.8	1.0	-62.0	-13.0	-49.0	
2.47	-67.3	V	3.0	-23.2	36.6	1.0	-58.8	-13.0	-45.8	
3.30	-66.8	V	3.0	-20.9	36.5	1.0	-56.4	-13.0	-43.4	
Mid Channel (836.52MHz)										
1.67	-66.2	H	3.0	-24.7	37.8	1.0	-61.5	-13.0	-48.5	
2.51	-67.1	H	3.0	-23.9	36.4	1.0	-59.3	-13.0	-46.3	
3.35	-68.0	H	3.0	-22.0	36.5	1.0	-57.5	-13.0	-44.5	
1.67	-66.3	V	3.0	-24.5	37.8	1.0	-61.3	-13.0	-48.3	
2.51	-65.2	V	3.0	-20.9	36.4	1.0	-56.3	-13.0	-43.3	
3.35	-67.5	V	3.0	-21.5	36.5	1.0	-56.9	-13.0	-43.9	
High Channel (848.31MHz)										
1.70	-65.5	H	3.0	-24.0	37.8	1.0	-60.8	-13.0	-47.8	
2.54	-67.6	H	3.0	-24.2	36.4	1.0	-59.6	-13.0	-46.6	
3.39	-67.7	H	3.0	-21.6	36.4	1.0	-57.0	-13.0	-44.0	
1.70	-66.5	V	3.0	-24.7	37.8	1.0	-61.5	-13.0	-48.5	
2.54	-68.0	V	3.0	-23.7	36.4	1.0	-59.1	-13.0	-46.1	
3.39	-68.3	V	3.0	-22.1	36.4	1.0	-57.5	-13.0	-44.5	

Rev. 03.19.15

CDMA BC0 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/04/18
Test Engineer: 12491
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	-61.8	H	3.0	-19.3	37.8	1.0	-56.2	-13.0	-43.2	
2.47	-65.5	H	3.0	-20.5	38.5	1.0	-58.0	-13.0	-45.0	
3.30	-65.5	H	3.0	-16.5	38.5	1.0	-54.0	-13.0	-41.0	
1.65	-55.9	V	3.0	-13.8	37.8	1.0	-50.6	-13.0	-37.6	
2.47	-65.7	V	3.0	-20.6	38.5	1.0	-58.0	-13.0	-45.0	
3.30	-66.3	V	3.0	-17.6	38.5	1.0	-55.1	-13.0	-42.1	
Mid Channel (836.52MHz)										
1.67	-66.3	H	3.0	-23.8	37.8	1.0	-60.6	-13.0	-47.6	
2.51	-66.4	H	3.0	-21.2	38.6	1.0	-58.7	-13.0	-45.7	
3.35	-66.9	H	3.0	-17.8	38.5	1.0	-55.3	-13.0	-42.3	
1.67	-57.8	V	3.0	-15.6	37.8	1.0	-52.4	-13.0	-39.4	
2.51	-66.4	V	3.0	-21.0	38.6	1.0	-58.6	-13.0	-45.6	
3.35	-65.8	V	3.0	-17.0	38.5	1.0	-54.5	-13.0	-41.5	
High Channel (848.31MHz)										
1.70	-66.0	H	3.0	-23.5	37.9	1.0	-60.3	-13.0	-47.3	
2.54	-66.7	H	3.0	-21.3	38.6	1.0	-58.9	-13.0	-45.9	
3.39	-66.2	H	3.0	-17.0	38.5	1.0	-54.5	-13.0	-41.5	
1.70	-65.9	V	3.0	-23.5	37.9	1.0	-60.3	-13.0	-47.3	
2.54	-66.1	V	3.0	-20.5	38.6	1.0	-58.1	-13.0	-45.1	
3.39	-67.0	V	3.0	-18.0	38.5	1.0	-55.5	-13.0	-42.5	

Rev. 03.19.15

CDMA BC0 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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/18/18
Test Engineer: 12491
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	-65.1	H	3.0	-18.3	36.2	1.0	-53.6	-13.0	-40.6	
5.55	-63.5	H	3.0	-13.2	36.1	1.0	-48.3	-13.0	-35.3	
7.41	-68.9	H	3.0	-15.8	35.2	1.0	-50.0	-13.0	-37.0	
3.70	-64.7	V	3.0	-17.6	36.2	1.0	-52.8	-13.0	-39.8	
5.55	-67.1	V	3.0	-17.0	36.1	1.0	-52.1	-13.0	-39.1	
7.41	-68.8	V	3.0	-15.8	35.2	1.0	-50.0	-13.0	-37.0	
Mid Channel (1880MHz)										
3.76	-65.1	H	3.0	-18.2	36.2	1.0	-53.4	-13.0	-40.4	
5.64	-68.1	H	3.0	-17.6	36.1	1.0	-52.7	-13.0	-39.7	
7.52	-69.3	H	3.0	-16.2	35.1	1.0	-50.3	-13.0	-37.3	
3.76	-61.8	V	3.0	-14.4	36.2	1.0	-49.6	-13.0	-36.6	
5.64	-67.5	V	3.0	-17.3	36.1	1.0	-52.4	-13.0	-39.4	
7.52	-68.2	V	3.0	-15.1	35.1	1.0	-49.2	-13.0	-36.2	
High Channel (1908.75MHz)										
3.82	-61.4	H	3.0	-14.4	36.1	1.0	-49.6	-13.0	-36.6	
5.73	-67.8	H	3.0	-17.2	36.1	1.0	-52.3	-13.0	-39.3	
7.64	-68.8	H	3.0	-15.5	35.0	1.0	-49.5	-13.0	-36.5	
3.82	-62.3	V	3.0	-14.8	36.1	1.0	-49.9	-13.0	-36.9	
5.73	-68.2	V	3.0	-17.7	36.1	1.0	-52.8	-13.0	-39.8	
7.64	-69.0	V	3.0	-15.7	35.0	1.0	-49.8	-13.0	-36.8	

