

ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

Product Name: CDMA TSI11

Brand Name: N/A

Model Name: TSI11

Model Difference: N/A

FCC ID: YUW-TSI11

Report No.: EH/2011/60012

Issue Date: Jul. 06, 2011

FCC Rule Part: 2, 22H & 24E

Prepared for: Fujitsu Toshiba Mobile Communications
Limited
1-1, Kamiodanaka 4, Nakahara, Kawasaki,
211-8588, JAPAN

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: Fujitsu Toshiba Mobile Communications Limited
1-1, Kamiodanaka 4, Nakahara, Kawasaki, 211-8588, JAPAN

Product Name: CDMA TSI11

Brand Name: N/A

Model No.: TSI11

Model Difference: N/A

FCC ID: YUW-TSI11

File Number: EH/2011/60012

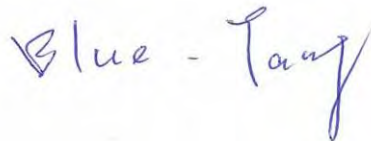
Date of test: Jun. 09, 2011 ~ Jul. 06, 2011

Date of EUT Received: Jun. 09, 2011

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:**

Jul. 06, 2011

*Blue Yang / Engineer***Prepared By:****Date:**

Jul. 06, 2011

*Cherry Chen / Clerk***Approved By:****Date:**

Jul. 06, 2011

Jim Chang / Supervisor

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Version

Version No.	Date	Description
00	Jul. 06, 2011	Initial creation of document

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1. GENERAL PRODUCT INFORMATION

General:

Product Name	CDMA TSI11		
Brand Name	N/A		
Model Name	TSI11		
Model Difference	N/A		
Power Supply	3.9 Vdc from re-chargeable battery		
	Battery:	Model No.: 1UF42426F-TB, Supplier: SANYO	

GSM:

Cellular Phone Standards Frequency Range and Power:	Operating Frequency		Rated Power
	GSM / GPRS 1900, Class 12	1850MHz – 1910MHz	30 dBm
Hardware Version:	CS1.0		
Software Version:	6002.0102.0061		
Type of Emission:	GSM 1900: 242KGXW GPRS 1900 :245KGXW		
IMEI:	356625040007570		

CDMA:

DUT Standards Frequency Range and Power:	Operating Frequency			Rated Maximum ERP/EIRP Power
	CDMA2000, Cellular	TX:	824.70-848.31 MHz	26.63 dBm
		RX:	869.70-893.31 MHz	
Type of Emission:	CDMA2000 Cellular: 1M27F9W			
Antenna Type:	1/4 lambda, 1.6dBi			

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Final Amplifier Voltage and Current Information:

Test Mode	DC voltage (V)	DC current (mA)
GSM 1900	3.9 Vdc	450
GPRS 1900	3.9 Vdc	428
CDMA 850	3.9 Vdc	734

This test report applies for GPRS1900, CDMA2000 Cellular bands.

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

This submittal(s) (test report) is intended for **FCC ID: YUW-TSI11** 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 of TIA/EIA 603C and FCC CFR 47.1046, 2.1047, 2.1049, 2.1051, 2.1053, 2.1055 and 2.1057.

The Output power Procedure of KDB941225 (SAR Measurement Procedures for 3G devices, WCDMA / HSDPA) was used for EUT and Base station setting.

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-4

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.

All equipment is calibrated externally and traceable to SI (International System of Unit).

1.4. Special Accessories

Not available for this EUT intended for grant.

1.5. Equipment Modifications

Not available for this EUT intended for grant.

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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):

The EUT is placed on as turn table which is 80 cm 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 and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made “while keeping the antenna in the ‘cone of radiation’ from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response.” is still within the 3dB illumination BW of the measurement antenna according to the requirements in Section 2 of TIA/EIA 603C.

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2.4. Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/19/2010	04/18/2012
Spectrum Analyzer	Agilent	E4440A	US41160416	01/23/2010	01/22/2012
Radio Communication Analyzer	R&S	CMU200	102189	05/13/2010	05/13/2012
800 – 1000MHz Filter	Micro-Tronics	BRM13462	001	01/05/2011	01/04/2012
1800 – 2000MHz Filter	Micro-Tronics	BRM13463	001	01/05/2011	01/04/2012
Temperature Chamber	TERCHY	MHG-120LF	911009	04/14/2010	04/13/2012
Temperature Chamber	GIANT FORCE	GTH-150-40-CP-AR	MAA0512-018	02/05/2010	02/04/2012
DC Block	Agilent	BLK-18	155452	07/05/2011	07/04/2012
Attenuator	Mini-Circuit	BW-S20W5	N/A	07/05/2011	07/04/2012
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2011	07/04/2012
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2011	07/04/2012
Splitter	Agilent	11636B	N/A	07/05/2011	07/04/2012
DC Power Supply	HP	6038A	2929A-07548	06/27/2011	06/26/2012
DC Power Supply	Topward	3303D	981327	10/25/2010	10/26/2012
Power Meter	Anritsu	ML2495A	1005007	02/17/2010	02/16/2012

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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	02/12/2010	02/11/2012
Bilog Antenna	SCHWAZBECK	VULB9160	9160-3136	11/15/2009	11/14/2011
Dipole Antenna	SCHWAZBECK	VHAP	908/909	07/10/2010	07/09/2012
Dipole Antenna	SCHWAZBECK	UHAP	891/892	07/10/2010	07/09/2012
Hor.n antenna	SCHWAZBECK	BBHA 9120D	309	01/22/2010	01/21/2012
Horn antenna	SCHWAZBECK	BBHA 9120D	9120D-673	05/09/2010	05/08/2012
Signal Generator	R&S	SMR40	100210	01/22/2010	01/21/2012
Signal Generator	Agilent	E4438C	MY45093613	06/11/2011	06/10/2012
Pre-Amplifier	Agilent	8447D	1937A02834	01/05/2011	01/04/2012
Pre-Amplifier	Agilent	8449B	3008A01973	01/05/2011	01/04/2012
Attenuator	Mini-Circuit	BW-S20W5	001	07/05/2010	07/04/2012
Attenuator	Mini-Circuit	BW-S10W5	001	07/05/2011	07/04/2012
Attenuator	Mini-Circuit	BW-S6W5	001	07/05/2011	07/04/2012
Radio Communication Analyzer	R&S	CMU200	102189	05/13/2010	05/12/2012
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	01/05/2011	01/04/2012
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	01/05/2011	01/04/2012
3m Site	SGS	966 chamber	N/A	11/09/2010	11/08/2011

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2.5. Configuration of Tested System

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

EUT

Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1.	N/A					

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3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a)	RF 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

Max ERP/EIRP measurement result:

	dBm		W
GSM 1900 Band	21.12	EIRP	0.129
GPRS 1900 Band	21.67	EIRP	0.147
CDMA 850 Band	25.76	ERP	0.377

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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 GSM/GPRS and CDMA Cellular Band E1 position were reported and GPRS will be choose for worst case.

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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(c) Peak Power Measurement

3GPP Power limitation for HSDPA and HSUPA

Maximum Output Powers for HSDPA

Sub-test in table C.10.1.4	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-3.7	+21	+2.7/-2.7
2	+24	+1.7/-3.7	+21	+2.7/-2.7
3	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7
4	+23.5	+2.2/-3.7	+20.5	+3.2/-2.7

Maximum Output Powers for HSUPA

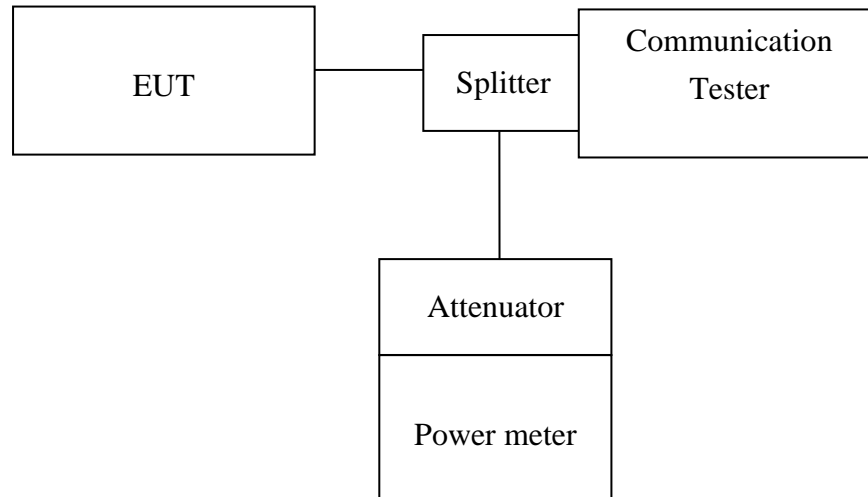
Sub-test in table C.11.1.3	Power Class 3		Power Class 4	
	Power (dBm)	Tol (dB)	Power (dBm)	Tol (dB)
1	+24	+1.7/-6.7	+21	+2.7/-5.7
2	+22	+3.7/-5.2	+19	+4.7/-4.2
3	+23	+2.7/-5.2	+20	+3.7/-4.2
4	+22	+3.7/-5.2	+19	+4.7/-4.2
5	+24	+1.7/-6.7	+21	+2.7/-5.7

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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 attenuator to the power meter reading. The Procedure of KDB941225(SAR Measurement Procedures for 3G devices, WCDMA/HSDPA) was used for EUT and Base station setting.RMC 12.2kps is used for this testing

5.4 Measurement Equipment Used:

Refer to section 2.4 in this report

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5.5 Measurement Result:**5.1 RF Conducted Output Power****5.1.1.: GPRS (GMSK)****Result:**

EUT Mode	Frequency (MHz)	CH	Peak Power (dBm)	Average Power (dBm)
GSM 1900 (Class 12)	1850.2	512	29.80	29.70
	1880.0	661	29.40	29.30
	1909.8	810	29.30	29.10

EUT Mode	Frequency (MHz)	CH	Peak Power (1TS) (dBm)	Peak Power (2TS) (dBm)	Peak Power (3TS) (dBm)	Peak Power (4TS) (dBm)
GPRS 1900 (Class 12)	1850.2	512	29.40	27.80	26.30	25.30
	1880.0	661	29.30	27.70	26.00	25.40
	1909.8	810	29.40	27.60	26.10	24.90

EUT Mode	Frequency (MHz)	CH	Average Power (1TS) (dBm)	Average Power (2TS) (dBm)	Average Power (3TS) (dBm)	Average Power (4TS) (dBm)
GPRS 1900 (Class 12)	1850.2	512	29.30	27.60	26.10	25.10
	1880.0	661	29.20	27.60	25.80	25.20
	1909.8	810	29.20	27.50	26.00	24.70

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5.5.1.2.:CDMA Cellular mode**Results: N/A**

EUT Mode	Frequency (MHz)	CH	Avg. Power (dBm)	Peak Power (dBm)
CDMA 2000 Cellular	824.70	1013	25.15	25.10
	836.52	384	25.87	25.43
	848.31	777	25.39	24.77

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5.5.2 Maximum Power Reduction: GPRS1900 band

PCL	0	1	2	3	4	5	6	7	8
Output power (dBm)	29.3	29.3	29.3	29.3	28.2	26.0	24.2	22.1	19.9
PCL	9	10	11	12	13	14	15		
Output power (dBm)	17.9	16.7	14.5	12.3	10.9	9.0	6.9		

Note: The EUT output power was controlled by simulator. Set Communication Tester CMU200 PCL as above, and get the mobile phone output power reading.

The EUT output power was controlled by simulator. Set Communication Tester CMU200 function key “UE Power Control” and enter max rated power 24dBm. The EUT is going to be set to max output power to 24dBm. then record the read(see page 19 for measurement data) . The min. power was measures by a function key “minimum power” then record the read. It is -52.5dBm. The power variation can be 0.1dB step by setting.

