ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 22 SUBPART H, PART 24 SUBPART E

OF

Product Description:	**GPS Tracker**
Product Name:	**LittleBuddy**
Brand Name:	**INSIGNIA**
Model Name:	**NS-KDTR1, NS-KDTR2**
FCC ID:	**MCLNSKDTR**
Model Difference:	**Different model for different color**
Report No.:	**EH/2009/90017**
Issue Date:	**Oct. 16, 2009**
FCC Rule Part:	**2 , 22H & 24E**
Prepared for:	**HON HAI Precision Ind. Co., Ltd.** **5F-1, 5, Hsin-An Road Hsinchu Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.**
Prepared by:	**SGS Taiwan Ltd.** **Electronics & Communication Laboratory** **No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.**

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VERIFICATION OF COMPLIANCE

Applicant:	HON HAI Precision Ind. Co., Ltd. 5F-1, 5, Hsin-An Road Hsinchu Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.
Product Name:	LittleBuddy
Brand Name:	INSIGNIA
FCC ID:	MCLNSKDTR
Model No.:	NS-KDTR1, NS-KDTR2
Model Difference:	Different model for different color
File Number:	EH/2009/90017
Date of test:	Sep. 09, 2009 ~ Sep. 15, 2009
Date of EUT Received:	Sep. 09, 2009

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in TIA/EIA-603-C-2004 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits of FCC Rule FCC PART 22 subpart H, PART 24 subpart E.

The test results of this report relate only to the tested sample identified in this report.

Test By:		***Date:***	Oct. 16, 2009
	Jason Wu / Asst. Supervisor		
Prepared By:		***Date:***	Oct. 16, 2009
	Eva Kao / Asst. Supervisor		
Approved By:		***Date:***	Oct. 16, 2009
	Vincent Su / Manager		

Version

Version No.	Date	Description
00	Oct. 16, 2009	Initial creation of document

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1. GENERAL PRODUCT INFORMATION

General:

Product Name	LittleBuddy
Brand Name	INSIGNIA
Model Name	NS-KDTR1, NS-KDTR2
Model Difference	Different model for different color
Data Cable (USB)	Model No: CUND003B-T44-EF, Supplier: FOXCONN
Power Supply	3.7 Vdc re-chargeable battery or 5Vdc by USB Cable

CDMA 2000:

Modular Report:	Report No: 2009 05128052 FCCA by Nemko USA In Supplier: QUALCOMM INC. Model Number: CASTRA WITHOUT ZIGBEE		
Cellular Phone Standards Frequency Range and Power	Operating Frequency		Rated Power
	CDMA 2000 Cellula	824.7MHz – 848.31MHz	24 dBm
	CDMA 2000 PCS	1851.25MHz– 1908.75MHz	24 dBm
Hardware Version:	30-A6537-P6		
Software Version:	AMSS v3.1.53 & Brew User App v00.07.001		
MEID Manuf. Code	A1000001B0A89A		

GPS:

Receiver Frequency	L1 Band, 1575.42MHz
Frequency Conversion oscillator	19.2MHz
Antenna Designation	Patch Antenna

This test report applies for CDMA 2000.

1.1. Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended FCC ID: **MCLNSKDTR** filing to comply with Section Part 22 subpart H, Part 24 subpart E of the FCC CFR 47 Rules.

1.2. Test Methodology

Both conducted and radiated testing were performed according to the procedures document on TIA/EIA-603-C-2004 and FCC CFR 47 2.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

1.3. Test Facility

The measurement facilities used to collect the 3m Radiated Emission and AC power line conducted data are located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei Country, Taiwan which are constructed and calibrated to meet the FCC requirements in documents ANSI C63.4: 2003. FCC Registration Number are: 990257 and 236194, Canada Registration Number: 4620A-1

The 10 m Open Area Test Sites located on the address of SGS Taiwan Ltd. Electronics & Communication Laboratory No. 29, Pau-Tou-Tsuo Valley Chia-Pau Tsuen, Linkou Hsiang, Taipei county, which is constructed and calibrated to meet the CISPR 22/EN 55022 requirements. SGS Site No. 1(3 &10 meters) and FCC Registration Number: 94644.

1.4. Special Accessories

Not available for this EUT intended for grant.

1.5. Equipment Modifications

Not available for this EUT intended for grant.

2. SYSTEM TEST CONFIGURATION

2.1. EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

2.2. EUT Exercise

The EUT (Transmitter) was operated in the engineering mode to fix the Tx frequency which was for the purpose of the measurements.

2.3. Test Procedure

2.3.1 AC Power Line Conducted Emissions

The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4: 2003. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

2.3.2 Conducted Measurement at Antenna Port:

According to measurement procured TIA/EIA 603C, the EUT is placed on a turn table which is 0.8 m above ground plane. A low loss of RF cable was used to connect the antenna port of EUT to measurement equipment.

2.3.3 Radiated Emissions (ERP/EIRP):

According to measurement procured TIA/EIA 603C, issue 2 of RSS-Gen and TIA/EIA IS-98 for Mobile stations. The EUT is placed on a turn table which is 1.0 m above ground plane. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this hand-held transmitter (EUT) was rotated through three orthogonal axes according to the requirements.

A standard antenna was used to replace the EUT and connect to the SG. Adjust the SG output level to reach the max emission level which were measured above.

2.4. Measurement Equipment Used:

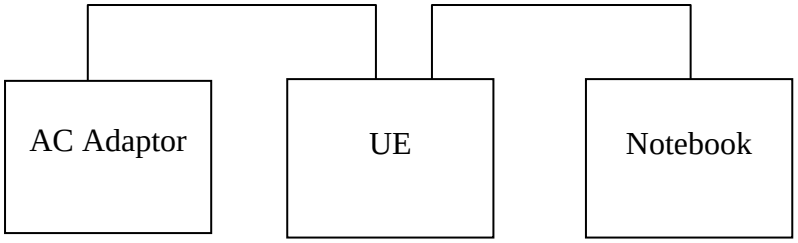
AC POWER LINE CONDUCTED EMISSION EQUIPMENT List					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
EMI Test Receiver	R&S	ESCS30	828985/004	09/16/2008	09/15/2009
LISN	Rolf-Heine	NNB-2/16Z	99012	04/28/2009	04/27/2010
LISN	FCC	FCC-LISN-50 /250-25-2-01	04034	04/28/2009	04/27/2010
Coaxial Cables	N/A	WK CE Cable	N/A	10/30/2008	10/29/2009

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2008	04/18/2010
Spectrum Analyzer	Agilent	E4440A	US41160416	01/23/2008	01/22/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/12/2010
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2009	01/04/2010
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2009	01/04/2010
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2008	04/13/2010
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2008	02/04/2010
Attenuator	Mini-Circuit	BW-S20W5	N/A	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2009	07/04/2010
Splitter	Agilent	11636B	N/A	07/05/2009	07/04/2010
DC Power Supply	Topward	3303D	981327	10/26/2007	10/25/2009

ERP, EIRP MEASUREMENT EQUIPMENT List 966 Chamber					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	R&S	FSP 40	100034	02/12/2009	02/11/2010
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/15/2008	11/14/2009
Dipole Antenna	SCHWAZBECK	VHAP	908/909	07/10/2008	07/09/2010
Dipole Antenna	SCHWAZBECK	UHAP	891/892	07/10/2008	07/09/2010
Hor.n antenna	SCHWAZBECK	BBHA 9120D	309	01/22/2008	01/21/2010
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2008	05/08/2010
Signal Generator	R&S	SMR40	100210	01/22/2008	01/21/2010
Signal Generator	Agilent	E4438C	MY45093613	06/11/2009	06/10/2010
Pre-Amplifier	Agilent	8447D	1937A02834	11/30/2008	11/29/2009
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2009	01/04/2010
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2009	07/04/2010
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2009	07/04/2010
Radio Communication Analyzer	R&S	CMU200	102189	05/13/208	05/12/2010
Turn Table	HD	DT420	N/A	N.C.R	N.C.R
Antenna Tower	HD	MA240-N	240/657	N.C.R	N.C.R
Controller	HD	HD100	N/A	N.C.R	N.C.R
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-10M	10m	01/05/2009	01/04/2010
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2009	01/04/2010
Filter 800-1000	Micro-Tronics	BRM13462	1	01/05/2009	01/04/2010
Filter 1800-2000	Micro-Tronics	BRM13463	1	01/05/2009	01/04/2010
3m Site	SGS	966 chamber	N/A	11/08/2008	11/09/2009

2.5. Configuration of Tested System

Fig. 2-1 Configuration of Tested System (Fixed Channel)



Remote Side

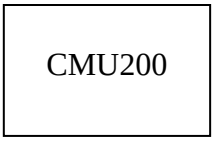


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	Universal Radio Communication Tester	R&S	CMU200	102189	Un-shielded	Un-shielded
2.	Notebook	IBM	T6	L3DK794	Un-shielded	Un-shielded

3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a) §22.913(a) §24.232(c)(d)	RF Peak Power Output	Compliant
§2.1046(a) §22.913(a)(2) §24.232(c)	ERP/ EIRP measurement	Compliant
§2.1049(h)	99% Occupied Bandwidth	Compliant
§2.1051 §22.917(a) §24.238(a)	Out of Band Emissions at Antenna Terminals and Band Edge	Compliant
§2.1053 §22.917(a) §24.238(a)	Field Strength of Spurious Radiation	Compliant
§2.1055(a)(1) §22.355 §24.235	Frequency Stability vs. Temperature	Compliant
§2.1055(d)(2) §22.355 §24.235	Frequency Stability vs. Voltage	Compliant
§15.107;§15.207	AC Power Line Conducted Emission	Compliant

Max ERP/EIRP measurement result:

	dBm		W
CDMA 2000 Cellular	29.13	ERP	0.818
CDMA 2000 PCS	25.61	EIRP	0.364

4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

EUT staying in continuous transmitting mode. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.

The field strength of spurious radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for CDMA 2000. The worst-case of E1 position for CDMA 2000 Cellular band and E1 position for CDMA 2000 PCS band were reported.

The CDMA module was approved and the FCC ID number is **J9CCASTRAWOZB** .

5. RF POWER OUTPUT MEASUREMENT

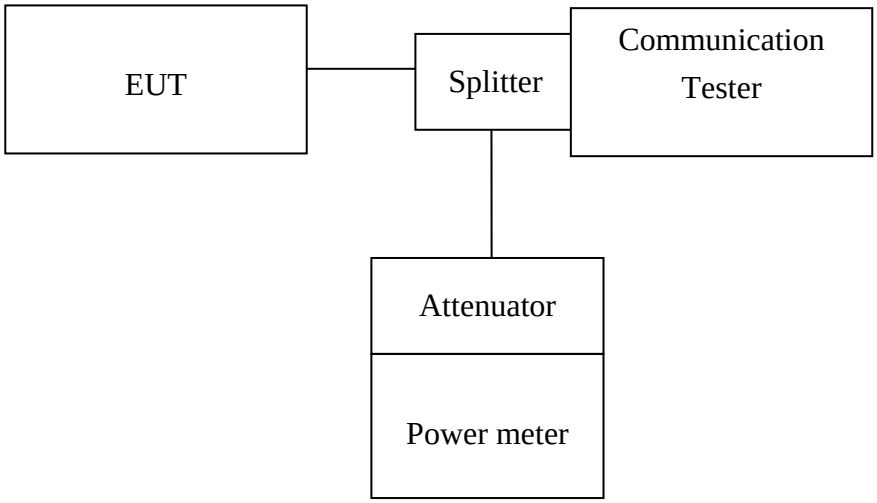
5.1. Standard Applicable:

According to FCC §2.1046.

FCC 22.913(a) Mobile station are limited to 7W.

FCC 24.232(d) Peak Power Measurement, FCC 24.232(c) Maximum Power Reduction.

5.2. Test Set-up:



Note: *Measurement setup for testing on Antenna connector*

5.3. Measurement Procedure:

The transmitter output was connected to a calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power meter in dBm. The power output at the transmitter antenna port was determined by adding the value of the attenu- ator to the power meter reading. was used for EUT and Base station setting.

5.4. Measurement Equipment Used:

Refer to section 2.4 in this report

5.5. Measurement Result:

EUT Mode	Frequency (MHz)	CH	Avg. Power (dBm)
CDMA 2000 Cellular	824.70	1013	23.38
	836.52	384	23.42
	848.31	777	23.64

EUT Mode	Frequency (MHz)	CH	Avg. Power (dBm)
CDMA 2000 PCS	1851.25	25	24.56
	1880	600	24.49
	1908.75	1175	24.40

offset: 0.5dB

6. ERP, EIRP MEASUREMENT

6.1. Standard Applicable:

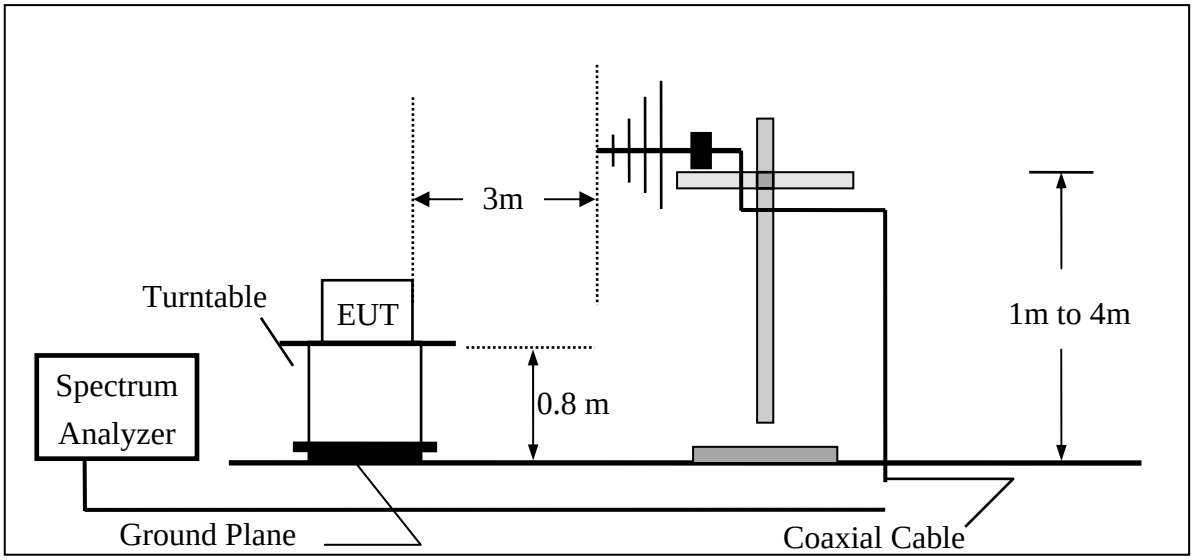
According to FCC §2.1046

FCC 22.913(a) Mobile station are limited to 7W ERP.