Rev. 03.19.15

CDMA BC1 1xRTT

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/05/18
Test Engineer: 12491
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	-60.1	H	3.0	-13.3	36.2	1.0	-48.6	-13.0	-35.6	
5.55	-64.1	H	3.0	-13.8	36.1	1.0	-48.9	-13.0	-35.9	
7.41	-65.1	H	3.0	-12.0	35.2	1.0	-46.3	-13.0	-33.3	
3.70	-63.5	V	3.0	-16.3	36.2	1.0	-51.5	-13.0	-38.5	
5.55	-65.2	V	3.0	-15.0	36.1	1.0	-50.2	-13.0	-37.2	
7.41	-67.4	V	3.0	-14.4	35.2	1.0	-48.6	-13.0	-35.6	
Mid Channel (1880MHz)										
3.76	-61.5	H	3.0	-14.6	36.2	1.0	-49.8	-13.0	-36.8	
5.64	-64.8	H	3.0	-14.4	36.1	1.0	-49.5	-13.0	-36.5	
7.52	-66.8	H	3.0	-13.6	35.1	1.0	-47.7	-13.0	-34.7	
3.76	-62.8	V	3.0	-15.5	36.2	1.0	-50.6	-13.0	-37.6	
5.64	-65.6	V	3.0	-15.3	36.1	1.0	-50.4	-13.0	-37.4	
7.52	-67.0	V	3.0	-13.9	35.1	1.0	-48.0	-13.0	-35.0	
High Channel (1908.75MHz)										
3.82	-62.6	H	3.0	-15.6	36.1	1.0	-50.8	-13.0	-37.8	
5.73	-66.1	H	3.0	-15.5	36.1	1.0	-50.5	-13.0	-37.5	
7.64	-66.6	H	3.0	-13.3	35.0	1.0	-47.4	-13.0	-34.4	
3.82	-61.4	V	3.0	-13.9	36.1	1.0	-49.0	-13.0	-36.0	
5.73	-64.4	V	3.0	-14.0	36.1	1.0	-49.0	-13.0	-36.0	
7.64	-66.0	V	3.0	-12.8	35.0	1.0	-46.8	-13.0	-33.8	

Rev. 03.19.15

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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.2.3. WCDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
Test Engineer: 10649
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	-64.9	H	3.0	-22.4	37.8	1.0	-59.3	-13.0	-46.3	
2.48	-64.7	H	3.0	-19.7	38.5	1.0	-57.2	-13.0	-44.2	
3.31	-66.7	H	3.0	-17.8	38.5	1.0	-55.3	-13.0	-42.3	
1.65	-64.8	V	3.0	-22.6	37.8	1.0	-59.4	-13.0	-46.4	
2.48	-66.2	V	3.0	-21.0	38.5	1.0	-58.5	-13.0	-45.5	
3.31	-66.9	V	3.0	-18.2	38.5	1.0	-55.6	-13.0	-42.6	
Mid Channel (836.6MHz)										
1.67	-66.8	H	3.0	-24.2	37.8	1.0	-61.1	-13.0	-48.1	
2.51	-67.8	H	3.0	-22.6	38.6	1.0	-60.2	-13.0	-47.2	
3.35	-69.5	H	3.0	-20.5	38.5	1.0	-58.0	-13.0	-45.0	
1.67	-66.1	V	3.0	-23.9	37.8	1.0	-60.7	-13.0	-47.7	
2.51	-67.5	V	3.0	-22.1	38.6	1.0	-59.7	-13.0	-46.7	
3.35	-68.1	V	3.0	-19.3	38.5	1.0	-56.8	-13.0	-43.8	
High Channel (846.6MHz)										
1.69	-65.3	H	3.0	-22.8	37.9	1.0	-59.6	-13.0	-46.6	
2.54	-67.8	H	3.0	-22.4	38.6	1.0	-60.0	-13.0	-47.0	
3.39	-68.0	H	3.0	-18.9	38.5	1.0	-56.4	-13.0	-43.4	
1.69	-66.5	V	3.0	-24.1	37.9	1.0	-61.0	-13.0	-48.0	
2.54	-67.4	V	3.0	-21.9	38.6	1.0	-59.4	-13.0	-46.4	
3.39	-68.6	V	3.0	-19.7	38.5	1.0	-57.2	-13.0	-44.2	

Rev. 03.19.15

WCDMA Band 5 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
Test Engineer: 10649
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	-65.4	H	3.0	-22.9	37.8	1.0	-59.7	-13.0	-46.7	
2.48	-65.2	H	3.0	-20.1	38.5	1.0	-57.6	-13.0	-44.6	
3.31	-67.7	H	3.0	-18.8	38.5	1.0	-56.2	-13.0	-43.2	
1.65	-66.0	V	3.0	-23.9	37.8	1.0	-60.7	-13.0	-47.7	
2.48	-66.8	V	3.0	-21.6	38.5	1.0	-59.0	-13.0	-46.0	
3.31	-68.2	V	3.0	-19.5	38.5	1.0	-56.9	-13.0	-43.9	
Mid Channel (836.6MHz)										
1.67	-65.9	H	3.0	-23.4	37.8	1.0	-60.2	-13.0	-47.2	
2.51	-67.8	H	3.0	-22.4	38.6	1.0	-59.9	-13.0	-46.9	
3.35	-67.2	H	3.0	-18.2	38.5	1.0	-55.7	-13.0	-42.7	
1.67	-65.5	V	3.0	-23.2	37.8	1.0	-60.1	-13.0	-47.1	
2.51	-67.7	V	3.0	-22.3	38.6	1.0	-59.9	-13.0	-46.9	
3.35	-68.8	V	3.0	-20.0	38.5	1.0	-57.5	-13.0	-44.5	
High Channel (846.6MHz)										
1.69	-66.0	H	3.0	-23.4	37.9	1.0	-60.3	-13.0	-47.3	
2.54	-67.0	H	3.0	-21.6	38.6	1.0	-59.2	-13.0	-46.2	
3.39	-68.9	H	3.0	-19.7	38.5	1.0	-57.2	-13.0	-44.2	
1.69	-65.4	V	3.0	-23.0	37.9	1.0	-59.9	-13.0	-46.9	
2.54	-67.1	V	3.0	-21.5	38.6	1.0	-59.1	-13.0	-46.1	
3.39	-67.7	V	3.0	-18.8	38.5	1.0	-56.3	-13.0	-43.3	