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6. ERP, EIRP MEASUREMENT

6.1. Standard Applicable:

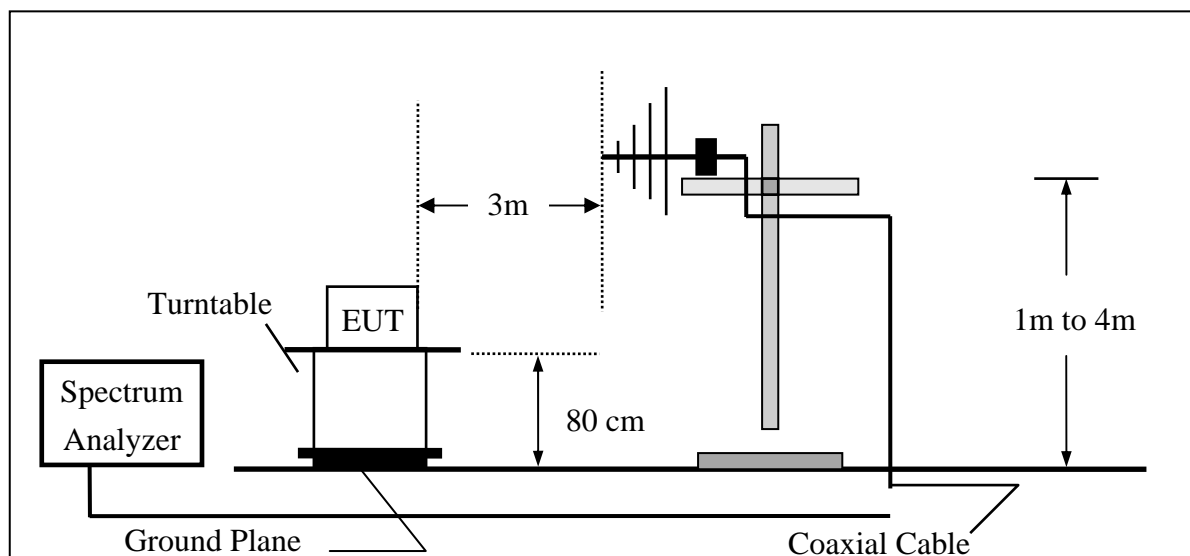
According to FCC §2.1046

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



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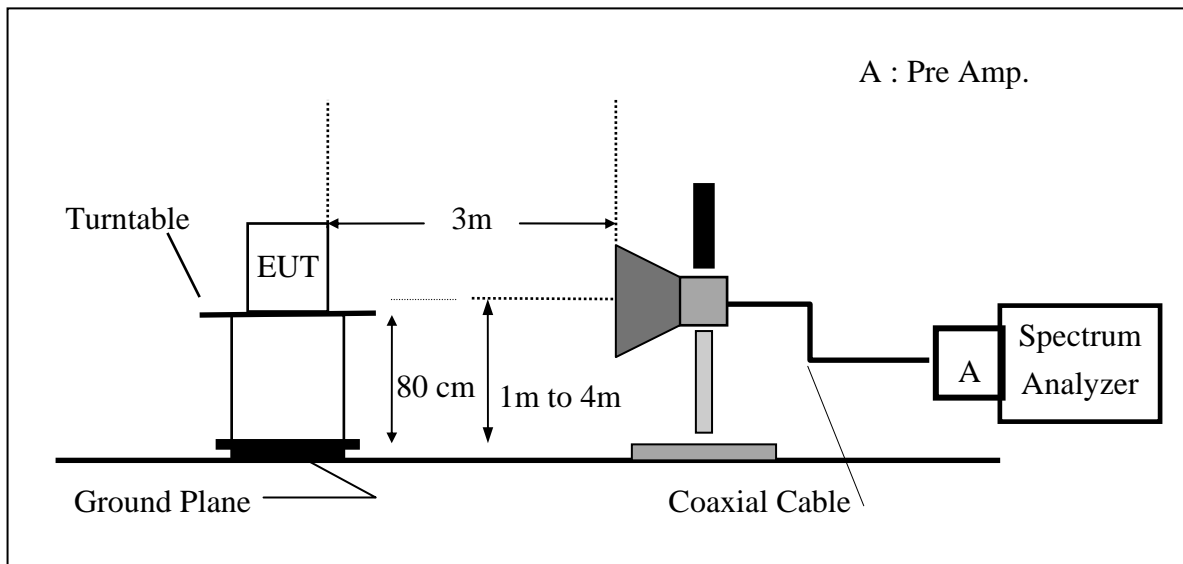
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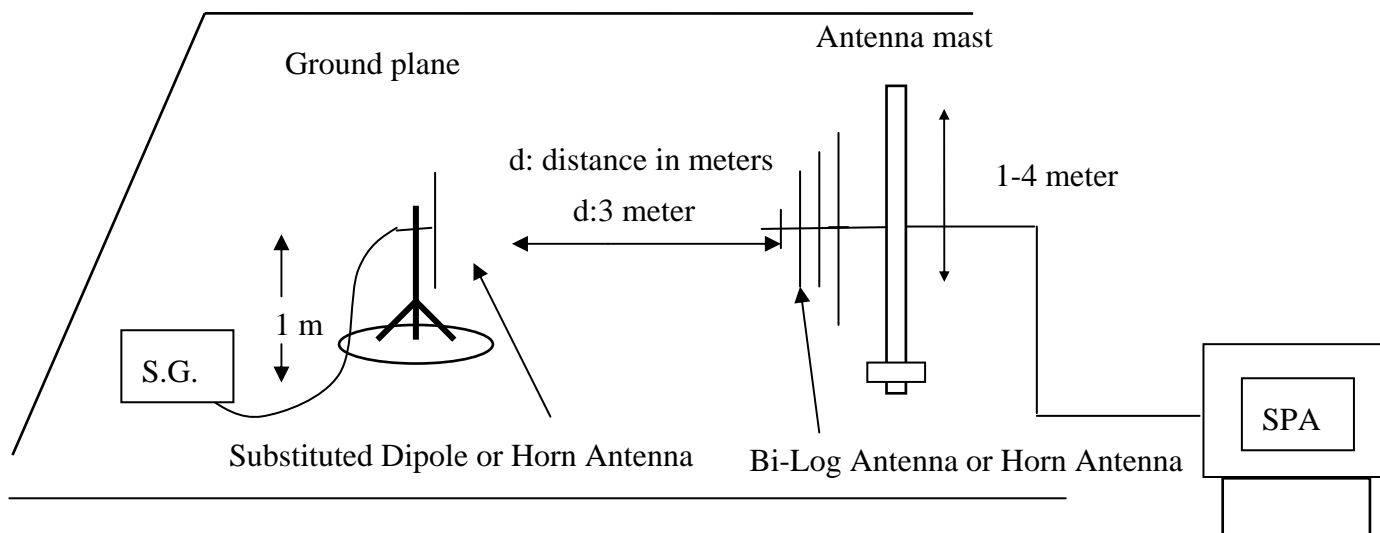
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(B) Radiated Emission Test Set-UP Frequency Over 1 GHz



(C) Substituted Method Test Set-UP



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6.3. Measurement Procedure:

The EUT was placed on a 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 in 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 824.2 –848.80MHz were measured using a substitution method. The EUT was replaced by a dipole antenna connected, the S.G. output was recorded and ERP was calculated as follows:

EIRP in frequency band 1850.2 –1909.8MHz 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:

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBd)} - \text{Cable Loss (dB)}$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$

6.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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6.5. 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)
GSM 1900	1850.20	512	H	V	117.25	12.86	9.90	5.56	17.20	33.00
				H	120.12	15.94	9.90	5.56	20.28	33.00
			E1	V	120.63	16.24	9.90	5.56	20.58	33.00
				H	112.47	8.29	9.90	5.56	12.63	33.00
			E2	V	107.72	3.33	9.90	5.56	7.67	33.00
				H	119.93	15.75	9.90	5.84	19.81	33.00
	1880.00	661	H	V	116.35	11.99	9.99	5.61	16.37	33.00
				H	120.35	16.21	9.99	5.61	20.58	33.00
			E1	V	120.52	16.16	9.99	5.61	20.54	33.00
				H	112.70	8.56	9.99	5.61	12.93	33.00
			E2	V	105.87	1.51	9.99	5.61	5.89	33.00
				H	119.79	15.65	9.99	5.61	20.02	33.00
	1909.80	810	H	V	116.75	12.42	10.08	5.66	16.84	33.00
				H	120.81	16.70	10.08	5.66	21.12	33.00
			E1	V	120.89	16.56	10.08	5.66	20.98	33.00
				H	113.11	9.00	10.08	5.66	13.42	33.00
			E2	V	107.07	2.74	10.08	5.66	7.16	33.00
				H	120.56	16.45	10.08	5.66	20.87	33.00

Remark :

- (1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz

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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)
PCS 1900	1850.20	512	H	V	114.23	9.84	9.90	5.56	14.18	33.00
				H	117.93	13.75	9.90	5.56	18.09	33.00
			E1	V	120.46	16.07	9.90	5.56	20.41	33.00
				H	112.96	8.78	9.90	5.56	13.12	33.00
			E2	V	109.75	5.36	9.90	5.56	9.70	33.00
				H	120.73	16.55	9.90	5.84	20.61	33.00
	1880.00	661	H	V	114.98	10.62	9.99	5.61	15.00	33.00
				H	119.37	15.23	9.99	5.61	19.60	33.00
			E1	V	121.31	16.95	9.99	5.61	21.33	33.00
				H	112.25	8.11	9.99	5.61	12.48	33.00
			E2	V	109.92	5.56	9.99	5.61	9.94	33.00
				H	121.07	16.93	9.99	5.61	21.30	33.00
	1909.80	810	H	V	115.48	11.15	10.08	5.66	15.57	33.00
				H	120.26	16.15	10.08	5.66	20.57	33.00
			E1	V	121.58	17.25	10.08	5.66	21.67	33.00
				H	113.58	9.47	10.08	5.66	13.89	33.00
			E2	V	109.15	4.82	10.08	5.66	9.24	33.00
				H	120.63	16.52	10.08	5.66	20.94	33.00

Remark :

(1) The RBW,VBW of SPA for frequency

RBW=300 KHz, VBW=1MHz

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Measurement Result:

EUT Mode	Frequency (MHz)	CH	EUT Pol.	Antenna Pol.	SPA Reading (dBuV)	S.G. Output (dBm)	Antenna Gain (dBd)	Cable Loss (dB)	ERP (dBm)	Limit (dBm)
CDMA2000 Cellular	824.70	1013	H	V	120.14	33.78	-7.88	3.63	22.27	38.45
				H	116.88	30.62	-7.88	3.63	19.12	38.45
			E1	V	117.95	31.59	-7.88	3.63	20.08	38.45
				H	121.86	35.60	-7.88	3.63	24.10	38.45
			E2	V	110.98	24.62	-7.88	3.63	13.11	38.45
				H	122.78	36.52	-7.88	3.63	25.02	38.45
	836.52	384	H	V	121.74	35.48	-7.88	3.65	23.95	38.45
				H	118.80	32.57	-7.88	3.65	21.04	38.45
			E1	V	119.34	33.08	-7.88	3.65	21.55	38.45
				H	122.61	36.38	-7.88	3.65	24.85	38.45
			E2	V	112.15	25.89	-7.88	3.65	14.36	38.45
				H	123.52	37.29	-7.88	3.65	25.76	38.45
	848.31	777	H	V	121.43	35.28	-7.88	3.67	23.73	38.45
				H	118.52	32.32	-7.88	3.67	20.77	38.45
			E1	V	118.97	32.81	-7.88	3.67	21.26	38.45
				H	121.80	35.60	-7.88	3.67	24.05	38.45
			E2	V	112.29	26.14	-7.88	3.67	14.59	38.45
				H	122.74	36.54	-7.88	3.67	24.99	38.45

Remark :

- (1) The RBW,VBW of SPA for frequency

RBW= 2MHz , VBW= 6MHz

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7. 99% OCCUPIED BANDWIDTH MEASUREMENT

7.1. Standard Applicable:

According to §FCC 2.1049.

7.2. Test Set-up:

Refer to section 5.2 in this report

7.3. Measurement Procedure:

The EUT's output RF connector was connected with a short cable to the spectrum analyzer, RBW (10/30KHz) was set to about 1% of emission BW, VBW= 3 times RBW(30/100KHz), -26dBc display line was placed on the screen (or 99% bandwidth), the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

7.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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7.5. Measurement Result:

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GSM 1900	1850.20	512	0.2422
	1880.00	661	0.2402
	1909.80	810	0.2408

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GPRS 1900	1850.20	512	0.2455
	1880.00	661	0.2456
	1909.80	810	0.2451

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
CDMA2000 Cellular	824.70	1013	1.2721
	836.52	384	1.2735
	848.31	777	1.2667

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Figure 7-1: GSM 1900 Channel Low

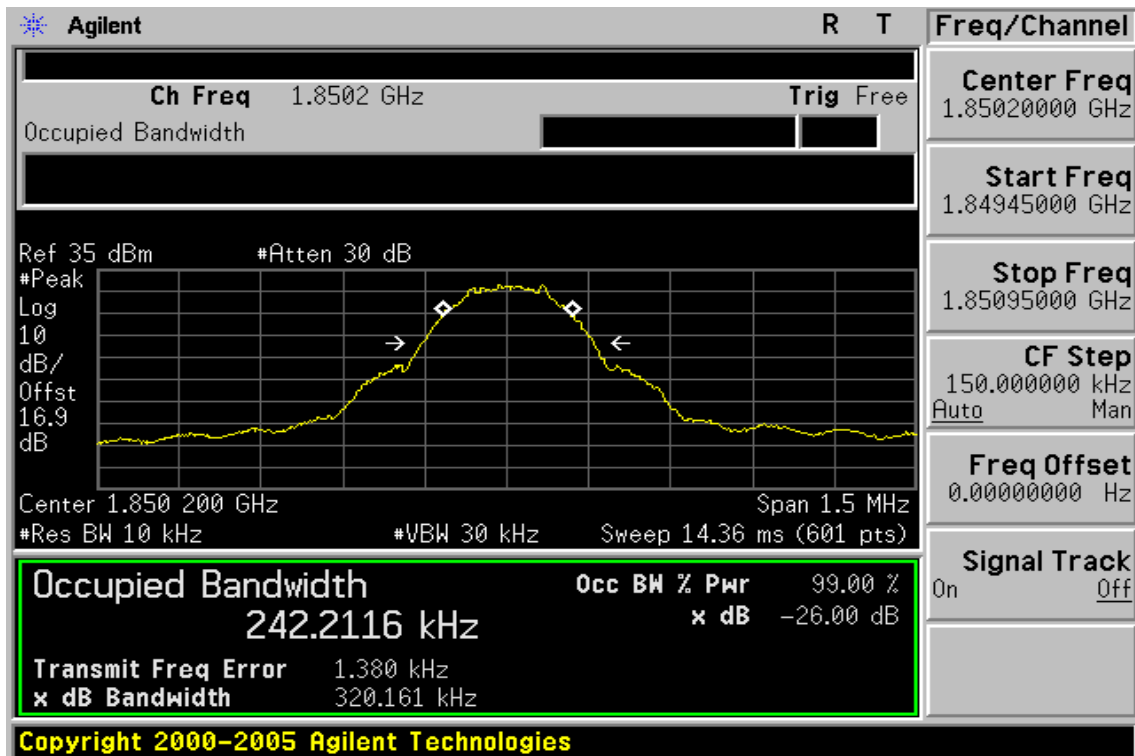
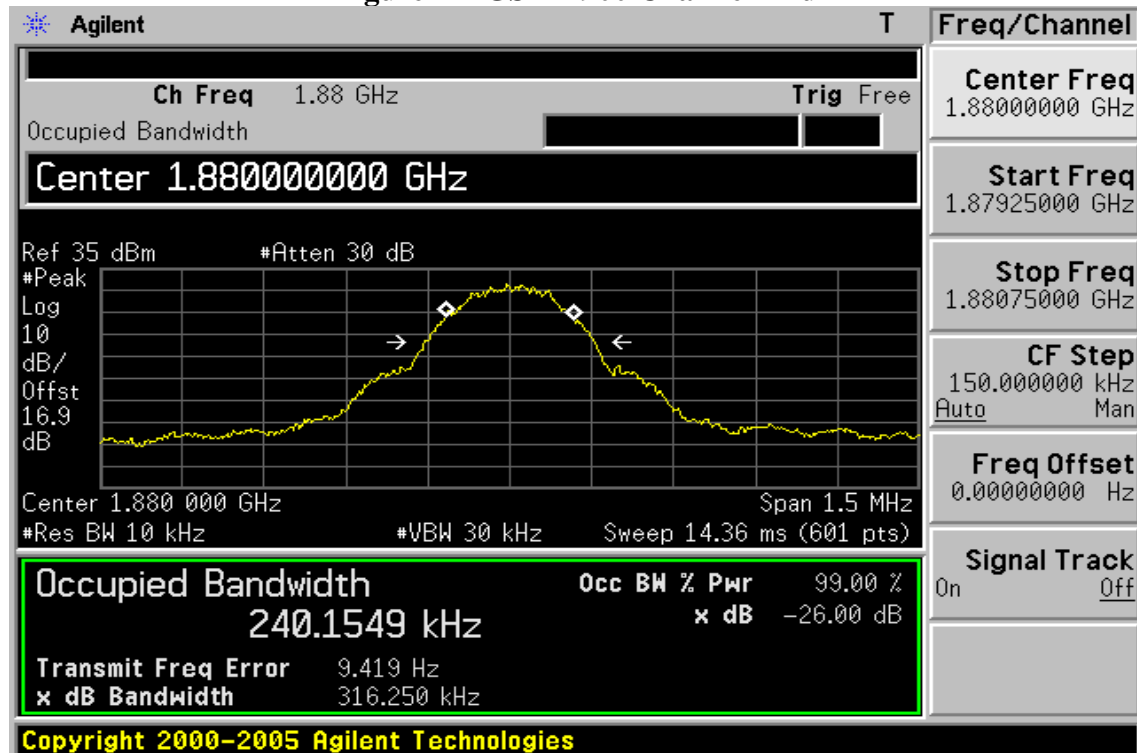