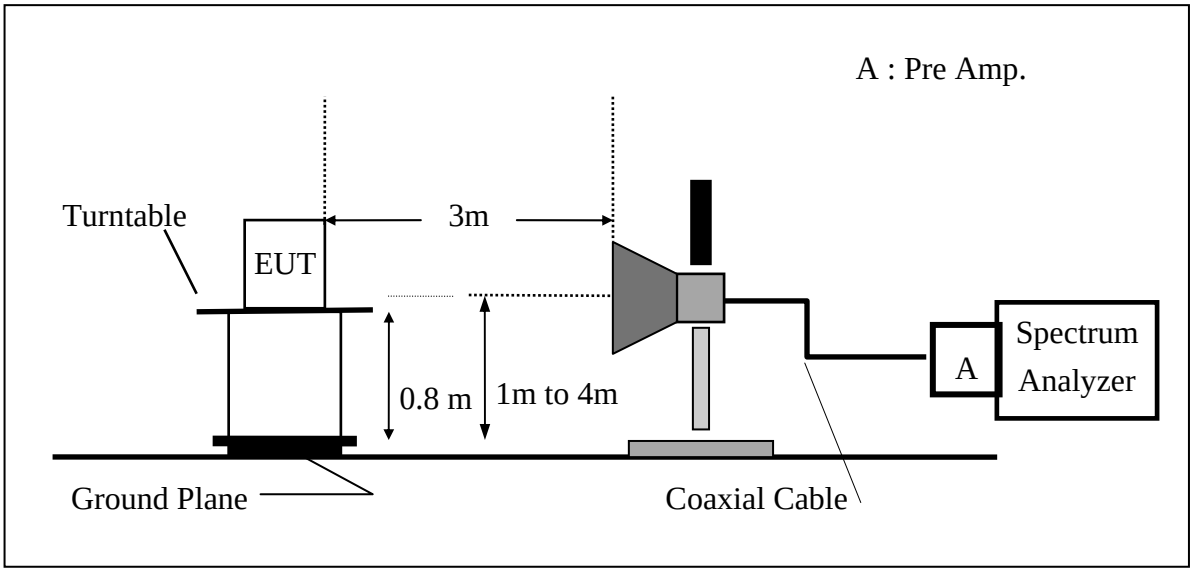
FCC 24.232(b) Mobile station are limited to 2W EIRP.

6.2. Test SET-UP (Block Diagram of Configuration):

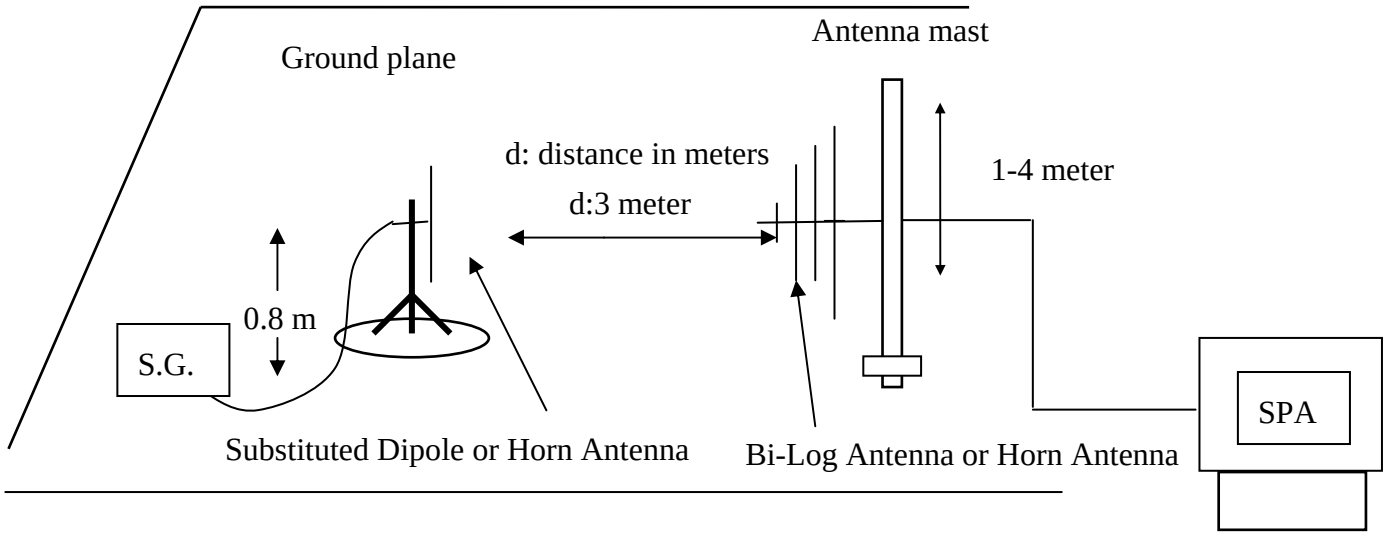
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



(C) Substituted Method Test Set-UP



6.3. Measurement Procedure:

The EUT was placed on an non-conductive turntable using a non-conductive support. The radiated emission at the fundamental frequency was measured at 3 m with a test antenna and EMI spectrum analyzer.

During the measurement, the EUT was communication with the station. The highest emission was recorded with the rotation of the turntable and the lowering of the test antenna from 4m to 1m. The reading was recorded and the field strength (E in dBuV/m) was calculated.

ERP in frequency band 824.7 –848.31MHz were measured using a substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1850.25 –1909.75MHz were measured using a substitution method. The EUT was replaced by a horn antenna connected, the S.G. output was recorded and EIRP was calculated as follows:

ERP = S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB)

EIRP = S.G. output (dBm) + Antenna Gain (dBi) – Cable Loss (dB)

6.4. Measurement Equipment Used:

Refer to section 2.4 in this report

6.5. Measurement Result:

Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
CDMA 2000 Cellular	824.70	1013	H	V	120.83	34.45	-7.87	3.62	22.95	38.45
				H	126.79	40.52	-7.87	3.62	29.02	38.45
			E1	V	125.82	39.44	-7.87	3.62	27.94	38.45
				H	123.77	37.50	-7.87	3.62	26.00	38.45
			E2	V	120.88	34.50	-7.87	3.62	23.00	38.45
				H	126.90	40.63	-7.87	3.62	**29.13**	38.45
	836.52	384	H	V	120.66	34.40	-7.88	3.65	22.88	38.45
				H	126.73	40.50	-7.88	3.65	28.97	38.45
			E1	V	126.01	39.75	-7.88	3.65	28.23	38.45
				H	124.32	38.09	-7.88	3.65	26.56	38.45
			E2	V	120.34	34.08	-7.88	3.65	22.56	38.45
				H	126.76	40.53	-7.88	3.65	29.00	38.45
	848.31	777	H	V	120.47	34.34	-7.88	3.68	22.79	38.45
				H	126.23	40.03	-7.88	3.68	28.48	38.45
			E1	V	125.63	39.50	-7.88	3.68	27.95	38.45
				H	123.16	36.96	-7.88	3.68	25.41	38.45
			E2	V	120.49	34.36	-7.88	3.68	22.81	38.45
				H	126.66	40.46	-7.88	3.68	28.91	38.45

Remark：

(1) The RBW,VBW of SPA for frequency

RBW= 2MHz , VBW= 6MHz

Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBi)	Cable Loss (dB)	EIRP (dBm)	Limit (dBm)
CDMA 2000 PCS	1851.25	25	H	V	119.93	15.54	9.90	5.56	19.88	33.00
				H	125.18	21.00	9.90	5.56	25.34	33.00
			E1	V	125.66	21.27	9.90	5.56	**25.61**	33.00
				H	122.73	18.55	9.90	5.56	22.89	33.00
			E2	V	118.70	14.31	9.90	5.56	18.65	33.00
				H	125.44	21.26	9.90	5.84	25.32	33.00
	1880.00	600	H	V	118.96	14.60	9.99	5.61	18.98	33.00
				H	123.57	19.43	9.99	5.61	23.80	33.00
			E1	V	125.10	20.74	9.99	5.61	25.12	33.00
				H	117.70	13.56	9.99	5.61	17.93	33.00
			E2	V	118.24	13.88	9.99	5.61	18.26	33.00
				H	123.07	18.93	9.99	5.61	23.30	33.00
	1908.75	1175	H	V	117.23	12.90	10.07	5.66	17.32	33.00
				H	121.91	17.80	10.07	5.66	22.21	33.00
			E1	V	124.18	19.85	10.07	5.66	24.27	33.00
				H	115.08	10.97	10.07	5.66	15.38	33.00
			E2	V	117.60	13.27	10.07	5.66	17.69	33.00
				H	121.63	17.52	10.07	5.66	21.93	33.00

Remark：

(1) The RBW,VBW of SPA for frequency

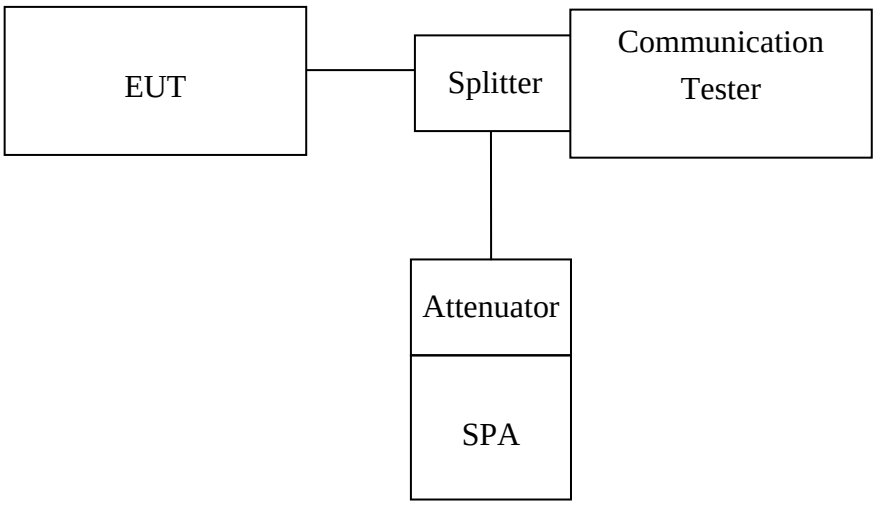
RBW= 2MHz , VBW= 6MHz

7. 99% OCCUPIED BANDWIDTH MEASUREMENT

7.1. Standard Applicable:

According to §FCC 2.1049.

7.2. Test Set-up:



7.3. Measurement Procedure:

As Figure below indicates, the Castra module device was connected to the call simulator test box through a calibrated coaxial cable and directional coupler. The coupled port of the coupler was connected to the spectrum analyzer. Occupied bandwidth (defined as the 99% power bandwidth) was measured using the PSA internal measurement personality feature.

Testing was completed using the Agilent 8960 for the CDMA 1x measurement.

