ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

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

OF

Product Name:	**BREMEN**
Brand Name:	**TomTom**
Marketing Name:	**TomTom LINK 300**
Model Name:	**LINK 300**
FCC ID:	**S4LLINK300**
Report No.:	**ER/2007/B0029**
Issue Date:	**Nov. 20, 2007**
FCC Rule Part:	**2 , 22H & 24E**
Prepared for	**TomTom International B.V.** **Rembrandtplein 35, 1017 CT Amsterdam**
Prepared by	**SGS Taiwan Ltd.** **Electronics & Communication Laboratory** **No. 134, Wu Kung Rd., Wuku Industrial Zone, Taipei County, Taiwan.**

VERIFICATION OF COMPLIANCE

Applicant:	TomTom International B.V. Rembrandtplein 35, 1017 CT Amsterdam
Product Name:	BREMEN
FCC ID Number:	S4LLINK300
Brand Name:	TomTom
Marketing Name:	TomTom LINK 300
Model No.:	LINK 300
Model Difference:	N/A
File Number:	ER/2007/B0029
Date of test:	Nov. 12, 2007 ~ Nov. 20, 2007
Date of EUT Received:	Nov. 12, 2007

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-B-2002 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 and FCC PART 24 subpart E.

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

Test By:	Jazz Huang	***Date***	Nov. 20, 2007
	Jazz Huang / Engineer		
Prepared By:	Eva Kao	***Date***	Nov. 20, 2007
	Eva Kao / Sr. Engineer		
Approved By:	Vincent Su	***Date***	Nov. 20, 2007
	Vincent Su/Manager		

Version

Version No.	Date
00	Nov. 20, 2007

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1. GENERAL INFORMATION

Product Name	BREMEN
Brand Name	TomTom
Marketing Name	TomTom LINK 300
Model Name	LINK 300
Model Difference:	N/A
Power Supply:	12Vdc ~ 24Vdc by car battery

GSM:

Frequency Range and Power	EGSM 900: 880MHz – 915MHz	33 dBm
	GSM 1800: 1710MHz-1785MHz	30 dBm
	GSM 850: 824MHz –849MHz	33 dBm
	GSM 1900: 1850MHz –1910MHz	30 dBm
Type of Emission	300KGXW	
IMEI	352022007482571	

Bluetooth:

Frequency Range	2402 – 2480MHz
Channel number	79 channels
Rated Power	-1.53 dBm E.I.R.P. (peak)
Modulation type	Frequency Hopping Spread Spectrum (GFSK) (FHSS)
Type of Emission	860KF1D
Antenna Designation	Chip Antenna, 0 dBi

GPS:

Receiver Frequency	L1 Band, 1575.42MHz
Frequency Conversion oscillator	12MHz and 32.768kHz

The EUT is compliance with Bluetooth Standard.

This test report applies for GSM850 and GSM1900.

1.1 Related Submittal(s) / Grant (s)

This submittal(s) (test report) is intended for FCC ID: **S4LLINK300** filing to comply with Section Part 22 subpart H and 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 chapter 13 of ANSI C63.4 (2003) and FCC CFR 47.1046, 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. 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. 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 Conducted Emissions

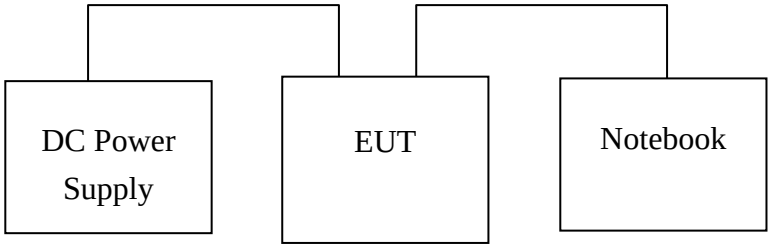
The EUT is placed on a turn table which is 0.8 m above ground plane. According to the requirements in Section 7 and 13 of ANSI C63.4-2003.Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and Average detector mode.

2.3.2 Radiated Emissions

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 in Section 8 and 13 of ANSI C63.4-2003.

2.4 Configuration of Tested System

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



Remote Side

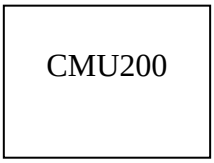


Table 2-1 Equipment Used in Tested System

Item	Equipment	Mfr/Brand	Model/ Type No.	Series No.	Data Cable	Power Cord
1	Universal Radio Communication Tester	R&S	CMU200	102189	shielded	Un-shielded
2	DC Power Supply	Topward	3303A	715856	shielded	Un-shielded
3	Notebook	IBM	T60	N/A	shielded	Un-shielded

3. SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§2.1046(a) §22.913(a) §24.232(a)	RF Power Output	Compliant
§2.1046(a) §22.913(a) §24.232(a)	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)(b)	Frequency Stability vs. Temperature	Compliant
§2.1055(d)(1)(2)	Frequency Stability vs. Voltage	Compliant
§15.107;§15.207	AC Power Line Conducted Emission	Compliant

4. DESCRIPTION OF TEST MODES

The EUT has been tested under operating condition.

EUT was staying in continuous transmitting mode by a test program in Notebook PC to link with CMU200. Channel Low, Mid and High for each type band with rated data rate were chosen for full testing.

The ERP/EIRP was measured as EUT on lie down position (E2 mode) for GSM. The worst-case of Spurious Radiation for GSM 850 band and GSM 1900 band at channel Low, Mid and High were reported.

5. RF POWER OUTPUT MEASUREMENT

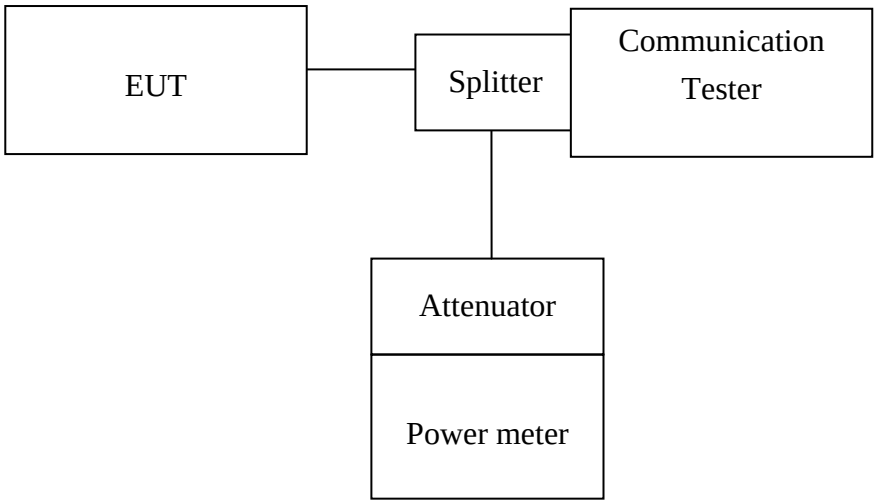
5.1 Standard Applicable

According to FCC §2.1046.

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

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

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.

5.4 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2007	04/26/2008
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008
Communication Test	R&S	CMU200	N/A	N/A	N/A
Power Sensor	Anritsu	MA2490A	31431	07/07/2007	07/06/2008
Power Meter	Anritsu	ML2487A	6K00002070	07/07/2007	07/06/2008
Temperature Chamber	TERCHY	MHG-120LF	911009	04/26/2007	04/25/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A
Attenuator	Mini-Circult	BW-S10W5	N/A	07/05/2007	07/04/2008
Attenuator	Mini-Circult	BW-S6W5	N/A	07/05/2007	07/04/2008
Splitter	Agilent	11636B	51818	07/05/2007	07/04/2008
DC Power Supply	TOPWARD	6038A	2929A-07548	06/27/2007	06/26/2008

5.5 Measurement Result

EUT Mode	Frequency (MHz)	CH	Power meter Reading (dBm)	Path Loss (dB)	Peak Power (dBm)
GSM 850	824.20	128	14.00	17.90	31.90
	836.60	190	14.20	17.90	32.10
	848.80	251	14.50	17.90	32.40

EUT Mode	Frequency (MHz)	CH	Power Meter Reading (dBm)	Path Loss (dB)	Peak Power (dBm)
PCS 1900	1850.20	512	11.45	17.90	29.35
	1880.00	661	11.28	17.90	29.18
	1909.80	810	11.36	17.90	29.26

6. ERP, EIRP MEASUREMENT

6.1 Standard Applicable

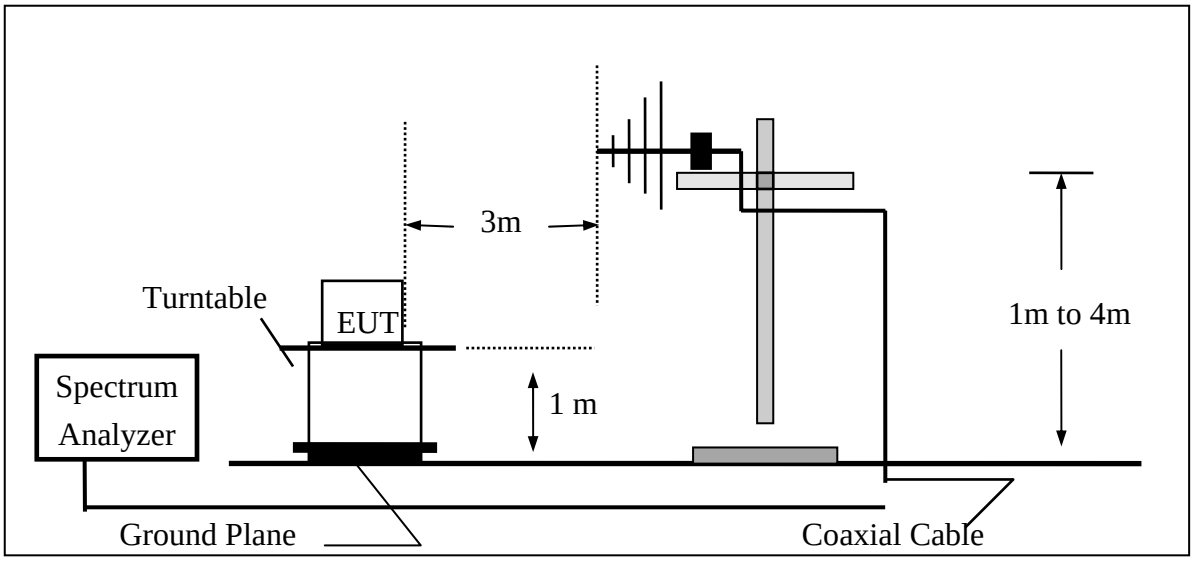
According to FCC §2.1046

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

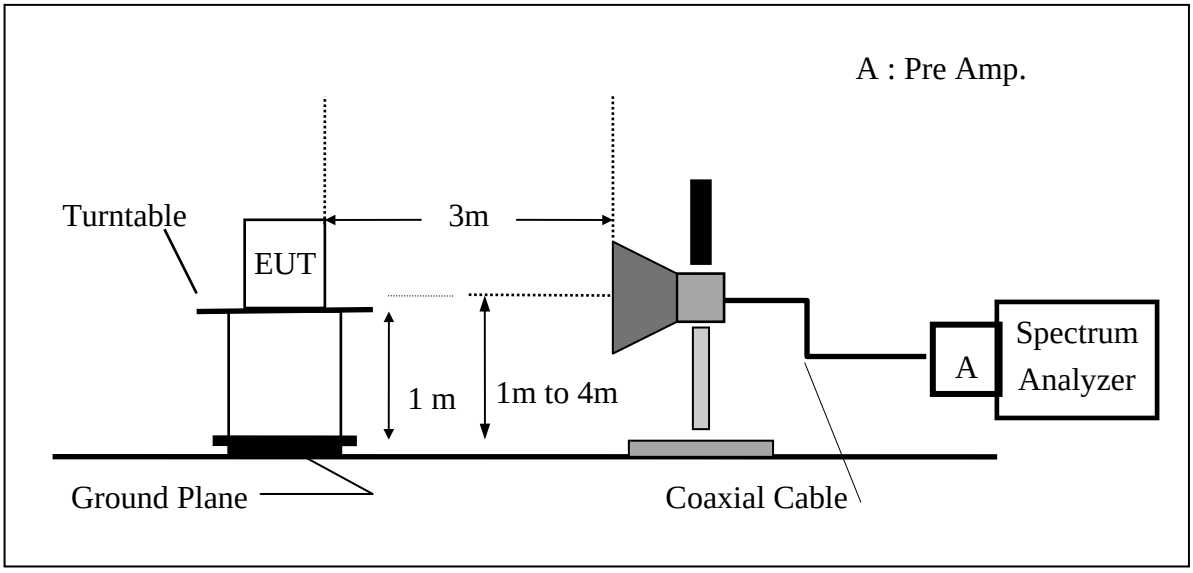
FCC 24.232(b) Mobile station are limited to 2W EIRP.

