SGS-CSTC Standards
Technical Services Co., Ltd.

588 West Jindu Road, Songjiang District, Shanghai, China

Telephone: +86 (0) 21 6191 5666
Fax: +86 (0) 21 6191 5655
Tino.Pan@sgs.com

TEST REPORT

Application No. :	SHEMO09110127501
Applicant:	MOTOROLA INC.
FCC ID:	IHDT56KT1
Equipment Under Test (EUT):	
Product Name:	G30
Brand Name:	MOTOROLA
Model No.:	F9000AAA,F9100AAA,F9200AAA,F9300AAA;F9400AAA;F9500AAA; F9000ABA,F9100ABA,F9200ABA,F9300ABA;F9400ABA;F9500ABA
Serial No.:	074SAB1234,074SKY20JX, 074SKY20KF, 074SKY20FK, 074SKY20L1, 074SKY20L9, 074SKY20GG
Standards:	FCC part 2, 22H & 24E
Date of Receipt:	Nov 13 , 2009
Date of Test:	Nov 13 , 2009 to Jan 26,2010
Date of Issue:	Jan 26 , 2010
Test Result :	**PASS ***

* In the configuration tested, the EUT detailed in this report complied with the standards specified above. Please refer to section 2 of this report for further details.

Tino Pan
E&E Section Manager
SGS-CSTC Co., Ltd.

Jack Wu
Project Engineer
SGS-CSTC Co., Ltd.

2 Test Summary

Description of Test	FCC Rules	Result
RF Power Output	2.1046(a) 22.913(a) 24.232(b)	Compliant
99% Occupied Bandwidth	2.1049(h)	Compliant
Effective Isotropic Radiated Power	2.1046(a) 22.913(a) 24.232(b)	Compliant
Out of Band Emissions at antenna Terminals and Band Edge	2.1051 22.917(a) 24.238(a)	Compliant
Field Strength of Spurious Emissions	2.1053 22.917(a) 24.238(a)	Compliant
Frequency Stability vs. Temperature and Voltage	2.1055	Compliant

3 Contents

4 General Information

4.1 Client Information

Applicant:	MOTOROLA INC.
Address of Applicant:	1301 E ALGONQUIN ROAD,SCHAUMBURG ILLINOIS 60196-1078 UNITED STATES
Manufacturer:	MOTOROLA INC.
Address of Manufacturer:	1301 E ALGONQUIN ROAD,SCHAUMBURG ILLINOIS 60196-1078 UNITED STATES

4.2 General Description of E.U.T.

Product Name:	G30
Brand Name:	MOTOROLA
Model No.:	F9000AAA,F9100AAA,F9200AAA, F9300AAA;F9400AAA;F9500AAA; F9000ABA,F9100ABA,F9200ABA, F9300ABA;F9400ABA;F9500ABA
Power Supply:	3.8 V DC

GSM:

	Operating frequency		Rated Power
Cellular phone standards Frequency Range and Power:	GSM 850	824.2MHz-848.8MHz	33dBm
	GSM 1900	1850.2MHz-1909.8MHz	30dBm

4.3 Test Location

Tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd., Shanghai EMC Laboratory

588 West Jindu Road, Songjiang District, Shanghai, China

Tel: +86 21 61915666 Fax: +86 21 61915678

4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing. Date of expiry: 2011-07-29.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2012-03-17.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A. Expiry Date: 2011-09-29.

4.5 Test Methodology

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

5 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Spectrum Analyzer	Rohde & Schwarz	FSP-30	100324	2009-4-21	2010-4-20
2	EMI test receiver	Rohde & Schwarz	ESU40	100109	2009-6-4	2010-6-3
4	Horn Antenna	Rohde & Schwarz	HF906	100284	2009-04-11	2010-04-10
5	Horn Antenna	Rohde & Schwarz	HF906	100285	2009-10-9	2010-10-8
6	ANTENNA	SCHWARZBECK	BBHA9120D	9120D-679	2009-06-04	2010-06-03
7	Ultra broadband antenna	Rohde & Schwarz	HL562	100227	2009-10-09	2010-10-08
8	Atmosphere pressure meter	Shanghai ZhongXuan Electronic Co;Ltd	BY－2003P	--	2009-10-15	2010-10-14
9	CLAMP METER	FLUKE	316	86080010	2009-04-27	2010-04-26
10	Thermo-Hygrometer	ZHICHEN	ZC1-2	01050033	2009-10-21	2010-10-20
11	Digital illuminance meter	TES electrical electronic Corp.	TES-1330A	050602219	2009-10-16	2010-10-15
12	TEMPERATURE& HUMIDITY BOX	KSON	THS-D2C-100	K40723	2009-11-18	2010-11-17
13	High-low temperature cabinet	Shanghai YuanZhen	GW2050	--	2009-6-27	2010-6-26
14	DC power	KIKUSUI	PMC35－3	NF100260	2009-1-16	2010-1-15
15	Power meter	Rohde & Schwarz	NRP	101641	2009-5-5	2010-5-4
16	UNIVERSAL RADIO COMMUNICATION TESTER	Rohde & Schwarz	CMU 200	112012	2009-08-25	2010-08-24
17	Tunable Notch Filter	WRCT800.0/880.0-0.2/40-5SSK	Wainwright instruments Gmbh	9	2009-1-27	2010-1-26
18	Tunable Notch Filter	WRCT1800.0/2000.0-0.2/40-5SSK	Wainwright instruments Gmbh	11	2009-1-27	2010-1-26
19	Band Reject Filter	WRCG 824/849-814/859-40/8SS	Amiden,Ireland	1	2009-1-27	2010-1-26

20	Band Reject Filter	WRCG 1850/1910-1835/1925-40/8SS	Amiden,Ireland	13	2009-1-27	2010-1-26

6 Test Results

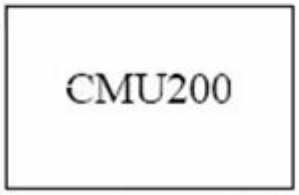
6.1 E.U.T. test conditions

Power supply: DC 3.8V

Operating Environment:
Temperature: 20.0 -25.0 °C
Humidity: 38-48 % RH
Atmospheric Pressure: 992 -1006 mbar