Rev. 03.19.15

WCDMA Band 5 HSDPA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
Test Engineer: 10649
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	-64.7	H	3.0	-14.7	38.6	1.0	-52.3	-13.0	-39.3	
5.56	-67.3	H	3.0	-13.2	38.6	1.0	-50.8	-13.0	-37.8	
7.41	-70.4	H	3.0	-12.8	37.8	1.0	-49.6	-13.0	-36.6	
3.70	-65.3	V	3.0	-15.4	38.6	1.0	-53.0	-13.0	-40.0	
5.55	-67.4	V	3.0	-13.7	38.6	1.0	-51.3	-13.0	-38.3	
7.42	-69.7	V	3.0	-12.2	37.8	1.0	-49.0	-13.0	-36.0	
Mid Channel (1880MHz)										
3.76	-63.8	H	3.0	-13.7	38.6	1.0	-51.4	-13.0	-38.4	
5.64	-68.1	H	3.0	-13.8	38.5	1.0	-51.4	-13.0	-38.4	
7.52	-70.2	H	3.0	-12.4	37.7	1.0	-49.2	-13.0	-36.2	
3.76	-64.4	V	3.0	-14.4	38.6	1.0	-52.0	-13.0	-39.0	
5.64	-68.0	V	3.0	-14.1	38.5	1.0	-51.6	-13.0	-38.6	
7.52	-70.5	V	3.0	-12.9	37.7	1.0	-49.6	-13.0	-36.6	
High Channel (1907.6MHz)										
3.81	-65.7	H	3.0	-15.5	38.7	1.0	-53.1	-13.0	-40.1	
5.72	-67.3	H	3.0	-12.9	38.5	1.0	-50.4	-13.0	-37.4	
7.66	-70.5	H	3.0	-12.5	37.7	1.0	-49.2	-13.0	-36.2	
3.82	-66.1	V	3.0	-15.9	38.7	1.0	-53.5	-13.0	-40.5	
5.72	-67.5	V	3.0	-13.4	38.5	1.0	-50.9	-13.0	-37.9	
7.63	-69.5	V	3.0	-11.8	37.7	1.0	-48.5	-13.0	-35.5	

Rev. 03.19.15

WCDMA Band 2 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
Test Engineer: 10649
Configuration: EUT Only
Mode: HSDPA 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	-66.5	H	3.0	-16.6	38.6	1.0	-54.2	-13.0	-41.2	
5.56	-67.5	H	3.0	-13.4	38.6	1.0	-51.0	-13.0	-38.0	
7.41	-69.4	H	3.0	-11.7	37.8	1.0	-48.5	-13.0	-35.5	
9.26	-72.8	H	3.0	-12.9	36.6	1.0	-48.5	-13.0	-35.5	
3.70	-64.6	V	3.0	-14.8	38.6	1.0	-52.4	-13.0	-39.4	
5.56	-68.5	V	3.0	-14.8	38.6	1.0	-52.4	-13.0	-39.4	
7.41	-69.4	V	3.0	-12.0	37.8	1.0	-48.8	-13.0	-35.8	
9.26	-71.5	V	3.0	-11.6	36.6	1.0	-47.2	-13.0	-34.2	
Mid Channel (1880MHz)										
3.76	-64.6	H	3.0	-14.5	38.6	1.0	-52.1	-13.0	-39.1	
5.64	-67.4	H	3.0	-13.1	38.5	1.0	-50.7	-13.0	-37.7	
7.52	-69.4	H	3.0	-11.6	37.7	1.0	-48.3	-13.0	-35.3	
9.40	-71.3	H	3.0	-11.3	36.5	1.0	-46.8	-13.0	-33.8	
3.76	-64.9	V	3.0	-14.8	38.6	1.0	-52.4	-13.0	-39.4	
5.64	-67.0	V	3.0	-13.1	38.5	1.0	-50.6	-13.0	-37.6	
7.52	-69.3	V	3.0	-11.6	37.7	1.0	-48.4	-13.0	-35.4	
9.40	-71.6	V	3.0	-11.6	36.5	1.0	-47.1	-13.0	-34.1	
High Channel (1907.6MHz)										
3.82	-66.4	H	3.0	-16.1	38.7	1.0	-53.8	-13.0	-40.8	
5.72	-67.2	H	3.0	-12.8	38.5	1.0	-50.3	-13.0	-37.3	
7.63	-69.7	H	3.0	-11.8	37.7	1.0	-48.5	-13.0	-35.5	
9.54	-72.2	H	3.0	-11.9	36.4	1.0	-47.3	-13.0	-34.3	
3.82	-65.7	V	3.0	-15.5	38.7	1.0	-53.1	-13.0	-40.1	
5.72	-67.8	V	3.0	-13.5	38.5	1.0	-51.3	-13.0	-38.3	
7.63	-70.5	V	3.0	-12.7	37.7	1.0	-49.4	-13.0	-36.4	
9.54	-72.0	V	3.0	-11.9	36.4	1.0	-47.3	-13.0	-34.3	

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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
Test Engineer: 10649
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	-70.0	H	3.0	-20.7	38.5	1.0	-58.3	-13.0	-45.3	
5.14	-67.1	H	3.0	-13.9	38.7	1.0	-51.6	-13.0	-38.6	
6.85	-68.7	H	3.0	-11.9	38.1	1.0	-49.0	-13.0	-36.0	
8.56	-69.8	H	3.0	-10.7	37.1	1.0	-46.8	-13.0	-33.8	
3.42	-69.2	V	3.0	-20.2	38.5	1.0	-57.7	-13.0	-44.7	
5.14	-65.9	V	3.0	-13.0	38.7	1.0	-50.7	-13.0	-37.7	
6.85	-69.2	V	3.0	-12.6	38.1	1.0	-49.7	-13.0	-36.7	
8.56	-71.4	V	3.0	-12.5	37.1	1.0	-48.5	-13.0	-35.5	
Mid Channel (1732.6MHz)										
3.47	-67.5	H	3.0	-18.1	38.5	1.0	-55.6	-13.0	-42.6	
5.20	-68.0	H	3.0	-14.7	38.7	1.0	-52.4	-13.0	-39.4	
6.93	-69.1	H	3.0	-12.1	38.1	1.0	-49.2	-13.0	-36.2	
8.66	-71.6	H	3.0	-12.4	37.0	1.0	-48.4	-13.0	-35.4	
3.47	-67.0	V	3.0	-17.8	38.5	1.0	-55.3	-13.0	-42.3	
5.20	-67.0	V	3.0	-14.1	38.7	1.0	-51.7	-13.0	-38.7	
6.93	-69.4	V	3.0	-12.6	38.1	1.0	-49.7	-13.0	-36.7	
8.66	-71.5	V	3.0	-12.5	37.0	1.0	-48.5	-13.0	-35.5	
High Channel (1752.6MHz)										
3.51	-69.5	H	3.0	-20.0	38.5	1.0	-57.5	-13.0	-44.5	
5.26	-66.7	H	3.0	-13.3	38.7	1.0	-50.9	-13.0	-37.9	
7.01	-68.5	H	3.0	-11.3	38.1	1.0	-48.4	-13.0	-35.4	
8.76	-71.5	H	3.0	-12.2	36.9	1.0	-48.1	-13.0	-35.1	
3.51	-69.2	V	3.0	-19.9	38.5	1.0	-57.4	-13.0	-44.4	
5.26	-68.2	V	3.0	-15.1	38.7	1.0	-52.8	-13.0	-39.8	
7.01	-68.3	V	3.0	-11.4	38.1	1.0	-48.5	-13.0	-35.5	
8.76	-71.2	V	3.0	-12.0	36.9	1.0	-48.0	-13.0	-35.0	