6.2 Test SET-UP (Block Diagram of Configuration)

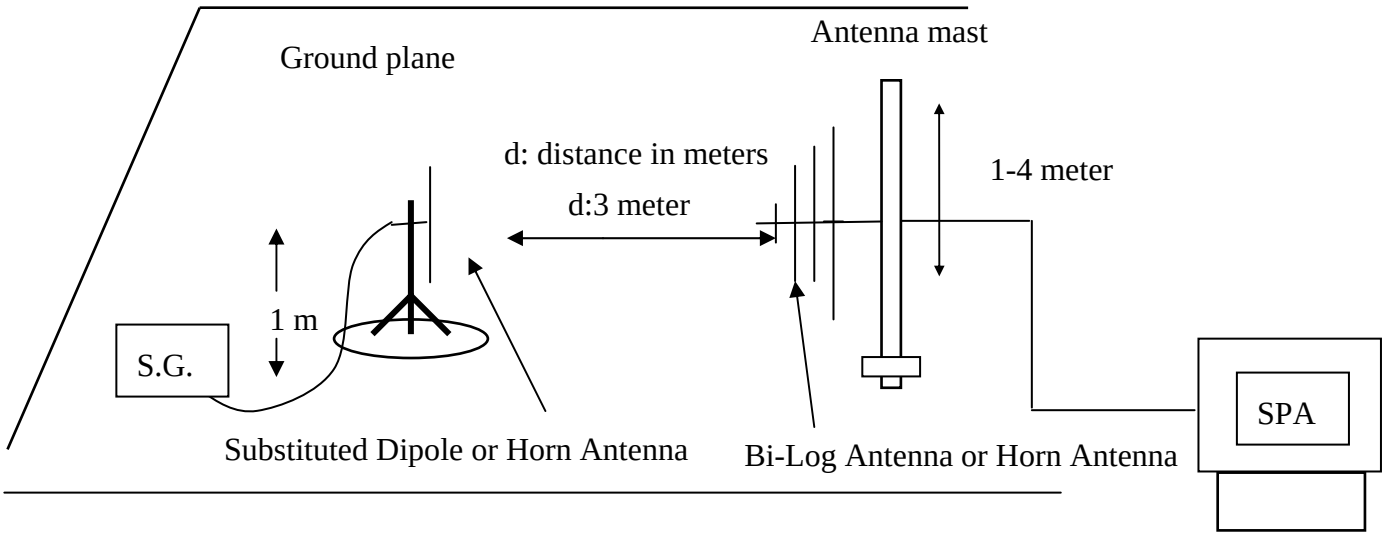
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



(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 824.2 –848.80.8MHz 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 1850.2 –1909.8MHz were measured using a substitution method. The EUT was replaced by or 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:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2007	04/26/2008
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008
Communication Test	R&S	CMU200	N/A	N/A	N/A
Bi-log Antenna	SCHWAZBECK	VULB9160	3224	11/17/2007	11/16/2008
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	08/16/2007	08/15/2008
Pre-Amplifier	HP	8447D	2944A09469	07/19/2007	07/18/2008
Pre-Amplifier	HP	8494B	3008A00578	02/26/2007	02/25/2008
Signal Generator	R&S	SMR40	100210	02/09/2007	02/10/2008
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	10/09/2007	10/08/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2007	10/08/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-0.5M	0.5m	10/09/2007	10/08/2008
Site NSA	SGS	966 chamber	N/A	10/02/2006	10/01/2008
Attenuator	Mini-Circult	BW-S10W5	N/A	09/23/2007	09/22/2008
Dipole Antenna	SCHWAZBECK	VHAP	908/909	06/09/2007	06/10/2008
Dipole Antenna	SCHWAZBECK	UHAP	891/892	06/09/2007	06/10/2008

6.5 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)
GSM 850	824.20	128	E2	V	106.51	19.19	-7.87	3.64	7.67	38.45
				H	108.84	21.18	-7.87	3.64	9.67	38.45
	836.60	190	E2	V	111.62	24.59	-7.88	3.70	13.02	38.45
				H	115.43	28.09	-7.88	3.70	16.52	38.45
	848.80	251	E2	V	109.65	22.91	-7.88	3.75	11.28	38.45
				H	110.74	23.72	-7.88	3.75	12.09	38.45

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	E2	V	124.79	17.83	9.90	5.41	22.32	33.00
				H	123.05	16.16	9.90	5.84	20.22	33.00
	1880.00	661	E2	V	124.92	17.97	9.99	5.46	22.50	33.00
				H	122.33	15.46	9.99	5.46	19.99	33.00
	1909.80	810	E2	V	126.03	19.09	10.08	5.51	23.66	33.00
				H	123.36	16.51	10.08	5.51	21.07	33.00

Remark：

(1) The RBW,VBW of SPA for frequency

Below 1GHz was RBW=100 KHz, VBW=300KHz,

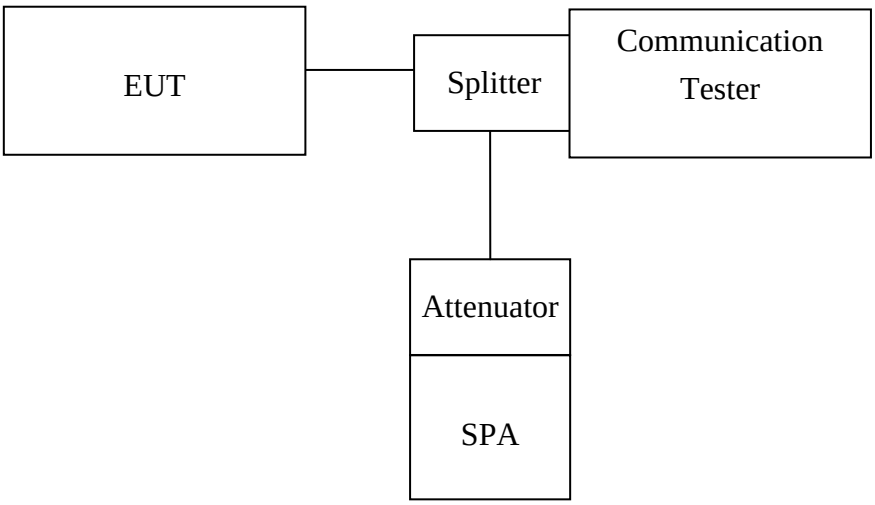
Above 1GHz was RBW= 1MHz , VBW= 3MHz

7. 99% OCCUPIED BANDWIDTH MEASUREMENT

7.1 Standard Applicable

According to §FCC 2.1049.

7.2 Test Set-up:



Note: *Measurement setup for testing on Antenna connector*

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:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2007	04/26/2008
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008
Power Sensor	Anritsu	MA2490A	31431	07/07/2007	07/06/2008
Power Meter	Anritsu	ML2487A	6K00002070	07/07/2007	07/06/2008
Communication Test	R&S	CMU200	N/A	N/A	N/A
Temperature Chamber	TERCHY	MHG-120LF	911009	04/26/2007	04/25/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2007	07/04/2008
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2007	07/04/2008
Splitter	Agilent	11636B	51728	09/23/2007	09/22/2008
Signal Generator	R&S	SMR40	100210	12/20/2006	12/19/2007
DC Power Supply	Agilent	6038A	2929A-07548	01/06/2007	01/05/2008

7.5 Measurement Result:

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GSM 850	824.20	128	0.2462
	836.60	190	0.2511
	848.80	251	0.2466

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
PCS 1900	1850.20	512	0.2518
	1880.00	661	0.2449
	1909.80	810	0.2481