Configuration of Tested System:

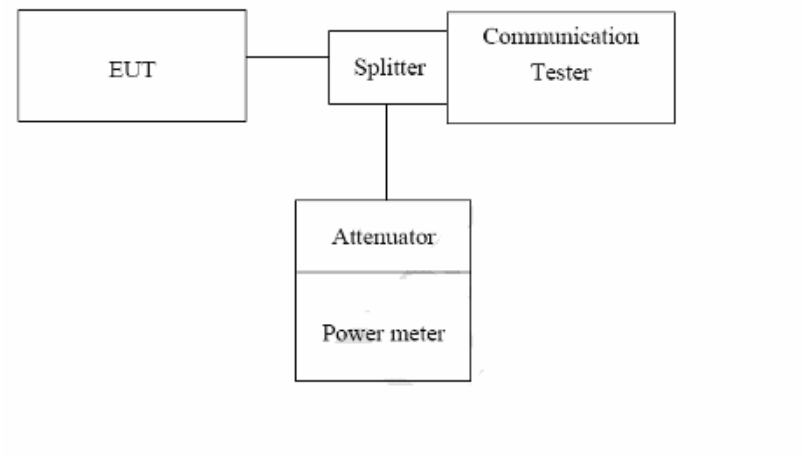
Remote Side



6.2 RF Power Output

Test Requirement: Part 2.1046
Part 22.913(a) Mobile station are limited to 7W
Part 24.232(b) Peak power measurement, Mobile station are limited to 2W

Test Setup



Measurement Setup for testing on Antenna connector.

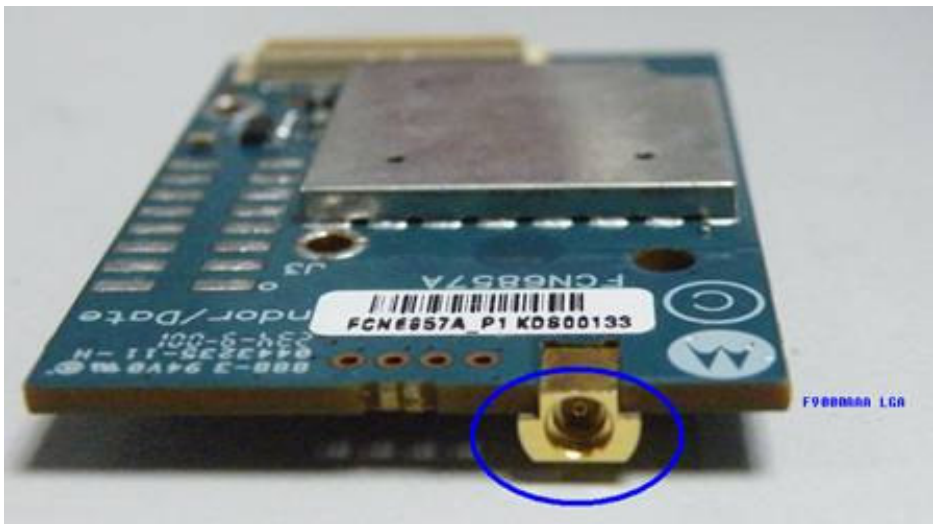
Test Date: Nov 27,2009

Test Status: Test lowest, middle, highest channel.

Test Procedure:

The transmitter output was connected to calibrated attenuator, the other end of which was connected to a power meter. Transmitter output was read off the power in dBm. The power output at the transmitter antenna port was determined by adding the value of attenuator to the power meter reading.

Note :G30 has several connectivity options in the different models - LGA (Land Grid Array) or 70 pins connector as interface - the RF port has also two options, one is through LGA pad (ANT_RF_PAD) and the other is through a RF U-FL type connector.
For F9500AAA, the U-FL type connector is used for RF measurements.
For F9000AAA, the G30 module is assembled on an adapter board (connection through LGA pads) and the MMCX RF conn. of the adapter is used for RF measurements. (See below the pictures.)



Measurement Result:

RF Conducted output power

Result:

F9500AAA(UFL)

EUT Mode	Frequency (MHz)	Ch	1 Time Slot		2 Time Slot	
			Peak power (dBm)	AV power (dBm)	Peak power (dBm)	AV power (dBm)
GSM 850	824.2	128	33.7	33.5	33.5	33.3
	836.6	190	33.6	33.4	33.5	33.3
	848.8	251	33.4	33.2	33.3	33.1

EUT Mode	Frequency (MHz)	Ch	1 Time Slot		2 Time Slot	
			Peak power (dBm)	AV power (dBm)	Peak power (dBm)	AV power (dBm)
PCS 1900	1850.2	512	30.3	30.1	30.2	30.0
	1880.0	661	30.4	30.2	30.3	30.1
	1909.8	810	30.5	30.3	30.4	30.2

F9000AAA(LGA)

EUT Mode	Frequency (MHz)	Ch	1 Time Slot		2 Time Slot	
			Peak power (dBm)	AV power (dBm)	Peak power (dBm)	AV power (dBm)
GSM 850	824.2	128	33.3	33.2	33.2	33.1
	836.6	190	33.3	33.2	33.1	33.0
	848.8	251	33.4	33.3	33.2	33.0

EUT Mode	Frequency (MHz)	Ch	1 Time Slot		2 Time Slot	
			Peak power (dBm)	AV power (dBm)	Peak power (dBm)	AV power (dBm)
PCS 1900	1850.2	512	30.6	30.4	30.5	30.4
	1880.0	661	30.4	30.2	30.3	30.2
	1909.8	810	30.6	30.4	30.5	30.3

6.3 99% Occupied Bandwidth

Test Requirement: Part 2.1049

Test Date: Nov 27, 2009

Test Status: Test lowest, middle, highest channel.

Test Procedure:

The EUT output RF connector was connected with a short a cable to the spectrum analyzer, RBW was set to about 1% of emission BW, VBW>=3 times RBW, 99% bandwidth were measured, the occupied bandwidth is the delta frequency between the two points where the display line intersects the signal trace.