Rev. 03.19.15

WCDMA Band 4 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
Test Engineer: 10649
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	-69.6	H	3.0	-20.4	38.5	1.0	-57.9	-13.0	-44.9	
5.14	-66.9	H	3.0	-13.8	38.7	1.0	-51.4	-13.0	-38.4	
6.85	-68.5	H	3.0	-11.7	38.1	1.0	-48.8	-13.0	-35.8	
8.56	-71.0	H	3.0	-12.0	37.1	1.0	-48.0	-13.0	-35.0	
3.42	-69.7	V	3.0	-20.7	38.5	1.0	-58.2	-13.0	-45.2	
5.14	-66.3	V	3.0	-13.5	38.7	1.0	-51.2	-13.0	-38.2	
6.85	-70.2	V	3.0	-13.6	38.1	1.0	-50.7	-13.0	-37.7	
8.56	-71.4	V	3.0	-12.5	37.1	1.0	-48.6	-13.0	-35.6	
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	-67.9	H	3.0	-14.6	38.7	1.0	-52.3	-13.0	-39.3	
6.93	-69.7	H	3.0	-12.7	38.1	1.0	-49.8	-13.0	-36.8	
8.66	-70.9	H	3.0	-11.7	37.0	1.0	-47.7	-13.0	-34.7	
3.47	-66.8	V	3.0	-17.6	38.5	1.0	-55.1	-13.0	-42.1	
5.20	-66.4	V	3.0	-13.5	38.7	1.0	-51.2	-13.0	-38.2	
6.93	-68.0	V	3.0	-11.2	38.1	1.0	-48.3	-13.0	-35.3	
8.66	-71.4	V	3.0	-12.3	37.0	1.0	-48.3	-13.0	-35.3	
High Channel (1752.6MHz)										
3.51	-66.7	H	3.0	-17.3	38.5	1.0	-54.8	-13.0	-41.8	
5.26	-67.3	H	3.0	-13.9	38.7	1.0	-51.5	-13.0	-38.5	
7.01	-68.6	H	3.0	-11.4	38.1	1.0	-48.5	-13.0	-35.5	
8.76	-70.6	H	3.0	-11.3	36.9	1.0	-47.2	-13.0	-34.2	
3.51	-66.7	V	3.0	-17.4	38.5	1.0	-55.0	-13.0	-42.0	
5.26	-67.7	V	3.0	-14.7	38.7	1.0	-52.3	-13.0	-39.3	
7.01	-69.8	V	3.0	-12.8	38.1	1.0	-49.9	-13.0	-36.9	
8.76	-71.6	V	3.0	-12.4	36.9	1.0	-48.3	-13.0	-35.3	

Rev. 03.19.15

WCDMA Band 4 HSDPA

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.3. FIELD STRENGTH OF SPURIOUS RADIATION (Ant 3)

9.3.1. GSM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12482
Configuration: EUT only
Mode: GPRS 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 (1850.2MHz)										
3.70	-68.5	H	3.0	-21.8	36.2	1.0	-57.0	-13.0	-44.0	
5.55	-69.0	H	3.0	-18.6	36.1	1.0	-53.8	-13.0	-40.8	
7.40	-68.9	H	3.0	-15.9	35.2	1.0	-50.1	-13.0	-37.1	
3.70	-69.0	V	3.0	-21.9	36.2	1.0	-57.1	-13.0	-44.1	
5.55	-67.7	V	3.0	-17.6	36.1	1.0	-52.7	-13.0	-39.7	
7.40	-70.2	V	3.0	-17.2	35.2	1.0	-51.4	-13.0	-38.4	
Mid Channel (1880.0MHz)										
3.76	-69.1	H	3.0	-22.2	36.2	1.0	-57.4	-13.0	-44.4	
5.64	-70.9	H	3.0	-20.4	36.1	1.0	-55.5	-13.0	-42.5	
7.52	-68.7	H	3.0	-15.5	35.1	1.0	-49.7	-13.0	-36.7	
3.76	-68.2	V	3.0	-20.9	36.2	1.0	-56.1	-13.0	-43.1	
5.64	-69.3	V	3.0	-19.1	36.1	1.0	-54.2	-13.0	-41.2	
7.52	-70.6	V	3.0	-17.5	35.1	1.0	-51.6	-13.0	-38.6	
High Channel (1909.8MHz)										
3.82	-67.6	H	3.0	-20.6	36.1	1.0	-55.8	-13.0	-42.8	
5.73	-68.3	H	3.0	-17.6	36.1	1.0	-52.7	-13.0	-39.7	
7.54	-69.4	H	3.0	-16.2	35.1	1.0	-50.4	-13.0	-37.4	
3.82	-68.2	V	3.0	-20.7	36.1	1.0	-55.9	-13.0	-42.9	
5.73	-68.8	V	3.0	-18.4	36.1	1.0	-53.4	-13.0	-40.4	
7.54	-70.2	V	3.0	-17.1	35.1	1.0	-51.2	-13.0	-38.2	

Rev. 03.19.15

GSM 1900MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/17/18
Test Engineer: 12482
Configuration: EUT only
Mode: EGPRS 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 (1850.2MHz)										
3.70	-68.8	H	3.0	-22.1	36.2	1.0	-57.3	-13.0	-44.3	
5.55	-68.5	H	3.0	-18.2	36.1	1.0	-53.3	-13.0	-40.3	
7.40	-69.7	H	3.0	-16.7	35.2	1.0	-50.9	-13.0	-37.9	
3.70	-69.1	V	3.0	-22.0	36.2	1.0	-57.2	-13.0	-44.2	
5.55	-67.6	V	3.0	-17.5	36.1	1.0	-52.6	-13.0	-39.6	
7.40	-69.3	V	3.0	-16.3	35.2	1.0	-50.5	-13.0	-37.5	
Mid Channel (1880.0)										
3.76	-68.7	H	3.0	-21.8	36.2	1.0	-57.0	-13.0	-44.0	
5.64	-69.0	H	3.0	-18.5	36.1	1.0	-53.6	-13.0	-40.6	
7.52	-69.5	H	3.0	-16.3	35.1	1.0	-50.4	-13.0	-37.4	
3.76	-68.3	V	3.0	-21.0	36.2	1.0	-56.2	-13.0	-43.2	
5.64	-67.2	V	3.0	-16.9	36.1	1.0	-52.0	-13.0	-39.0	
7.52	-69.1	V	3.0	-16.0	35.1	1.0	-50.1	-13.0	-37.1	
High Channel (1909.8MHz)										
3.82	-68.6	H	3.0	-21.6	36.1	1.0	-56.7	-13.0	-43.7	
5.73	-69.4	H	3.0	-18.8	36.1	1.0	-53.8	-13.0	-40.8	
7.54	-71.5	H	3.0	-18.3	35.1	1.0	-52.4	-13.0	-39.4	
3.82	-68.6	V	3.0	-21.1	36.1	1.0	-56.3	-13.0	-43.3	
5.73	-69.4	V	3.0	-19.0	36.1	1.0	-54.0	-13.0	-41.0	
7.54	-70.0	V	3.0	-16.9	35.1	1.0	-51.0	-13.0	-38.0	