Figure 7-1: GSM 850 Channel Low

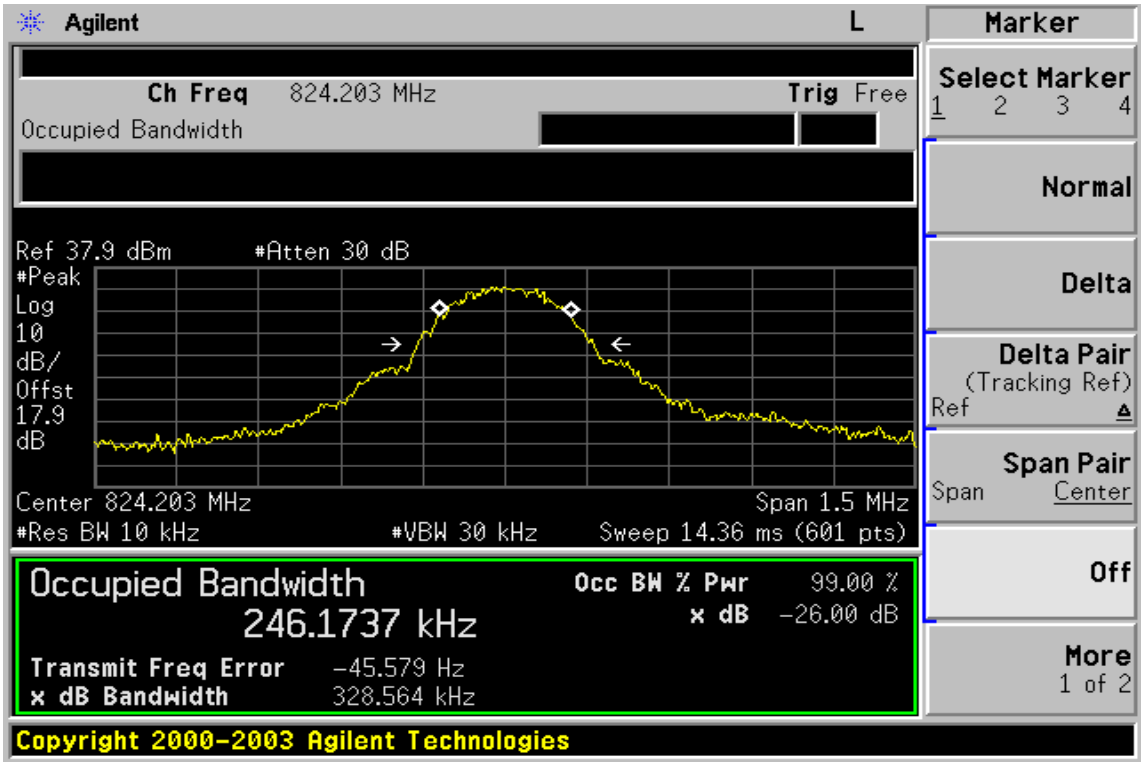


Figure 7-2 GSM 850 Channel Mid

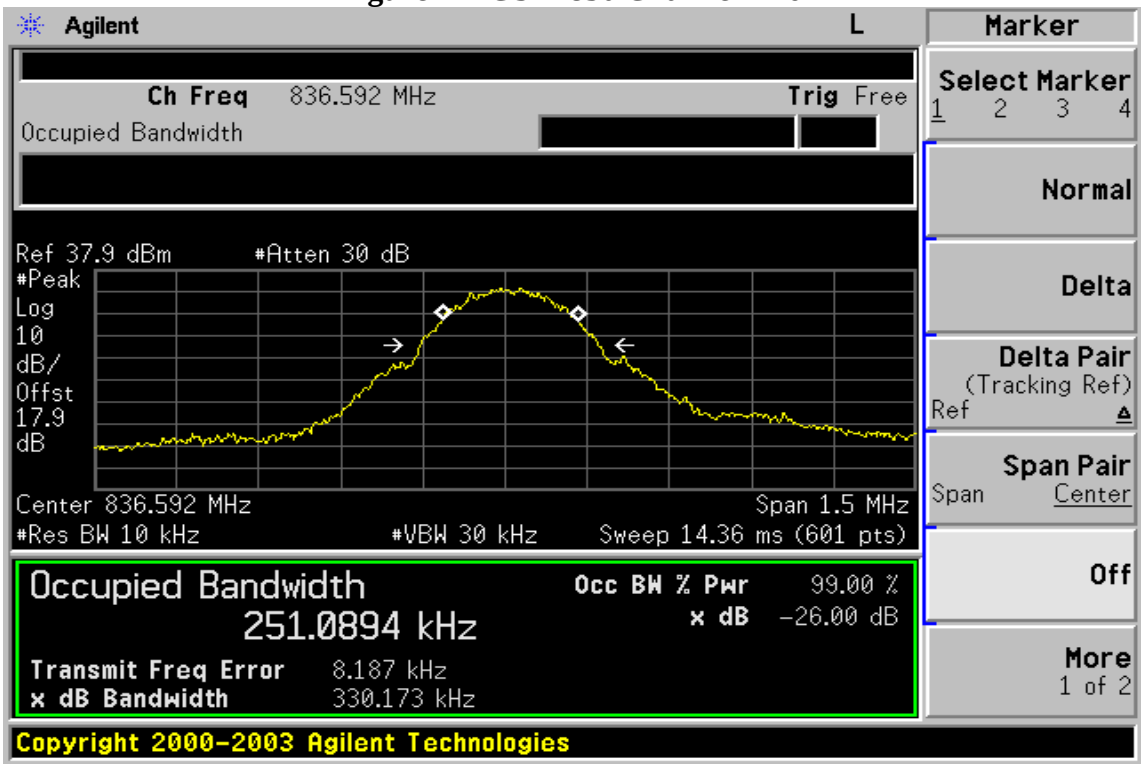


Figure 7-3: GSM 850 Channel High

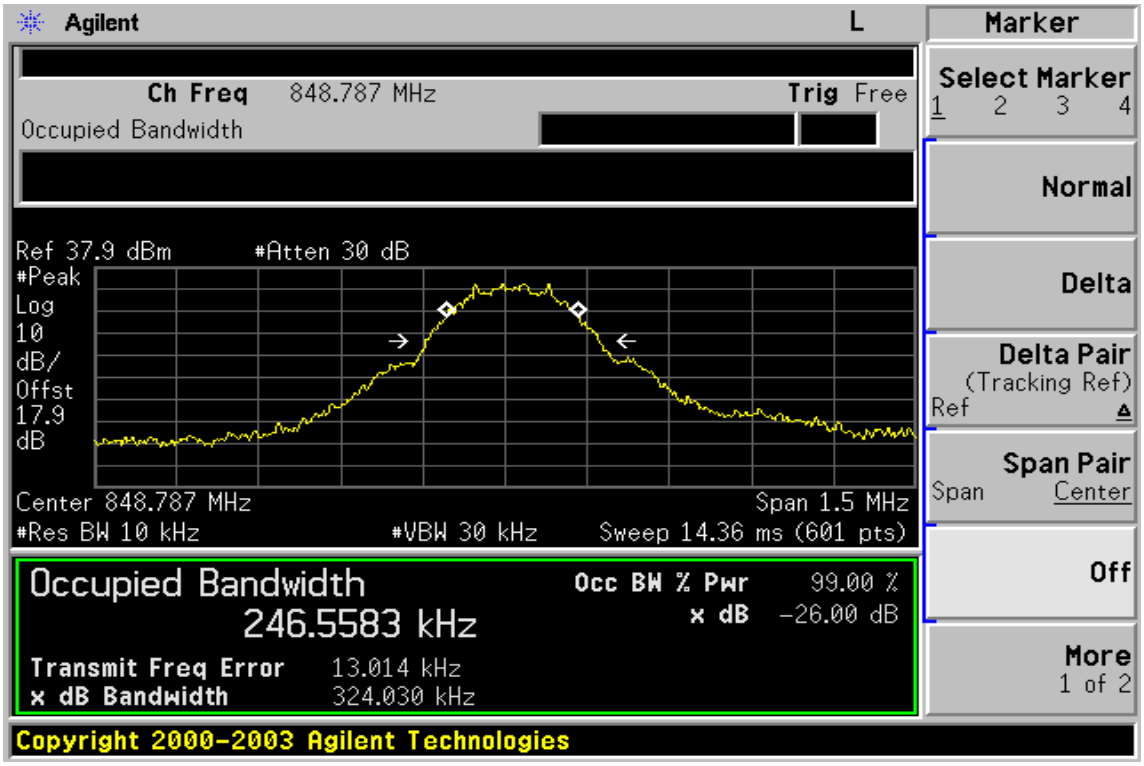


Figure 7-4: GSM 1900 Channel Low

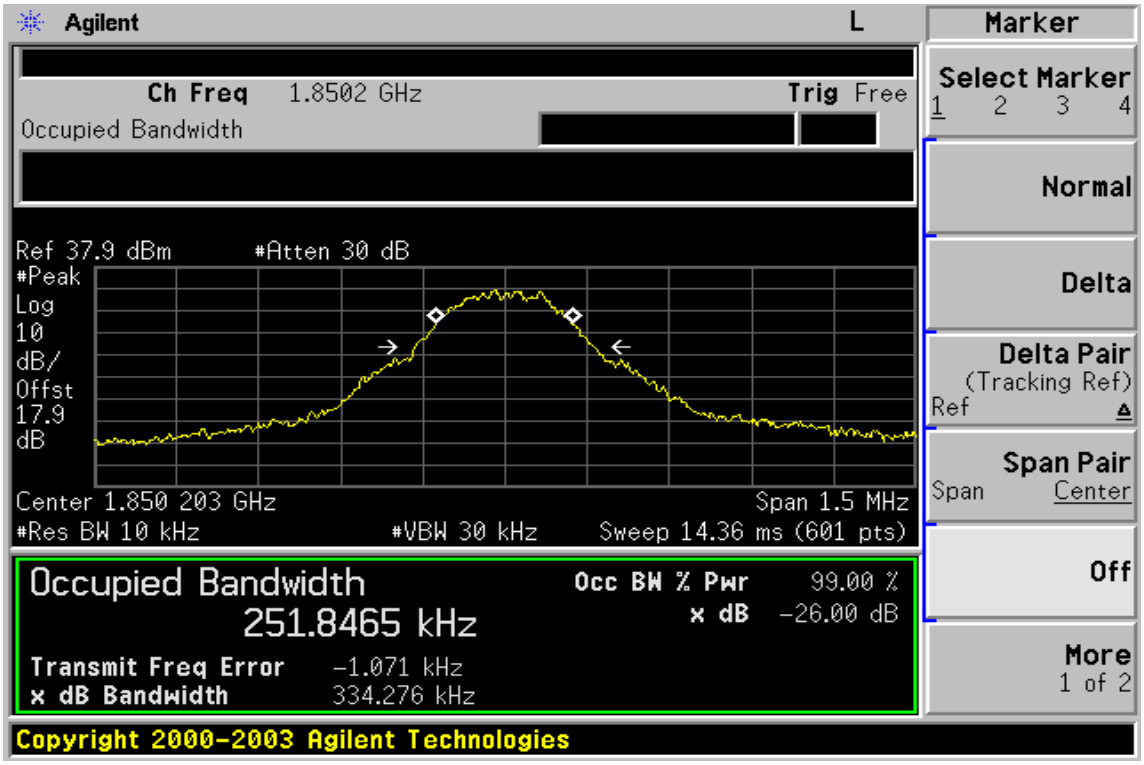


Figure 7-5 GSM 1900 Channel Mid

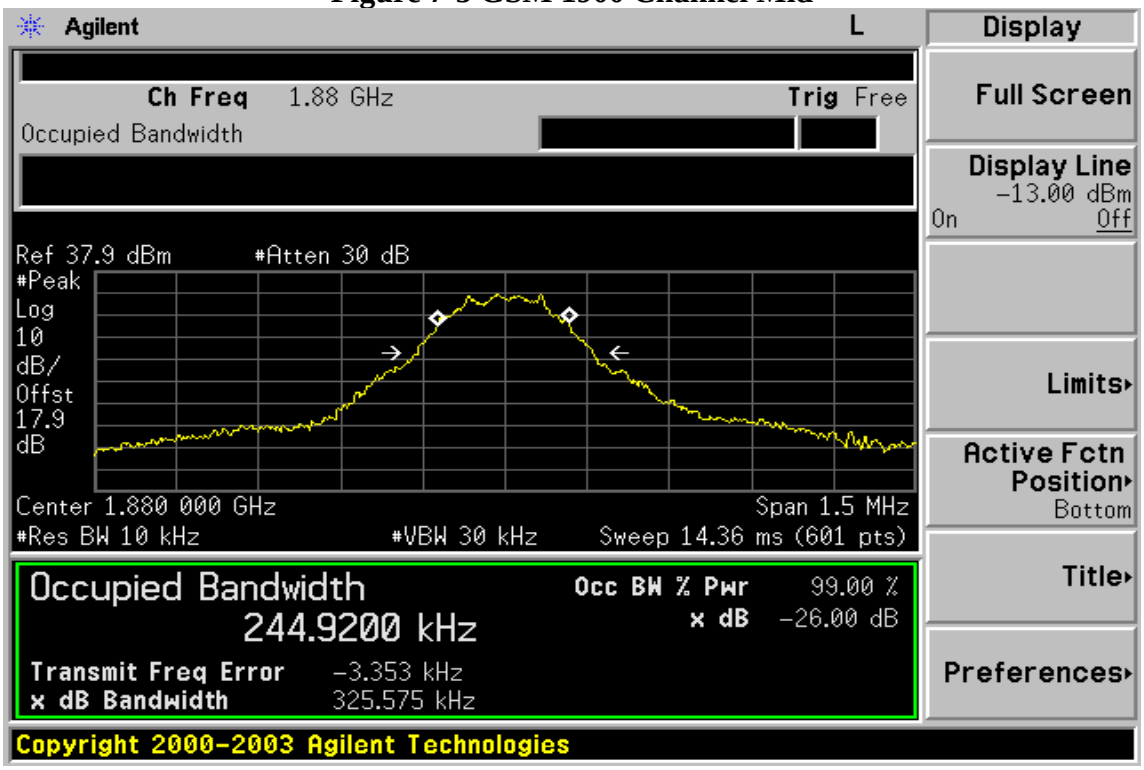
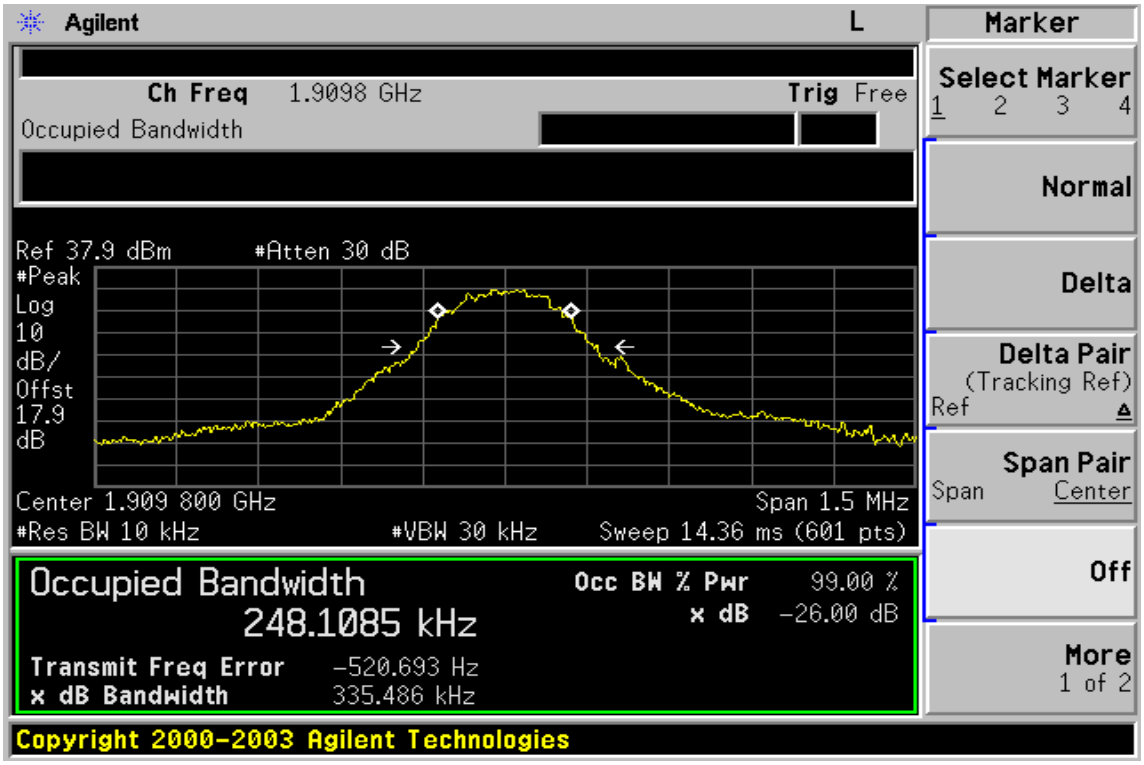


Figure 7-6: GSM 1900 Channel High



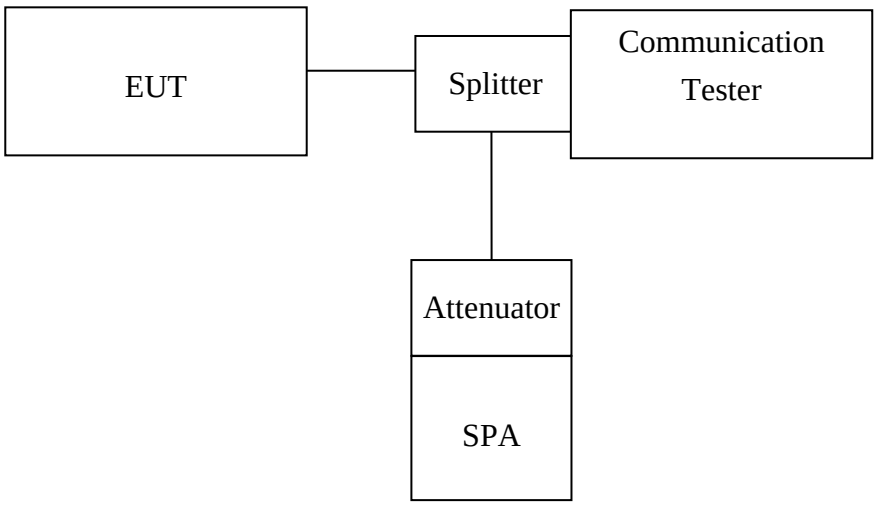
8. OUT OF BAND EMISSION AT ANTENNA TERMINALS

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



Note: *Measurement setup for testing on Antenna connector*

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= 10 th harmonic. Limit = -13dBm

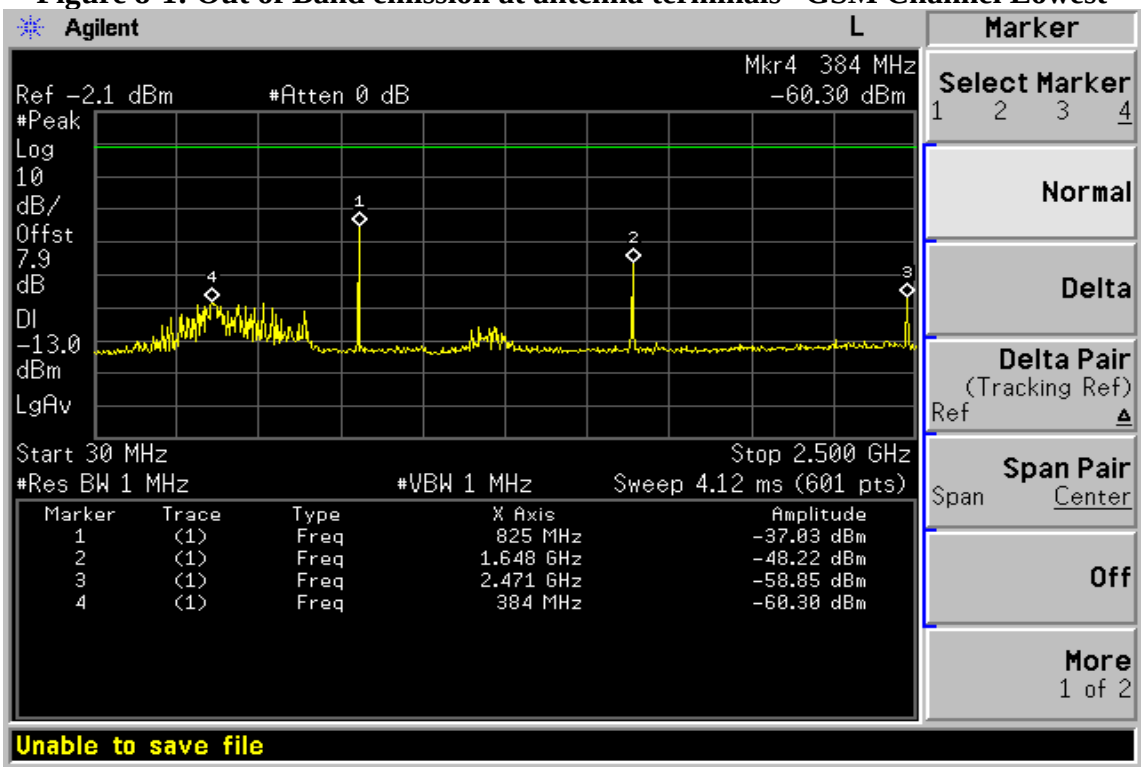
Band Edge Requirements: In the 1 MHz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 percent of the emission bandwidth of the fundamental emission of the transmitter may be employed to measure the out of band Emissions. Limit, -13dBm.