7.4. Measurement Equipment Used:

Refer to section 2.4 in this report

7.5. Measurement Result:

Mode		Frequency (MHz)	Channel	99% Occupied Bandwidth (MHz)	Plot number
CDMA1x/ 1x-EVDO	RC3 SO55	824.7	1013	1.2764	Plot 5.2 - 1
		836.52	384	1.2778	Plot 5.2 - 2
		848.31	777	1.2759	Plot 5.2 - 3
		1851.25	25	1.2800	Plot 5.2 - 4
		1880	600	1.2807	Plot 5.2 - 5
		1908.75	1175	1.2759	Plot 5.2 - 6

Figure 7-1: CDMA2000 Cellular Channel Low

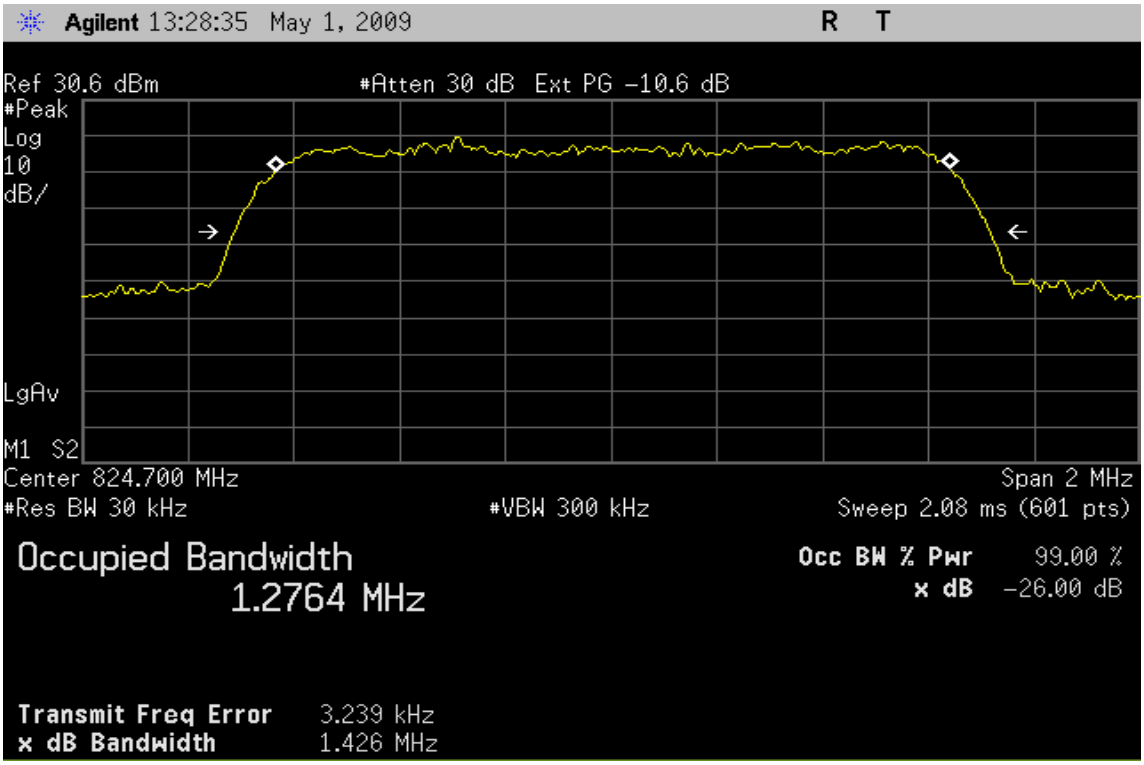


Figure 7-2 CDMA2000 Cellular Channel Mid

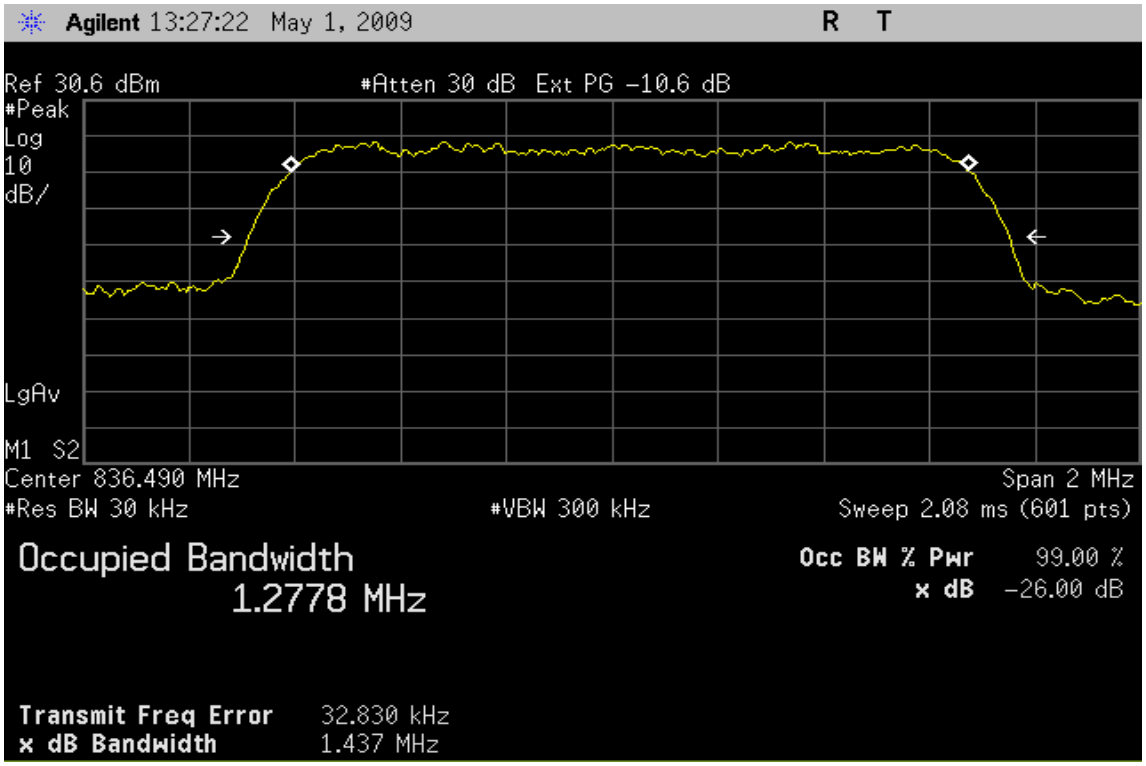


Figure 7-3: CDMA2000 Cellular Channel High

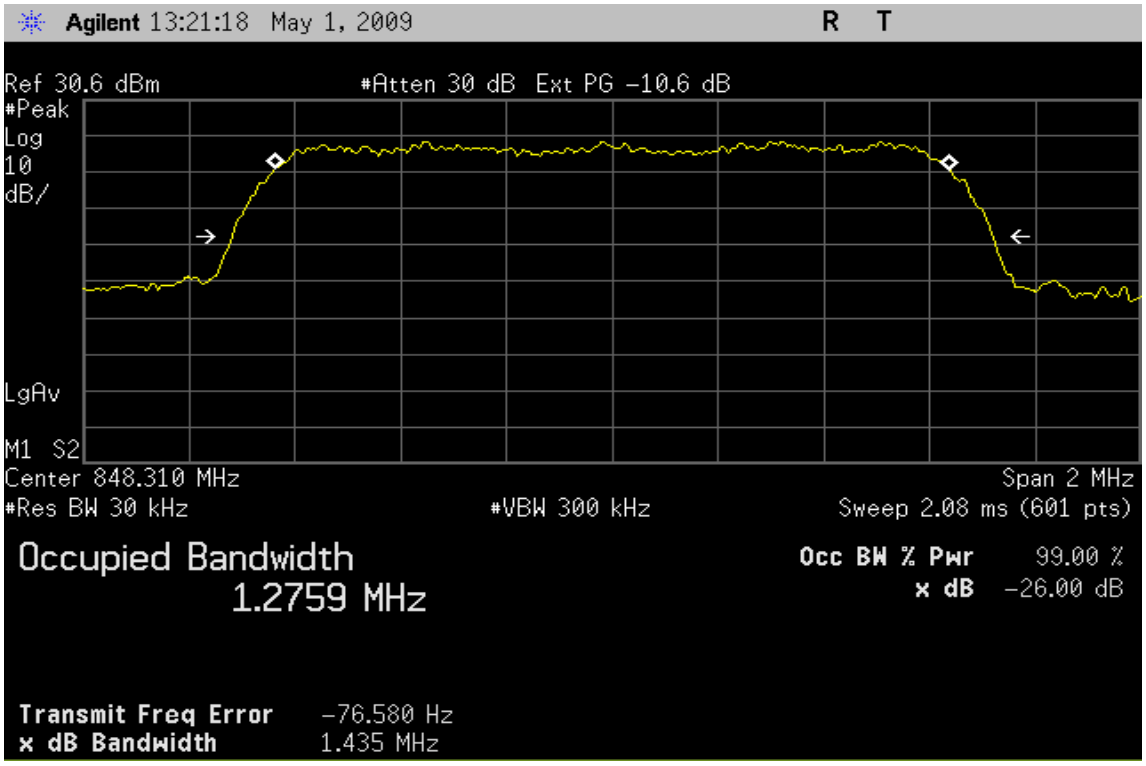


Figure 7-1: CDMA2000 PCS Channel Low

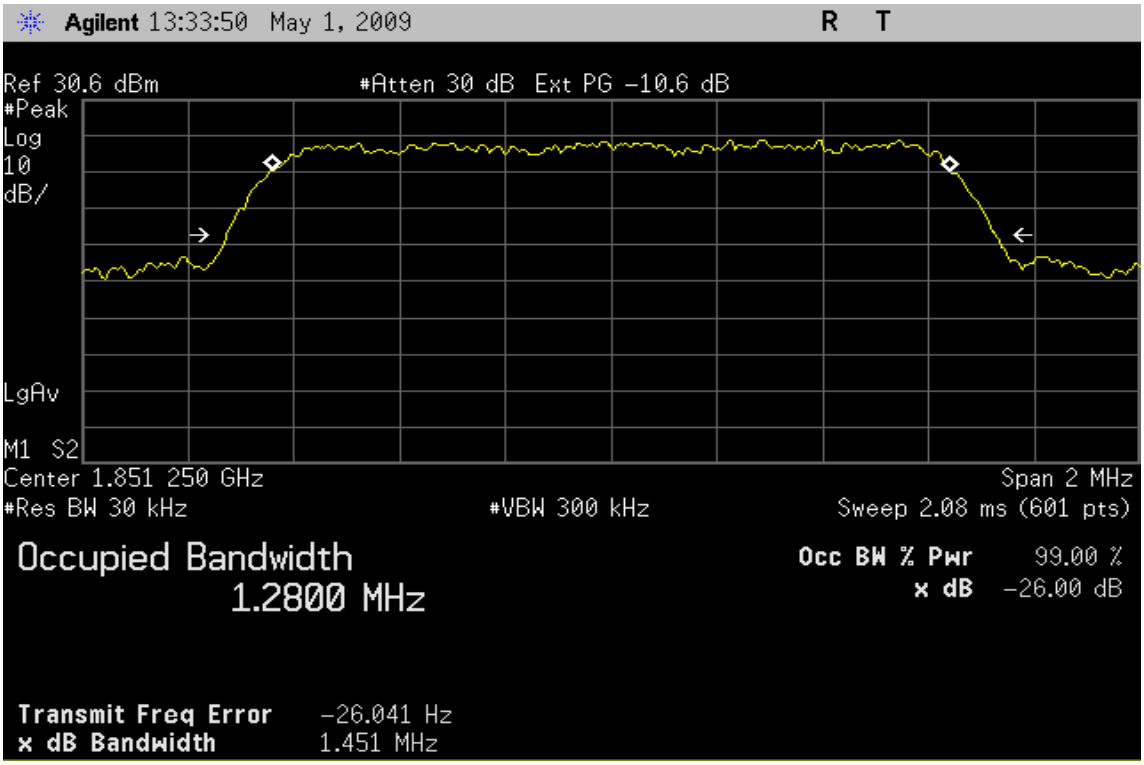


Figure 7-2 CDMA2000 PCS Channel Mid

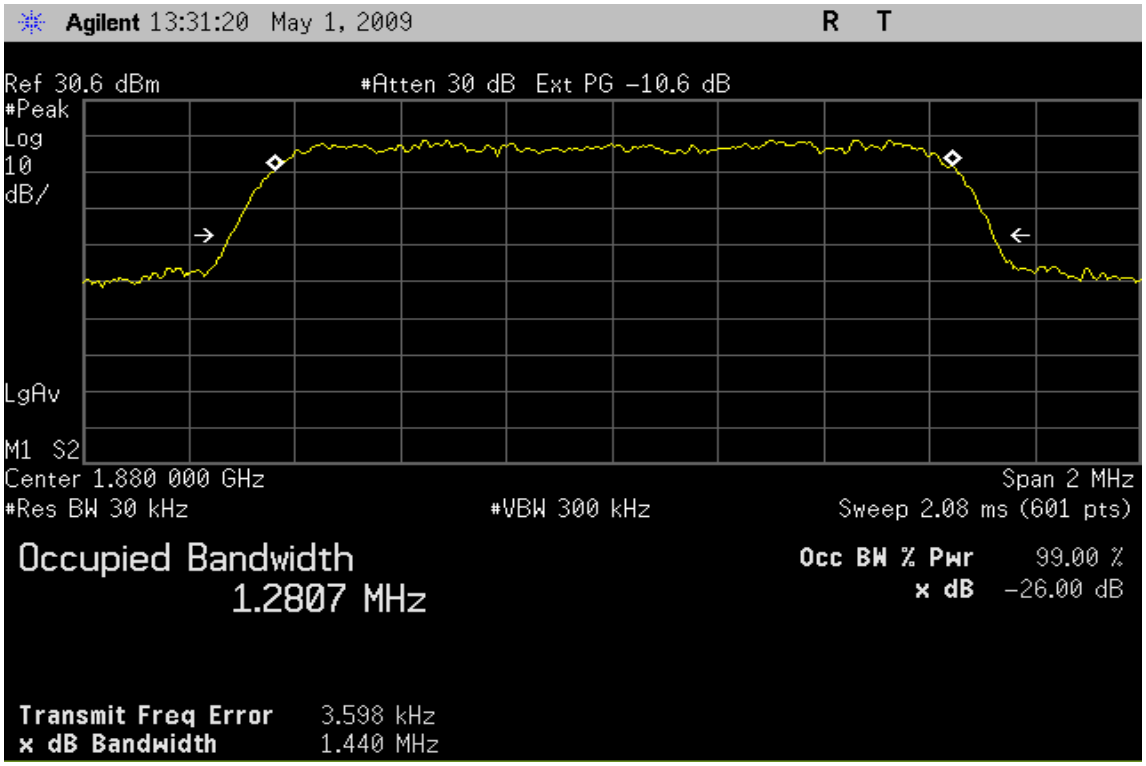
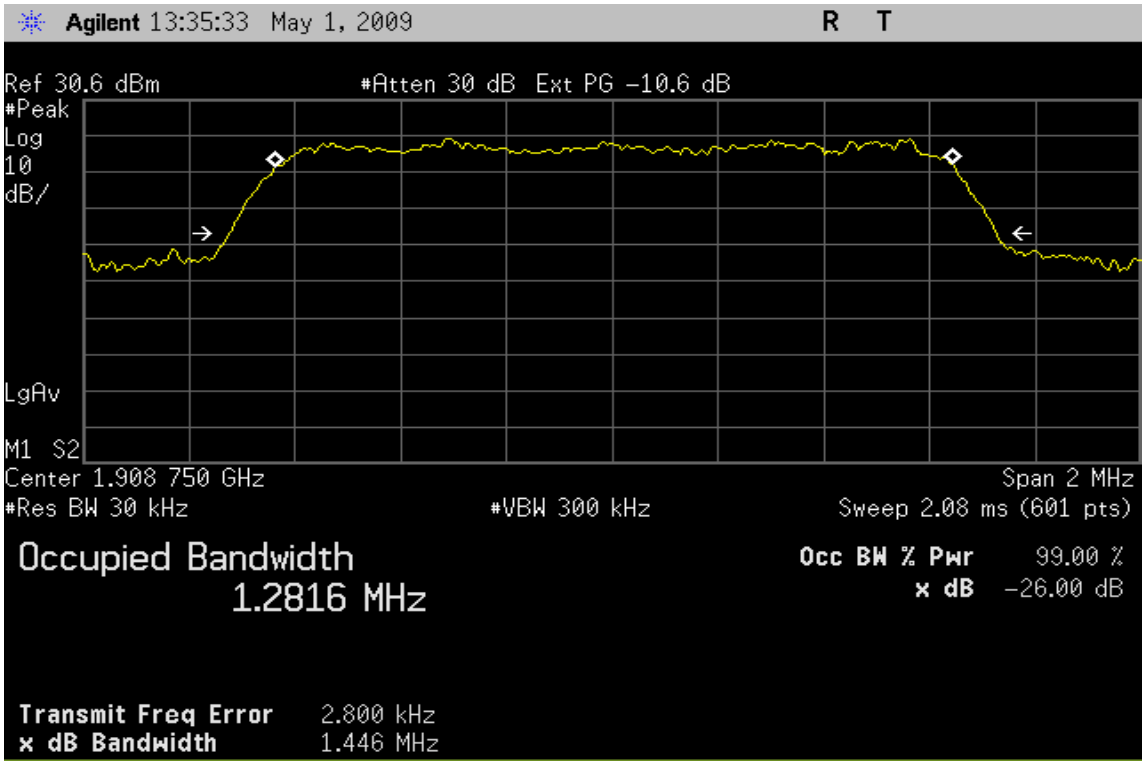


Figure 7-3: CDMA2000 PCS Channel High



8. OUT OF BAND EMISSION AT ANTENNA TERMINALS

8.1. Standard Applicable:

According to FCC §2.1051.