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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.3.2. WCDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/27/18
Test Engineer: 10649
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	-66.2	H	3.0	-16.4	34.4	1.0	-49.9	-13.0	-36.9	
5.56	-68.2	H	3.0	-14.7	34.1	1.0	-47.9	-13.0	-34.9	
7.41	-70.3	H	3.0	-14.0	33.6	1.0	-46.6	-13.0	-33.6	
3.70	-65.1	V	3.0	-15.2	34.4	1.0	-48.6	-13.0	-35.6	
5.55	-67.5	V	3.0	-13.8	34.1	1.0	-47.0	-13.0	-34.0	
7.42	-70.3	V	3.0	-14.2	33.6	1.0	-46.8	-13.0	-33.8	
Mid Channel (1880MHz)										
3.76	-65.3	H	3.0	-15.3	34.4	1.0	-48.7	-13.0	-35.7	
5.64	-66.8	H	3.0	-13.3	34.1	1.0	-46.4	-13.0	-33.4	
7.52	-69.9	H	3.0	-13.5	33.5	1.0	-46.0	-13.0	-33.0	
3.76	-65.3	V	3.0	-15.2	34.4	1.0	-48.6	-13.0	-35.6	
5.64	-66.7	V	3.0	-13.0	34.1	1.0	-46.1	-13.0	-33.1	
7.52	-69.8	V	3.0	-13.5	33.5	1.0	-46.0	-13.0	-33.0	
High Channel (1907.6MHz)										
3.81	-65.3	H	3.0	-15.1	34.4	1.0	-48.5	-13.0	-35.5	
5.72	-67.7	H	3.0	-14.0	34.1	1.0	-47.1	-13.0	-34.1	
7.66	-69.9	H	3.0	-13.3	33.4	1.0	-45.7	-13.0	-32.7	
3.81	-63.9	V	3.0	-13.6	34.4	1.0	-47.0	-13.0	-34.0	
5.72	-68.0	V	3.0	-14.1	34.1	1.0	-47.2	-13.0	-34.2	
7.63	-69.8	V	3.0	-13.4	33.4	1.0	-45.9	-13.0	-32.9	

Rev. 03.19.15

WCDMA Band 2 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10646
Configuration: EUT Only
Mode: HSDPA 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	-61.8	H	3.0	-11.8	38.6	1.0	-49.4	-13.0	-36.4	
5.56	-64.7	H	3.0	-10.6	38.6	1.0	-48.2	-13.0	-35.2	
7.41	-66.2	H	3.0	-8.5	37.8	1.0	-45.3	-13.0	-32.3	
3.70	-60.4	V	3.0	-10.5	38.6	1.0	-48.2	-13.0	-35.2	
5.56	-63.0	V	3.0	-9.3	38.6	1.0	-46.8	-13.0	-33.8	
7.41	-65.9	V	3.0	-8.4	37.8	1.0	-45.2	-13.0	-32.2	
Mid Channel (1880MHz)										
3.76	-61.1	H	3.0	-11.0	38.6	1.0	-48.7	-13.0	-35.7	
5.64	-63.4	H	3.0	-9.2	38.5	1.0	-46.7	-13.0	-33.7	
7.52	-65.9	H	3.0	-8.1	37.7	1.0	-44.8	-13.0	-31.8	
3.76	-61.8	V	3.0	-11.7	38.6	1.0	-49.3	-13.0	-36.3	
5.64	-63.5	V	3.0	-9.6	38.5	1.0	-47.1	-13.0	-34.1	
7.52	-66.2	V	3.0	-8.6	37.7	1.0	-45.3	-13.0	-32.3	
High Channel (1907.6MHz)										
3.82	-61.7	H	3.0	-11.4	38.7	1.0	-49.1	-13.0	-36.1	
5.72	-64.6	H	3.0	-10.2	38.5	1.0	-47.7	-13.0	-34.7	
7.63	-66.2	H	3.0	-8.2	37.7	1.0	-44.9	-13.0	-31.9	
3.82	-61.6	V	3.0	-11.4	38.7	1.0	-49.0	-13.0	-36.0	
5.72	-64.0	V	3.0	-9.9	38.5	1.0	-47.4	-13.0	-34.4	
7.63	-65.9	V	3.0	-8.1	37.7	1.0	-44.8	-13.0	-31.8	

Rev. 03.19.15

WCDMA Band 2 HSDPA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10646
Configuration: EUT Only
Mode: REL 99, 1700MHz