8.4 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2007	04/26/2008
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008
Power Sensor	Anritsu	MA2490A	31431	07/07/2007	07/06/2008
Power Meter	Anritsu	ML2487A	6K00002070	07/07/2007	07/06/2008
Communication Test	R&S	CMU200	N/A	N/A	N/A
Temperature Chamber	TERCHY	MHG-120LF	911009	04/26/2007	04/25/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2007	07/04/2008
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2007	07/04/2008
Splitter	Agilent	11636B	51728	09/23/2007	09/22/2008
Signal Generator	R&S	SMR40	100210	12/20/2006	12/19/2007
DC Power Supply	Agilent	6038A	2929A-07548	01/06/2007	01/05/2008

8.5 Measurement Result

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



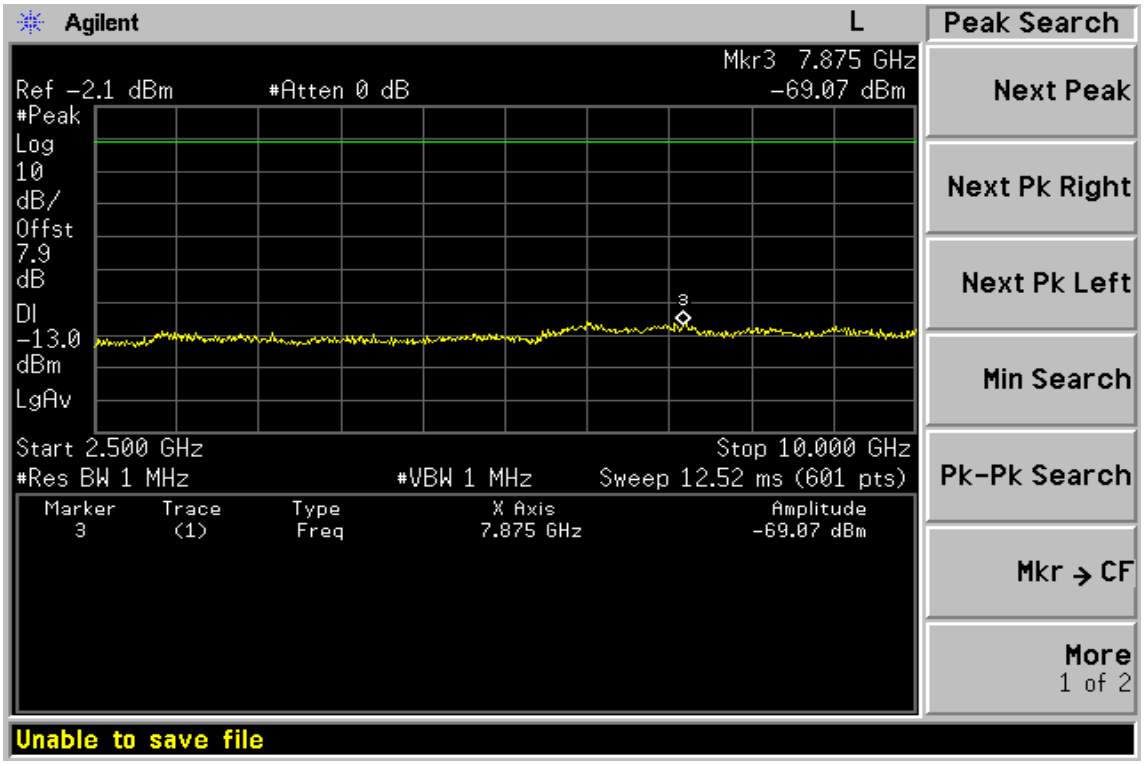
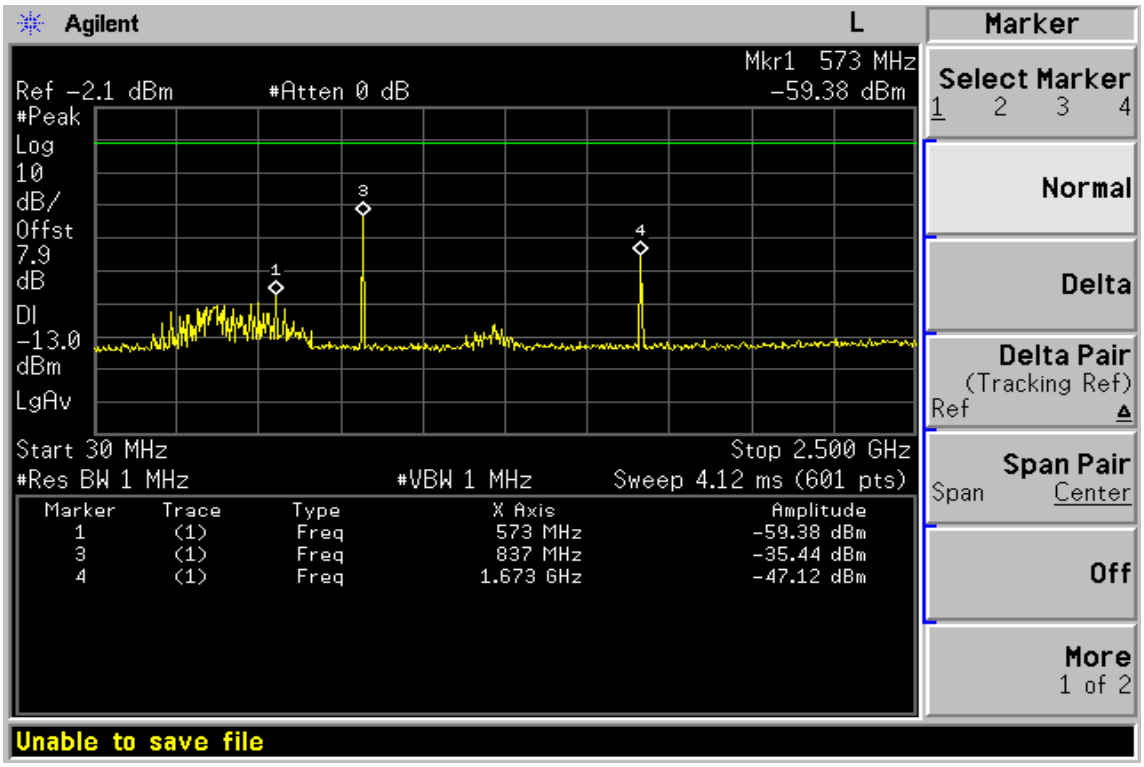


Figure 8-2: Out of Band emission at antenna terminals –GSM Channel Mid



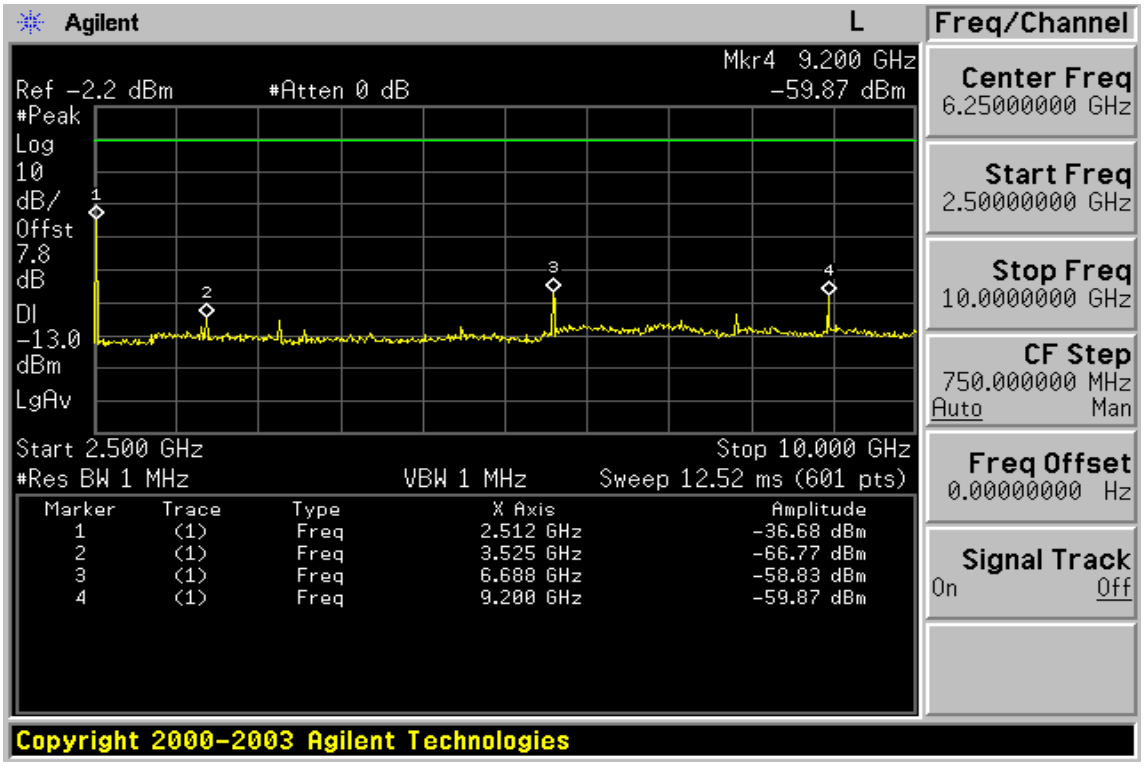
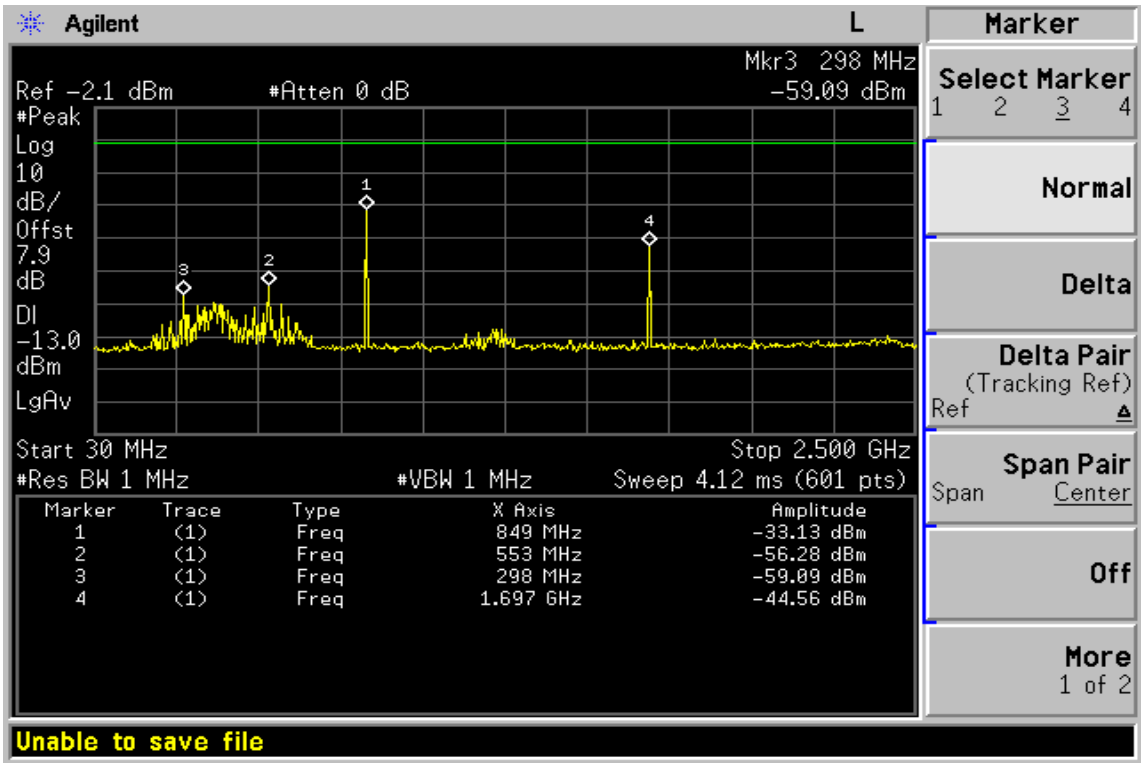