Test result:

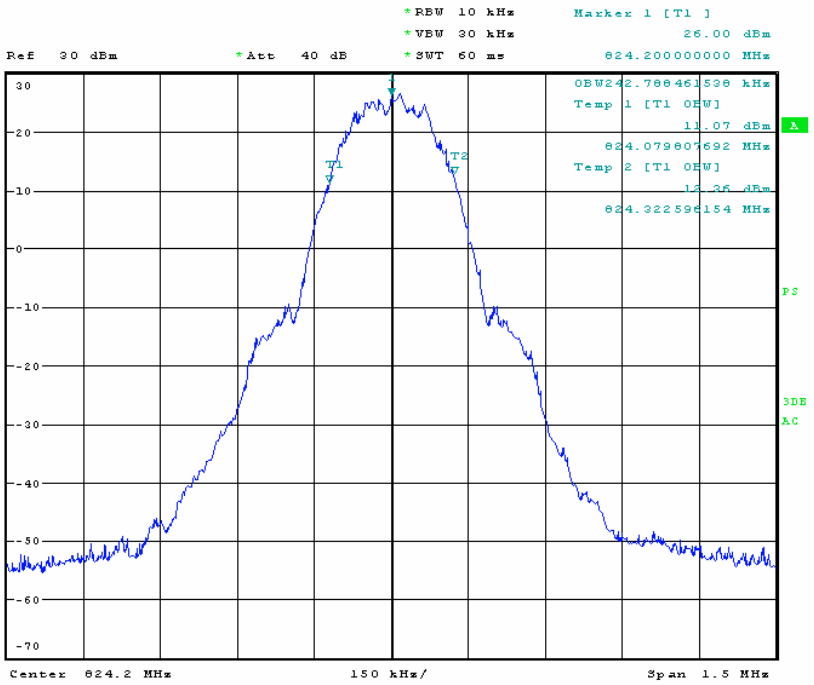
F9500AAA(UFL)

EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
GSM 850	824.2	128	0.2428
	836.6	190	0.2404
	848.8	251	0.2428

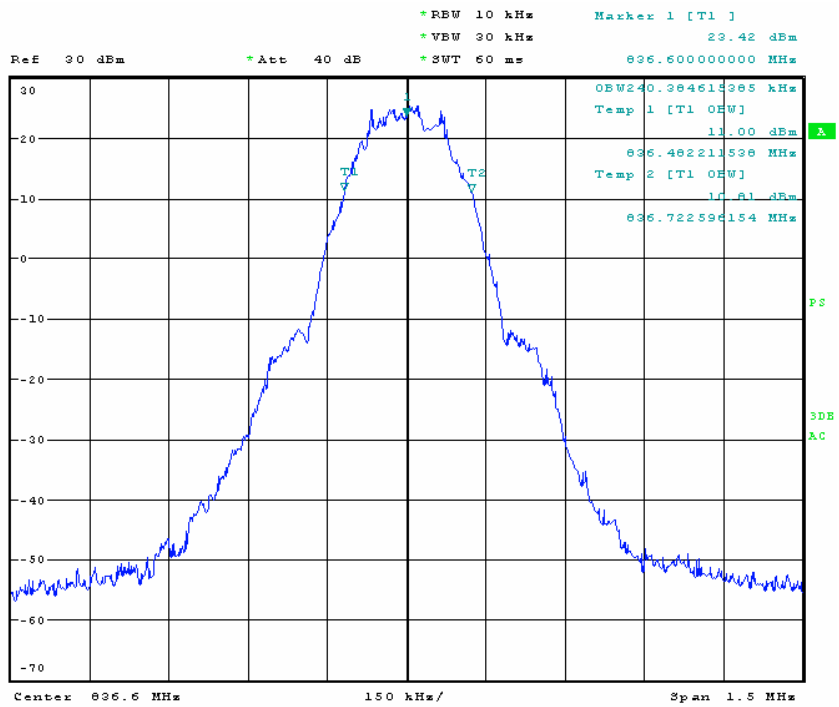
EUT Mode	Frequency (MHz)	CH	99% Bandwidth (MHz)
PCS 1900	1850.2	512	0.2428
	1880.0	661	0.2428
	1909.8	810	0.2428