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 (1712.4MHz)										
3.42	-69.9	H	3.0	-21.2	34.6	1.0	-54.8	-13.0	-41.8	
5.14	-66.3	H	3.0	-13.6	34.2	1.0	-46.8	-13.0	-33.8	
6.85	-69.8	H	3.0	-14.2	33.9	1.0	-47.2	-13.0	-34.2	
8.56	-71.0	H	3.0	-13.2	32.7	1.0	-44.9	-13.0	-31.9	
3.42	-69.7	V	3.0	-20.8	34.6	1.0	-54.4	-13.0	-41.4	
5.14	-65.5	V	3.0	-12.4	34.2	1.0	-45.6	-13.0	-32.6	
6.85	-68.4	V	3.0	-13.0	33.9	1.0	-46.0	-13.0	-33.0	
8.56	-70.9	V	3.0	-13.2	32.7	1.0	-44.9	-13.0	-31.9	
Mid Channel (1732.6MHz)										
3.47	-66.4	H	3.0	-17.5	34.6	1.0	-51.1	-13.0	-38.1	
5.20	-66.7	H	3.0	-13.8	34.2	1.0	-47.0	-13.0	-34.0	
6.93	-69.7	H	3.0	-14.0	33.9	1.0	-46.9	-13.0	-33.9	
8.66	-71.3	H	3.0	-13.3	32.6	1.0	-44.9	-13.0	-31.9	
3.47	-67.2	V	3.0	-18.2	34.6	1.0	-51.7	-13.0	-38.7	
5.20	-67.6	V	3.0	-14.4	34.2	1.0	-47.6	-13.0	-34.6	
6.93	-69.3	V	3.0	-13.8	33.9	1.0	-46.8	-13.0	-33.8	
8.66	-71.3	V	3.0	-13.5	32.6	1.0	-45.1	-13.0	-32.1	
High Channel (1752.6MHz)										
3.51	-69.0	H	3.0	-20.0	34.5	1.0	-53.5	-13.0	-40.5	
5.26	-67.7	H	3.0	-14.8	34.2	1.0	-47.9	-13.0	-34.9	
7.01	-68.0	H	3.0	-12.2	33.9	1.0	-45.1	-13.0	-32.1	
8.76	-70.7	H	3.0	-12.6	32.6	1.0	-44.2	-13.0	-31.2	
3.51	-68.4	V	3.0	-19.1	34.5	1.0	-52.7	-13.0	-39.7	
5.26	-68.3	V	3.0	-15.0	34.2	1.0	-48.2	-13.0	-35.2	
7.01	-69.2	V	3.0	-13.6	33.9	1.0	-46.6	-13.0	-33.6	
8.76	-70.2	V	3.0	-12.2	32.6	1.0	-43.7	-13.0	-30.7	

Rev. 03.19.15

WCDMA Band 4 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 04/07/18
Test Engineer: 10646
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	-65.4	H	3.0	-16.1	38.5	1.0	-53.6	-13.0	-40.6	
5.14	-63.9	H	3.0	-10.7	38.7	1.0	-48.4	-13.0	-35.4	
6.85	-65.6	H	3.0	-8.7	38.1	1.0	-45.8	-13.0	-32.8	
3.42	-64.5	V	3.0	-15.5	38.5	1.0	-53.0	-13.0	-40.0	
5.14	-63.5	V	3.0	-10.6	38.7	1.0	-48.3	-13.0	-35.3	
6.85	-64.9	V	3.0	-8.3	38.1	1.0	-45.4	-13.0	-32.4	
Mid Channel (1732.6MHz)										
3.47	-65.6	H	3.0	-16.2	38.5	1.0	-53.7	-13.0	-40.7	
5.20	-63.7	H	3.0	-10.5	38.7	1.0	-48.1	-13.0	-35.1	
6.93	-65.6	H	3.0	-8.6	38.1	1.0	-45.7	-13.0	-32.7	
3.47	-65.8	V	3.0	-16.6	38.5	1.0	-54.1	-13.0	-41.1	
5.20	-63.6	V	3.0	-10.7	38.7	1.0	-48.4	-13.0	-35.4	
6.93	-64.6	V	3.0	-7.8	38.1	1.0	-44.9	-13.0	-31.9	
High Channel (1752.6MHz)										
3.51	-65.5	H	3.0	-16.1	38.5	1.0	-53.6	-13.0	-40.6	
5.26	-65.8	H	3.0	-11.6	38.7	1.0	-49.2	-13.0	-36.2	
7.01	-65.5	H	3.0	-8.3	38.1	1.0	-45.3	-13.0	-32.3	
3.51	-65.5	V	3.0	-16.2	38.5	1.0	-53.8	-13.0	-40.8	
5.26	-64.7	V	3.0	-11.7	38.7	1.0	-49.3	-13.0	-36.3	
7.01	-65.5	V	3.0	-8.5	38.1	1.0	-45.6	-13.0	-32.6	

Rev. 03.19.15

WCDMA Band 4 HSDPA

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.4. FIELD STRENGTH OF SPURIOUS RADIATION (Ant 4)

9.4.1. GSM

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/08/18
Test Engineer: 44410
Configuration: EUT only
Mode: GPRS 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 (1850.2MHz)										
3.70	-62.7	H	3.0	-12.8	38.6	1.0	-50.4	-13.0	-37.4	
5.55	-64.1	H	3.0	-10.1	38.6	1.0	-47.6	-13.0	-34.6	
7.40	-65.9	H	3.0	-8.2	37.8	1.0	-45.1	-13.0	-32.1	
3.70	-62.2	V	3.0	-12.3	38.6	1.0	-49.9	-13.0	-36.9	
5.55	-64.7	V	3.0	-10.9	38.6	1.0	-48.5	-13.0	-35.5	
7.40	-66.9	V	3.0	-9.4	37.8	1.0	-46.2	-13.0	-33.2	
Mid Channel (1880.0)										
3.76	-61.9	H	3.0	-11.8	38.6	1.0	-49.5	-13.0	-36.5	
5.64	-63.6	H	3.0	-9.3	38.5	1.0	-46.9	-13.0	-33.9	
7.52	-66.2	H	3.0	-8.4	37.7	1.0	-45.1	-13.0	-32.1	
3.76	-61.9	V	3.0	-11.8	38.6	1.0	-49.4	-13.0	-36.4	
5.64	-64.6	V	3.0	-10.7	38.5	1.0	-48.2	-13.0	-35.2	
7.52	-67.1	V	3.0	-9.5	37.7	1.0	-46.2	-13.0	-33.2	
High Channel (1909.8MHz)										
3.82	-61.7	H	3.0	-11.5	38.7	1.0	-49.1	-13.0	-36.1	
5.73	-64.9	H	3.0	-10.4	38.5	1.0	-47.9	-13.0	-34.9	
7.54	-66.6	H	3.0	-8.7	37.7	1.0	-45.4	-13.0	-32.4	
3.82	-61.2	V	3.0	-11.0	38.7	1.0	-48.6	-13.0	-35.6	
5.73	-63.8	V	3.0	-9.7	38.5	1.0	-47.2	-13.0	-34.2	
7.54	-66.8	V	3.0	-9.2	37.7	1.0	-45.9	-13.0	-32.9	