Figure 7-2 GSM 1900 Channel Mid



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GPRS Figure 7-3: GSM 1900 Channel High

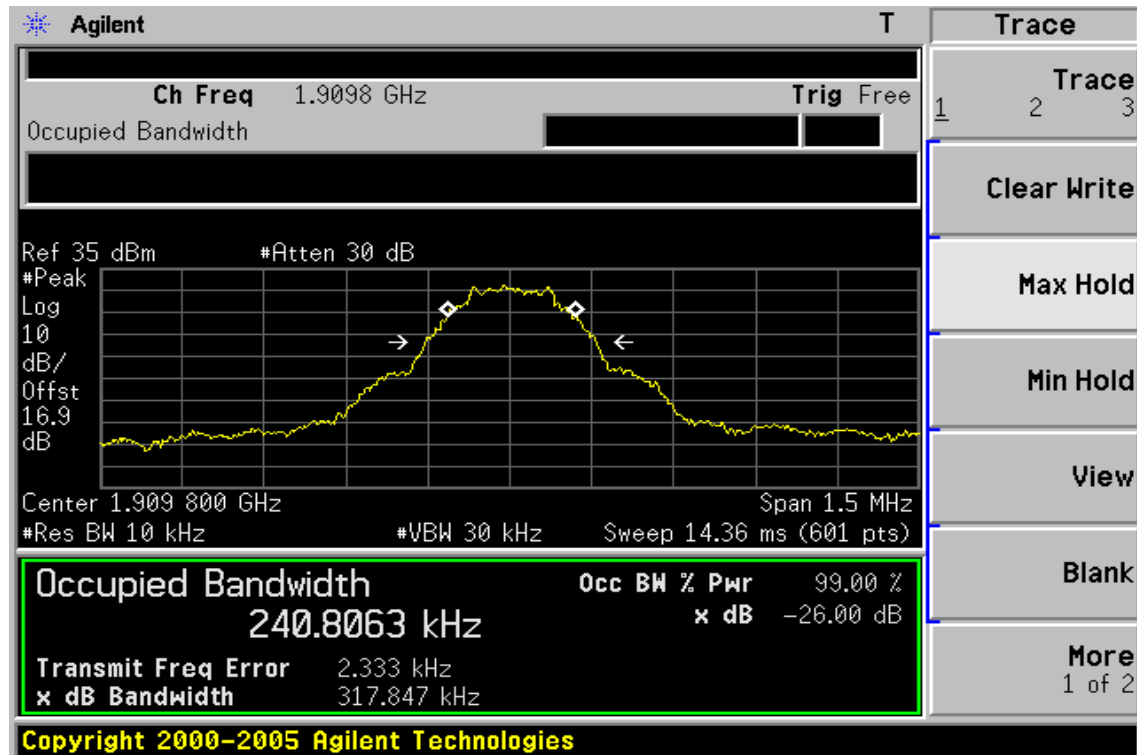
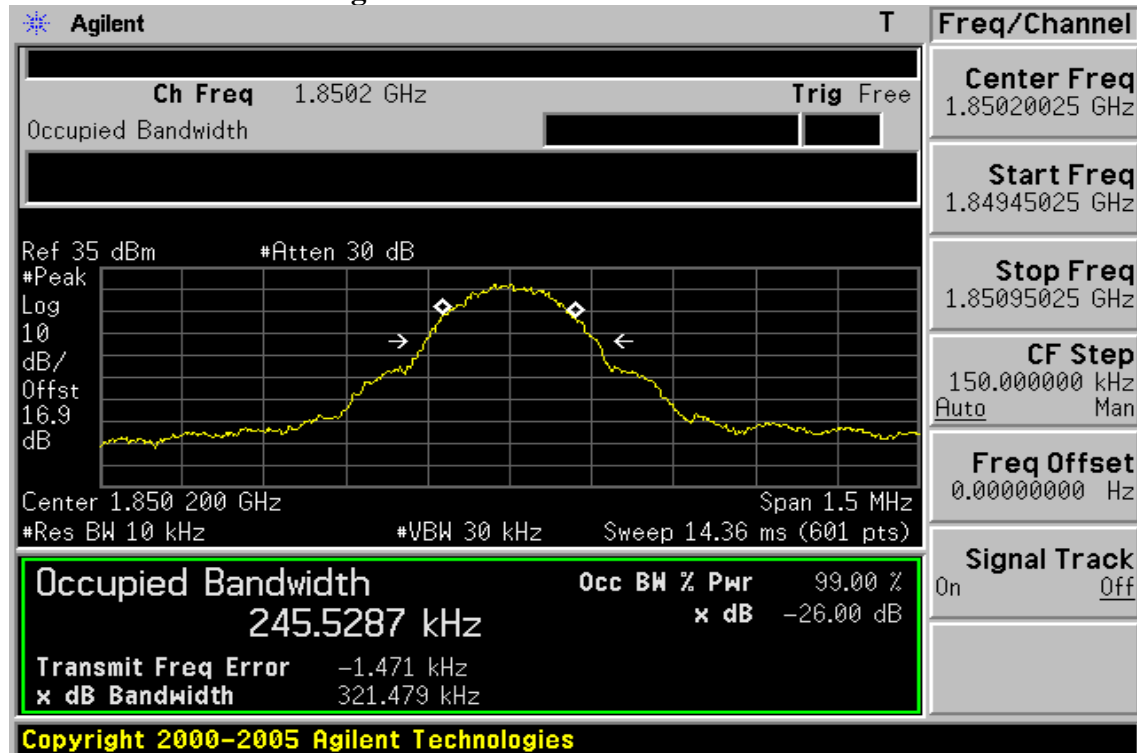


Figure 7-4: GPRS 1900 Channel Low



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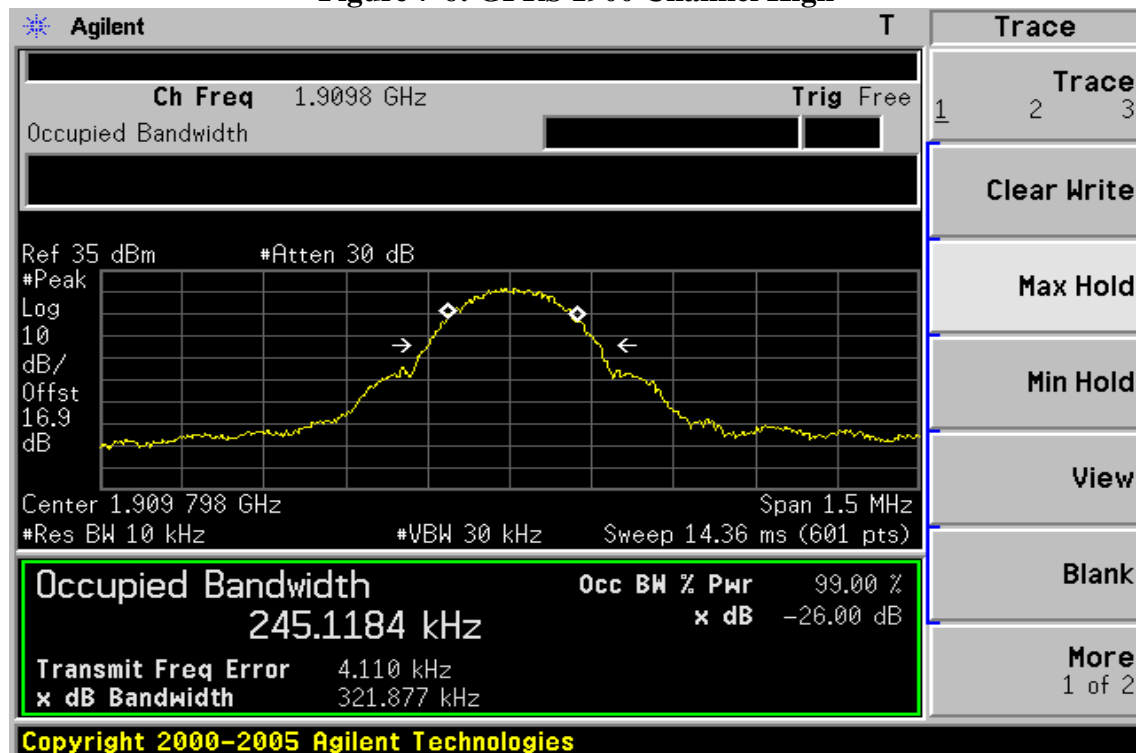
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Figure 7-5 GPRS 1900 Channel Mid



Figure 7-6: GPRS 1900 Channel High



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Figure 7-7: CDMA 850 Channel Low

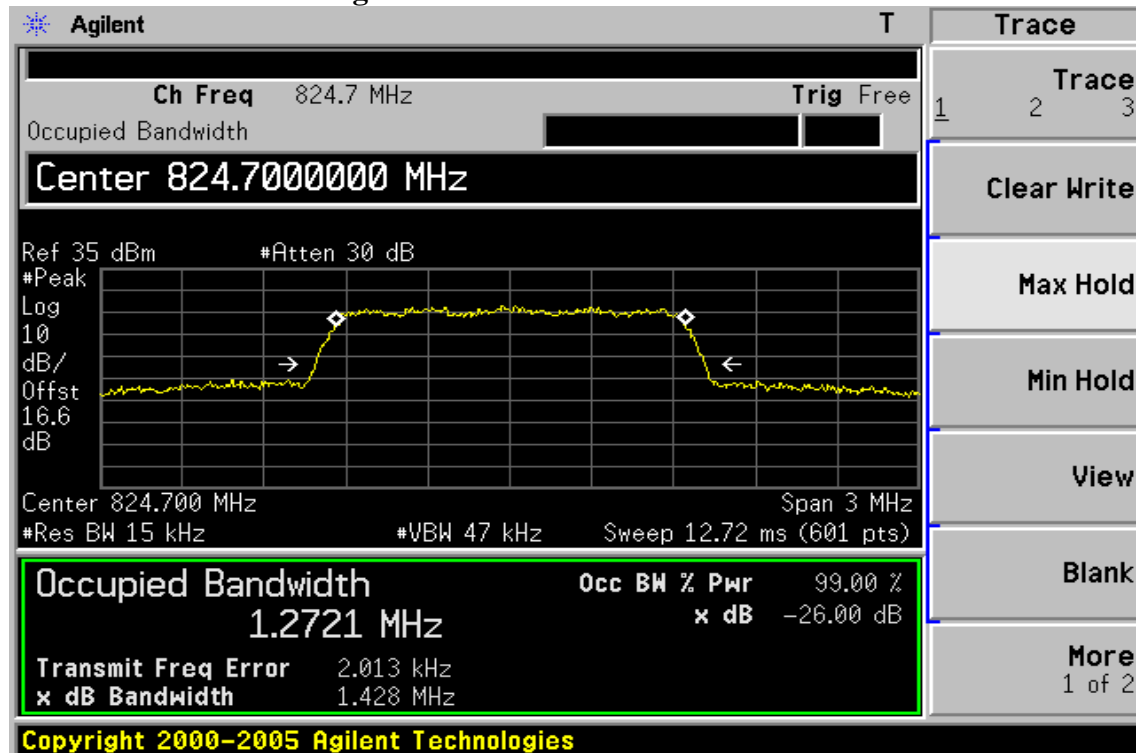
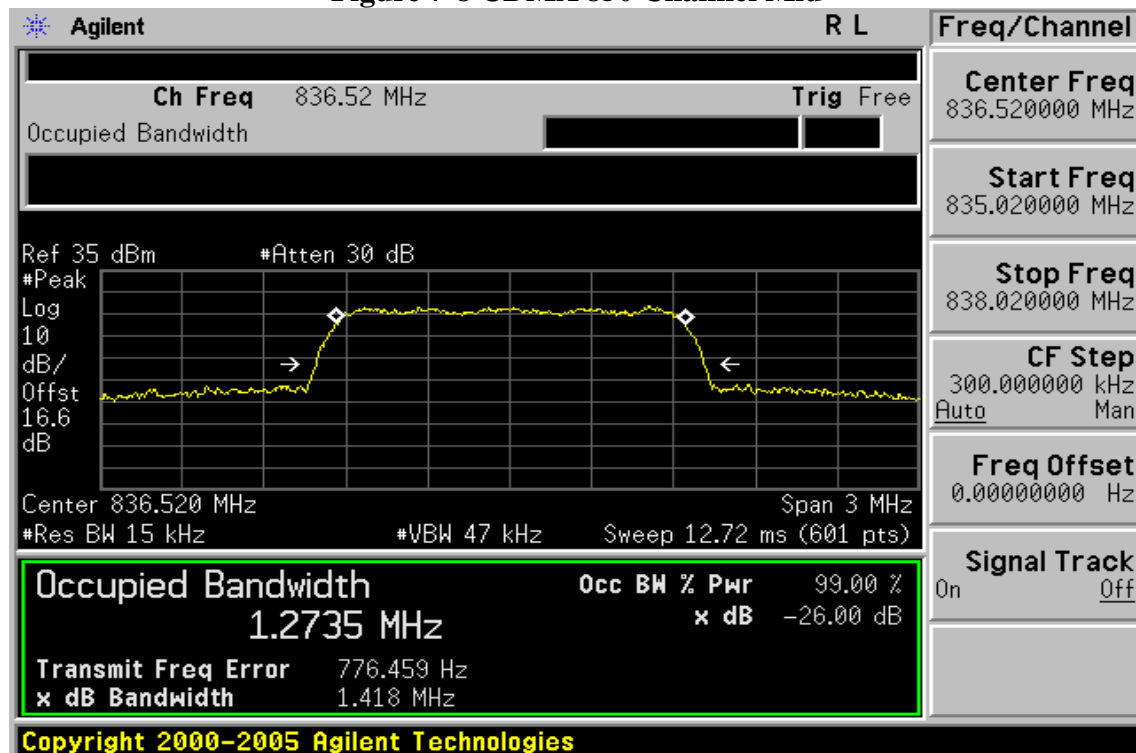