Figure 8-3: Out of Band emission at antenna terminals–GSM Channel Highest



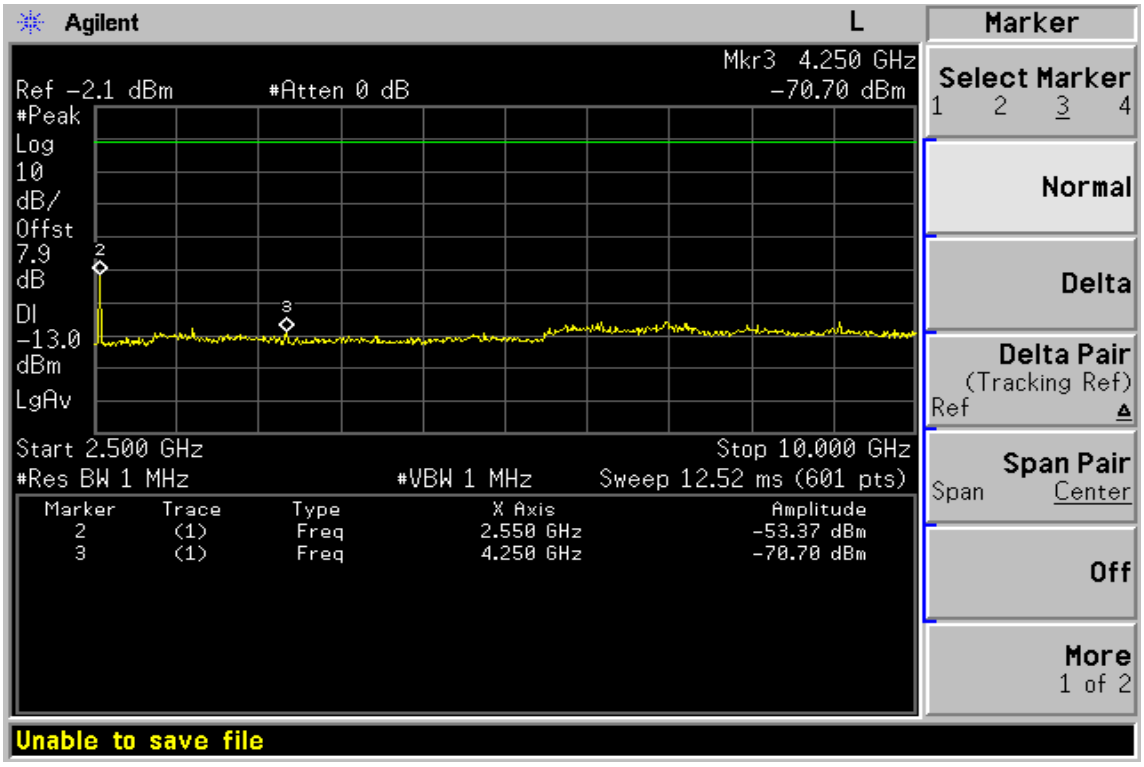


Figure 8-4: Bad edge emission at antenna terminals – GSM Channel Lowest

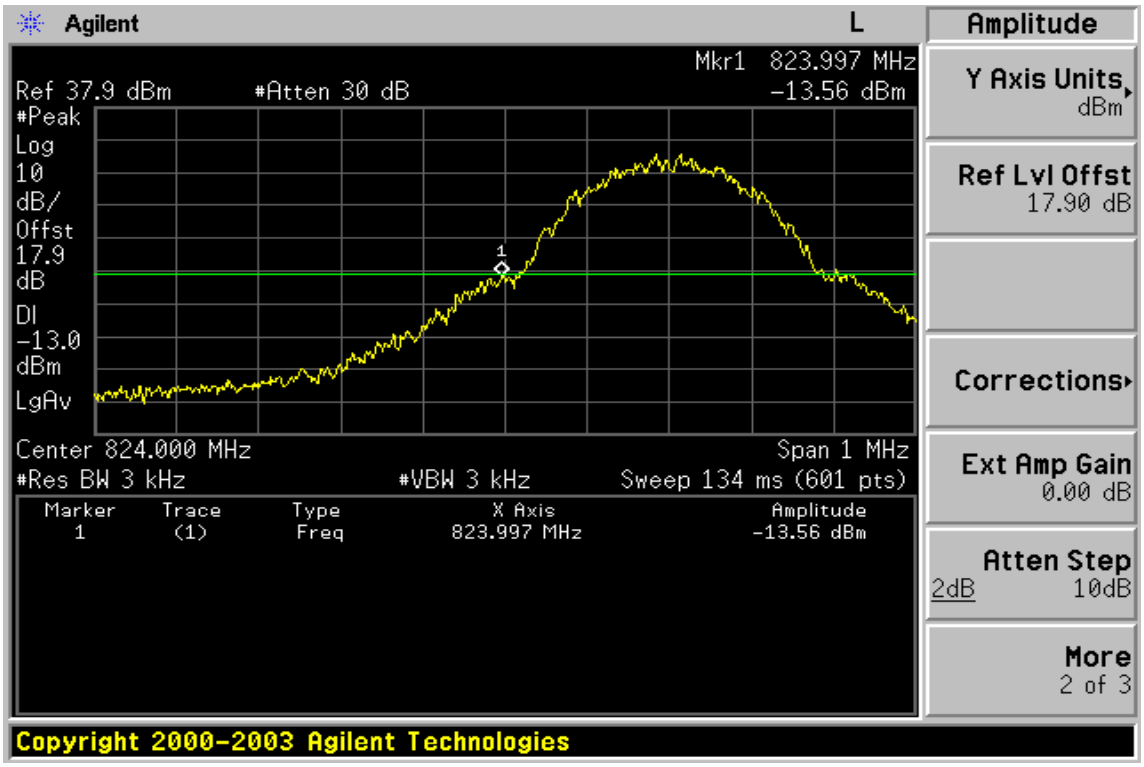


Figure 8-5: Band edge emission at antenna terminals – GSM Channel Highest

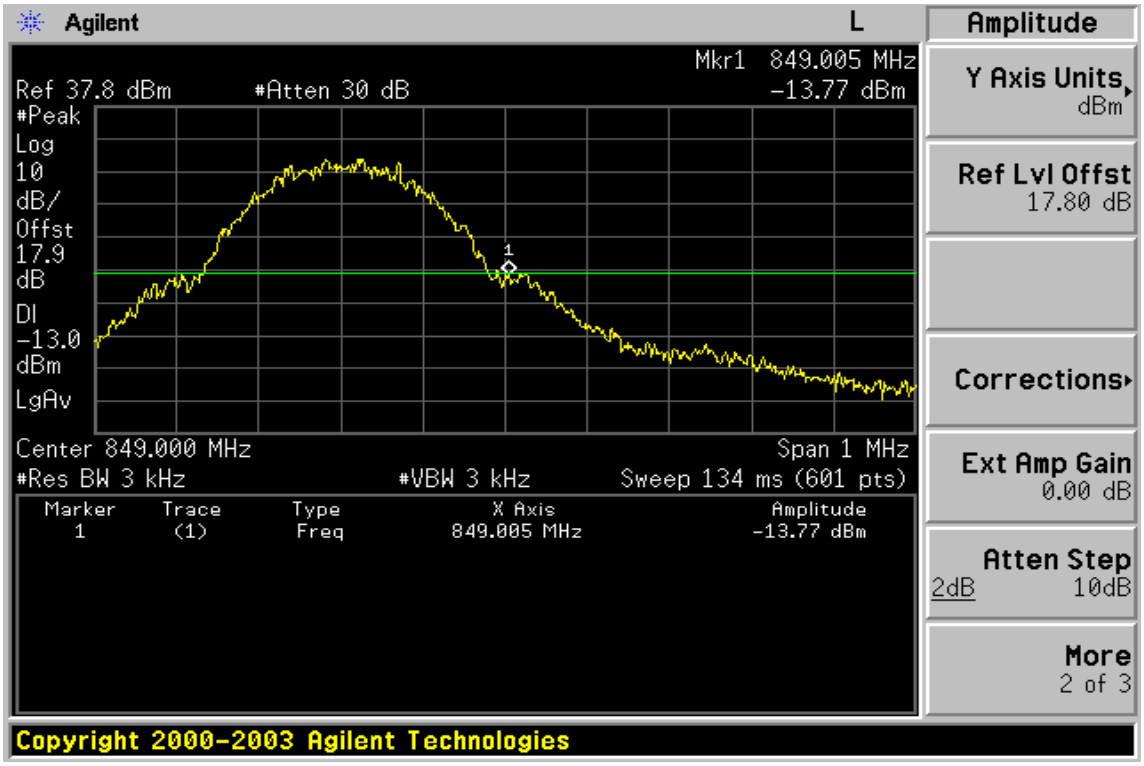
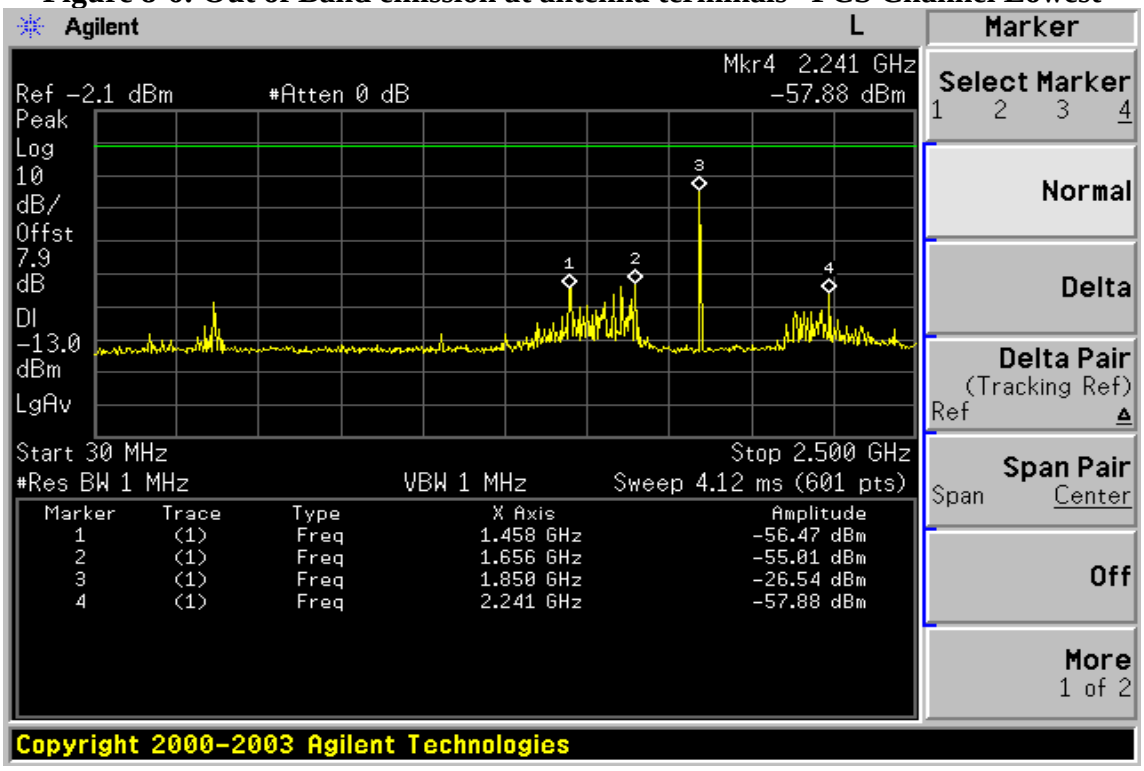


Figure 8-6: Out of Band emission at antenna terminals– PCS Channel Lowest



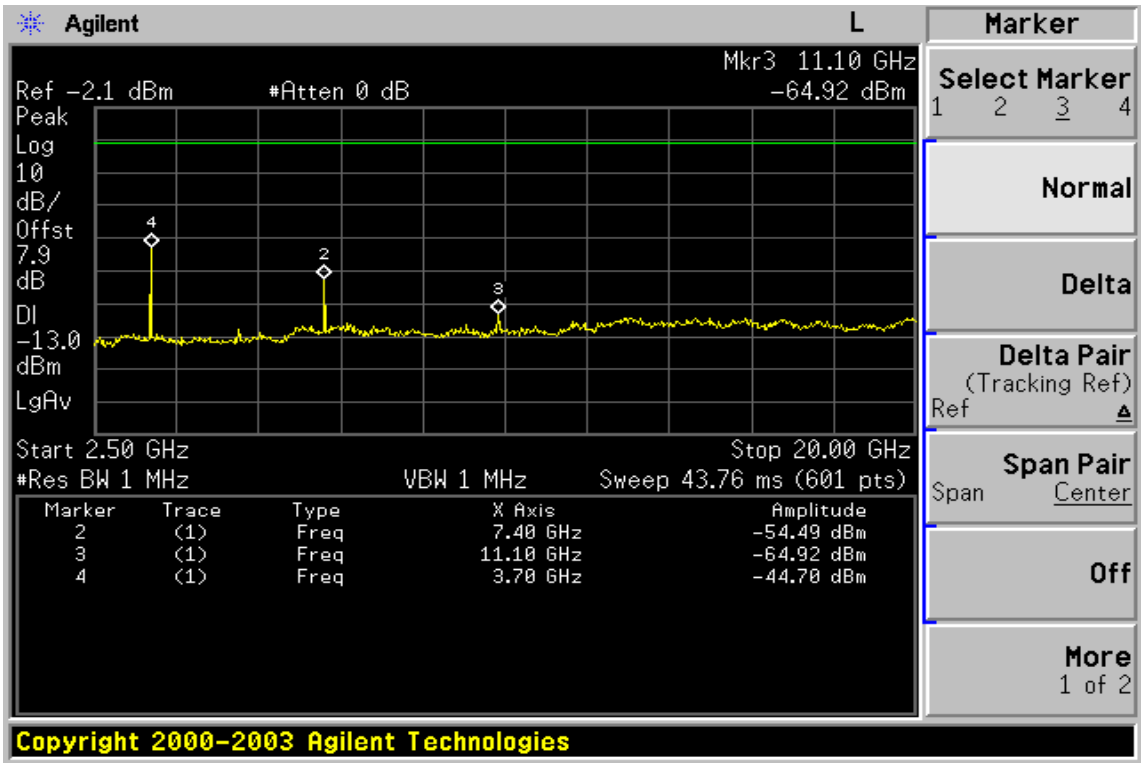
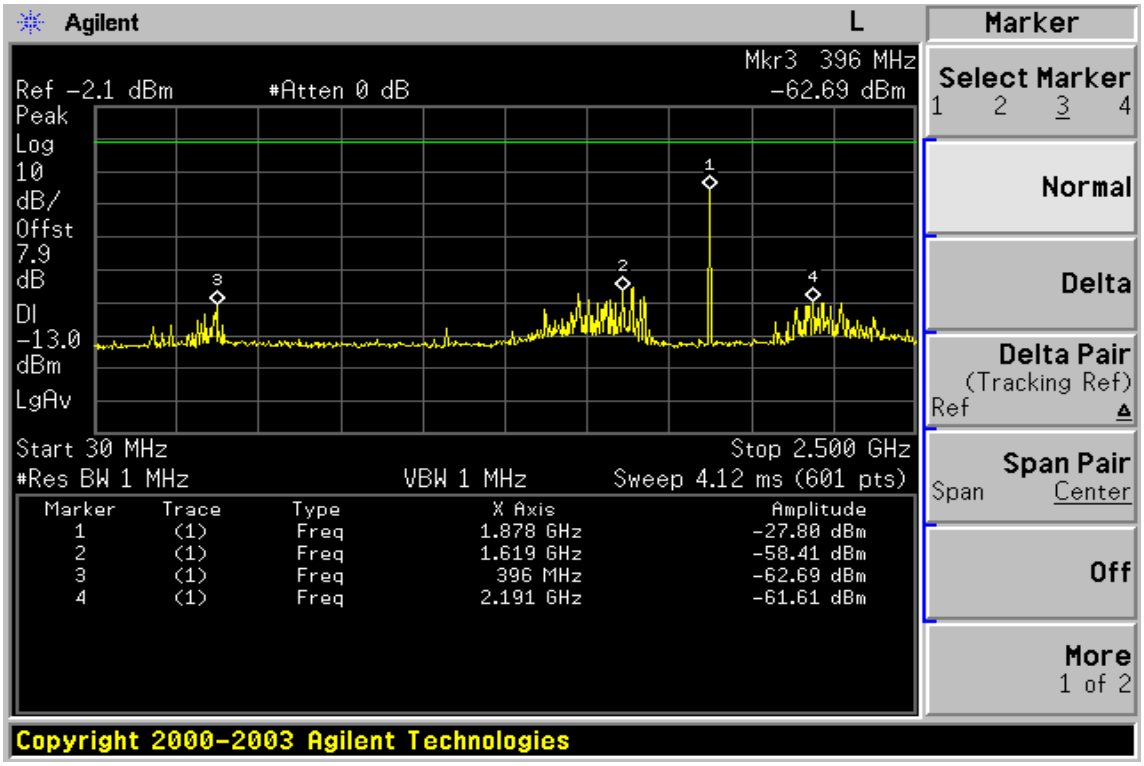