FCC §22.917(a),§24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm)

8.2. Test SET-UP:

Refer to section 7.2 in this report

8.3. Measurement Procedure:

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of the spectrum analyzer was set at 1MHz; sufficient scans were taken to show the out of band Emissions if any up to 10th harmonic.

For the out of band: Set the RBW, VBW = 100kHz, Start=2Hz, Stop= 10 th harmonic. Limit = -13dBm

Band Edge measurement: a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission use the spectrum analyzer Band power function with Integrated 5KHz and 15kHz of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

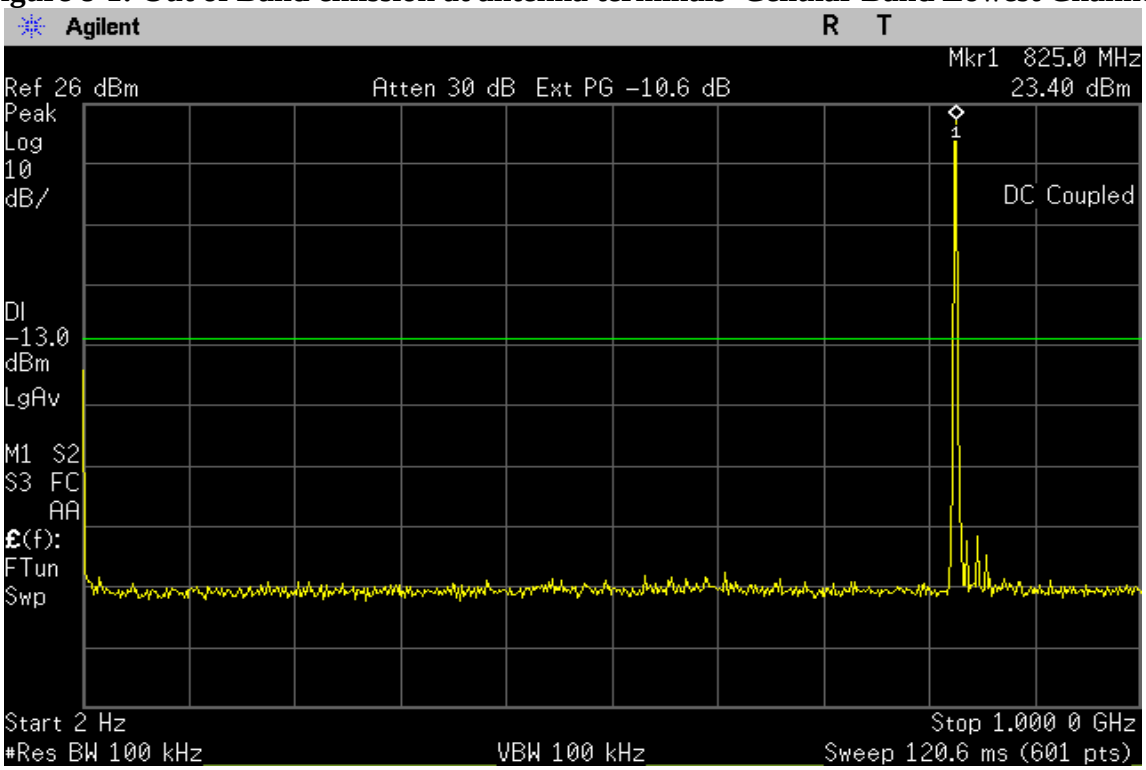
8.4. Measurement Equipment Used:

Refer to section 2.4 in this report

8.5. Measurement Result:

Refer to next page for plots.

Figure 8-1: Out of Band emission at antenna terminals–Cellular Band Lowest Channel



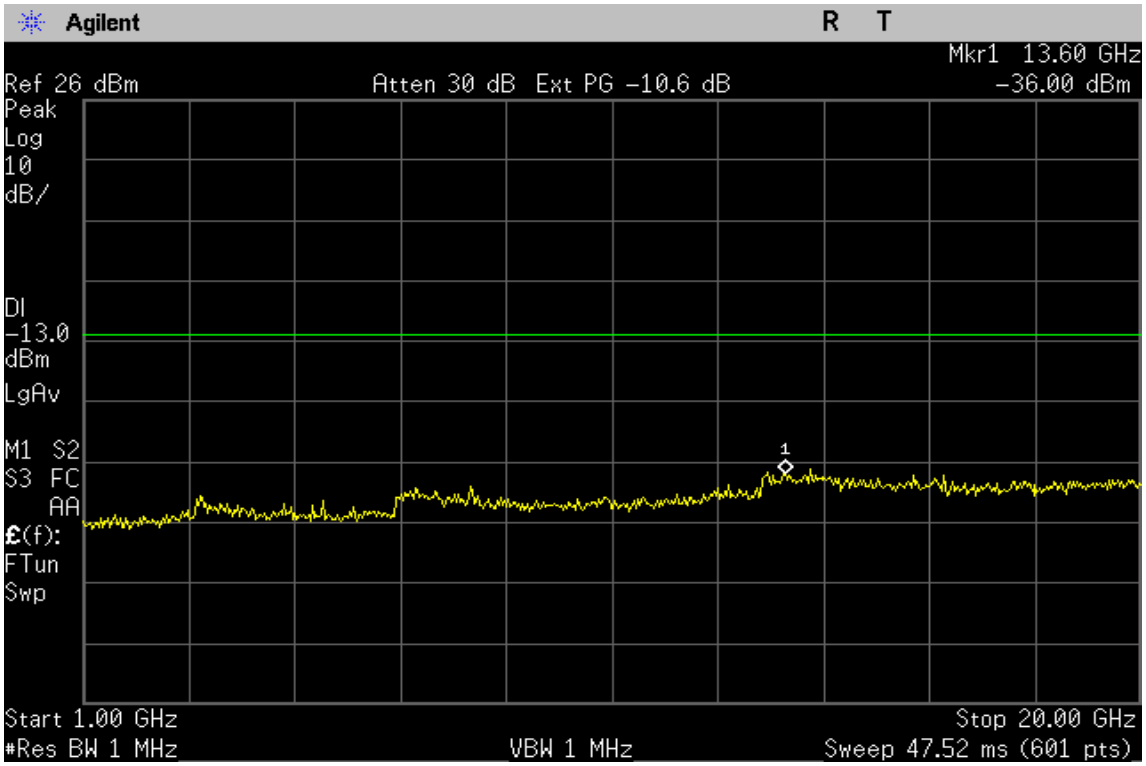
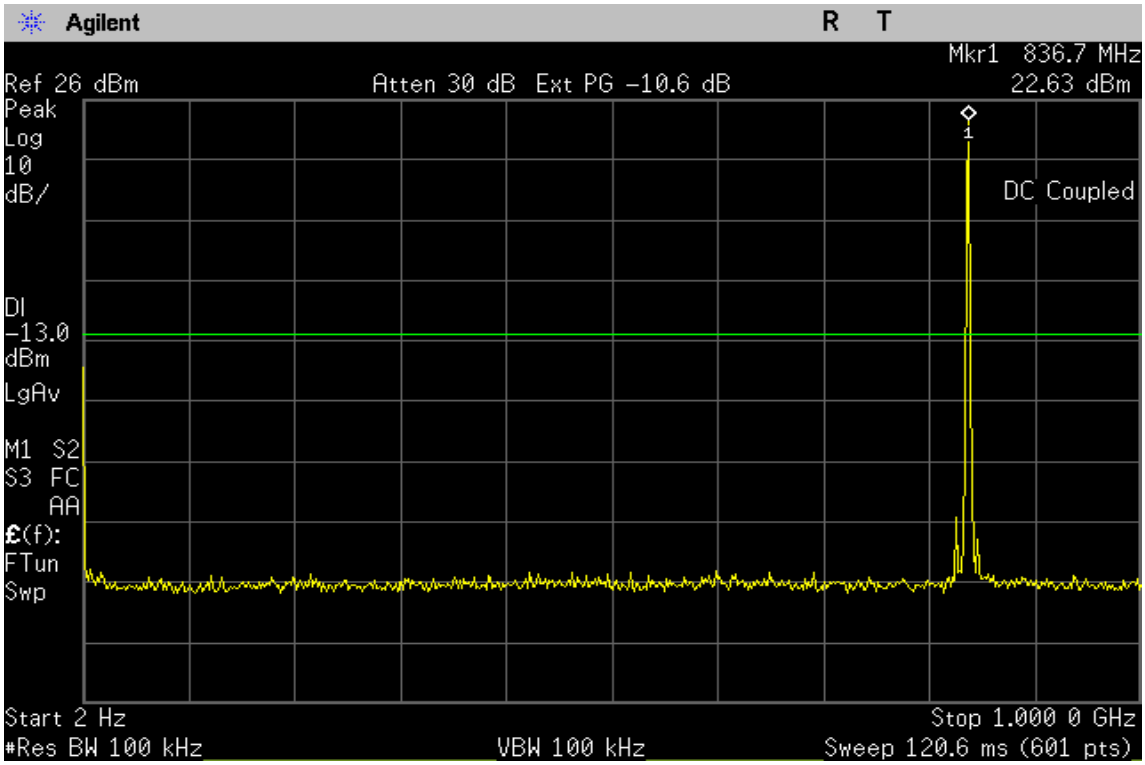