Figure 7-8 CDMA 850 Channel Mid

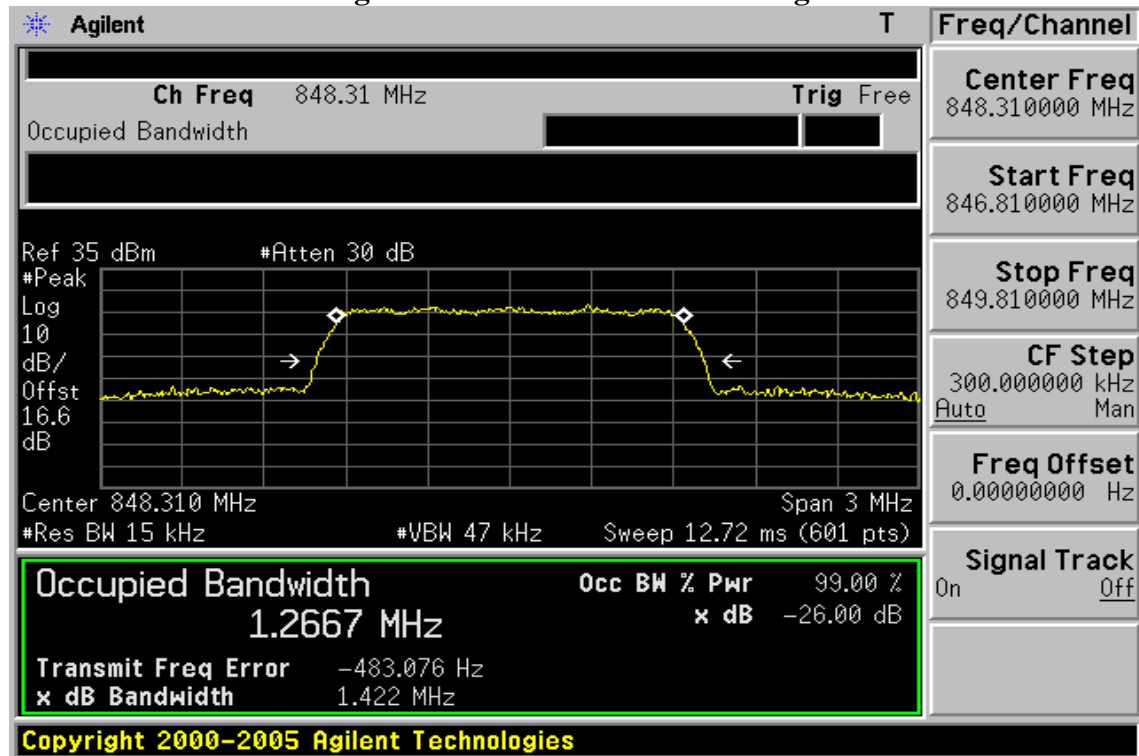


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Figure 7-9 CDMA 850 Channel High



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8. OUT OF BAND EMISSION AT ANTENNA TERMINALS

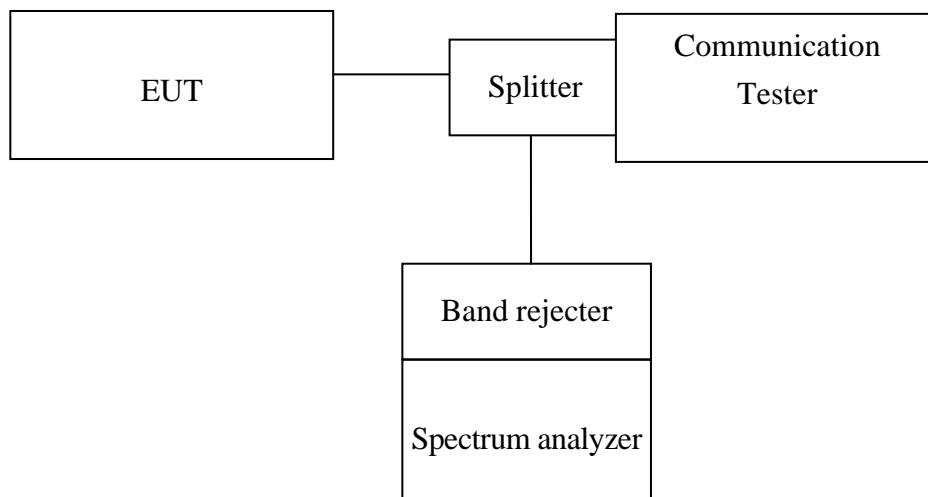
8.1. Standard Applicable:

According to FCC §2.1051.

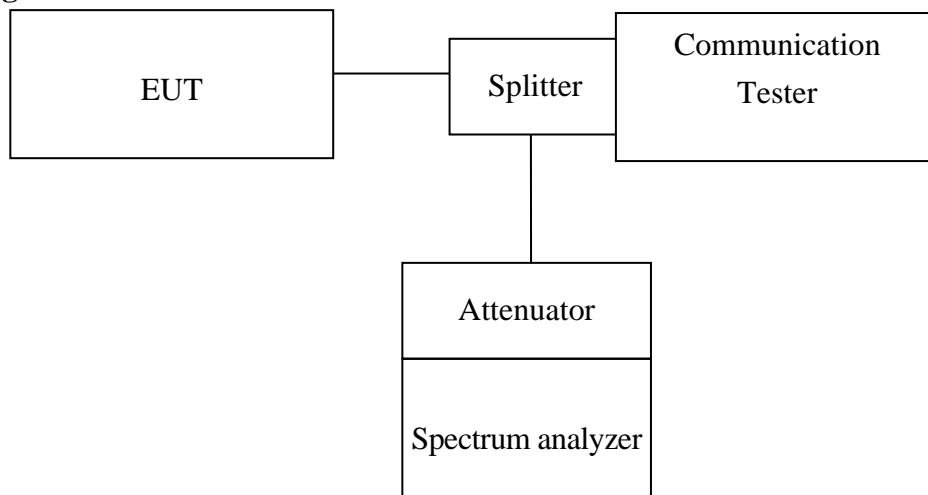
FCC §22.917(a), §24.238(a) the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than $43 + 10 \log$ (mean output power in watts) dBc below the mean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

8.2. Test SET-UP:

Out of band emission



Band Edge



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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 = 1MHz, Start=30MHz, Stop= 10th harmonic. Limit = -13dBm

Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission 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

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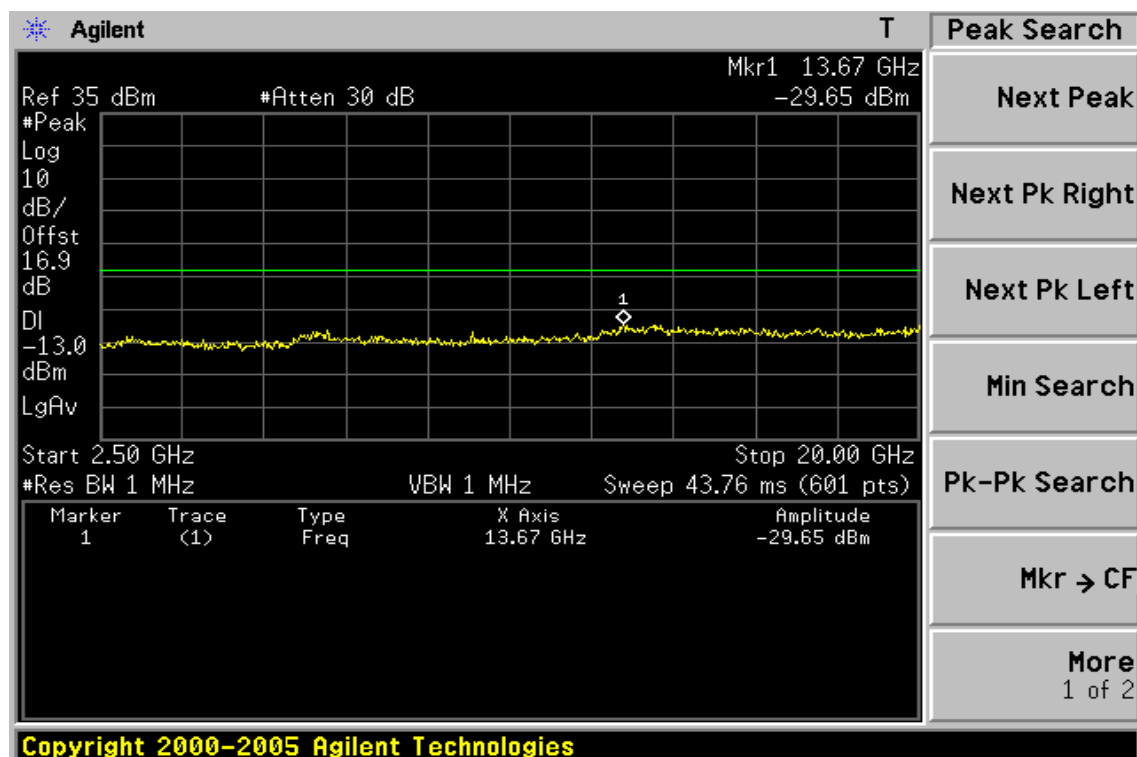
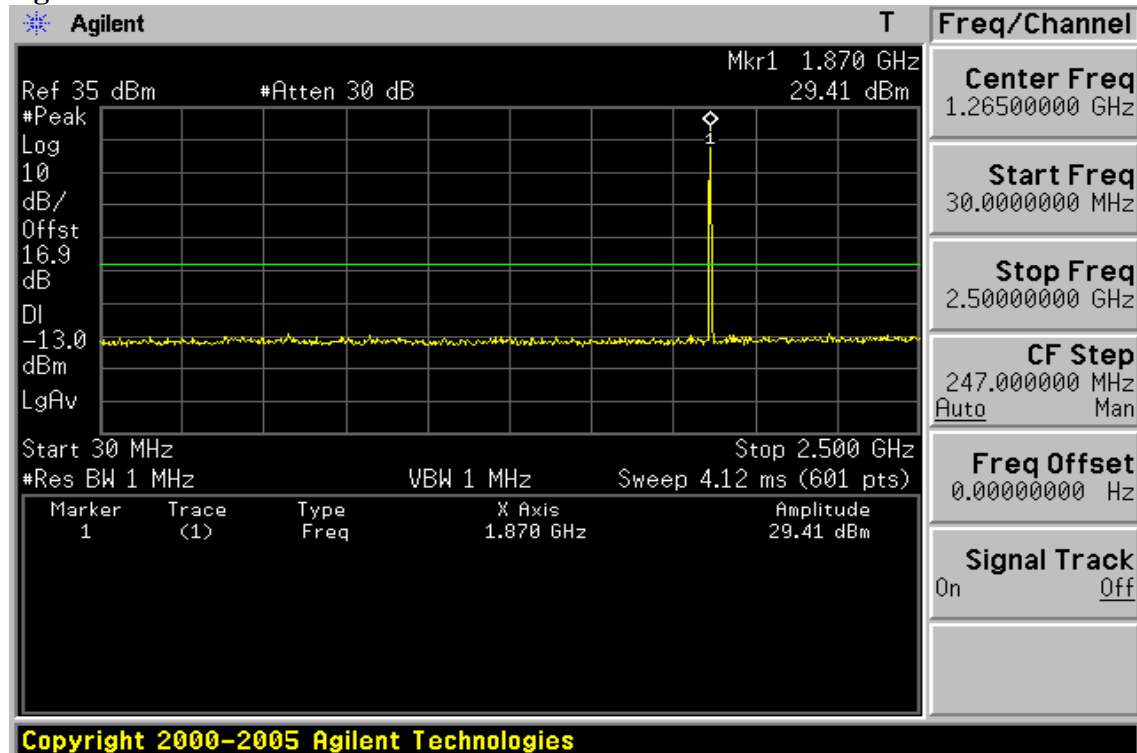
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8.5. Measurement Result:

Figure 8-1: Out of Band emission at antenna terminals– GSM 1900 Channel Lowest

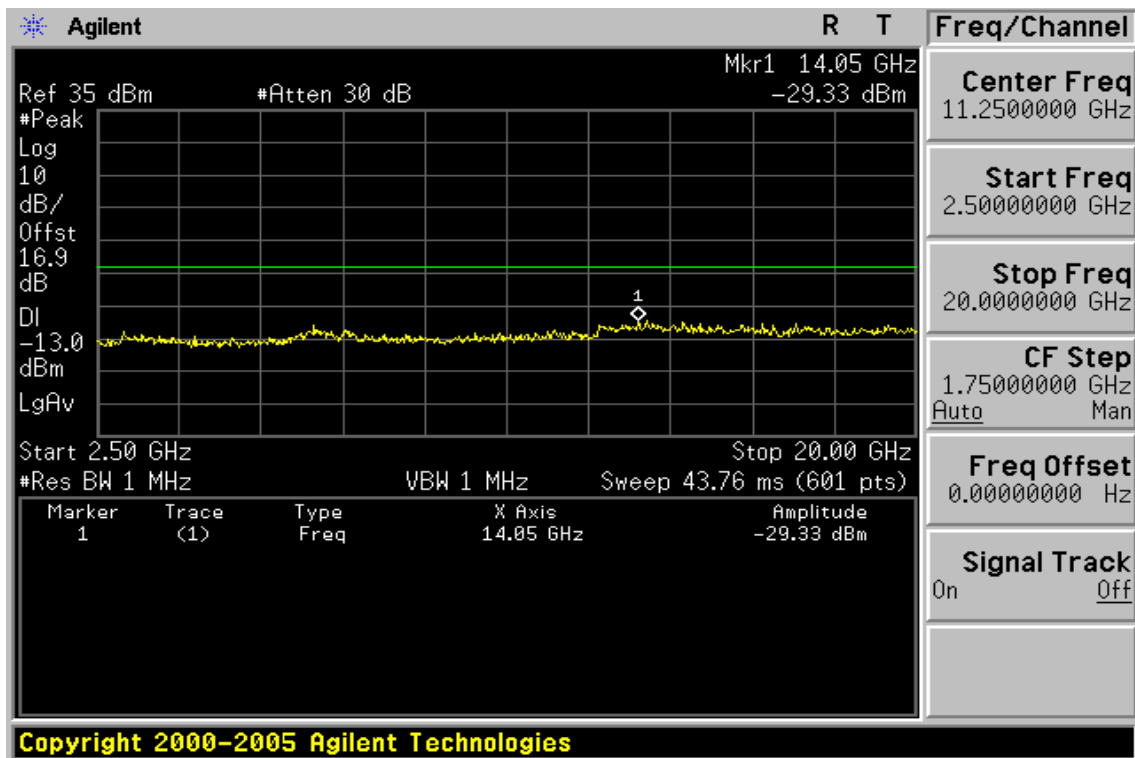
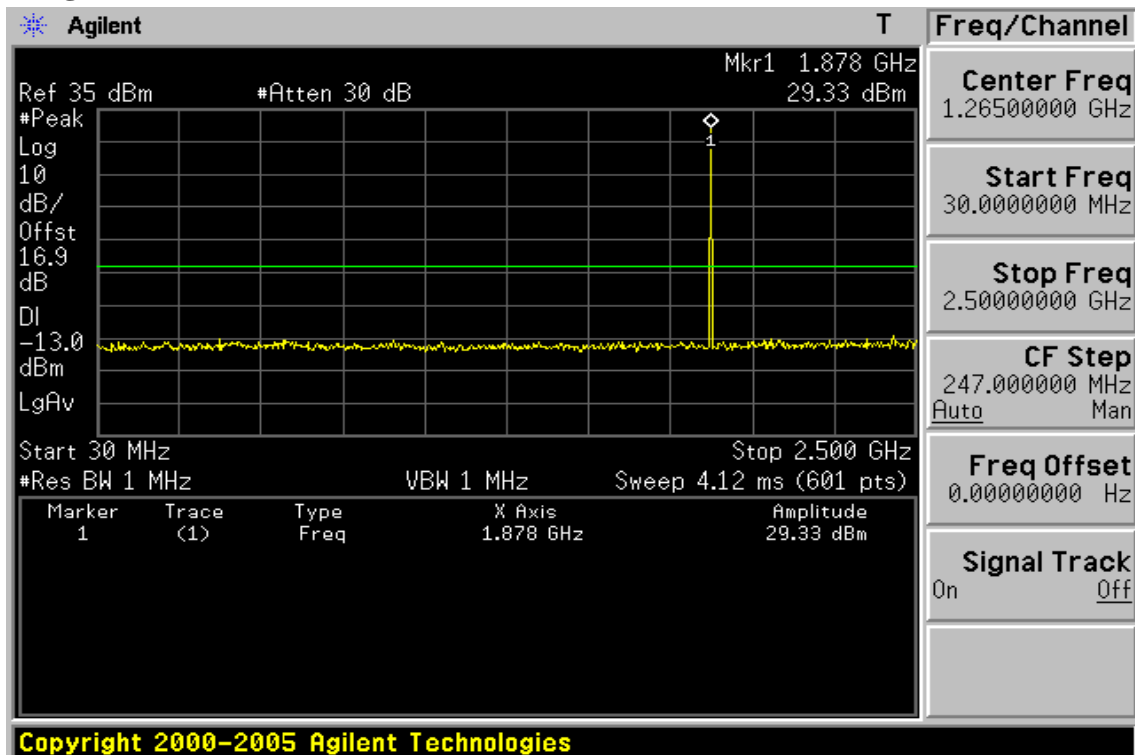


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Figure 8-2: Out of Band emission at antenna terminals –GSM 1900 Channel Mid

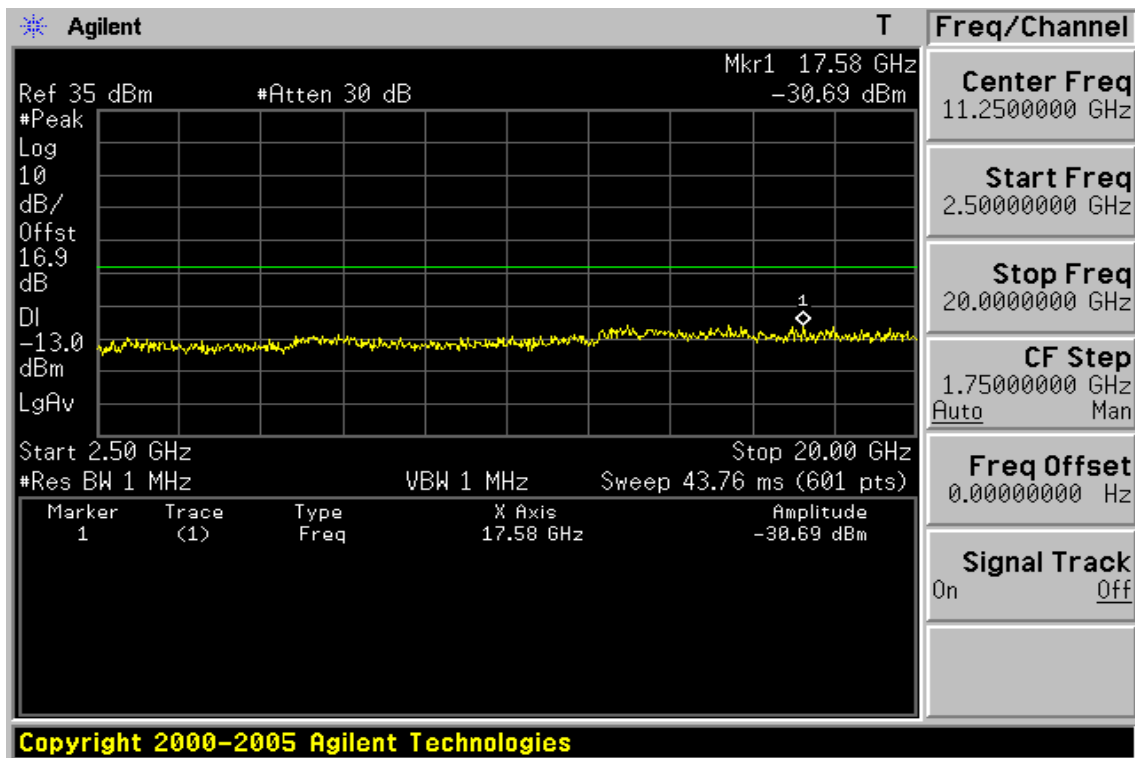
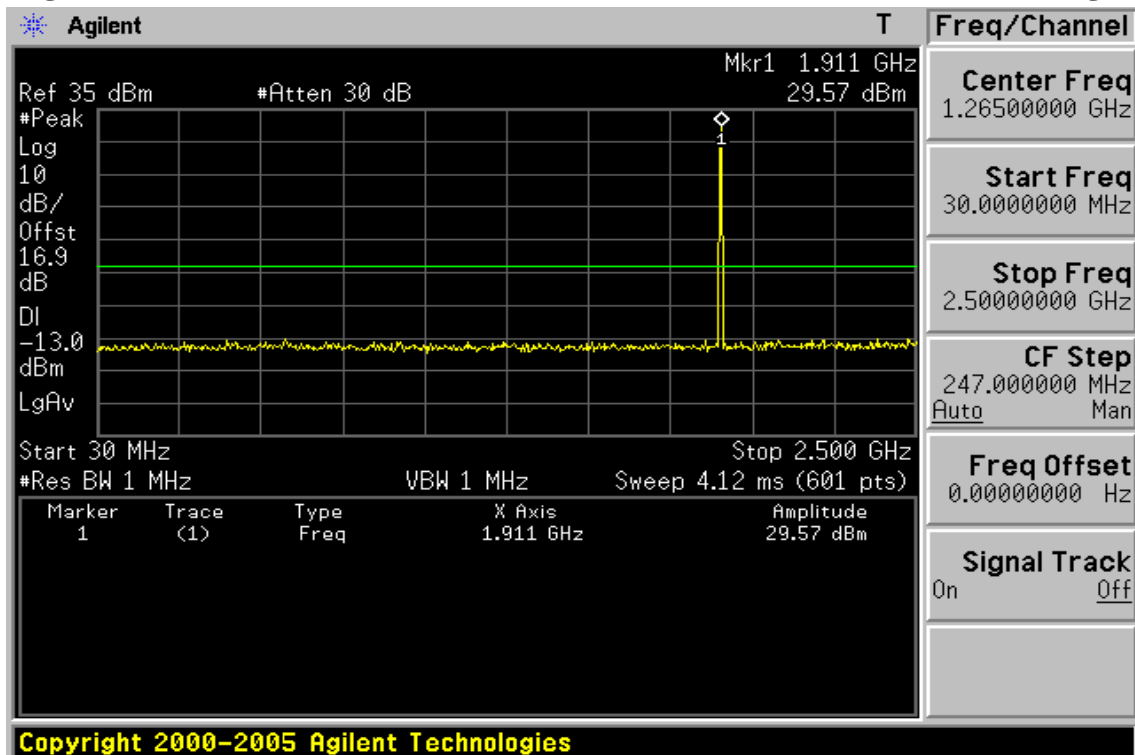


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Figure 8-3: Out of Band emission at antenna terminals–GSM 1900 Channel Highest



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Figure 8-4: Band edge emission at antenna terminals –GPRS 1900 Channel Lowest

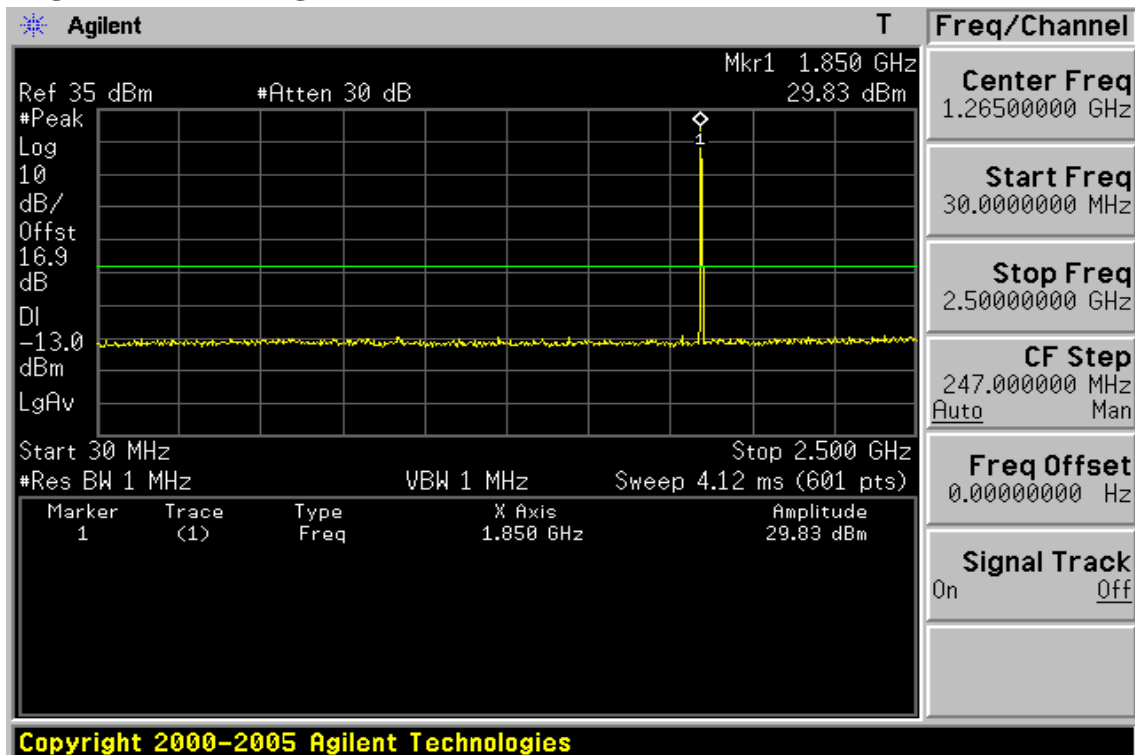
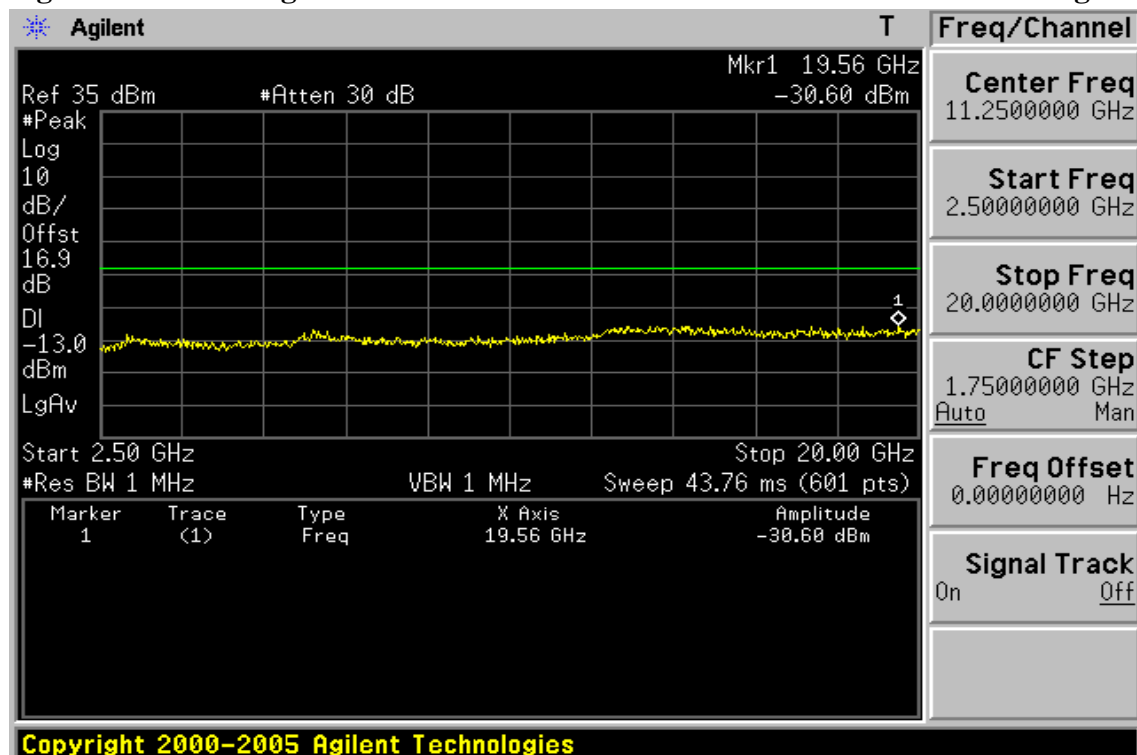