Figure 8-7: Out of Band emission at antenna terminals –PCS Channel Mid



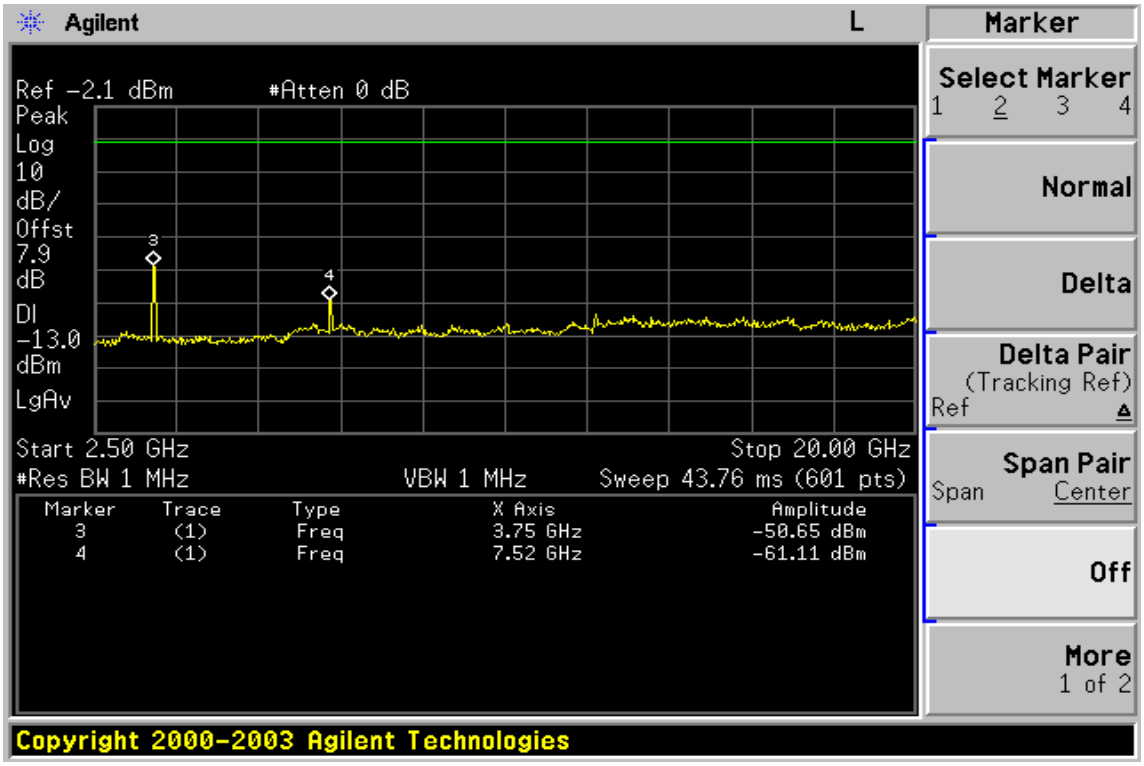
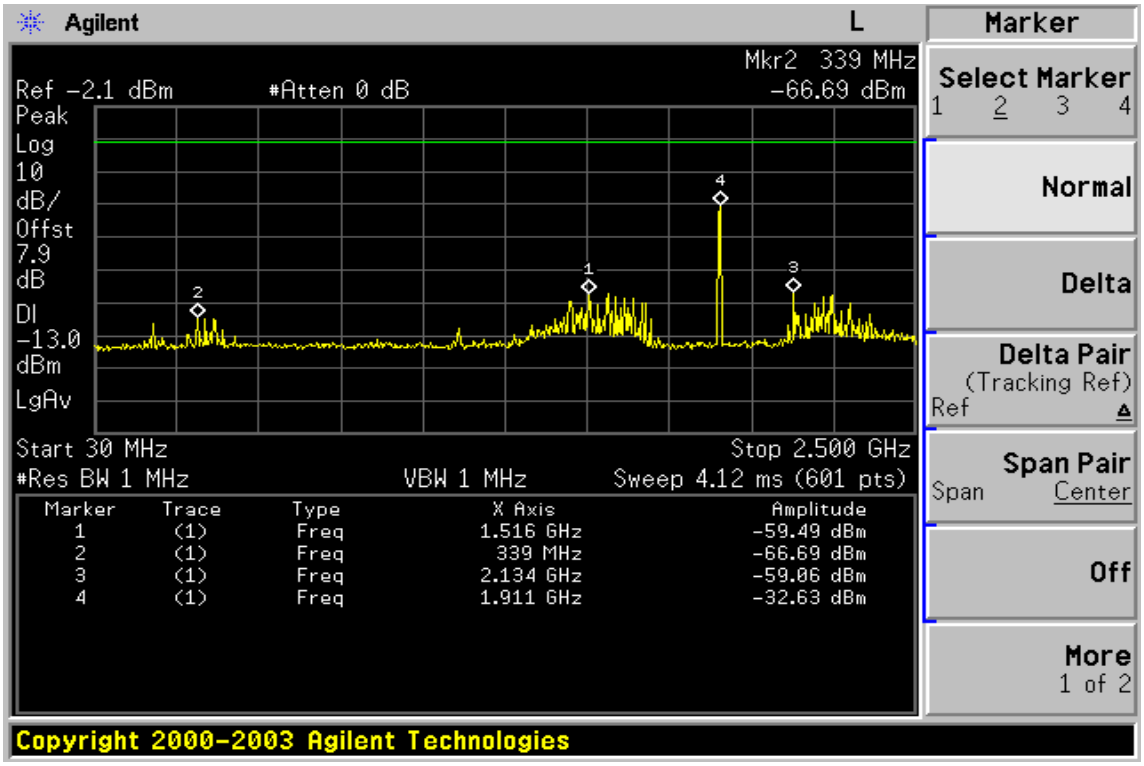


Figure 8-8: Out of Band emission at antenna terminals–PCS Channel Highest



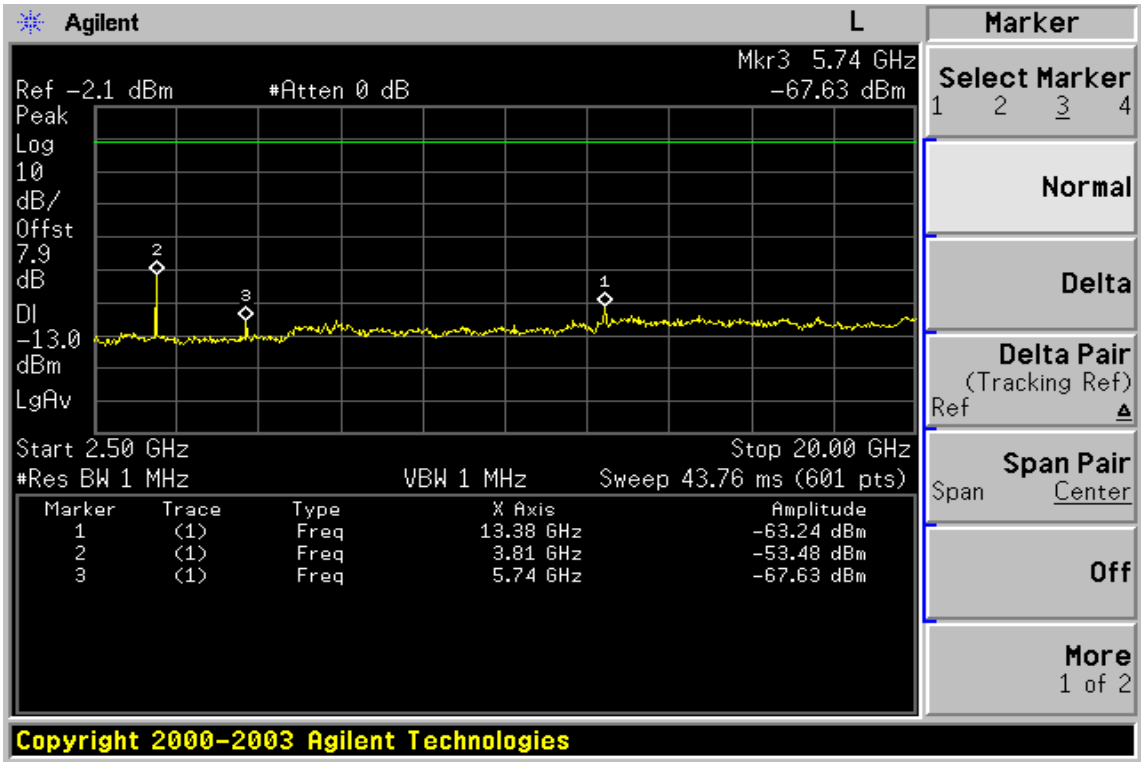


Figure 8-9: Bad edge emission at antenna terminals – PCS Channel Lowest

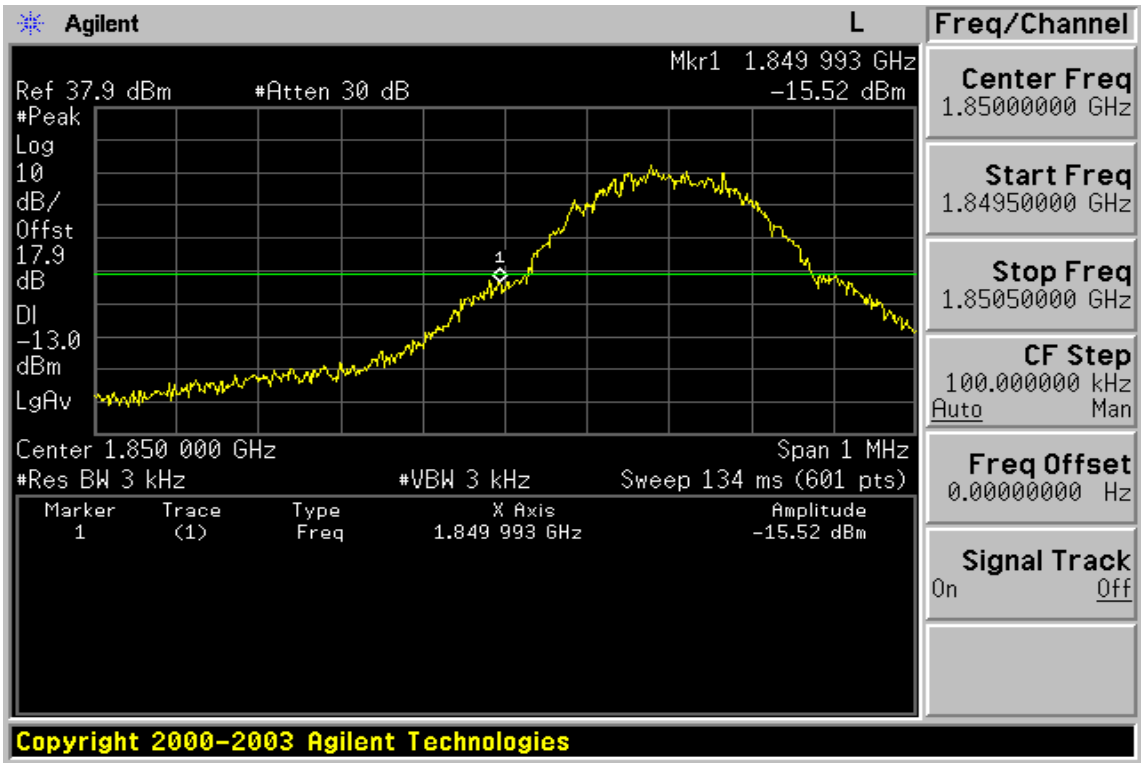
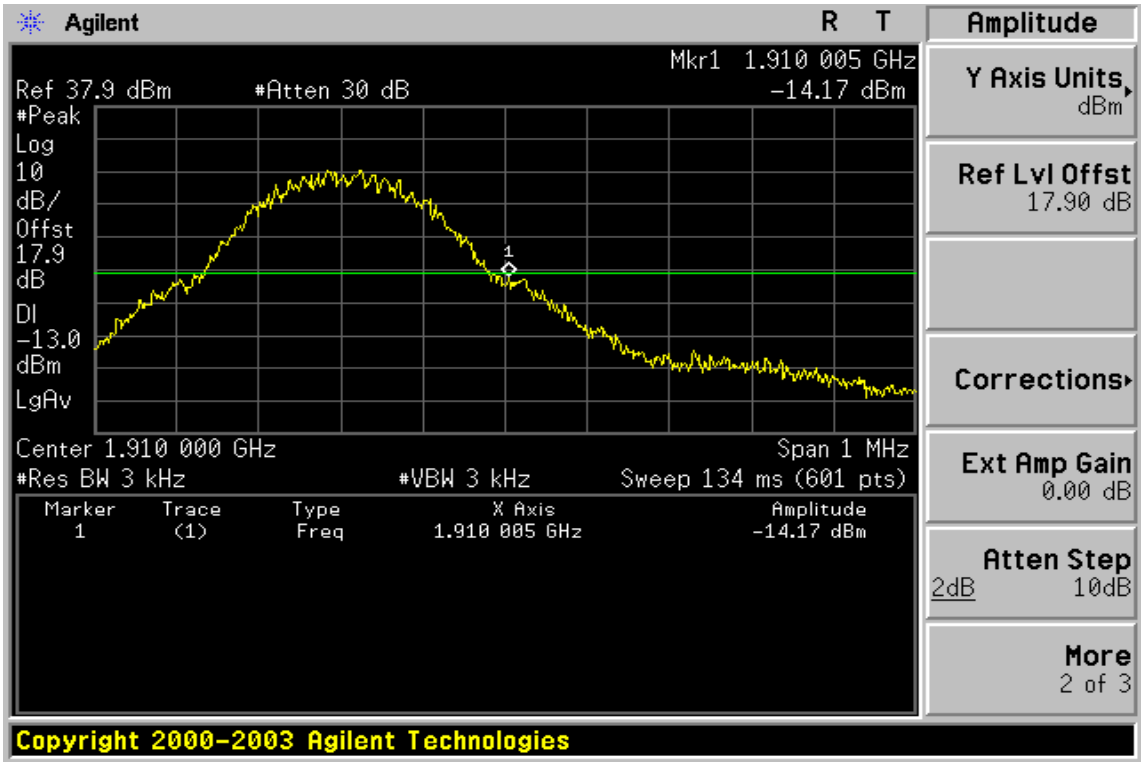