Figure 8-2: Out of Band emission at antenna terminals –Cellular Band Mid Channel



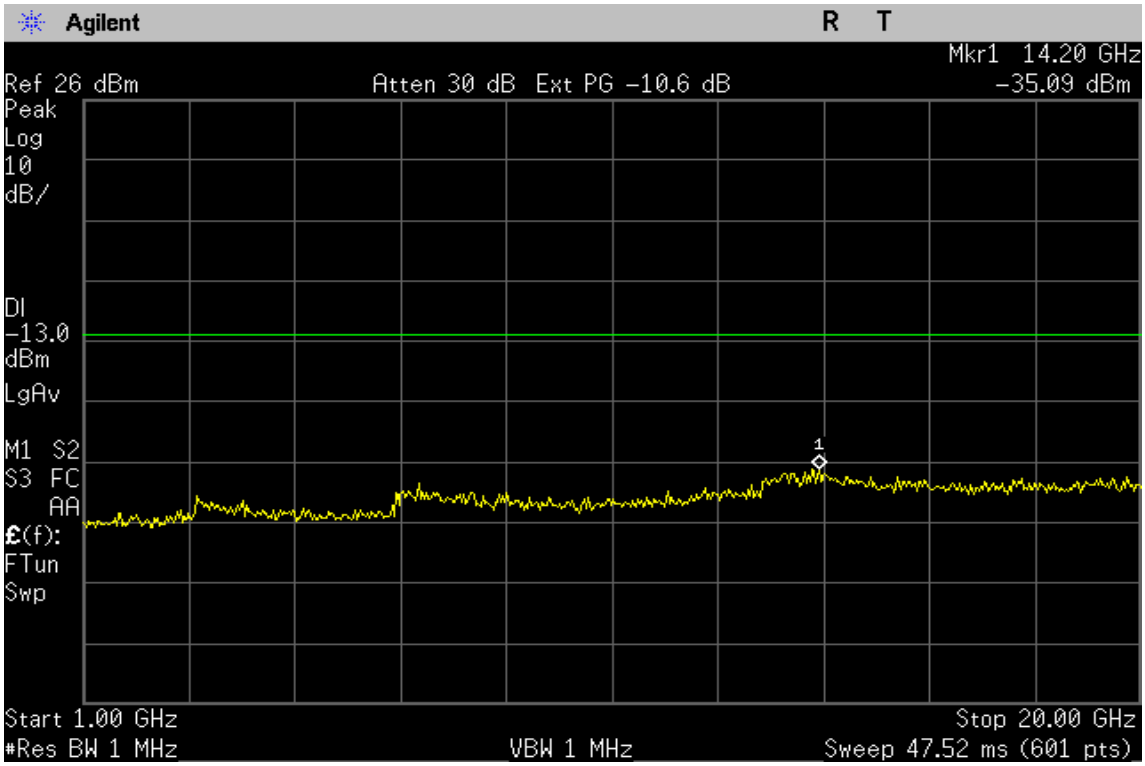
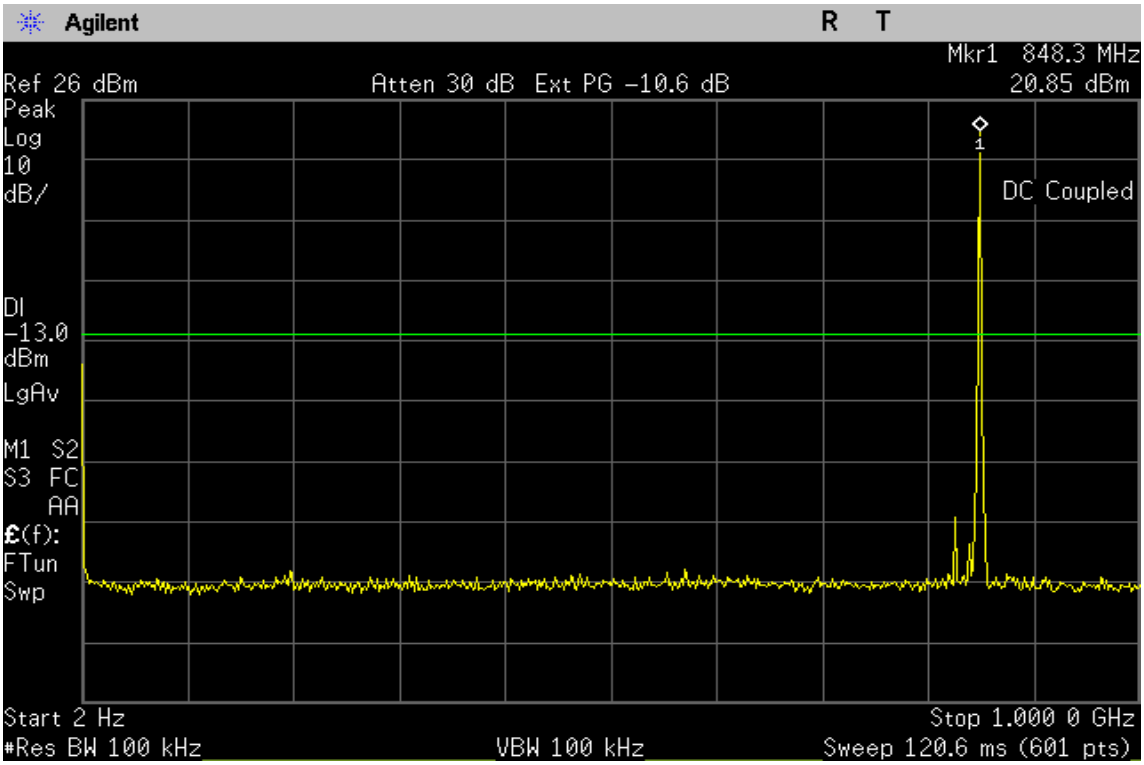


Figure 8-3: Out of Band emission at antenna terminals–Cellular Band Highest Channel



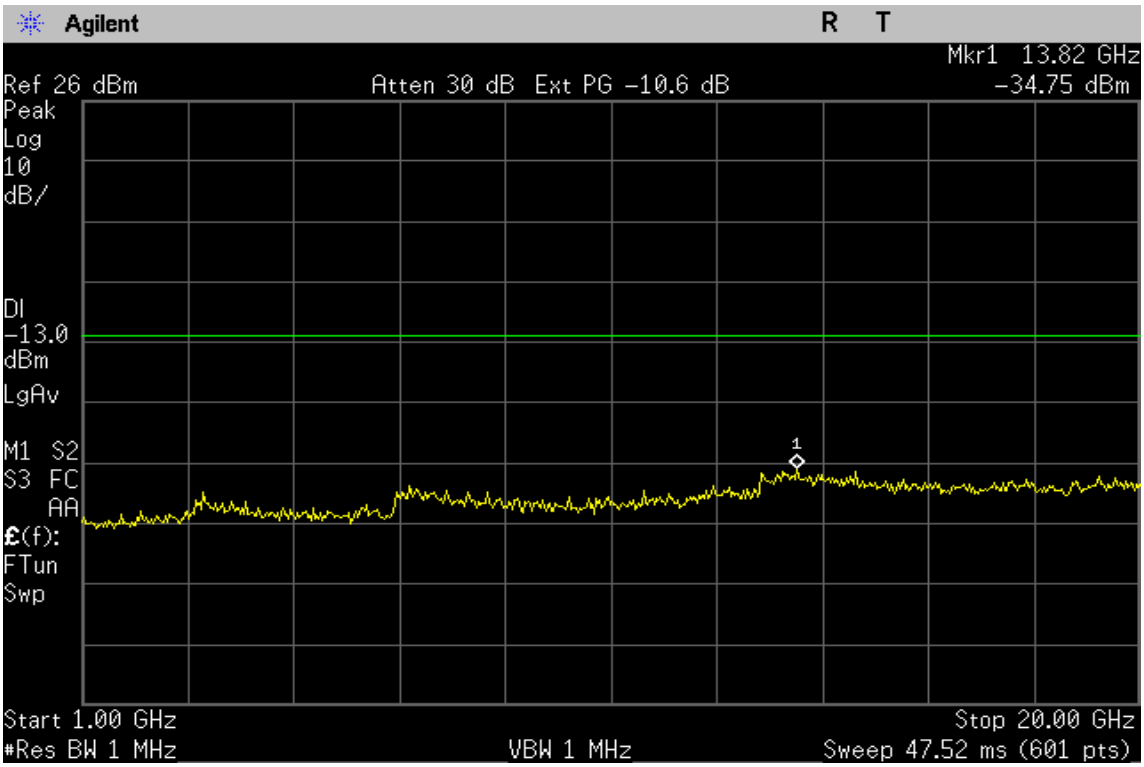


Figure 8-4: Band edge emission at antenna terminals – Cellular Channel Lowest

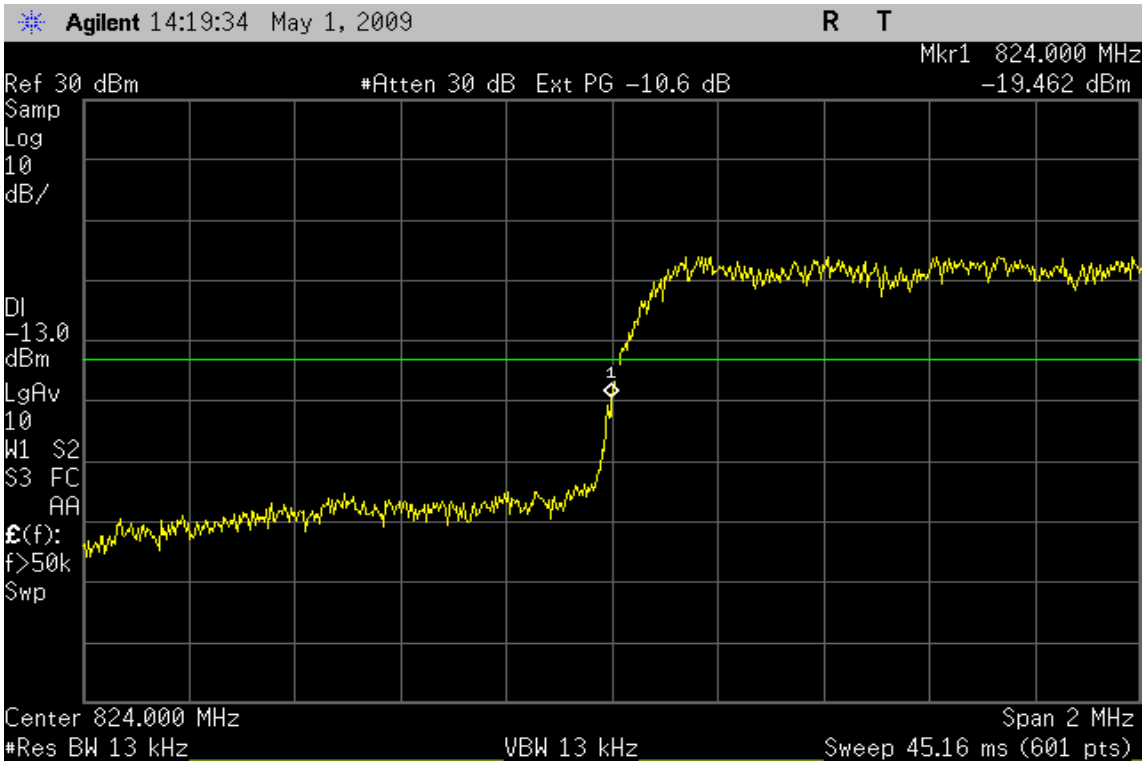


Figure 8-5: Band edge emission at antenna terminals –Cellular Channel Highest

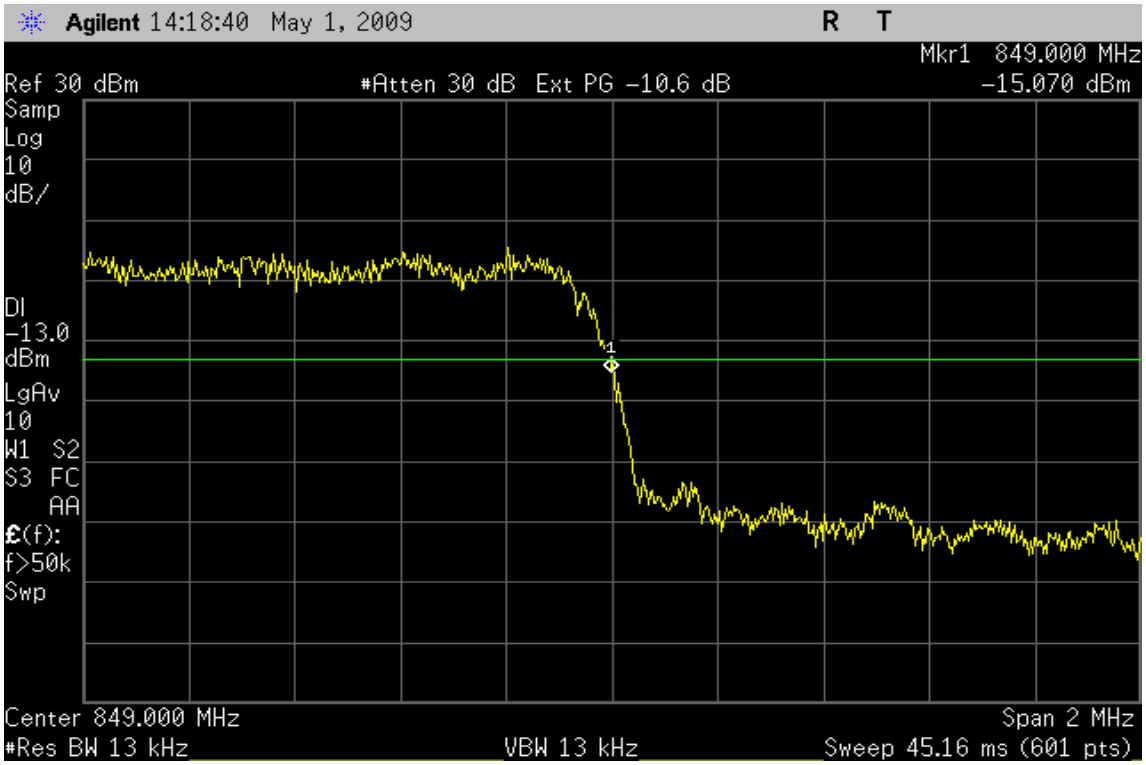
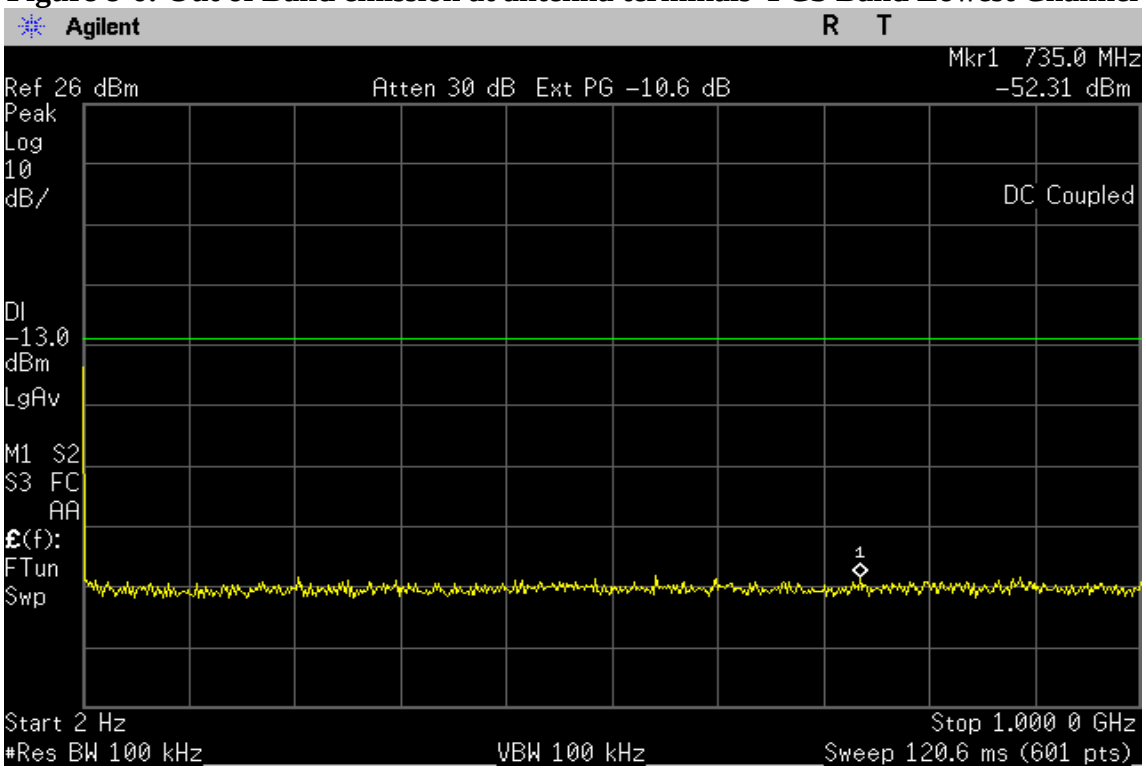