99% Bandwidth

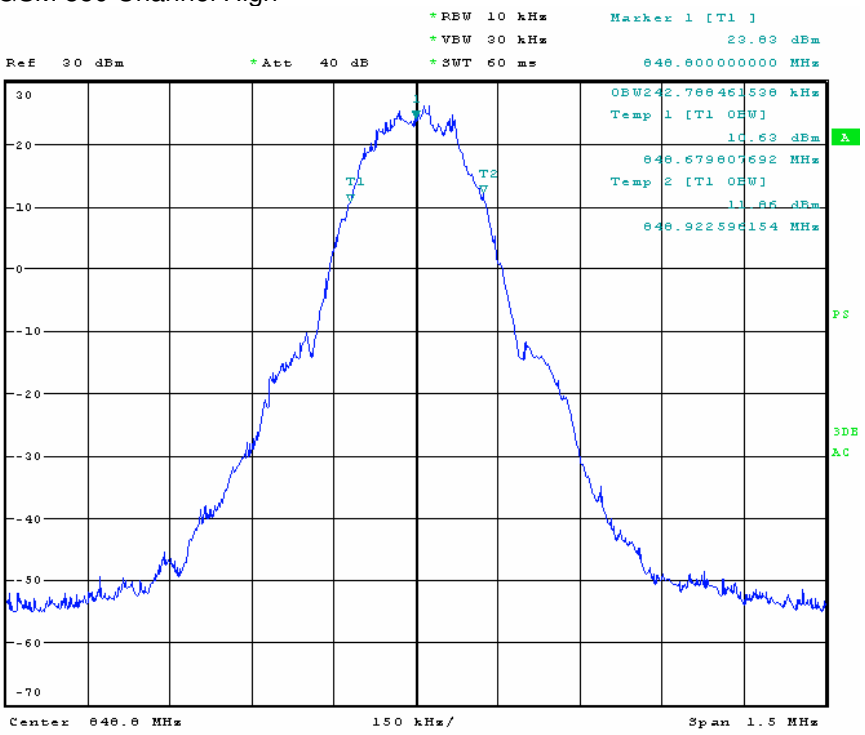
GSM 850 Channel Low



GSM 850 Channel Mid

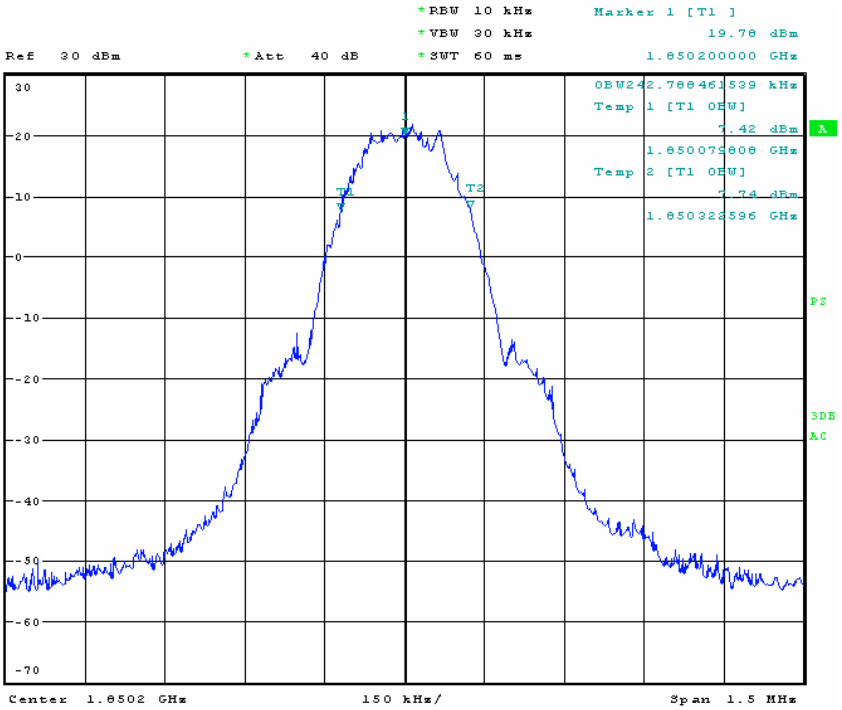


GSM 850 Channel High

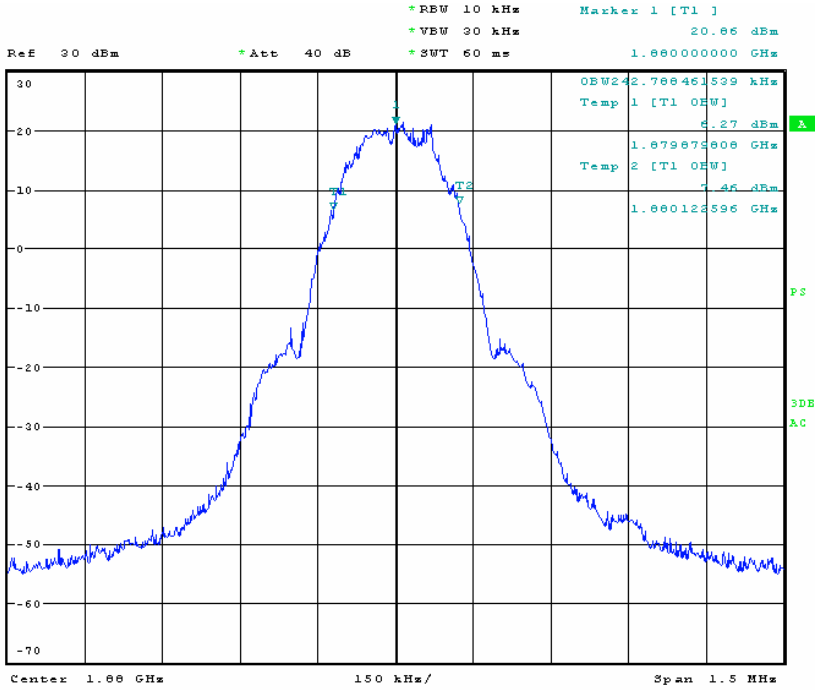


99% Bandwidth

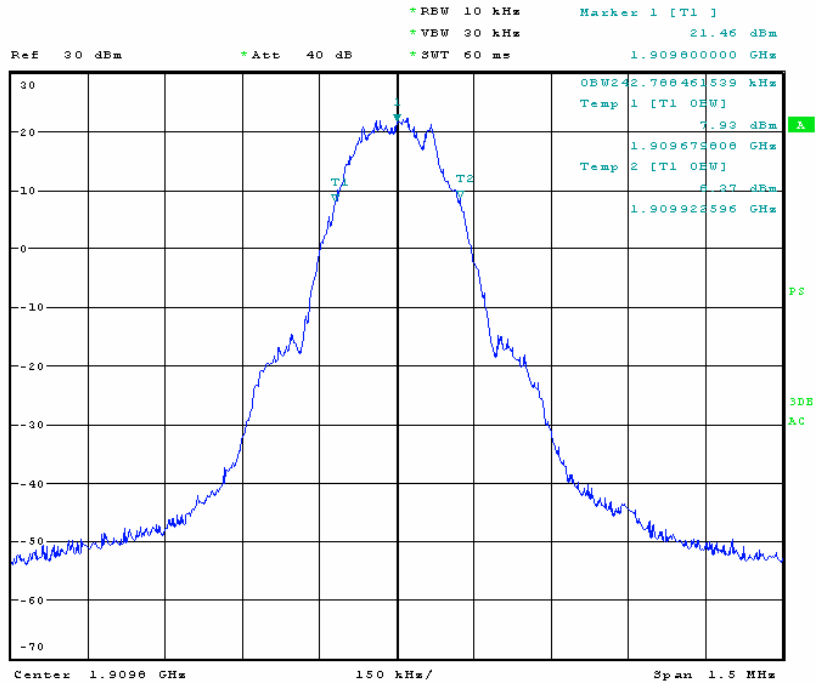
PCS 1900 Channel Low



PCS 1900 Channel Mid



PCS 1900 Channel High



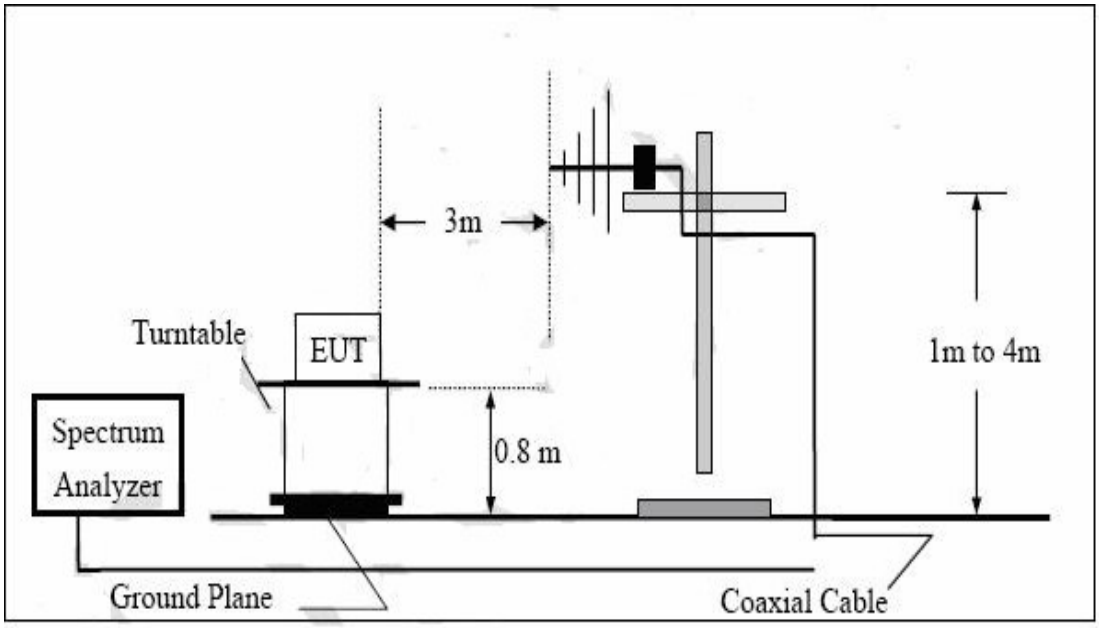