Rev. 03.19.15

GSM 1900MHz GPRS

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/08/18
Test Engineer: 44410
Configuration: EUT only
Mode: EGPRS 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 (1850.2MHz)										
3.70	-62.7	H	3.0	-12.7	38.6	1.0	-50.3	-13.0	-37.3	
5.55	-63.4	H	3.0	-9.4	38.6	1.0	-47.0	-13.0	-34.0	
7.40	-65.5	H	3.0	-7.8	37.8	1.0	-44.7	-13.0	-31.7	
3.70	-62.7	V	3.0	-12.8	38.6	1.0	-50.4	-13.0	-37.4	
5.55	-64.8	V	3.0	-11.1	38.6	1.0	-48.6	-13.0	-35.6	
7.40	-66.0	V	3.0	-8.5	37.8	1.0	-45.3	-13.0	-32.3	
Mid Channel (1880.0)										
3.76	-61.9	H	3.0	-11.8	38.6	1.0	-49.4	-13.0	-36.4	
5.64	-63.9	H	3.0	-9.6	38.5	1.0	-47.2	-13.0	-34.2	
7.52	-66.2	H	3.0	-8.4	37.7	1.0	-45.2	-13.0	-32.2	
3.76	-62.6	V	3.0	-12.6	38.6	1.0	-50.2	-13.0	-37.2	
5.64	-63.0	V	3.0	-9.1	38.5	1.0	-46.6	-13.0	-33.6	
7.52	-65.3	V	3.0	-7.7	37.7	1.0	-44.4	-13.0	-31.4	
High Channel (1909.8MHz)										
3.82	-61.9	H	3.0	-11.6	38.7	1.0	-49.3	-13.0	-36.3	
5.73	-60.8	H	3.0	-6.4	38.5	1.0	-43.9	-13.0	-30.9	
7.54	-66.2	H	3.0	-8.3	37.7	1.0	-45.1	-13.0	-32.1	
3.82	-61.5	V	3.0	-11.3	38.7	1.0	-48.9	-13.0	-35.9	
5.73	-64.5	V	3.0	-10.4	38.5	1.0	-47.9	-13.0	-34.9	
7.54	-66.3	V	3.0	-8.7	37.7	1.0	-45.4	-13.0	-32.4	

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
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

9.4.2. WCDMA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/08/18
Test Engineer: 10649
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	-61.9	H	3.0	-11.9	38.6	1.0	-49.5	-13.0	-36.5	
5.56	-65.5	H	3.0	-11.5	38.6	1.0	-49.0	-13.0	-36.0	
7.41	-66.1	H	3.0	-8.4	37.8	1.0	-45.2	-13.0	-32.2	
3.70	-62.2	V	3.0	-12.3	38.6	1.0	-49.9	-13.0	-36.9	
5.55	-64.4	V	3.0	-10.7	38.6	1.0	-48.2	-13.0	-35.2	
7.42	-65.4	V	3.0	-7.9	37.8	1.0	-44.7	-13.0	-31.7	
Mid Channel (1880MHz)										
3.76	-62.2	H	3.0	-12.1	38.6	1.0	-49.7	-13.0	-36.7	
5.64	-63.6	H	3.0	-9.4	38.5	1.0	-46.9	-13.0	-33.9	
7.52	-66.7	H	3.0	-8.9	37.7	1.0	-45.6	-13.0	-32.6	
3.76	-61.6	V	3.0	-11.5	38.6	1.0	-49.2	-13.0	-36.2	
5.64	-64.2	V	3.0	-10.3	38.5	1.0	-47.8	-13.0	-34.8	
7.52	-66.2	V	3.0	-8.6	37.7	1.0	-45.4	-13.0	-32.4	
High Channel (1907.6MHz)										
3.81	-60.4	H	3.0	-10.2	38.7	1.0	-47.8	-13.0	-34.8	
5.72	-64.3	H	3.0	-9.9	38.5	1.0	-47.4	-13.0	-34.4	
7.66	-65.7	H	3.0	-7.8	37.7	1.0	-44.4	-13.0	-31.4	
3.82	-61.5	V	3.0	-11.3	38.7	1.0	-49.0	-13.0	-36.0	
5.72	-64.8	V	3.0	-10.7	38.5	1.0	-48.2	-13.0	-35.2	
7.63	-66.1	V	3.0	-8.3	37.7	1.0	-45.0	-13.0	-32.0	

Rev. 03.19.15

WCDMA Band 2 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/08/18
Test Engineer: 10649
Configuration: EUT Only
Mode: HSDPA 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	-62.3	H	3.0	-12.4	38.6	1.0	-50.0	-13.0	-37.0	
5.56	-65.0	H	3.0	-11.0	38.6	1.0	-48.5	-13.0	-35.5	
7.41	-66.3	H	3.0	-8.6	37.8	1.0	-45.4	-13.0	-32.4	
9.26	-67.8	H	3.0	-7.9	36.6	1.0	-43.5	-13.0	-30.5	
3.70	-61.7	V	3.0	-11.8	38.6	1.0	-49.4	-13.0	-36.4	
5.56	-64.3	V	3.0	-10.5	38.6	1.0	-48.1	-13.0	-35.1	
7.41	-66.2	V	3.0	-8.7	37.8	1.0	-45.6	-13.0	-32.6	
9.26	-67.1	V	3.0	-7.3	36.6	1.0	-42.9	-13.0	-29.9	
Mid Channel (1880MHz)										
3.76	-61.8	H	3.0	-11.7	38.6	1.0	-49.4	-13.0	-36.4	
5.64	-64.6	H	3.0	-10.4	38.5	1.0	-47.9	-13.0	-34.9	
7.52	-67.1	H	3.0	-9.3	37.7	1.0	-46.0	-13.0	-33.0	
9.40	-67.4	H	3.0	-7.3	36.5	1.0	-42.8	-13.0	-29.8	
3.76	-61.8	V	3.0	-11.8	38.6	1.0	-49.4	-13.0	-36.4	
5.64	-63.6	V	3.0	-9.7	38.5	1.0	-47.2	-13.0	-34.2	
7.52	-66.1	V	3.0	-8.5	37.7	1.0	-45.2	-13.0	-32.2	
9.40	-66.3	V	3.0	-6.3	36.5	1.0	-41.8	-13.0	-28.8	
High Channel (1907.6MHz)										
3.82	-60.9	H	3.0	-10.6	38.7	1.0	-48.3	-13.0	-35.3	
5.72	-63.6	H	3.0	-9.2	38.5	1.0	-46.7	-13.0	-33.7	
7.63	-65.2	H	3.0	-7.2	37.7	1.0	-43.9	-13.0	-30.9	
9.54	-65.2	H	3.0	-4.9	36.4	1.0	-40.4	-13.0	-27.4	
3.82	-62.0	V	3.0	-11.8	38.7	1.0	-49.4	-13.0	-36.4	
5.72	-64.9	V	3.0	-10.8	38.5	1.0	-48.3	-13.0	-35.3	
7.63	-66.0	V	3.0	-8.3	37.7	1.0	-44.9	-13.0	-31.9	
9.54	-66.8	V	3.0	-6.6	36.4	1.0	-42.0	-13.0	-29.0	