Figure 8-6: Out of Band emission at antenna terminals–PCS Band Lowest Channel



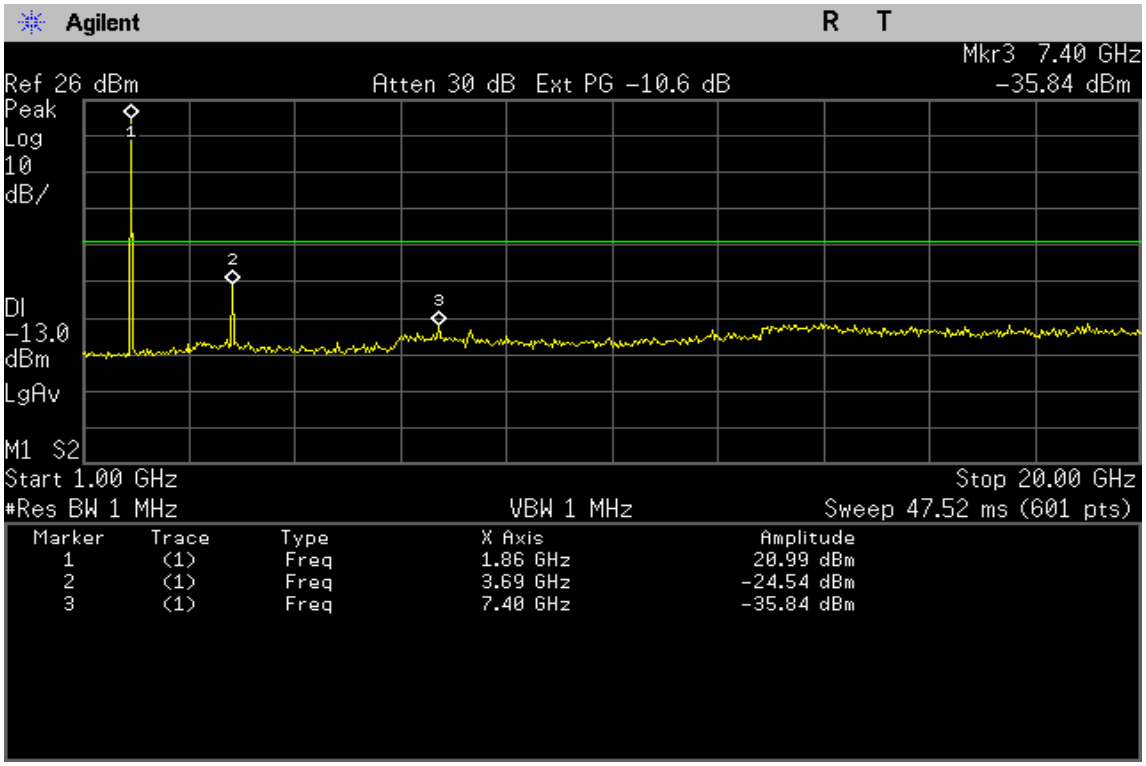
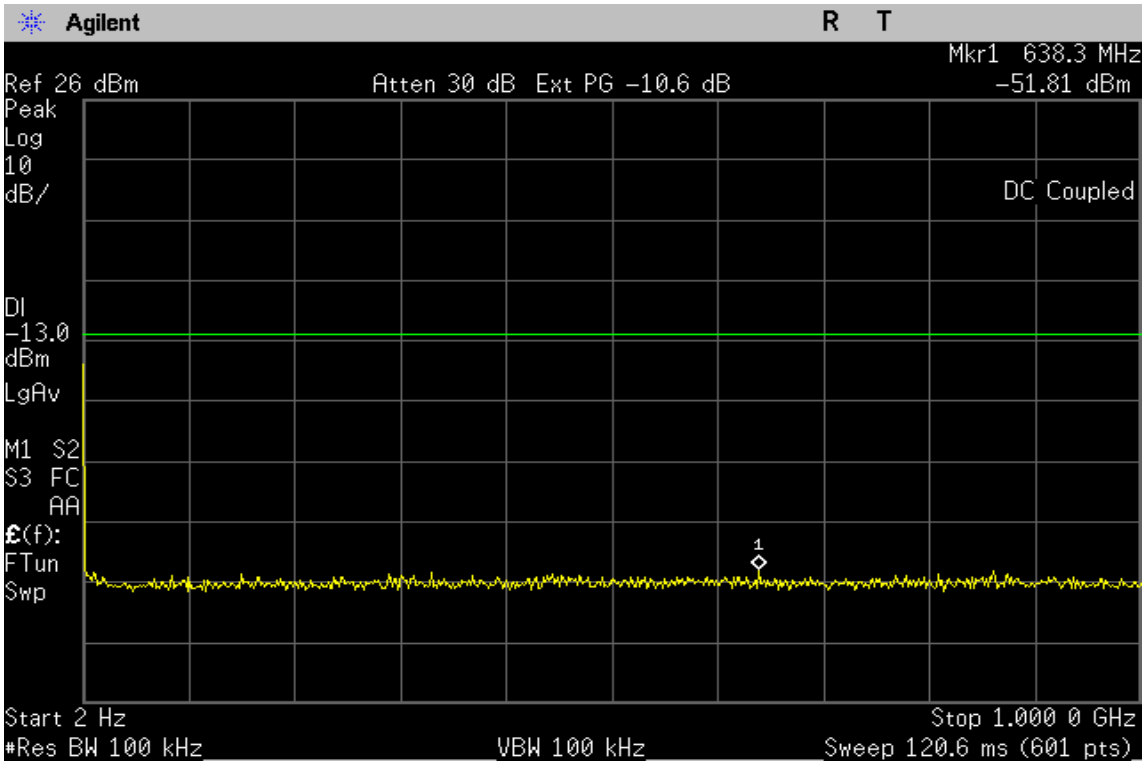


Figure 8-7: Out of Band emission at antenna terminals –PCS Band Mid Channel



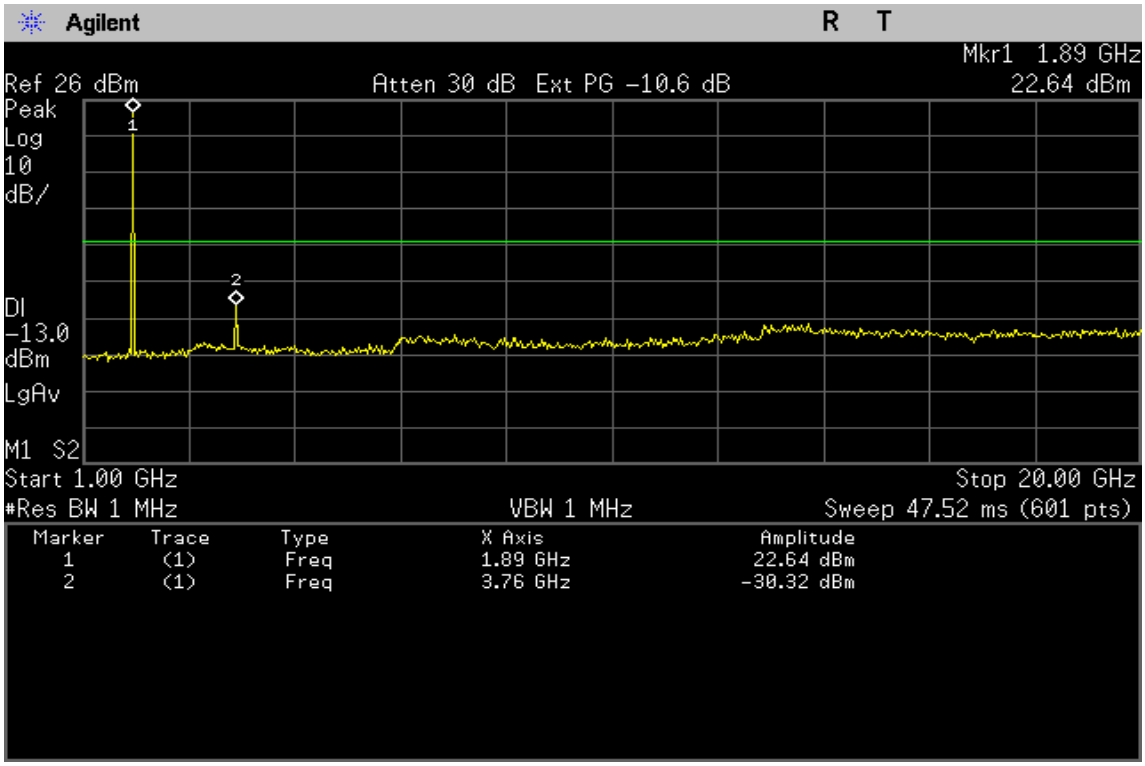
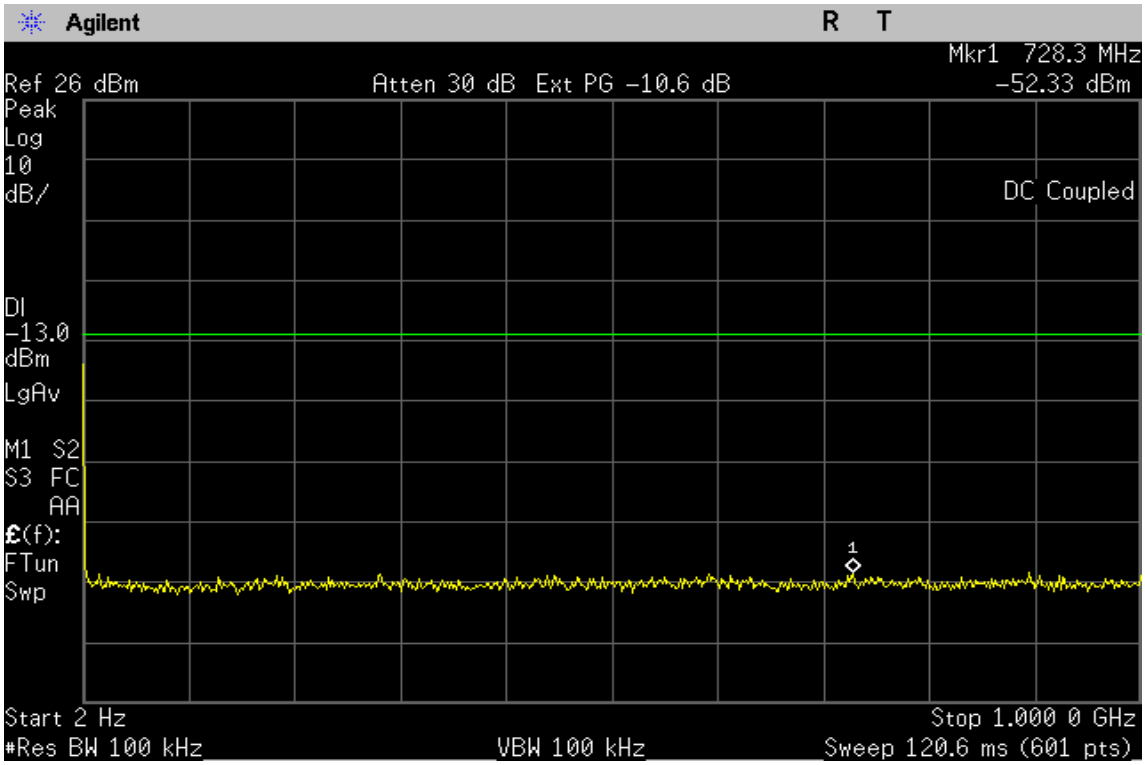