Figure 8-10: Band edge emission at antenna terminals – PCS Channel Highest



9. FIELD STRENGTH OF SPURIOUS RADIATION MEASUREMENT

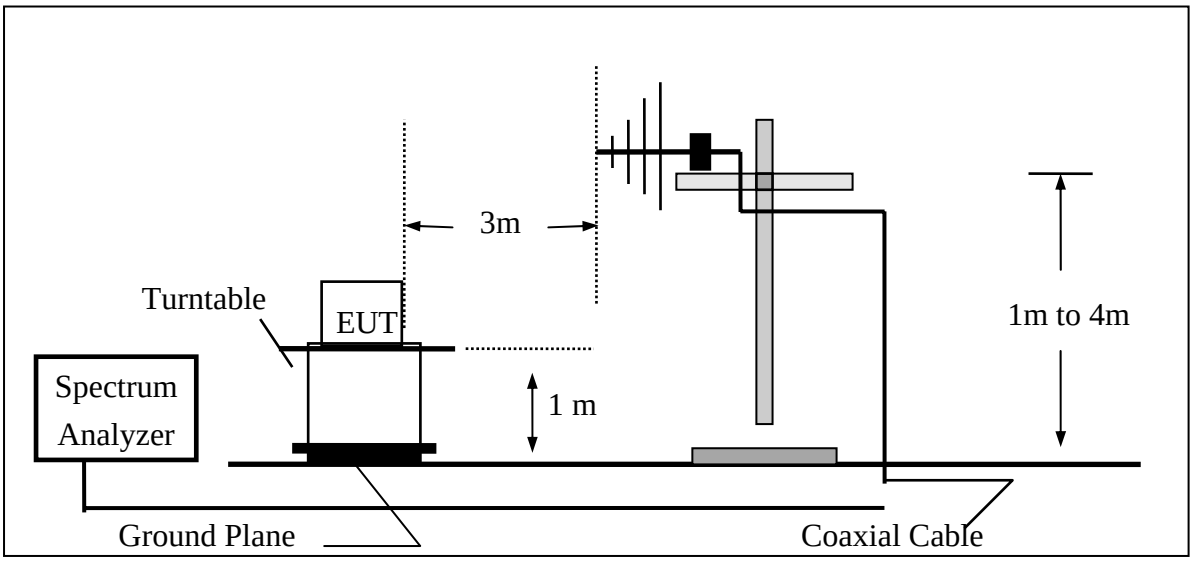
9.1 Standard Applicable

According to FCC §2.1053,

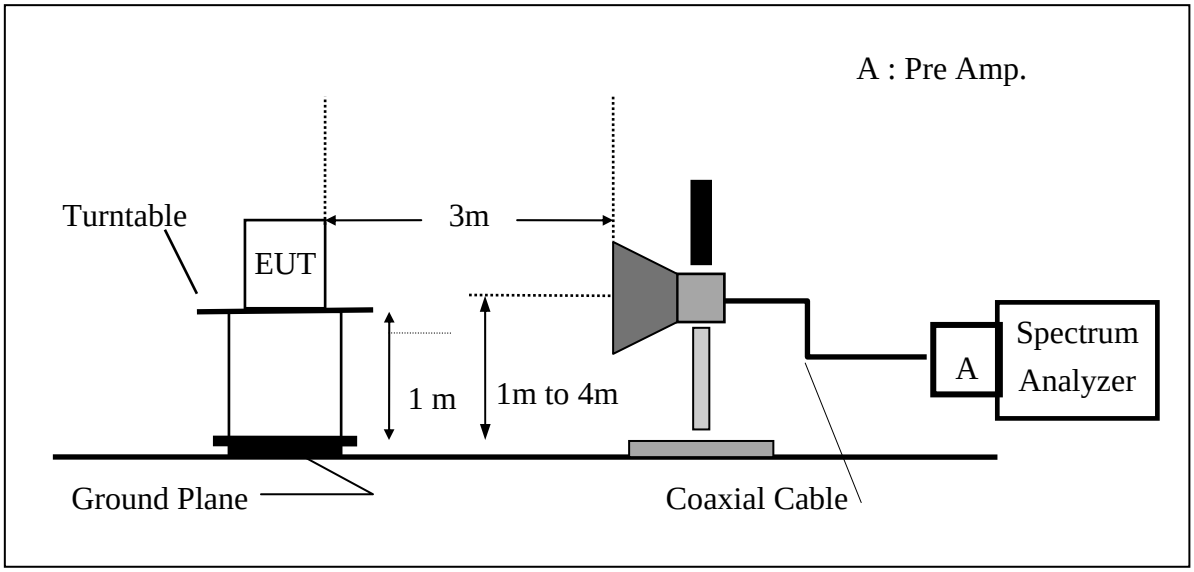
FCC §22.917(a),§24.238(a), the magnitude of each spurious and harmonic emission that can be detected when the equipment is operated under the conditions specified in the instruction manual and/ or alignment procedure, shall not be less than 43 + 10 log (mean output power in watts) dBc below the mean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

9.2 EUT Setup (Block Diagram of Configuration)

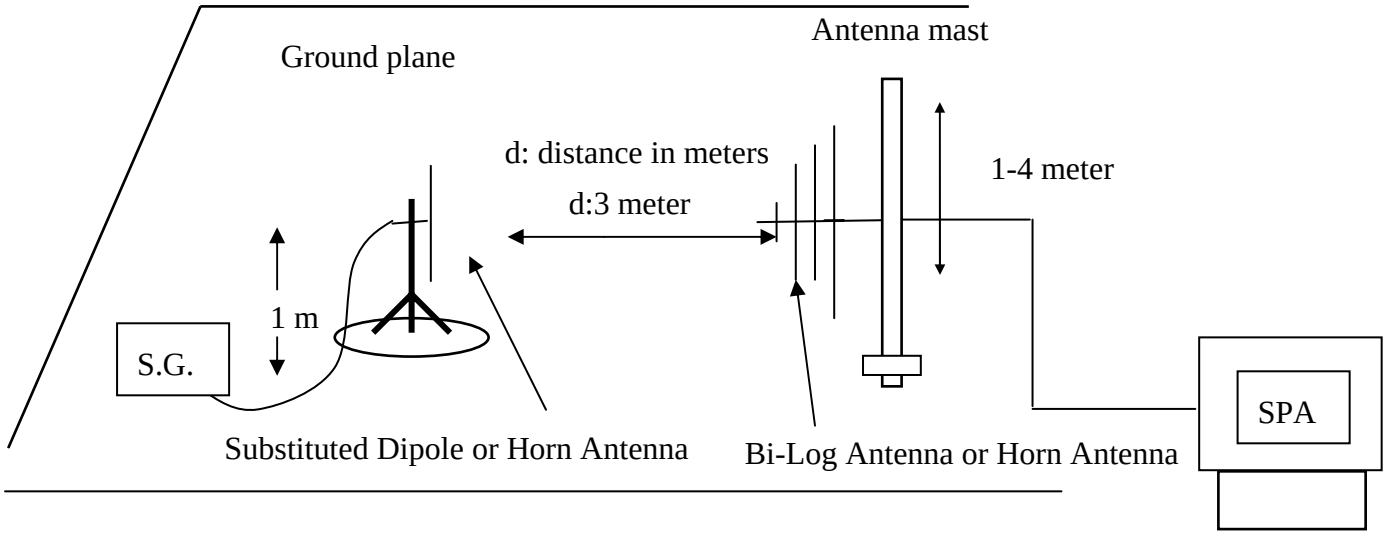
(A) Radiated Emission Test Set-Up, Frequency Below 1000MHz



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



(C) Substituted Method Test Set-UP



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.

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:

EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2007	04/26/2008
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008
Communication Test	R&S	CMU200	N/A	N/A	N/A
Bi-log Antenna	SCHWAZBECK	VULB9160	3224	11/17/2007	11/16/2008
Horn antenna	SCHWAZBECK	BBHA 9120D	309/320	08/16/2007	08/15/2008
Pre-Amplifier	HP	8447D	2944A09469	07/19/2007	07/18/2008
Pre-Amplifier	HP	8494B	3008A00578	02/26/2007	02/25/2008
Signal Generator	R&S	SMR40	100210	02/09/2007	02/10/2008
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	10/09/2007	10/08/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-3M	3m	10/09/2007	10/08/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA-0.5M	0.5m	10/09/2007	10/08/2008
Site NSA	SGS	966 chamber	N/A	10/02/2006	10/01/2008
Attenuator	Mini-Circult	BW-S10W5	N/A	09/23/2007	09/22/2008
Dipole Antenna	SCHWAZBECK	VHAP	908/909	06/09/2007	06/10/2008
Dipole Antenna	SCHWAZBECK	UHAP	891/892	06/09/2007	06/10/2008

9.5 Measurement Result

Refer to attach tabular data sheets.

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Nov. 20, 2007
Fundamental Frequency	: 824.20 MHz	Test By:	Jazz
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)
92.08	49.24	V	-55.01	-7.75	1.17	-63.94	-13.00	-50.94
245.34	45.10	V	-55.73	-7.89	1.95	-65.56	-13.00	-52.56
284.14	41.06	V	-58.88	-7.91	1.99	-68.77	-13.00	-55.77
824.00	60.81	V	-26.52	-7.87	3.64	-38.04	-13.00	-25.04
1648.40	39.31	V	-67.73	9.29	5.06	-63.50	-13.00	-50.50
2472.60	---	V		10.08	6.30		-13.00	
3296.80	---	V		12.17	7.26		-13.00	
4121.00	---	V		12.61	8.33		-13.00	
4945.20	35.72	V	-60.85	12.65	9.19	-57.39	-13.00	-44.39
5769.40	---	V		13.55	9.80		-13.00	
6593.60	---	V		12.05	10.61		-13.00	
7417.80	---	V		11.49	11.28		-13.00	
8242.00	---	V		11.48	12.26		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Low E2 Mode	Test Date:	Nov. 20, 2007
Fundamental Frequency	: 824.20 MHz	Test By:	Jazz
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)
250.19	46.78	H	-54.12	-7.89	1.99	-63.99	-13.00	-50.99
366.59	40.43	H	-56.46	-7.65	2.46	-66.57	-13.00	-53.57
824.00	62.41	H	-25.25	-7.87	3.64	-36.77	-13.00	-23.77
1343.00	41.12	H	-66.48	7.94	4.49	-63.04	-13.00	-50.04
1648.40	---	H		9.29	5.06		-13.00	
2472.60	---	H		10.08	6.30		-13.00	
3296.80	---	H		12.17	7.26		-13.00	
4121.00	---	H		12.61	8.33		-13.00	
4945.20	---	H		12.65	9.19		-13.00	
5769.40	---	H		13.55	9.80		-13.00	
6593.60	---	H		12.05	10.61		-13.00	
7417.80	---	H		11.49	11.28		-13.00	
8242.00	---	H		11.48	12.26		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Nov. 20, 2007
Fundamental Frequency	: 836.60 MHz	Test By:	Jazz
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)
92.08	49.72	V	-54.53	-7.75	1.17	-63.46	-13.00	-50.46
235.64	45.25	V	-55.85	-7.88	1.86	-65.59	-13.00	-52.59
1673.20	---	V		9.36	5.10		-13.00	
2509.80	---	V		10.09	6.35		-13.00	
3346.40	---	V		12.28	7.29		-13.00	
4183.00	---	V		12.62	8.40		-13.00	
5019.60	---	V		12.67	9.26		-13.00	
5856.20	---	V		13.68	9.85		-13.00	
6692.80	---	V		11.95	10.74		-13.00	
7529.40	---	V		11.45	11.35		-13.00	
8366.00	---	V		11.59	12.43		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH Mid E2 Mode	Test Date:	Nov. 20, 2007
Fundamental Frequency	: 836.60 MHz	Test By:	Jazz
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)
245.34	50.20	H	-50.78	-7.89	1.95	-60.62	-13.00	-47.62
361.74	38.26	H	-58.72	-7.64	2.46	-68.82	-13.00	-55.82
1343.00	40.80	H	-66.80	7.94	4.49	-63.36	-13.00	-50.36
1673.20	---	H		9.36	5.10		-13.00	
2509.80	---	H		10.09	6.35		-13.00	
3346.40	---	H		12.28	7.29		-13.00	
4183.00	---	H		12.62	8.40		-13.00	
5019.60	---	H		12.67	9.26		-13.00	
5856.20	---	H		13.68	9.85		-13.00	
6692.80	---	H		11.95	10.74		-13.00	
7529.40	---	H		11.45	11.35		-13.00	
8366.00	---	H		11.59	12.43		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH High E2 Mode	Test Date:	Nov. 20, 2007
Fundamental Frequency	: 848.80 MHz	Test By:	Jazz
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)
203.63	42.21	V	-59.79	-7.84	1.59	-69.22	-13.00	-56.22
242.43	43.25	V	-57.66	-7.88	1.92	-67.47	-13.00	-54.47
850.00	64.91	V	-21.80	-7.88	3.75	-33.43	-13.00	-20.43
1697.60	38.73	V	-68.29	9.44	5.14	-64.00	-13.00	-51.00
2546.40	---	V		10.20	6.40		-13.00	
3395.20	---	V		12.38	7.33		-13.00	
4244.00	---	V		12.63	8.46		-13.00	
5092.80	---	V		12.74	9.32		-13.00	
5941.60	---	V		13.81	9.89		-13.00	
6790.40	---	V		11.86	10.87		-13.00	
7639.20	---	V		11.40	11.48		-13.00	
8488.00	---	V		11.70	12.59		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 850 Mode