Figure 8-5: Band edge emission at antenna terminals –GPRS 1900 Channel Highest

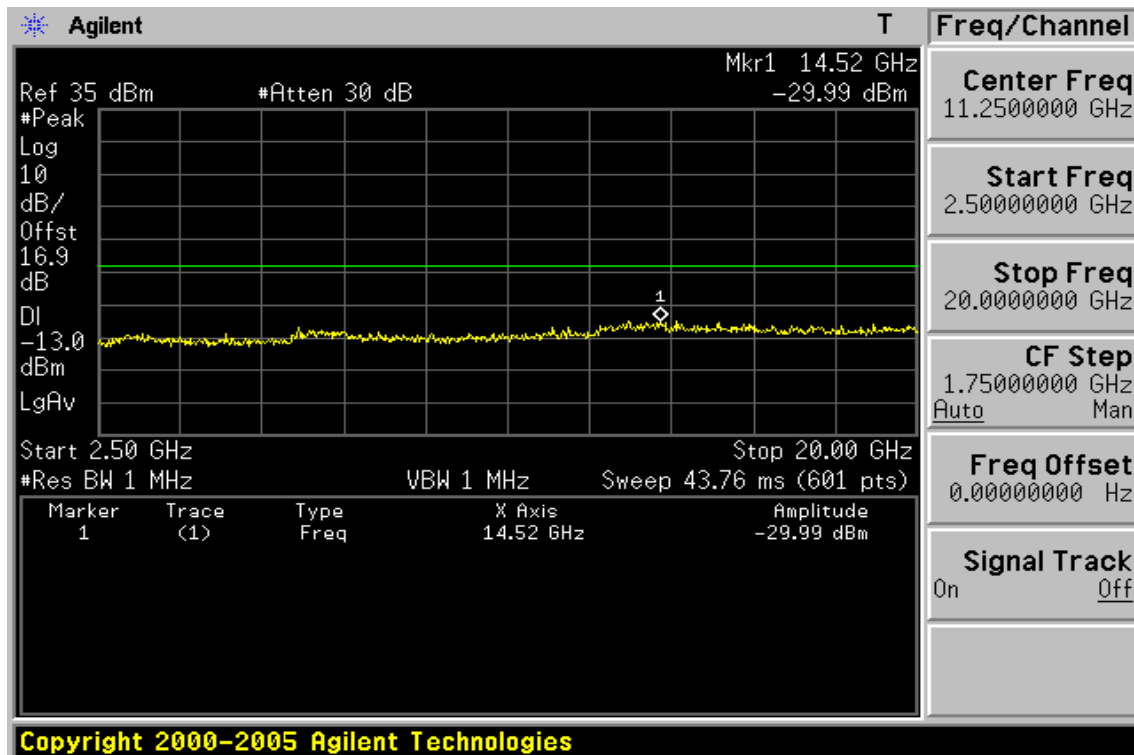
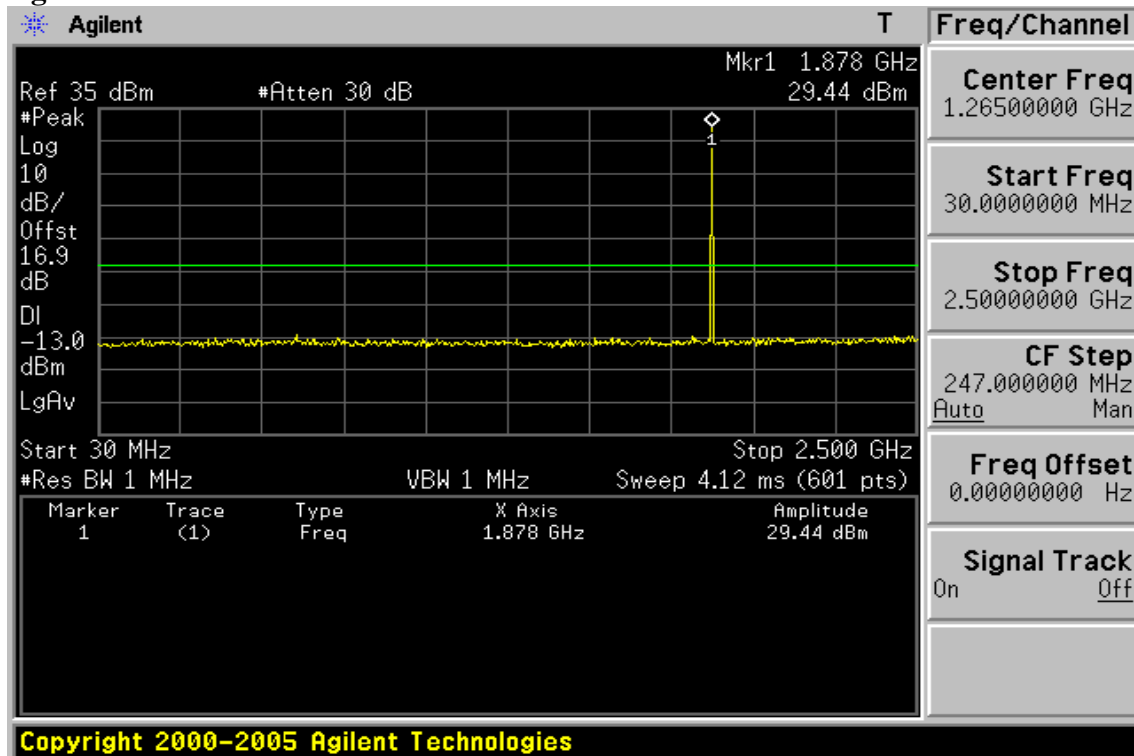


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Figure 8-6: Out of Band emission at antenna terminals–CDMA 850 Channel Lowest



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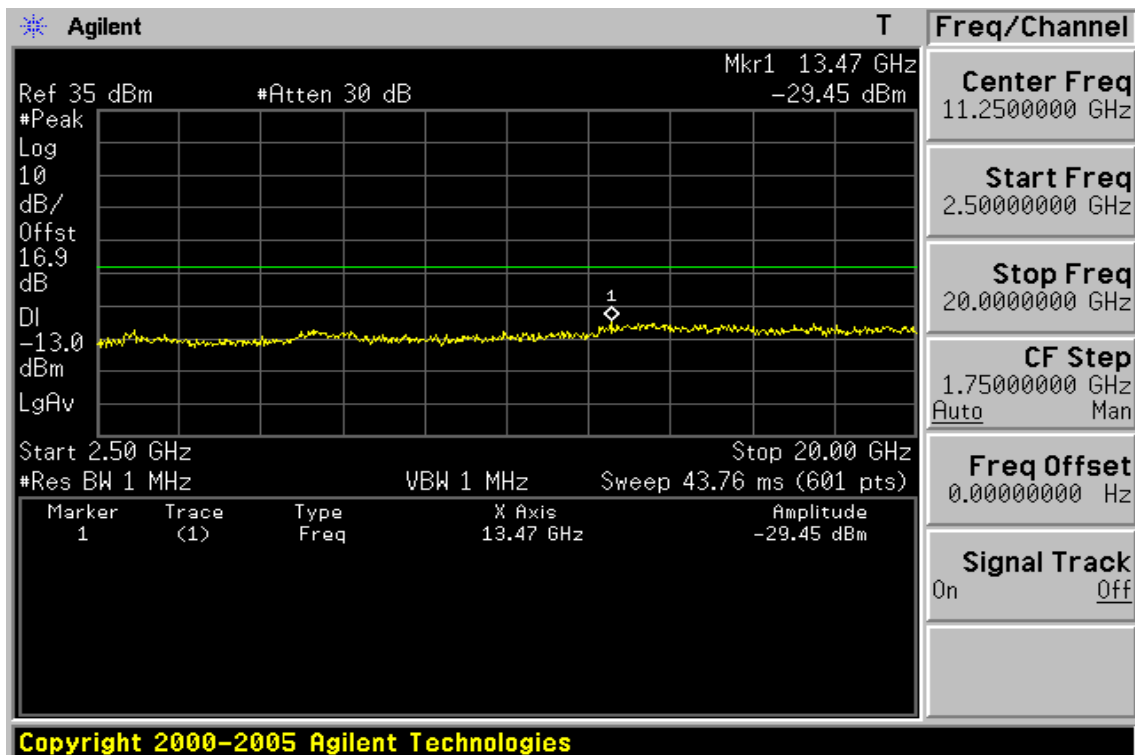
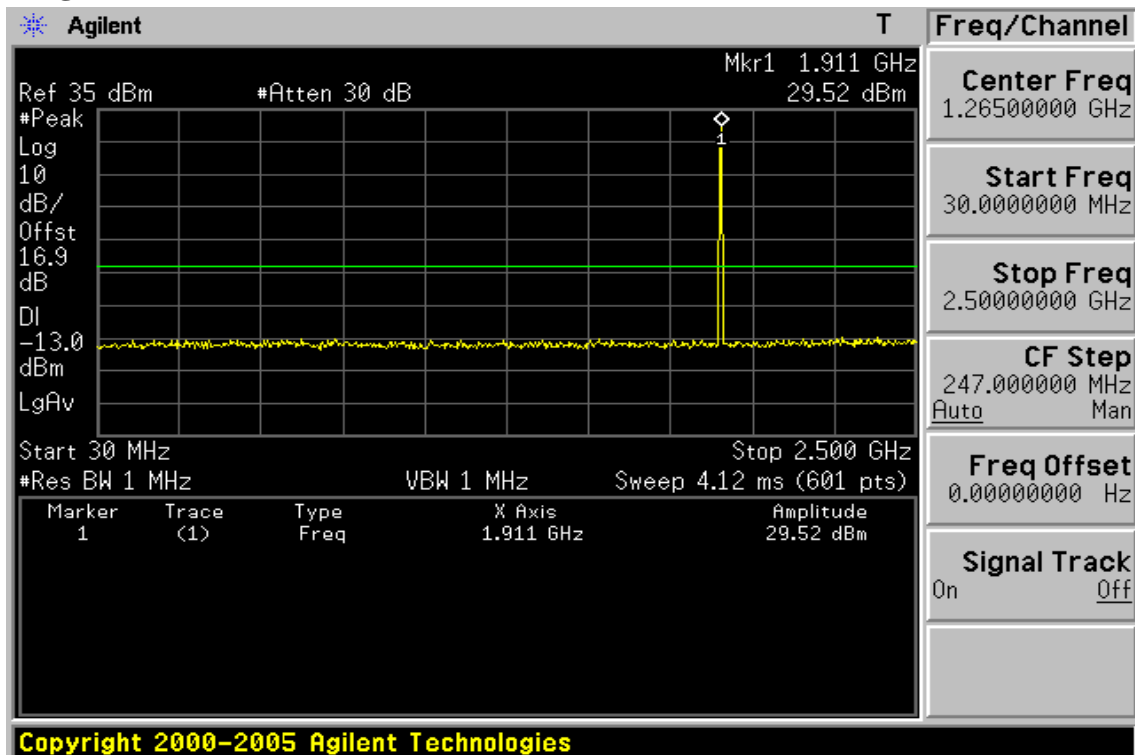
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Figure 8-7: Out of Band emission at antenna terminals –CDMA 850 Channel Mid

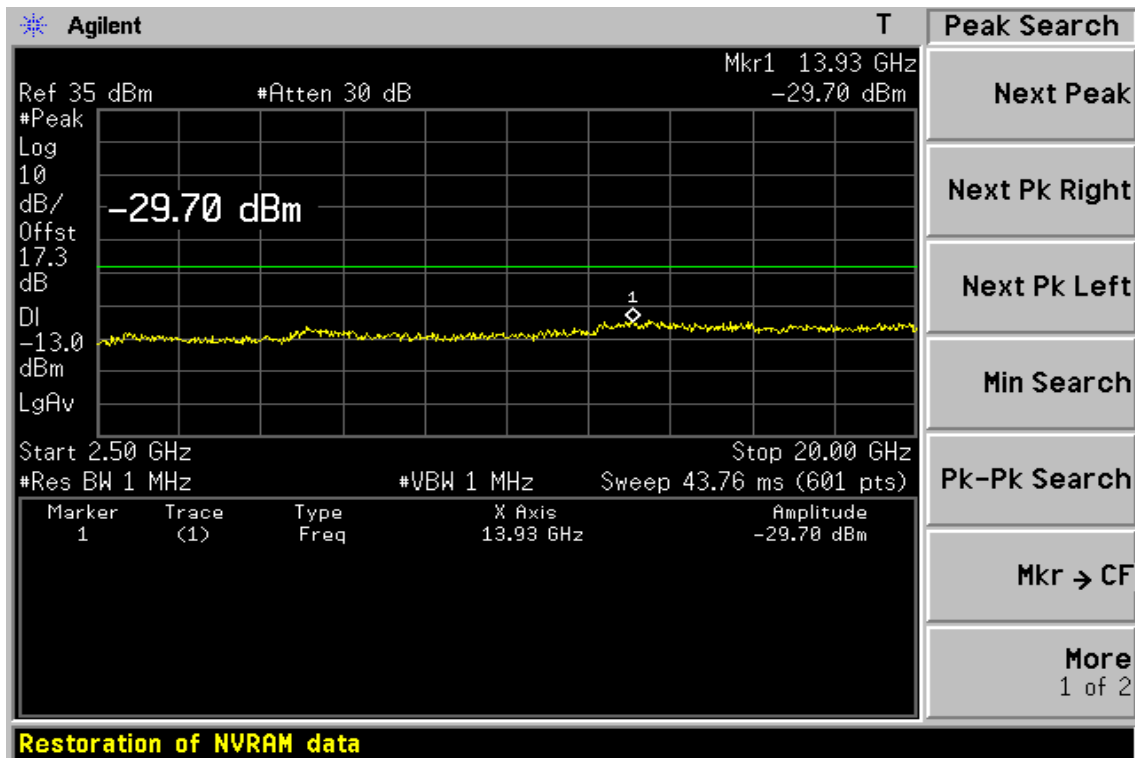
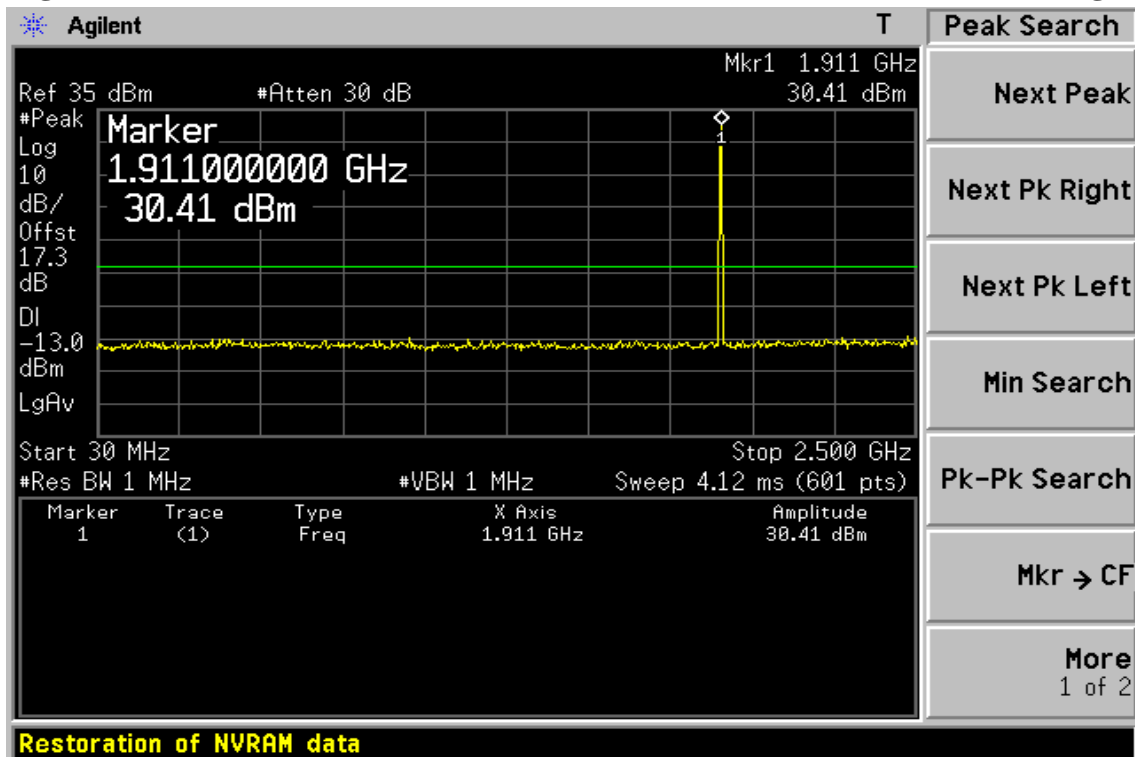