Figure 8-8: Out of Band emission at antenna terminals–PCS Band Highest Channel



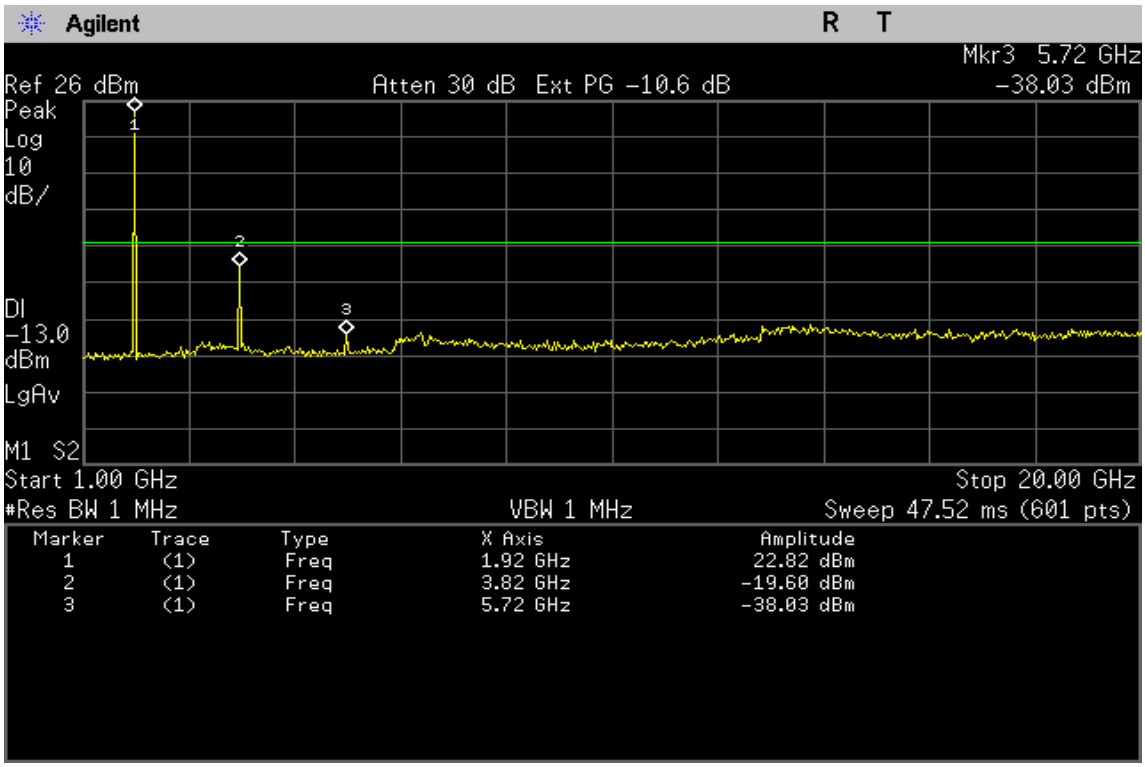
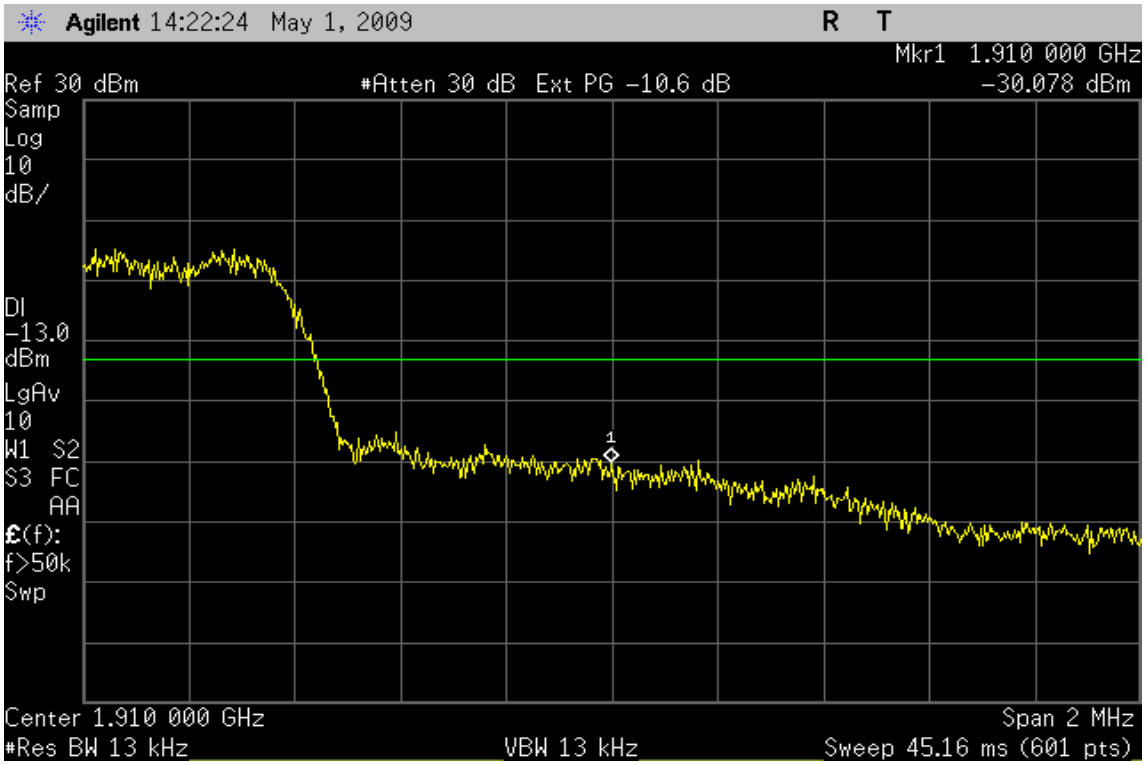


Figure 8-9: Band edge emission at antenna terminals – PCS Channel Lowest

Figure 8-10: Band edge emission at antenna terminals –PCS Channel Highest



9. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

9.1. Standard Applicable:

According to FCC §2.1053,

FCC §22.917(a),§24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean power output outside a license's frequency block (-13dBm)

9.2. EUT Setup (Block Diagram of Configuration):

Refer to section 6.2 in this report

9.3. Measurement Procedure:

The EUT was placed on a non-conductive, The measurement antenna was placed at a distance of 3 meters from the EUT. During the tests, the antenna height and the EUT azimuth were varied in order to identify the maximum level of emissions from the EUT. This maximization process was repeated with the EUT positioned in each of its three orthogonal orientations.

The frequency range up to tenth harmonic was investigated for each of three fundamental frequency (low, middle and high channels). Once spurious emission were identified, the power of the emission was determined using the substitution method.

The spurious emissions attenuation was calculated as the difference between radiated power at the fundamental frequency and the spurious emissions frequency.

Band Edge measurement: a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission use the spectrum analyzer Band power function with

Integrated 5KHz and 15kHz of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

ERP= S.G. output (dBm) + Antenna Gain (dBd) – Cable Loss (dB)

EIRP = S.G. output (dBm) + Antenna Gain(dBi) – Cable Loss (dB)

9.4. Measurement Equipment Used:

Refer to section 2.4 in this report

9.5. Measurement Result:

Refer to attach tabular data sheets.

Radiated Spurious Emission Measurement Result: CDMA 2000 Cellular Mode

Operation Mode : TX CH Low E2 Mode
Fundamental Frequency : 824.70MHz
Temperature : 25℃
Humidity : 65%

Test Date: Sep. 11, 2009
Test By: Jason
Pol: Ver

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	46.00	V	-58.70	-7.34	0.95	-66.99	-13.00	-53.99
33.88	43.87	V	-59.70	-5.52	0.93	-66.15	-13.00	-53.15
67.83	41.72	V	-69.97	-0.95	1.14	-72.06	-13.00	-59.06
90.14	45.91	V	-57.27	-7.75	1.27	-66.29	-13.00	-53.29
825.00	76.36	V	-10.02	-7.88	3.63	-21.52	-13.00	-8.52
1649.40	45.40	V	-59.18	9.29	5.23	-55.12	-13.00	-42.12
2474.10	---	V		10.08	6.53		-13.00	
3298.80	45.99	V	-52.88	12.17	7.72	-48.42	-13.00	-35.42
4123.50	---	V		12.61	8.86		-13.00	
4948.20	40.23	V	-52.23	12.65	9.74	-49.32	-13.00	-36.32
5772.90	---	V		13.56	10.54		-13.00	
6597.60	---	V		12.04	11.30		-13.00	
7422.30	---	V		11.49	12.10		-13.00	
8247.00	---	V		11.48	12.72		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 Cellular Mode

Operation Mode : TX CH Low E2 Mode
Fundamental Frequency : 824.70MHz
Temperature : 25℃
Humidity : 65%

Test Date: Sep. 11, 2009
Test By: Jason
Pol: Hor

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	44.28	H	-61.62	-7.34	0.95	-69.91	-13.00	-56.91
41.64	44.52	H	-58.99	-2.31	0.93	-62.23	-13.00	-49.23
90.14	42.16	H	-61.57	-7.75	1.27	-70.59	-13.00	-57.59
		H					-13.00	
		H					-13.00	
825.00	80.03	H	-6.24	-7.88	3.63	-17.74	-13.00	-4.74
1649.40	50.91	H	-53.49	9.29	5.23	-49.43	-13.00	-36.43
2474.10	39.68	H	-61.22	10.08	6.53	-57.68	-13.00	-44.68
3298.80	52.46	H	-46.63	12.17	7.72	-42.18	-13.00	-29.18
4123.50	41.52	H	-54.73	12.61	8.86	-50.97	-13.00	-37.97
4948.20	41.54	H	-51.08	12.65	9.74	-48.17	-13.00	-35.17
5772.90	---	H		13.56	10.54		-13.00	
6597.60	---	H		12.04	11.30		-13.00	
7422.30	---	H		11.49	12.10		-13.00	
8247.00	---	H		11.48	12.72		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 Cellular Mode

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 836.52MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
36.79	45.15	V	-57.58	-4.16	0.91	-62.65	-13.00	-49.65
67.83	41.86	V	-69.83	-0.95	1.14	-71.92	-13.00	-58.92
90.14	44.41	V	-58.77	-7.75	1.27	-67.79	-13.00	-54.79
96.93	43.48	V	-58.83	-7.76	1.33	-67.92	-13.00	-54.92
1673.04	48.14	V	-56.42	9.36	5.27	-52.33	-13.00	-39.33
2509.56	38.21	V	-62.57	10.09	6.58	-59.07	-13.00	-46.07
3346.08	49.70	V	-49.16	12.27	7.79	-44.68	-13.00	-31.68
4182.60	41.34	V	-54.55	12.62	8.93	-50.86	-13.00	-37.86
5019.12	43.42	V	-48.73	12.67	9.81	-45.87	-13.00	-32.87
5855.64	---	V		13.68	10.62		-13.00	
6692.16	---	V		11.95	11.39		-13.00	
7528.68	---	V		11.45	12.20		-13.00	
8365.20	---	V		11.59	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 Cellular Mode

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 836.52MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	44.36	H	-61.54	-7.34	0.95	-69.83	-13.00	-56.83
41.64	43.56	H	-59.95	-2.31	0.93	-63.19	-13.00	-50.19
172.59	38.42	H	-61.10	-7.82	1.64	-70.57	-13.00	-57.57
1673.04	52.23	H	-52.15	9.36	5.27	-48.05	-13.00	-35.05
2509.56	43.87	H	-56.83	10.09	6.58	-53.33	-13.00	-40.33
3346.08	53.98	H	-45.08	12.27	7.79	-40.60	-13.00	-27.60
4182.60	45.00	H	-51.03	12.62	8.93	-47.34	-13.00	-34.34
5019.12	44.52	H	-47.80	12.67	9.81	-44.94	-13.00	-31.94
5855.64	---	H		13.68	10.62		-13.00	
6692.16	---	H		11.95	11.39		-13.00	
7528.68	---	H		11.45	12.20		-13.00	
8365.20	---	H		11.59	12.81		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 Cellular Mode

Operation Mode	: TX CH High E2 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 848.31MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	45.03	V	-59.67	-7.34	0.95	-67.96	-13.00	-54.96
33.88	42.75	V	-60.82	-5.52	0.93	-67.27	-13.00	-54.27
90.14	44.47	V	-58.71	-7.75	1.27	-67.73	-13.00	-54.73
850.00	77.73	V	-8.38	-7.88	3.68	-19.94	-13.00	-6.94
1696.62	52.39	V	-52.15	9.43	5.31	-48.02	-13.00	-35.02
2544.93	41.15	V	-59.50	10.19	6.63	-55.94	-13.00	-42.94
3393.24	53.63	V	-45.22	12.38	7.86	-40.71	-13.00	-27.71
4241.55	42.59	V	-53.08	12.63	9.00	-49.45	-13.00	-36.45
5089.86	44.48	V	-47.50	12.74	9.88	-44.64	-13.00	-31.64
5938.17	---	V		13.81	10.70		-13.00	
6786.48	---	V		11.86	11.48		-13.00	
7634.79	---	V		11.41	12.27		-13.00	
8483.10	---	V		11.69	12.91		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 Cellular Mode