Operation Mode	: TX CH High E2 Mode	Test Date:	Nov. 20, 2007
Fundamental Frequency	: 848.80 MHz	Test By:	Jazz
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)
245.34	47.42	H	-53.56	-7.89	1.95	-63.40	-13.00	-50.40
366.59	38.22	H	-58.67	-7.65	2.46	-68.78	-13.00	-55.78
850.00	66.53	H	-20.46	-7.88	3.75	-32.09	-13.00	-19.09
1343.00	41.24	H	-66.36	7.94	4.49	-62.92	-13.00	-49.92
1697.60	---	H		9.44	5.14		-13.00	
2546.40	---	H		10.20	6.40		-13.00	
3395.20	---	H		12.38	7.33		-13.00	
4244.00	---	H		12.63	8.46		-13.00	
5092.80	---	H		12.74	9.32		-13.00	
5941.60	---	H		13.81	9.89		-13.00	
6790.40	---	H		11.86	10.87		-13.00	
7639.20	---	H		11.40	11.48		-13.00	
8488.00	---	H		11.70	12.59		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH Low E2 Mode	Test Date	Nov. 20, 2007
Fundamental Frequency	: 1850.20MHz	Test By:	Jazz
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)
99.84	43.66	V	-60.05	-7.76	1.22	-69.03	-13.00	-56.03
203.63	40.75	V	-61.25	-7.84	1.59	-70.68	-13.00	-57.68
1850.00	81.30	V	-25.66	9.90	5.41	-21.17	-13.00	-8.17
3700.40	---	V		12.61	7.73		-13.00	
5550.60	---	V		13.23	9.68		-13.00	
7400.80	---	V		11.50	11.28		-13.00	
9251.00	---	V		11.92	13.10		-13.00	
11101.20	---	V		11.66	14.33		-13.00	
12951.40	---	V		13.63	15.98		-13.00	
14801.60	---	V		12.76	17.27		-13.00	
16651.80	---	V		15.92	19.04		-13.00	
18502.00	---	V		18.75	21.21		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH Low E1 Mode	Test Date	Nov. 20, 2007
Fundamental Frequency	: 1850.20MHz	Test By:	Jazz
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)
92.08	46.89	H	-56.71	-7.75	1.17	-65.63	-13.00	-52.63
223.03	43.39	H	-58.00	-7.86	1.76	-67.62	-13.00	-54.62
363.68	37.57	H	-59.37	-7.65	2.46	-69.48	-13.00	-56.48
1850.00	80.22	H	-26.67	9.90	5.41	-22.18	-13.00	-9.18
3700.40	---	H		12.61	7.73		-13.00	
5550.60	---	H		13.23	9.68		-13.00	
7400.80	---	H		11.50	11.28		-13.00	
9251.00	---	H		11.92	13.10		-13.00	
11101.20	---	H		11.66	14.33		-13.00	
12951.40	---	H		13.63	15.98		-13.00	
14801.60	---	H		12.76	17.27		-13.00	
16651.80	---	H		15.92	19.04		-13.00	
18502.00	---	H		18.75	21.21		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH Mid E1 Mode	Test Date	Nov. 20, 2007
Fundamental Frequency	: 1880MHz	Test By	Jazz
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)
92.08	49.24	V	-55.01	-7.75	1.17	-63.94	-13.00	-50.94
206.54	40.00	V	-61.92	-7.85	1.62	-71.38	-13.00	-58.38
3760.00	39.35	V	-61.95	12.60	7.82	-57.17	-13.00	-44.17
5640.00	37.10	V	-57.86	13.36	9.73	-54.23	-13.00	-41.23
7520.00	---	V		11.45	11.33		-13.00	
9400.00	---	V		11.93	13.15		-13.00	
11280.00	---	V		11.92	14.56		-13.00	
13160.00	---	V		13.33	16.11		-13.00	
15040.00	---	V		13.76	17.57		-13.00	
16920.00	---	V		15.27	19.66		-13.00	
18800.00	---	V		18.68	21.34		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH Mid E1 Mode	Test Date	Nov. 20, 2007
Fundamental Frequency	: 1880MHz	Test By	Jazz
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)
92.08	45.03	H	-58.57	-7.75	1.17	-67.49	-13.00	-54.49
201.69	43.77	H	-58.00	-7.84	1.58	-67.42	-13.00	-54.42
366.59	38.26	H	-58.63	-7.65	2.46	-68.74	-13.00	-55.74
3760.00	---	H		12.60	7.82		-13.00	
5640.00	---	H		13.36	9.73		-13.00	
7520.00	---	H		11.45	11.33		-13.00	
9400.00	---	H		11.93	13.15		-13.00	
11280.00	---	H		11.92	14.56		-13.00	
13160.00	---	H		13.33	16.11		-13.00	
15040.00	---	H		13.76	17.57		-13.00	
16920.00	---	H		15.27	19.66		-13.00	
18800.00	---	H		18.68	21.34		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH High E2 Mode	Test Date	Nov. 20, 2007
Fundamental Frequency	: 1909.8 MHz	Test By	Jazz
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)
92.08	49.58	V	-54.67	-7.75	1.17	-63.60	-13.00	-50.60
201.69	40.48	V	-61.57	-7.84	1.58	-70.99	-13.00	-57.99
1910.00	81.92	V	-25.02	10.08	5.51	-20.45	-13.00	-7.45
3981.60	37.21	V	-63.07	12.60	8.17	-58.65	-13.00	-45.65
5972.40	39.23	V	-54.79	13.86	9.91	-50.84	-13.00	-37.84
7963.20	---	V		11.27	11.88		-13.00	
9954.00	---	V		12.08	13.43		-13.00	
11944.80	---	V		13.08	15.21		-13.00	
13935.60	---	V		11.82	16.86		-13.00	
15926.40	---	V		17.08	18.33		-13.00	
17917.20	---	V		9.63	20.12		-13.00	
19908.00	---	V		18.88	20.85		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

Radiated Spurious Emission Measurement Result: GSM 1900 Mode

Operation Mode	: TX CH High E2 Mode	Test Date	Nov. 20, 2007
Fundamental Frequency	: 1909.8 MHz	Test By	Jazz
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)
92.08	45.74	H	-57.86	-7.75	1.17	-66.78	-13.00	-53.78
208.48	42.22	H	-59.43	-7.85	1.63	-68.91	-13.00	-55.91
376.29	36.92	H	-59.81	-7.65	2.44	-69.91	-13.00	-56.91
1910.00	82.10	H	-24.75	10.08	5.51	-20.19	-13.00	-7.19
3981.60	---	H		12.60	8.17		-13.00	
5972.40	---	H		13.86	9.91		-13.00	
7963.20	---	H		11.27	11.88		-13.00	
9954.00	---	H		12.08	13.43		-13.00	
11944.80	---	H		13.08	15.21		-13.00	
13935.60	---	H		11.82	16.86		-13.00	
15926.40	---	H		17.08	18.33		-13.00	
17917.20	---	H		9.63	20.12		-13.00	
19908.00	---	H		18.88	20.85		-13.00	

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

Remark：

1 The emission behavior 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 (dBm) = SG Setting(dBm) + Antenna Gain (dB/dBi) – Cable loss (dB)

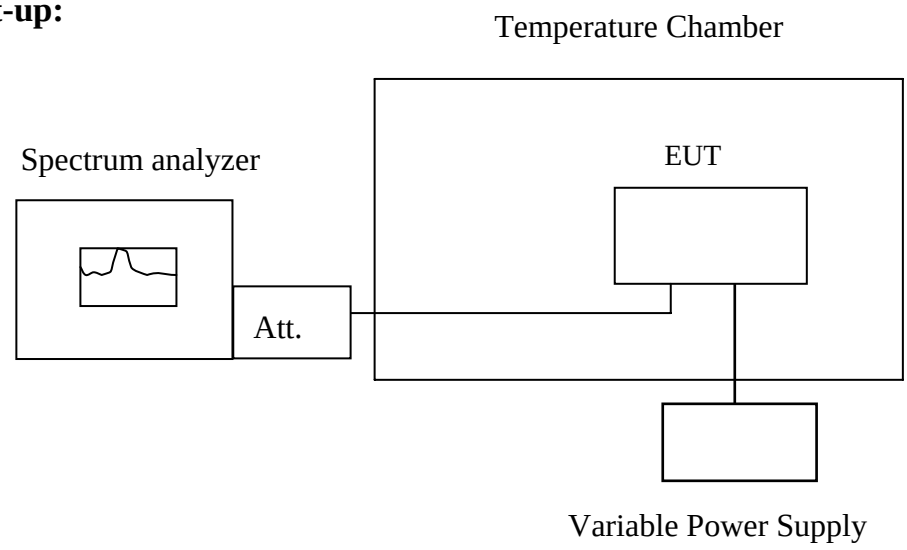
10. FREQUENCY STABILITY V.S. TEMPERATURE MEASUREMENT

10.1 Standard Applicable

According to FCC §2.1055(a)(1)(b).

Frequency Tolerance: 2.5 ppm

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:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2007	04/26/2008
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008
Power Sensor	Anritsu	MA2490A	31431	07/07/2007	07/06/2008
Power Meter	Anritsu	ML2487A	6K00002070	07/07/2007	07/06/2008
Communication Test	R&S	CMU200	N/A	N/A	N/A
Temperature Chamber	TERCHY	MHG-120LF	911009	04/26/2007	04/25/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2007	07/04/2008
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2007	07/04/2008
Splitter	Agilent	11636B	51728	09/23/2007	09/22/2008
Signal Generator	R&S	SMR40	100210	12/20/2006	12/19/2007
DC Power Supply	Agilent	6038A	2929A-07548	01/06/2007	01/05/2008

10.5 Measurement Result

Reference Frequency: GSM Mid Channel 836.6 MHz @ 25℃				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
12	-30	836.600033	2.00	2091
12	-20	836.600036	-1.00	2091
12	-10	836.600037	-2.00	2091
12	0	836.600029	6.00	2091
12	10	836.600031	4.00	2091
12	20	836.600035	0.00	2091
12	30	836.600032	3.00	2091
12	40	836.600030	5.00	2091
12	50	836.600034	1.00	2091

Reference Frequency: PCS Mid Channel 1880 MHz @ 25℃				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
12	-30	1880.000001	-3.00	4700
12	-20	1880.000003	-5.00	4700
12	-10	1879.999996	2.00	4700
12	0	1879.999995	3.00	4700
12	10	1879.999997	1.00	4700
12	20	1879.999998	0.00	4700
12	30	1879.999999	-1.00	4700
12	40	1880.000001	-3.00	4700
12	50	1879.999996	2.00	4700

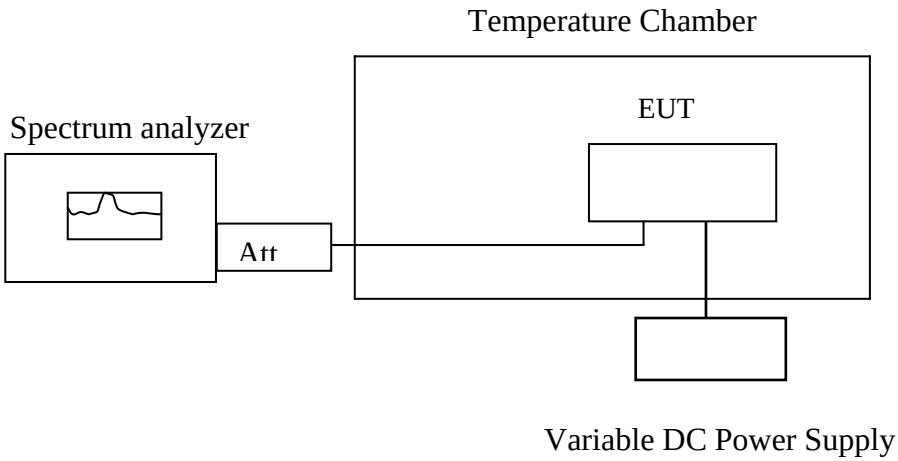
11. FREQUENCY STABILITY V.S. VOLTAGE MEASUREMENT

11.1 Standard Applicable

According to FCC §2.1055(d)(1)(2)

Frequency Tolerance: 2.5 ppm

11.2 Test Set-up:



Note: *Measurement setup for testing on Antenna connector*

11.3 Measurement Procedure

Set chamber temperature to 25℃. 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 (+/- 15%) and endpoint, record the maximum frequency change.

11.4 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
Spectrum Analyzer	Agilent	E4446A	MY43360126	04/27/2007	04/26/2008
Spectrum Analyzer	Agilent	E7405A	US41160416	07/04/2007	07/03/2008
Power Sensor	Anritsu	MA2490A	31431	07/07/2007	07/06/2008
Power Meter	Anritsu	ML2487A	6K00002070	07/07/2007	07/06/2008
Communication Test	R&S	CMU200	N/A	N/A	N/A
Temperature Chamber	TERCHY	MHG-120LF	911009	04/26/2007	04/25/2008
Low Loss Cable	HUBER+SUHNER	SUCOFLEX 104PEA	N/A	N/A	N/A
Attenuator	Mini-Circuit	BW-S10W5	N/A	07/05/2007	07/04/2008
Attenuator	Mini-Circuit	BW-S6W5	N/A	07/05/2007	07/04/2008
Splitter	Agilent	11636B	51728	09/23/2007	09/22/2008
Signal Generator	R&S	SMR40	100210	12/20/2006	12/19/2007
DC Power Supply	Agilent	6038A	2929A-07548	01/06/2007	01/05/2008

11.5 Measurement Result

Reference Frequency: GSM Mid Channel 836.6 MHz @ 25℃				
Limit: +/- 2.5 ppm = 2091 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
12.00	25.00	836.600031	0.00	2091.00
10.20	25.00	836.600030	1.00	2091.00
13.80	25.00	836.600034	-3.00	2091.00
6 (End Point)	25.00	836.600019	12.00	2091.00

Reference Frequency: PCS Mid Channel 1880 MHz @ 25℃				
Limit: +/- 2.5 ppm = 4700 Hz				
Power Supply	Environment	Frequency	Delta (Hz)	Limit (Hz)
Vdc	Temperature (℃)	(MHz)		
12.00	25	1879.999991	0.00	4700
10.20	25	1879.999995	-4.00	4700
13.80	25	1879.999994	-3.00	4700
6.00 (Endpoint)	25	1879.999994	-3.00	4700

12. AC POWER LINE CONDUCTED EMISSION TEST

12.1 Standard Applicable

According to §15.207. The emission value for frequency within 150KHz to 30MHz shall not exceed criteria of below chart.

Frequency range MHz	Limits dB(uV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50
Note 1.The lower limit shall apply at the transition frequencies 2.The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.		

12.2 EUT Setup

1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI C63.4-2001.
2. The EUT was plug-in DC power adaptort and was placed on the center of the back edge on the test table. The peripherals like earphone was placed on the side of the EUT. The rear of the EUT and peripherals were placed flushed with the rear of the tabletop.
3. The Power adaptor was connected with 110Vac/60Hz power source.

12.3 Measurement Procedure

1. The EUT was placed on a table which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured were complete.

12.4 Measurement Equipment Used:

Conducted Emission Test Site					
EQUIPMENT TYPE	**MFR**	**MODEL NUMBER**	**SERIAL NUMBER**	**LAST CAL.**	**CAL DUE.**
EMC Analyzer	HP	8594EM	3624A00203	01/27/2007	01/26/2008
EMI Test Receiver	R&S	ESCS30	828985/004	09/15/2007	09/14/2008
Transient Limiter	HP	11947A	3107A02062	09/02/2007	09/01/2008
LISN	Rolf-Heine	NNB-2/16Z	99012	08/30/2007	08/29/2008
LISN	Rolf-Heine	NNB-2/16Z	99013	08/30/2007	08/29/2008
Coaxial Cables	N/A	No. 3, 4	N/A	12/01/2006	11/30/2007

12.5 Measurement Result

N/A, the EUT is powered by car battery.