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Figure 8-8: Out of Band emission at antenna terminals–CDMA 850 Channel Highest



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9. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

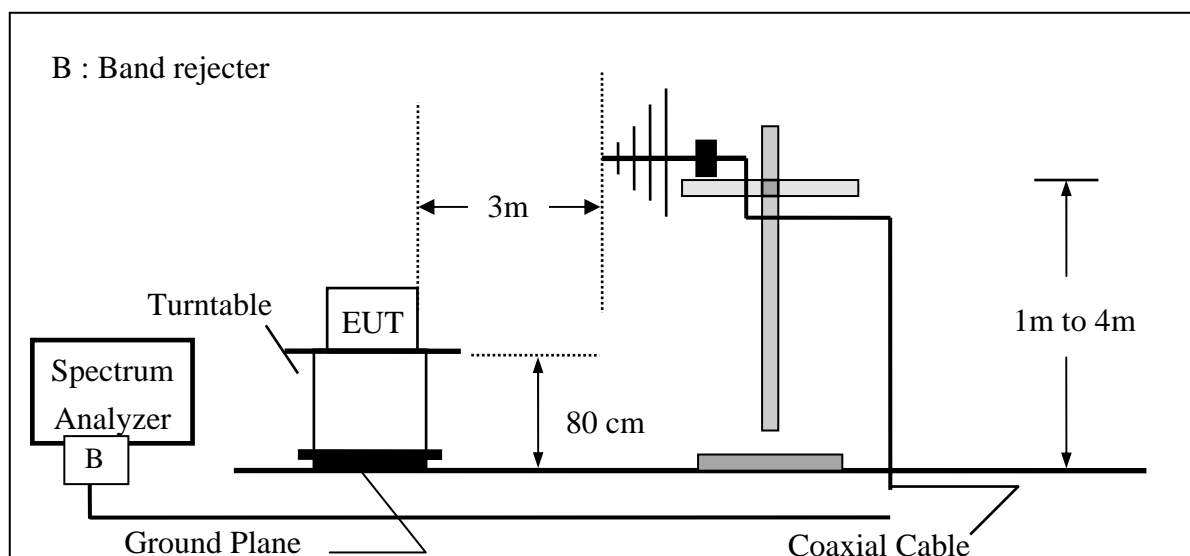
9.1. Standard Applicable:

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):

Radiated Emission Test Set-Up, Frequency Below 1000MHz



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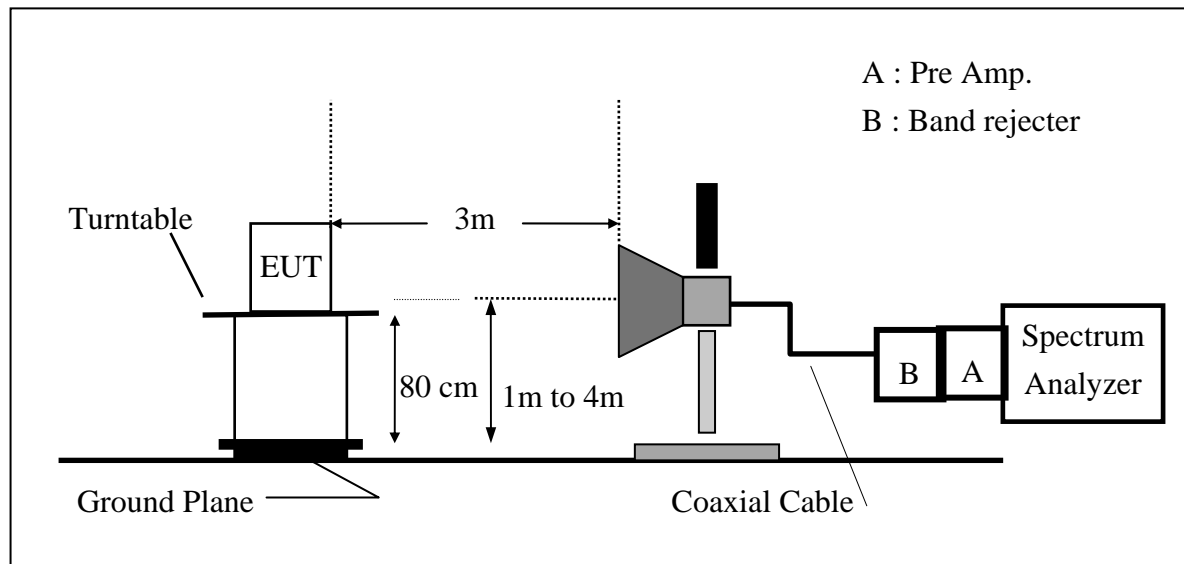
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Radiated Emission Test Set-UP Frequency Over 1 GHz



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 was 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.

$$\text{ERP} = \text{S.G. output (dBm)} + \text{Antenna Gain (dBi)} - \text{Cable Loss (dB)}$$

$$\text{EIRP} = \text{S.G. output (dBm)} + \text{Antenna Gain(dBi)} - \text{Cable Loss (dB)}$$

9.4. Measurement Equipment Used:

Refer to section 2.4 in this report

9.5. Measurement Result:

Refer to attach tabular data sheets.

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Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH Low Mode

Test Date: Jul. 06, 2011

Fundamental Frequency 1850.20 MHz

Test By: Blue

Temperature : 27°C

Pol: Ver

Humidity : 66%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
151.25	35.23	V	-62.17	-7.80	1.59	-71.57	-13.00	-58.57
238.55	37.45	V	-62.87	-7.88	1.93	-72.68	-13.00	-59.68
299.66	35.93	V	-62.33	-7.92	2.17	-72.42	-13.00	-59.42
526.64	33.47	V	-59.79	-7.74	2.89	-70.42	-13.00	-57.42
579.90	34.68	V	-56.06	-7.78	3.00	-66.84	-13.00	-53.84
927.25	34.37	V	-50.31	-7.98	3.84	-62.13	-13.00	-49.13
3700.40	59.02	V	-38.91	12.61	8.31	-34.61	-13.00	-21.61
5550.60	40.91	V	-49.93	13.23	10.33	-47.03	-13.00	-34.03
7400.80	---	V		11.50	12.08		-13.00	
9251.00	---	V		11.92	13.50		-13.00	
11101.20	---	V		11.66	15.11		-13.00	
12951.40	---	V		13.63	16.60		-13.00	
14801.60	---	V		12.76	17.95		-13.00	
16651.80	---	V		15.92	19.14		-13.00	
18502.00	---	V		18.75	10.40		-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 $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dBd/dBi) - Cable \text{ loss} (dB)$

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Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH Low Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 1850.20 MHz

Test By: Blue

Temperature : 27°C

Pol: Hor

Humidity : 66%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
194.90	36.85	H	-64.40	-7.84	1.70	-73.94	-13.00	-60.94
219.15	35.52	H	-65.20	-7.86	1.82	-74.88	-13.00	-61.88
321.00	38.78	H	-58.69	-7.80	2.25	-68.74	-13.00	-55.74
546.04	33.34	H	-58.52	-7.76	2.95	-69.22	-13.00	-56.22
697.36	34.28	H	-53.46	-7.86	3.28	-64.60	-13.00	-51.60
956.35	34.34	H	-49.83	-8.00	3.90	-61.73	-13.00	-48.73
3700.40	58.20	H	-39.84	12.61	8.31	-35.54	-13.00	-22.54
5550.60	36.94	H	-54.11	13.23	10.33	-51.21	-13.00	-38.21
7400.80	---	H		11.50	12.08		-13.00	
9251.00	---	H		11.92	13.50		-13.00	
11101.20	---	H		11.66	15.11		-13.00	
12951.40	---	H		13.63	16.60		-13.00	
14801.60	---	H		12.76	17.95		-13.00	
16651.80	---	H		15.92	19.14		-13.00	
18502.00	---	H		18.75	10.40		-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 $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dBd/dBi) - Cable \text{ loss} (dB)$

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Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH Mid Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 1880.00 MHz

Test By: Blue

Temperature : 27°C

Pol: Ver

Humidity : 66%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
194.90	35.76	V	-65.56	-7.84	1.70	-75.10	-13.00	-62.10
233.70	36.38	V	-64.13	-7.87	1.90	-73.90	-13.00	-60.90
282.20	38.39	V	-60.44	-7.91	2.11	-70.46	-13.00	-57.46
534.40	33.51	V	-59.49	-7.75	2.91	-70.15	-13.00	-57.15
699.30	34.19	V	-55.24	-7.86	3.29	-66.39	-13.00	-53.39
934.04	34.31	V	-50.35	-7.98	3.85	-62.19	-13.00	-49.19
3760.00	51.67	V	-45.99	12.60	8.39	-41.77	-13.00	-28.77
5640.00	37.53	V	-53.05	13.36	10.41	-50.10	-13.00	-37.10
7520.00	---	V		11.45	12.19		-13.00	
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 belongs 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 $ERP/EIRP \text{ (dBm)} = SG \text{ Setting (dBm)} + \text{Antenna Gain (dBd/dBi)} - \text{Cable loss (dB)}$

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Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH Mid Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 1880.00 MHz

Test By: Blue

Temperature : 27°C

Pol: Hor

Humidity : 66%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
194.90	38.79	H	-62.46	-7.84	1.70	-72.00	-13.00	-59.00
238.55	32.92	H	-66.86	-7.88	1.93	-76.66	-13.00	-63.66
322.94	40.85	H	-56.60	-7.79	2.26	-66.65	-13.00	-53.65
425.76	35.98	H	-59.14	-7.68	2.59	-69.41	-13.00	-56.41
699.30	34.93	H	-52.73	-7.86	3.29	-63.88	-13.00	-50.88
959.26	33.89	H	-50.26	-8.00	3.91	-62.17	-13.00	-49.17
3760.00	53.98	H	-43.79	12.60	8.39	-39.58	-13.00	-26.58
5640.00	44.85	H	-45.90	13.36	10.41	-42.95	-13.00	-29.95
7520.00	---	H		11.45	12.19		-13.00	
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
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- 4 $ERP/EIRP\ (dBm) = SG\ Setting(dBm) + Antenna\ Gain\ (dBd/dBi) - Cable\ loss\ (dB)$

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Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH High Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 1909.80 MHz

Test By: Blue

Temperature : 27°C

Pol: Ver

Humidity : 66%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
173.56	36.43	V	-62.98	-7.82	1.65	-72.44	-13.00	-59.44
243.40	32.74	V	-67.40	-7.88	1.95	-77.24	-13.00	-64.24
321.00	34.17	V	-63.82	-7.80	2.25	-73.87	-13.00	-60.87
425.76	35.89	V	-58.80	-7.68	2.59	-69.07	-13.00	-56.07
672.14	34.38	V	-54.77	-7.83	3.22	-65.82	-13.00	-52.82
922.40	34.08	V	-50.61	-7.97	3.83	-62.41	-13.00	-49.41
3819.60	52.18	V	-45.21	12.60	8.47	-41.08	-13.00	-28.08
5729.40	39.72	V	-50.60	13.49	10.50	-47.60	-13.00	-34.60
7639.20	---	V		11.40	12.27		-13.00	
9549.00	---	V		11.95	13.74		-13.00	
11458.80	---	V		12.17	15.43		-13.00	
13368.60	---	V		12.97	16.82		-13.00	
15278.40	---	V		15.00	18.29		-13.00	
17188.20	---	V		14.47	19.52		-13.00	
19098.00	---	V		18.66	20.78		-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 $ERP/EIRP \text{ (dBm)} = SG \text{ Setting (dBm)} + \text{Antenna Gain (dBd/dBi)} - \text{Cable loss (dB)}$

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Radiated Spurious Emission Measurement Result: GPRS 1900 Mode

Operation Mode : TX CH High Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 1909.80 MHz