6.4 Effective Isotropic Radiated Power

Test Requirement: Part 2.1046
Part 22.913(a) Mobile station are limited to 7W ERP.
Part 24.232(b) Mobile station are Limited to 2W EIRP.

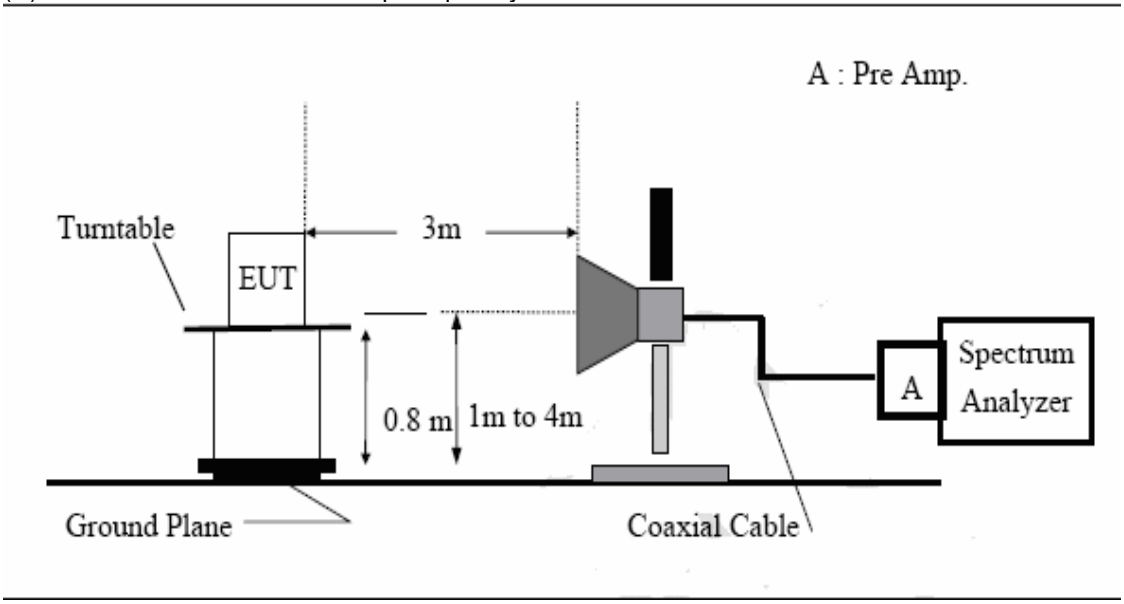
Test Date: Dec 01, 2009; Jan 05,2010

Test Setup:

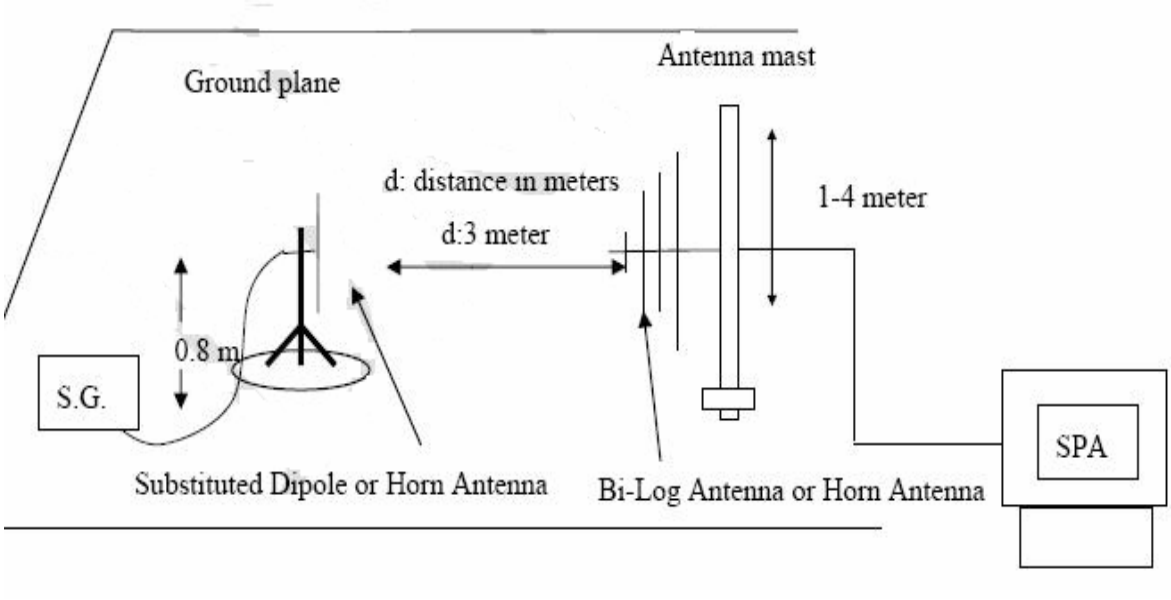
(A) Radiated emission Test setup, Below Frequency 1000MHz:



(B) Radiated emission Test setup frequency over 1GHz:



(C) Substituted Method Test setup:



Test 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 communication with the station. The highest emission was recorded with the rotation of the turntable and 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 824.2-848.8MHz were measured using substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follow:

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:

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

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

Note : the preliminary radiated emission will be performed on all variants.

The result for preliminary plots will be shown as below.

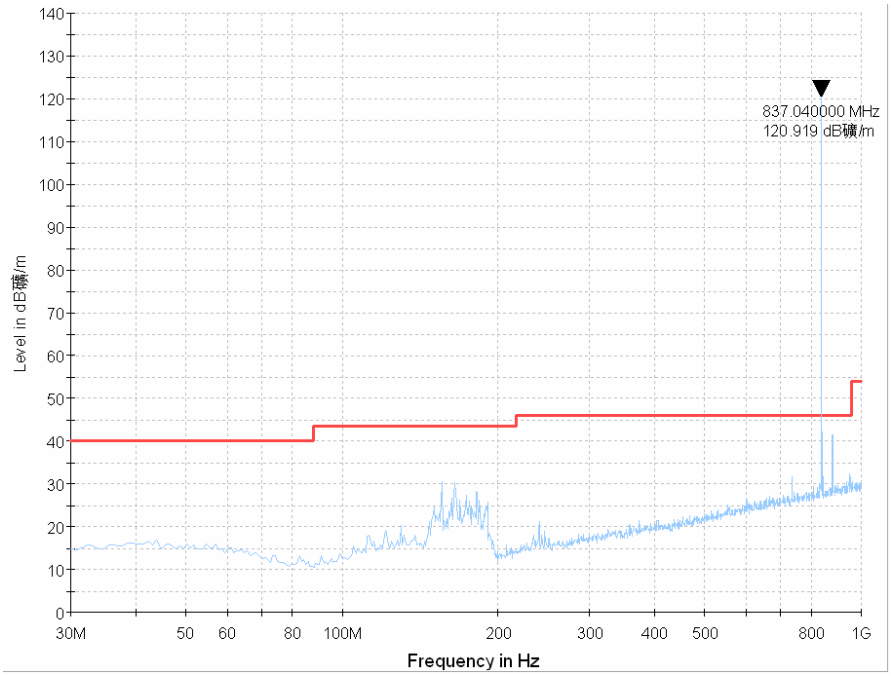
The worst case preliminary results for the variant will be performed final radiated test(substitution method).

Measurement result:

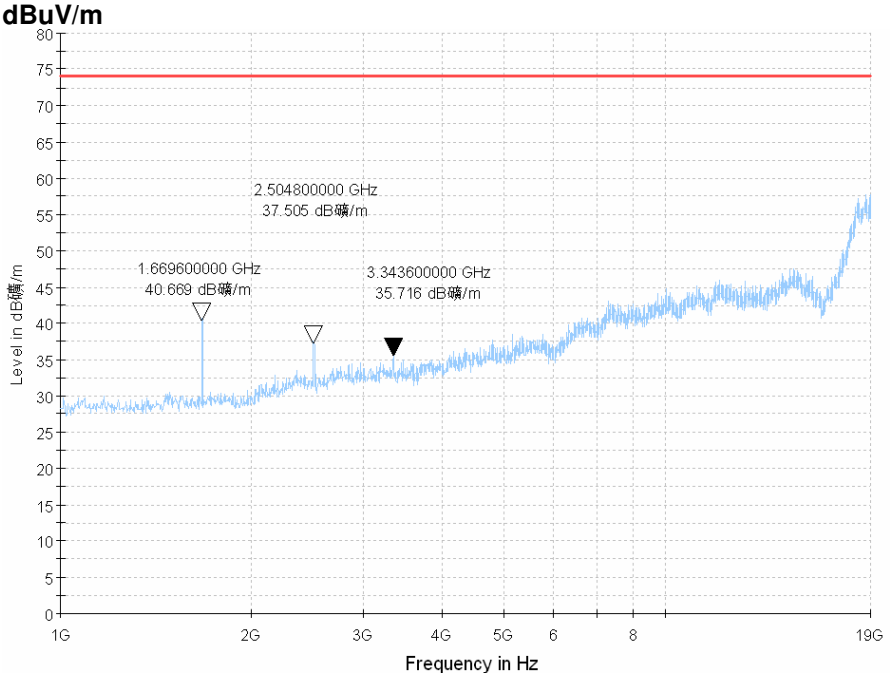
F9100AAA

GSM 850

dBuV/m

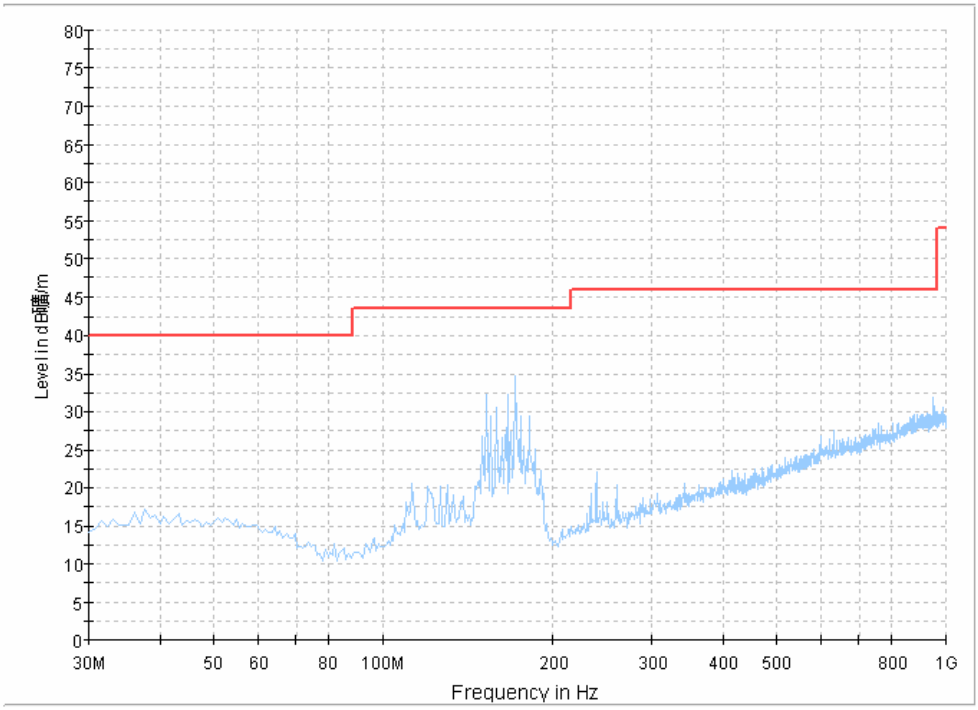


dBuV/m

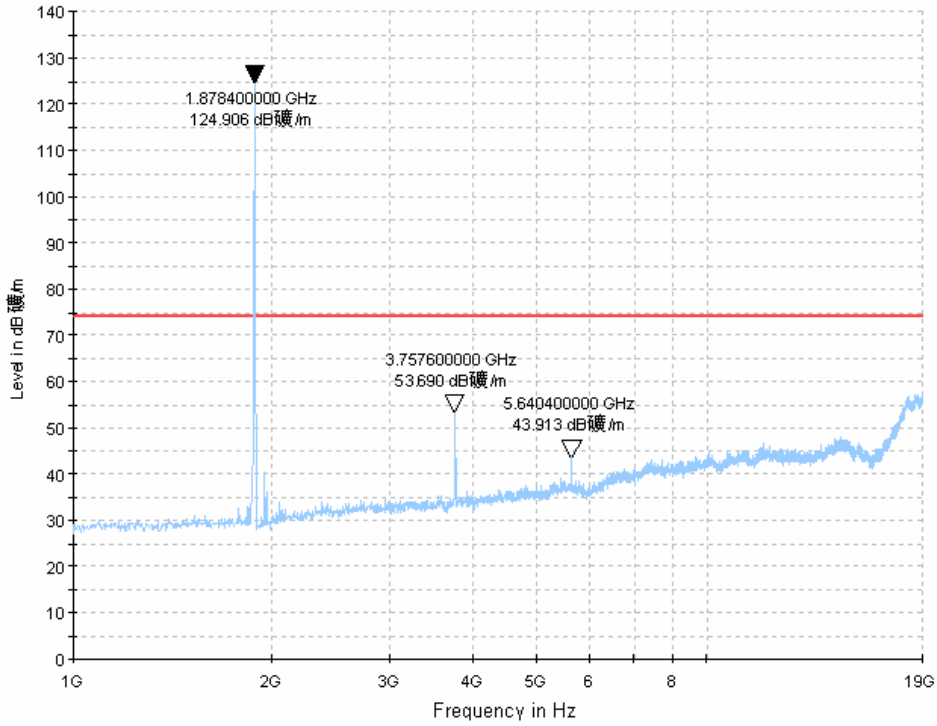


PCS 1900

dBuV/m

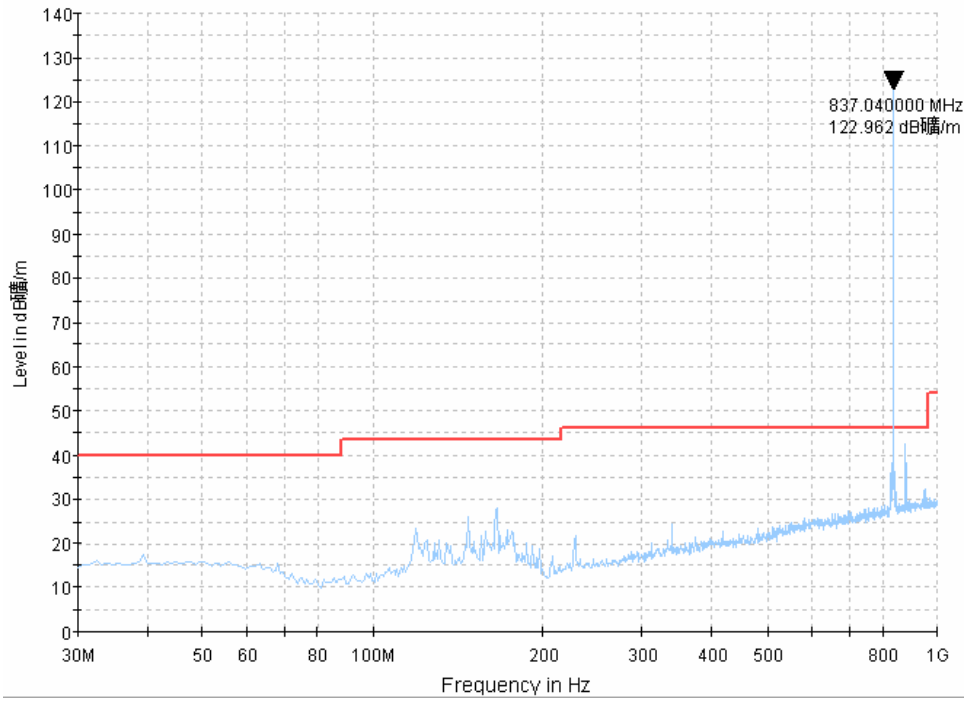