Rev. 03.19.15

WCDMA Band 2 HSDPA

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/08/18
Test Engineer: 10649
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	-65.9	H	3.0	-16.6	38.5	1.0	-54.1	-13.0	-41.1	
5.14	-63.5	H	3.0	-10.3	38.7	1.0	-48.0	-13.0	-35.0	
6.85	-65.8	H	3.0	-9.0	38.1	1.0	-46.1	-13.0	-33.1	
8.56	-66.3	H	3.0	-7.3	37.1	1.0	-43.3	-13.0	-30.3	
3.42	-65.8	V	3.0	-16.7	38.5	1.0	-54.3	-13.0	-41.3	
5.14	-64.2	V	3.0	-11.3	38.7	1.0	-49.0	-13.0	-36.0	
6.85	-65.7	V	3.0	-9.1	38.1	1.0	-46.3	-13.0	-33.3	
8.56	-66.5	V	3.0	-7.5	37.1	1.0	-43.6	-13.0	-30.6	
Mid Channel (1732.6MHz)										
3.47	-64.8	H	3.0	-15.5	38.5	1.0	-53.0	-13.0	-40.0	
5.20	-64.9	H	3.0	-11.7	38.7	1.0	-49.3	-13.0	-36.3	
6.93	-65.3	H	3.0	-8.2	38.1	1.0	-45.3	-13.0	-32.3	
8.66	-67.3	H	3.0	-8.2	37.0	1.0	-44.2	-13.0	-31.2	
3.47	-66.0	V	3.0	-16.8	38.5	1.0	-54.3	-13.0	-41.3	
5.20	-64.1	V	3.0	-11.2	38.7	1.0	-48.9	-13.0	-35.9	
6.93	-65.2	V	3.0	-8.4	38.1	1.0	-45.5	-13.0	-32.5	
8.66	-67.3	V	3.0	-8.2	37.0	1.0	-44.2	-13.0	-31.2	
High Channel (1752.6MHz)										
3.51	-65.6	H	3.0	-16.1	38.5	1.0	-53.6	-13.0	-40.6	
5.26	-65.9	H	3.0	-12.5	38.7	1.0	-50.2	-13.0	-37.2	
7.01	-65.9	H	3.0	-8.6	38.1	1.0	-45.7	-13.0	-32.7	
8.76	-65.6	H	3.0	-6.3	36.9	1.0	-42.2	-13.0	-29.2	
3.51	-65.9	V	3.0	-16.5	38.5	1.0	-54.1	-13.0	-41.1	
5.26	-64.7	V	3.0	-11.6	38.7	1.0	-49.3	-13.0	-36.3	
7.01	-64.9	V	3.0	-8.0	38.1	1.0	-45.0	-13.0	-32.0	
8.76	-66.7	V	3.0	-7.5	36.9	1.0	-43.4	-13.0	-30.4	

Rev. 03.19.15

WCDMA Band 4 Rel 99

High Frequency Substitution Measurement
UL Fremont Radiated Chamber

Company:
Project #:
Date: 05/08/18
Test Engineer: 10649
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	-65.3	H	3.0	-16.1	38.5	1.0	-53.6	-13.0	-40.6	
5.14	-63.7	H	3.0	-10.5	38.7	1.0	-48.2	-13.0	-35.2	
6.85	-65.8	H	3.0	-8.9	38.1	1.0	-46.1	-13.0	-33.1	
8.56	-65.6	H	3.0	-6.6	37.1	1.0	-42.6	-13.0	-29.6	
3.42	-65.5	V	3.0	-16.4	38.5	1.0	-53.9	-13.0	-40.9	
5.14	-62.8	V	3.0	-9.9	38.7	1.0	-47.6	-13.0	-34.6	
6.85	-65.6	V	3.0	-9.0	38.1	1.0	-46.1	-13.0	-33.1	
8.56	-66.3	V	3.0	-7.4	37.1	1.0	-43.4	-13.0	-30.4	
Mid Channel (1732.6MHz)										
3.47	-65.7	H	3.0	-16.3	38.5	1.0	-53.8	-13.0	-40.8	
5.20	-64.2	H	3.0	-10.9	38.7	1.0	-48.6	-13.0	-35.6	
6.93	-64.3	H	3.0	-7.3	38.1	1.0	-44.4	-13.0	-31.4	
8.66	-66.4	H	3.0	-7.2	37.0	1.0	-43.2	-13.0	-30.2	
3.47	-65.8	V	3.0	-16.6	38.5	1.0	-54.2	-13.0	-41.2	
5.20	-64.6	V	3.0	-11.6	38.7	1.0	-49.3	-13.0	-36.3	
6.93	-64.7	V	3.0	-7.8	38.1	1.0	-45.0	-13.0	-32.0	
8.66	-66.7	V	3.0	-7.7	37.0	1.0	-43.7	-13.0	-30.7	
High Channel (1752.6MHz)										
3.51	-65.0	H	3.0	-15.5	38.5	1.0	-53.1	-13.0	-40.1	
5.26	-65.7	H	3.0	-12.2	38.7	1.0	-49.9	-13.0	-36.9	
7.01	-65.4	H	3.0	-8.2	38.1	1.0	-45.3	-13.0	-32.3	
8.76	-67.0	H	3.0	-7.7	36.9	1.0	-43.6	-13.0	-30.6	
3.51	-66.1	V	3.0	-16.8	38.5	1.0	-54.3	-13.0	-41.3	
5.26	-64.7	V	3.0	-11.7	38.7	1.0	-49.3	-13.0	-36.3	
7.01	-65.3	V	3.0	-8.4	38.1	1.0	-45.4	-13.0	-32.4	
8.76	-65.9	V	3.0	-6.8	36.9	1.0	-42.7	-13.0	-29.7	

Rev. 03.19.15

WCDMA Band 4 HSDPA

END OF REPORT

This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.

10. SETUP PHOTOS

Please refer to 12204512-EP1V1 for setup photos

UL VERIFICATION SERVICES INC. FORM NO: CCSUP4701i
47173 BENICIA STREET, FREMONT, CA 94538, USA TEL: (510) 771-1000 FAX: (510) 661-0888
This report shall not be reproduced except in full, without the written approval of UL Verification Services Inc.