Test By: Blue

Temperature : 27°C

Pol: Hor

Humidity : 66%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
183.26	36.47	H	-63.88	-7.83	1.67	-73.38	-13.00	-60.38
231.76	38.89	H	-61.22	-7.87	1.89	-70.98	-13.00	-57.98
291.90	36.41	H	-61.50	-7.92	2.14	-71.56	-13.00	-58.56
503.36	33.98	H	-59.35	-7.72	2.81	-69.89	-13.00	-56.89
697.36	34.51	H	-53.23	-7.86	3.28	-64.37	-13.00	-51.37
934.04	34.02	H	-50.39	-7.98	3.85	-62.23	-13.00	-49.23
3819.60	50.85	H	-46.66	12.60	8.47	-42.52	-13.00	-29.52
5729.40	43.74	H	-46.71	13.49	10.50	-43.72	-13.00	-30.72
7639.20	---	H		11.40	12.27		-13.00	
9549.00	---	H		11.95	13.74		-13.00	
11458.80	---	H		12.17	15.43		-13.00	
13368.60	---	H		12.97	16.82		-13.00	
15278.40	---	H		15.00	18.29		-13.00	
17188.20	---	H		14.47	19.52		-13.00	
19098.00	---	H		18.66	20.78		-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 $ERP/EIRP \text{ (dBm)} = SG \text{ Setting (dBm)} + \text{Antenna Gain (dBd/dBi)} - \text{Cable loss (dB)}$

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Radiated Spurious Emission Measurement Result: CDMA 1900 Mode

Operation Mode : TX CH Low Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 824.70MHz

Test By: Blue

Temperature : 25°C

Pol: Blue

Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
154.16	33.36	V	-64.30	-7.80	1.60	-73.71	-13.00	-60.71
243.40	32.39	V	-67.75	-7.88	1.95	-77.59	-13.00	-64.59
322.94	34.27	V	-63.70	-7.79	2.26	-73.74	-13.00	-60.74
553.80	33.55	V	-58.72	-7.76	2.97	-69.45	-13.00	-56.45
681.84	34.20	V	-55.05	-7.84	3.24	-66.14	-13.00	-53.14
963.14	34.32	V	-50.00	-8.00	3.92	-61.91	-13.00	-48.91
1649.40	46.23	V	-58.35	9.29	5.23	-54.29	-13.00	-41.29
2474.10	38.08	V	-62.92	10.08	6.53	-59.37	-13.00	-46.37
3298.80	39.44	V	-59.43	12.17	7.72	-54.97	-13.00	-41.97
4123.50	36.94	V	-59.17	12.61	8.86	-55.42	-13.00	-42.42
4948.20	---	V		12.65	9.74		-13.00	
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 $ERP/EIRP \text{ (dBm)} = SG \text{ Setting (dBm)} + \text{Antenna Gain (dBd/dBi)} - \text{Cable loss (dB)}$

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Radiated Spurious Emission Measurement Result: CDMA 1900 Mode

Operation Mode : TX CH Low Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 824.70MHz

Test By: Blue

Temperature : 25°C

Pol: Hor

Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
199.75	38.22	H	-63.41	-7.84	1.71	-72.96	-13.00	-59.96
233.70	34.56	H	-65.45	-7.87	1.90	-75.22	-13.00	-62.22
306.45	36.79	H	-60.81	-7.88	2.19	-70.89	-13.00	-57.89
558.65	34.16	H	-57.38	-7.77	2.97	-68.12	-13.00	-55.12
697.36	34.45	H	-53.29	-7.86	3.28	-64.43	-13.00	-51.43
922.40	34.04	H	-50.52	-7.97	3.83	-62.33	-13.00	-49.33
1649.40	46.82	H	-57.58	9.29	5.23	-53.52	-13.00	-40.52
2474.10	39.11	H	-61.79	10.08	6.53	-58.25	-13.00	-45.25
3298.80	43.79	H	-55.30	12.17	7.72	-50.85	-13.00	-37.85
4123.50	39.70	H	-56.55	12.61	8.86	-52.79	-13.00	-39.79
4948.20	---	H		12.65	9.74		-13.00	
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 $ERP/EIRP \text{ (dBm)} = SG \text{ Setting (dBm)} + \text{Antenna Gain (dBd/dBi)} - \text{Cable loss (dB)}$

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Radiated Spurious Emission Measurement Result: CDMA 1900 Mode

Operation Mode : TX CH Mid Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 836.52MHz

Test By: Blue

Temperature : 25°C

Pol: Ver

Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
160.95	33.88	V	-64.39	-7.81	1.62	-73.82	-13.00	-60.82
245.34	33.03	V	-67.04	-7.89	1.96	-76.89	-13.00	-63.89
284.14	36.90	V	-61.87	-7.91	2.11	-71.89	-13.00	-58.89
555.74	33.24	V	-58.91	-7.76	2.97	-69.65	-13.00	-56.65
700.27	34.50	V	-54.93	-7.86	3.29	-66.08	-13.00	-53.08
939.86	33.95	V	-50.70	-7.99	3.86	-62.55	-13.00	-49.55
1673.04	43.81	V	-60.75	9.36	5.27	-56.66	-13.00	-43.66
2509.56	40.10	V	-60.68	10.09	6.58	-57.18	-13.00	-44.18
3346.08	39.04	V	-59.82	12.27	7.79	-55.34	-13.00	-42.34
4182.60	---	V		12.62	8.93		-13.00	
5019.12	---	V		12.67	9.81		-13.00	
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 $ERP/EIRP \text{ (dBm)} = SG \text{ Setting (dBm)} + \text{Antenna Gain (dBd/dBi)} - \text{Cable loss (dB)}$

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Radiated Spurious Emission Measurement Result: CDMA 1900 Mode

Operation Mode : TX CH Mid Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 836.52MHz

Test By: Blue

Temperature : 25°C

Pol: Hor

Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
163.86	37.45	H	-61.40	-7.81	1.62	-70.83	-13.00	-57.83
225.94	40.56	H	-59.83	-7.87	1.86	-69.55	-13.00	-56.55
319.06	36.67	H	-60.81	-7.81	2.24	-70.87	-13.00	-57.87
558.65	33.55	H	-57.99	-7.77	2.97	-68.73	-13.00	-55.73
697.36	34.44	H	-53.30	-7.86	3.28	-64.44	-13.00	-51.44
920.46	34.14	H	-50.45	-7.97	3.83	-62.25	-13.00	-49.25
1673.04	47.87	H	-56.51	9.36	5.27	-52.41	-13.00	-39.41
2509.56	43.82	H	-56.88	10.09	6.58	-53.38	-13.00	-40.38
3346.08	44.99	H	-54.07	12.27	7.79	-49.59	-13.00	-36.59
4182.60	38.02	H	-58.01	12.62	8.93	-54.32	-13.00	-41.32
5019.12	---	H		12.67	9.81		-13.00	
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 $ERP/EIRP (dBm) = SG \text{ Setting}(dBm) + Antenna \text{ Gain} (dBd/dBi) - Cable \text{ loss} (dB)$

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Radiated Spurious Emission Measurement Result: CDMA 1900 Mode

Operation Mode : TX CH High Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 848.31 MHz

Test By: Blue

Temperature : 25°C

Pol: Ver

Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
154.16	33.61	V	-64.05	-7.80	1.60	-73.46	-13.00	-60.46
241.46	33.84	V	-66.37	-7.88	1.94	-76.20	-13.00	-63.20
316.15	35.38	V	-62.67	-7.83	2.23	-72.73	-13.00	-59.73
559.62	33.18	V	-58.75	-7.77	2.97	-69.49	-13.00	-56.49
694.45	34.55	V	-54.83	-7.85	3.28	-65.96	-13.00	-52.96
970.90	33.81	V	-50.33	-8.00	3.94	-62.27	-13.00	-49.27
1696.62	47.12	V	-57.42	9.43	5.31	-53.29	-13.00	-40.29
2544.93	41.96	V	-58.69	10.19	6.63	-55.13	-13.00	-42.13
3393.24	39.62	V	-59.23	12.38	7.86	-54.72	-13.00	-41.72
4241.55	---	V		12.63	9.00		-13.00	
5089.86	---	V		12.74	9.88		-13.00	
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 $ERP/EIRP \text{ (dBm)} = SG \text{ Setting (dBm)} + Antenna \text{ Gain (dBd/dBi)} - Cable \text{ loss (dB)}$

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Radiated Spurious Emission Measurement Result: CDMA 1900 Mode

Operation Mode : TX CH High Mode

Test Date: Jul. 06, 2011

Fundamental Frequency : 848.31 MHz

Test By: Blue

Temperature : 25°C

Pol: Hor

Humidity : 65%

Freq. (MHz)	SPA. Reading (dBuV)	Ant.Pol. H/V	S.G Out- put (dBm)	Antenna Gain (dBd/dBi)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dBm)
196.84	40.92	H	-60.48	-7.84	1.70	-70.02	-13.00	-57.02
231.76	37.77	H	-62.34	-7.87	1.89	-72.10	-13.00	-59.10
319.06	38.22	H	-59.26	-7.81	2.24	-69.32	-13.00	-56.32
524.70	34.67	H	-57.93	-7.74	2.88	-68.54	-13.00	-55.54
697.36	34.37	H	-53.37	-7.86	3.28	-64.51	-13.00	-51.51
595.26	34.14	H	-56.66	-7.79	3.02	-67.47	-13.00	-54.47
1696.62	48.04	H	-56.31	9.43	5.31	-52.18	-13.00	-39.18
2544.93	43.00	H	-57.60	10.19	6.63	-54.04	-13.00	-41.04
3393.24	44.73	H	-54.30	12.38	7.86	-49.78	-13.00	-36.78
4241.55	40.11	H	-55.71	12.63	9.00	-52.08	-13.00	-39.08
5089.86	---	H		12.74	9.88		-13.00	
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 $ERP/EIRP \text{ (dBm)} = SG \text{ Setting (dBm)} + \text{Antenna Gain (dBd/dBi)} - \text{Cable loss (dB)}$

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10. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

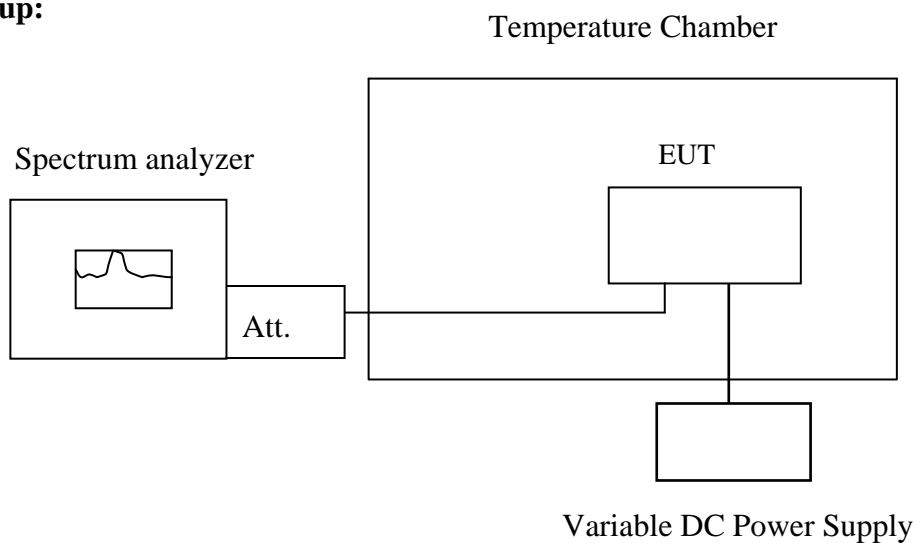
10.1. Standard Applicable:

According to FCC §2.1055(a) (1)

Frequency Tolerance: ± 2.5 ppm for 850MHz band

± 2.5 ppm for 1900MHz band

10.2. Test Set-up:



Note : Measurement setup for testing on Antenna connector

10.3. Measurement Procedure:

The equipment under test was connected to an external AC or DC power supply and input rated voltage. RF output was connected to a frequency counter or spectrum analyzer via feed through attenuators. The EUT was placed inside the temperature chamber. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and measure EUT 25°C operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30°C. After the temperature stabilized for approximately 30 minutes recorded the frequency. Repeat step measure with 10°C increased per stage until the highest temperature of +50°C reached.

10.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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10.5. Measurement Result:

Reference Frequency: GPRS 1900 Mid Channel 1880 MHz @ 25°C				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
3.9	55	1880.000018	18.00	4700
3.9	50	1880.000015	15.00	4700
3.9	40	1879.999995	-5.00	4700
3.9	30	1879.999983	-17.00	4700
3.9	20	1880.000000	0.00	4700
3.9	10	1879.999968	-32.00	4700
3.9	0	1879.999960	-40.00	4700
3.9	-10	1879.999934	-66.00	4700

Reference Frequency: CDMA 850 Mid Channel 836.52 MHz (ARFCN4183)				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
3.9	-10	836.519997	-3.00	2091
3.9	0	836.519995	-1.00	2091
3.9	10	836.519996	-2.00	2091
3.9	20	836.519994	0.00	2091
3.9	30	836.519994	0.00	2091
3.9	40	836.519979	15.00	2091
3.9	50	836.519982	12.00	2091
3.9	55	836.519981	13.00	2091

Note: The battery is rated 3.9V dc.

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11. FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

11.1. Standard Applicable:

According to FCC §2.1055(a) (1)

Frequency Tolerance: ± 2.5 ppm for 850MHz band

± 2.5 ppm for 1900MHz band

11.2. Test Set-up:

Refer to section 10.2 in this report

11.3. Measurement Procedure:

Set chamber temperature to 25°C. Use a variable AC power supply / DC power source to power the EUT and set the voltage to rated voltage. Set the spectrum analyzer RBW low enough to obtain the desired frequency resolution and recorded the frequency.

Reduce the input voltage to specified extreme voltage variation ($\pm 15\%$) and endpoint, record the maximum frequency change.

11.4. Measurement Equipment Used:

Refer to section 2.4 in this report

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11.5. Measurement Result:

Reference Frequency: PCS Mid Channel 1880 MHz @ 25°C				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
4.7	25	1880.000010	10.00	4700
3.9	25	1880.000000	0.00	4700
3.7	25	1880.000017	17.00	4700
2.9 shutdown point	25	1880.000010	10.00	4700

Reference Frequency: CDMA 850 Mid Channel 836.52 MHz (ARFCN4183)				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (°C)	(MHz)		
4.7	25	836.5200008	-0.50	2091.00
3.9	25	836.5200003	0.00	2091.00
3.6	25	836.5200002	0.10	2091.00
2.9 shutdown point	25	836.5200035	-3.20	2091.00

Note: The battery is rated 3.9V dc.

~ End of Report ~

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