Operation Mode	: TX CH High E1 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 848.31MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
41.64	43.49	H	-60.02	-2.31	0.93	-63.26	-13.00	-50.26
96.93	41.27	H	-61.96	-7.76	1.33	-71.05	-13.00	-58.05
850.00	83.03	H	-3.16	-7.88	3.68	-14.72	-13.00	-1.72
1696.62	56.19	H	-48.16	9.43	5.31	-44.03	-13.00	-31.03
2544.93	45.15	H	-55.45	10.19	6.63	-51.89	-13.00	-38.89
3393.24	56.70	H	-42.33	12.38	7.86	-37.81	-13.00	-24.81
4241.55	49.17	H	-46.65	12.63	9.00	-43.02	-13.00	-30.02
5089.86	46.47	H	-45.69	12.74	9.88	-42.82	-13.00	-29.82
5938.17	---	H		13.81	10.70		-13.00	
6786.48	---	H		11.86	11.48		-13.00	
7634.79	---	H		11.41	12.27		-13.00	
8483.10	---	H		11.69	12.91		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 PCS Mode

Operation Mode	: TX CH Low E1 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 1851.25MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	49.66	V	-55.04	-7.34	0.95	-63.33	-13.00	-50.33
33.88	47.64	V	-55.93	-5.52	0.93	-62.38	-13.00	-49.38
92.08	48.43	V	-54.50	-7.75	1.29	-63.54	-13.00	-50.54
1850.00	78.67	V	-25.72	9.90	5.56	-21.38	-13.00	-8.38
3702.50	53.53	V	-44.39	12.61	8.31	-40.09	-13.00	-27.09
5553.75	37.61	V	-53.22	13.23	10.33	-50.32	-13.00	-37.32
7405.00	---	V		11.50	12.09		-13.00	
9256.25	---	V		11.92	13.50		-13.00	
11107.50	---	V		11.67	15.12		-13.00	
12958.75	---	V		13.62	16.61		-13.00	
14810.00	---	V		12.79	17.96		-13.00	
16661.25	---	V		15.89	19.14		-13.00	
18512.50	---	V		18.75	10.62		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 PCS Mode

Operation Mode	: TX CH Low E1 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 1851.25MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	44.20	H	-61.70	-7.34	0.95	-69.99	-13.00	-56.99
41.64	41.24	H	-62.27	-2.31	0.93	-65.51	-13.00	-52.51
104.69	40.43	H	-62.08	-7.76	1.38	-71.22	-13.00	-58.22
1850.00	64.46	H	-39.72	9.90	5.56	-35.38	-13.00	-22.38
3702.50	50.74	H	-47.29	12.61	8.31	-43.00	-13.00	-30.00
5553.75	45.78	H	-45.26	13.23	10.33	-42.36	-13.00	-29.36
7405.00	---	H		11.50	12.09		-13.00	
9256.25	---	H		11.92	13.50		-13.00	
11107.50	---	H		11.67	15.12		-13.00	
12958.75	---	H		13.62	16.61		-13.00	
14810.00	---	H		12.79	17.96		-13.00	
16661.25	---	H		15.89	19.14		-13.00	
18512.50	---	H		18.75	10.62		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 PCS Mode

Operation Mode	: TX CH Mid E1 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 1880MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	49.92	V	-54.78	-7.34	0.95	-63.07	-13.00	-50.07
33.88	46.89	V	-56.68	-5.52	0.93	-63.13	-13.00	-50.13
92.08	47.84	V	-55.09	-7.75	1.29	-64.13	-13.00	-51.13
3760.00	58.37	V	-39.29	12.60	8.39	-35.07	-13.00	-22.07
5640.00	40.82	V	-49.76	13.36	10.41	-46.81	-13.00	-33.81
7520.00	43.26	V	-37.40	11.45	12.19	-38.14	-13.00	-25.14
9400.00	---	V		11.93	13.61		-13.00	
11280.00	---	V		11.92	15.27		-13.00	
13160.00	---	V		13.33	16.71		-13.00	
15040.00	---	V		13.76	18.15		-13.00	
16920.00	---	V		15.27	19.32		-13.00	
18800.00	---	V		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 PCS Mode

Operation Mode	: TX CH Mid E1 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 1880MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	42.96	H	-62.94	-7.34	0.95	-71.23	-13.00	-58.23
92.08	40.47	H	-63.12	-7.75	1.29	-72.16	-13.00	-59.16
104.69	39.96	H	-62.55	-7.76	1.38	-71.69	-13.00	-58.69
3760.00	53.66	H	-44.11	12.60	8.39	-39.90	-13.00	-26.90
5640.00	47.36	H	-43.39	13.36	10.41	-40.44	-13.00	-27.44
7520.00	40.94	H	-39.70	11.45	12.19	-40.45	-13.00	-27.45
9400.00	---	H		11.93	13.61		-13.00	
11280.00	---	H		11.92	15.27		-13.00	
13160.00	---	H		13.33	16.71		-13.00	
15040.00	---	H		13.76	18.15		-13.00	
16920.00	---	H		15.27	19.32		-13.00	
18800.00	---	H		18.68	16.58		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 PCS Mode

Operation Mode	: TX CH High E1 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 1908.75MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Ver
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	47.31	V	-57.39	-7.34	0.95	-65.68	-13.00	-52.68
92.08	47.58	V	-55.35	-7.75	1.29	-64.39	-13.00	-51.39
1910.00	80.79	V	-23.54	10.08	5.66	-19.12	-13.00	-6.12
3817.50	60.13	V	-37.27	12.60	8.47	-33.14	-13.00	-20.14
5494.00	41.40	V	-49.60	13.14	10.27	-46.73	-13.00	-33.73
5726.25	40.37	V	-49.95	13.49	10.50	-46.96	-13.00	-33.96
7635.00	---	V		11.41	12.27		-13.00	
9543.75	---	V		11.95	13.73		-13.00	
11452.50	---	V		12.16	15.43		-13.00	
13361.25	---	V		12.99	16.82		-13.00	
15270.00	---	V		14.95	18.28		-13.00	
17178.75	---	V		14.50	19.51		-13.00	
19087.50	---	V		18.65	20.77		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: CDMA 2000 PCS Mode

Operation Mode	: TX CH High E1 Mode	Test Date:	Sep. 11, 2009
Fundamental Frequency	: 1908.75MHz	Test By:	Jason
Temperature	: 25℃	Pol:	Hor
Humidity	: 65%		

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out-put (dBm)	Antenna Gain (dB/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
30.00	43.13	H	-62.77	-7.34	0.95	-71.06	-13.00	-58.06
96.93	40.28	H	-62.95	-7.76	1.33	-72.04	-13.00	-59.04
1910.00	70.03	H	-34.08	10.08	5.66	-29.66	-13.00	-16.66
3817.50	55.68	H	-41.83	12.60	8.47	-37.70	-13.00	-24.70
5726.25	43.11	H	-47.35	13.49	10.50	-44.36	-13.00	-31.36
7635.00	38.05	H	-42.38	11.41	12.27	-43.25	-13.00	-30.25
9543.75	---	H		11.95	13.73		-13.00	
11452.50	---	H		12.16	15.43		-13.00	
13361.25	---	H		12.99	16.82		-13.00	
15270.00	---	H		14.95	18.28		-13.00	
17178.75	---	H		14.50	19.51		-13.00	
19087.50	---	H		18.65	20.77		-13.00	

Measurement uncertainty	30MHz - 80MHz: 5.04dB
	80MHz -1000MHz: 3.76dB
	1GHz - 13GHz: 4.45dB

Remark:

1 The emission behaviors belong to narrowband spurious emission.

2 Remark"---" means that the emission level is too low to be measured

3 The result basic equation calculation is as follows:

4 ERP/EIRP (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

10. FREQUENCY STABILITY

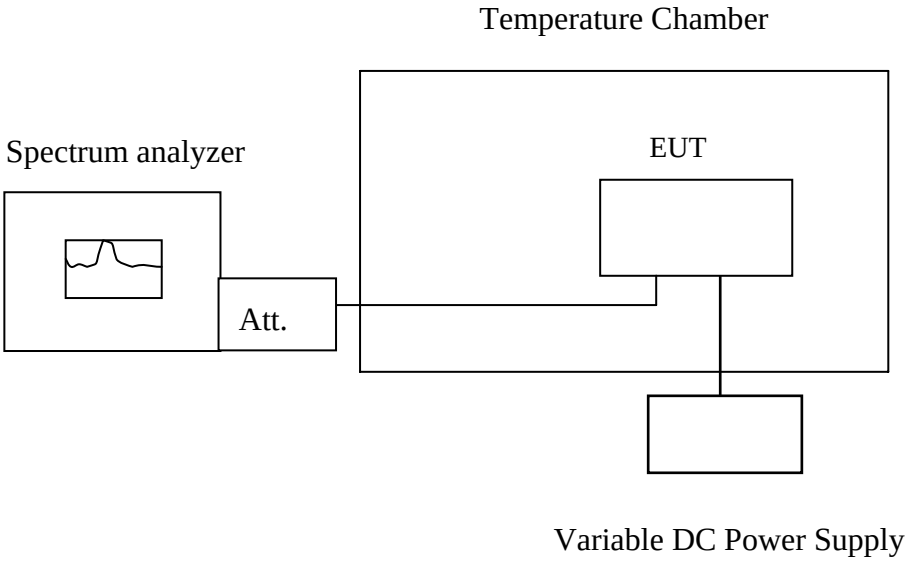
10.1. Standard Applicable:

According to FCC §2.1055(a) (1)

Frequency Tolerance: +/-2.5ppm for 850MHz band
+/-2.5ppm for 1900MHz band

§27.54: The frequency stability shall be sufficient to ensure that the fundamental emissions stay within the authorized bands of operation.

10.2. Test Set-up:



10.3. Measurement Procedure:

As the test setup indicates, the Castra module was placed inside the temperature chamber. Transmitting frequency error was measured at 20 degrees C with DC voltage varying from 3.3 volts to 4.2 volts, and then set the temperature to -30 degrees C and allow it to stabilize. After 1 hour soak time, the transmitting frequency error measurement was recorded at -30 degrees. The process was repeated at an incremental of 10 degrees C until +60 degrees C is completed. Testing was completed using the Agilent 8960 for CDMA 1x.

10.4. Measurement Equipment Used:

Model	Manufacturer	Description	S/N	Cal Data	Cal Due Date
8960 Series 10 E5515C	Agilent	Wireless Communication Set	K119302	09/15/2008	09/15/2009
E4440A PSA Series	Agilent	Spectrum Analyzer	K159342	09/15/2008	09/15/2009
Model 105	TestEquity	Temperature Chamber	K162535	08/04/2008	08/04/2009
8541C	Gigatronics	Power Meter	X07077	06/23/2008	06/23/2009
80601A	Gigatronics	Power Meter Sensor	K60750	02/12/2009	02/12/2010

10.5. Measurement Result:

Operation Mode:	CDMA 1x	**Channel:**	384
Tx Frequency:	836.49MHz	**Voltage:**	3.8v (3.3v ~ 4.2v)
Limit:	±2.5ppm (±2091Hz)		

Carrier Frequency Reference at 25 Degrees C: 836489931 Hz

	variation from carrier frequency reference (Hz)						specification	
temp (C)	3.3V	3.4V	3.6V	3.8V	4.0V	4.2V	lower limit	upper limit
-30	-61	-50	-22	-30	1	35	-2091	2091
-20	-53	-33	-24	-34	-9	-14	-2091	2091
-10	-95	-80	-77	-74	-61	-51	-2091	2091
0	-112	-120	-29	-12	-52	-112	-2091	2091
10	-39	-26	-16	-12	14	-11	-2091	2091
20	39	30	24	9	14	5	-2091	2091
30	89	50	52	26	19	11	-2091	2091
40	-29	-48	-55	-81	-66	-87	-2091	2091
50	-7	-2	2	43	0	15	-2091	2091
60	140	163	166	240	140	35	-2091	2091

Operation Mode:	CDMA 1x PCS	**Channel:**	600
Tx Frequency:	1880MHz	**Voltage:**	3.8v (3.3v ~ 4.2v)
Limit:	±2.5ppm (±4700Hz)		

Carrier Frequency Reference at 25 Degrees C: 1879999871 Hz

	variation from carrier frequency reference (Hz)						specification	
temp (C)	3.3V	3.4V	3.6V	3.8V	4.0V	4.2V	lower limit	upper limit
-30	102	258	128	192	208	268	-4700	4700
-20	122	137	208	203	253	170	-4700	4700
-10	13	68	53	57	45	153	-4700	4700
0	167	-209	-115	-40	128	112	-4700	4700
10	-67	92	203	83	148	123	-4700	4700
20	172	-62	-113	-77	-82	-112	-4700	4700
30	92	62	50	37	8	-8	-4700	4700
40	-82	-62	-85	-75	-150	-112	-4700	4700
50	-45	77	-73	-62	23	124	-4700	4700
60	412	476	393	520	580	600	-4700	4700