dBuV/m

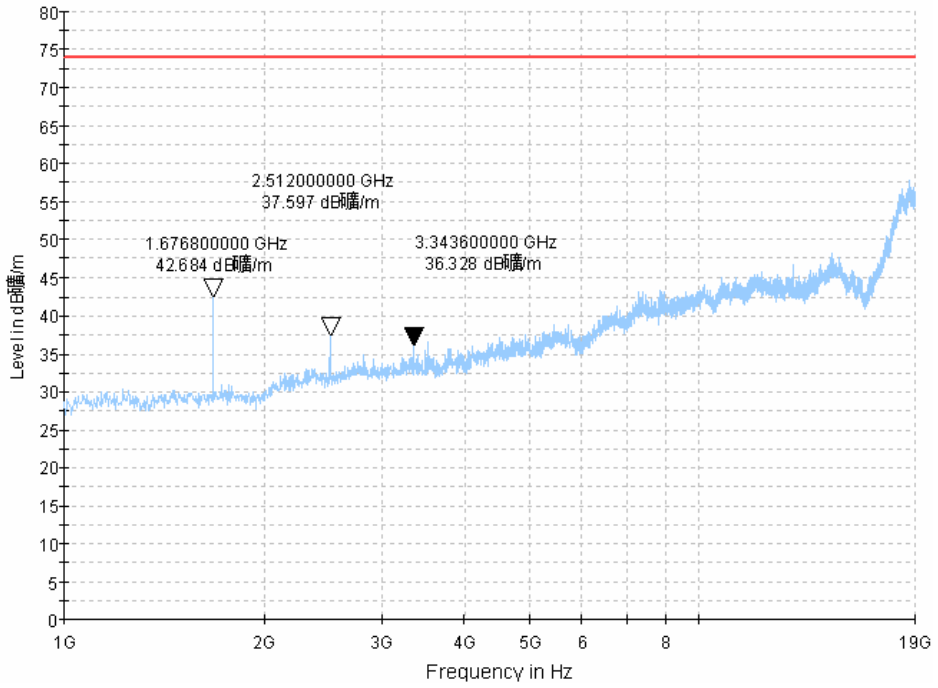


F9000AAA

dBuV/m

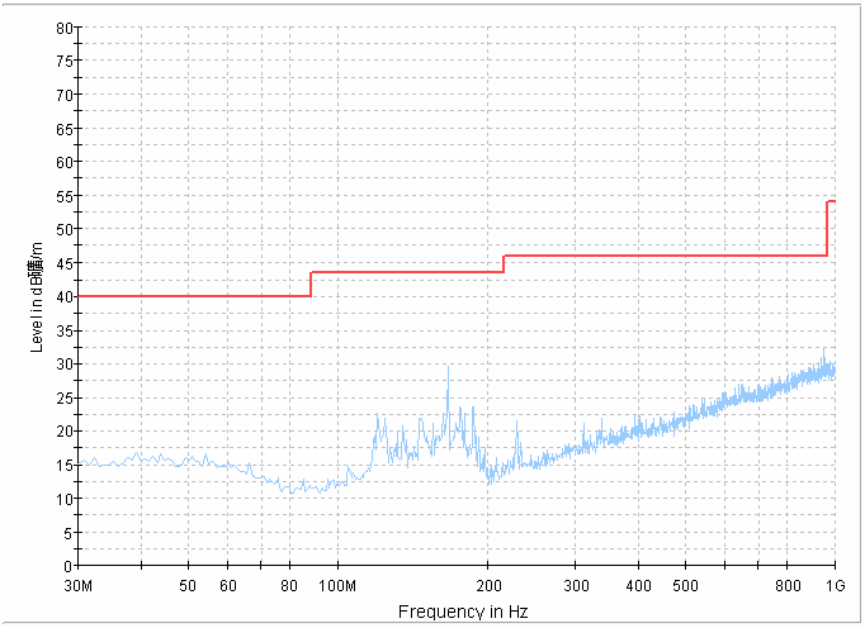


dBuV/m

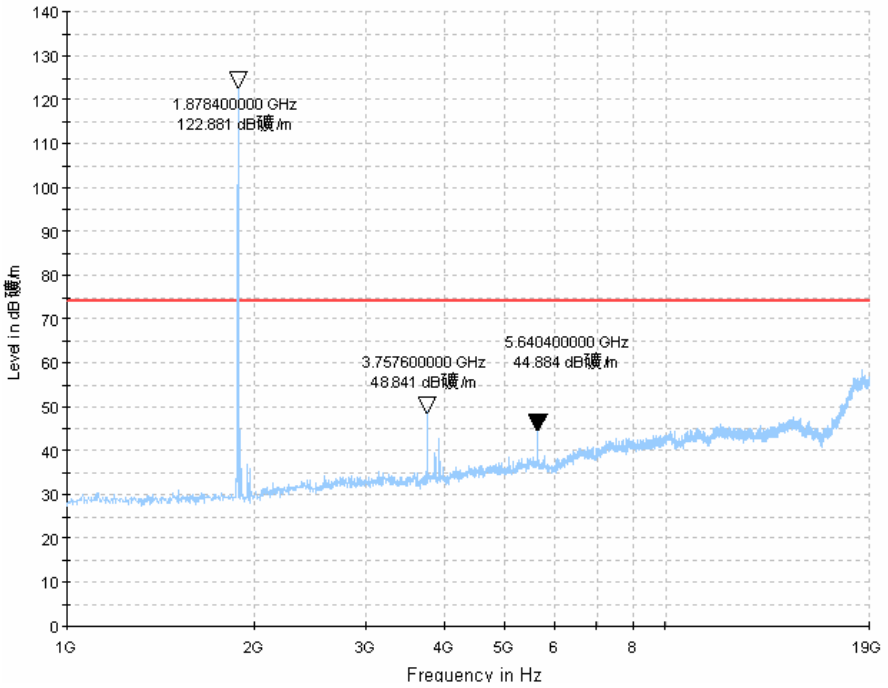


PCS 1900

dBuV/m



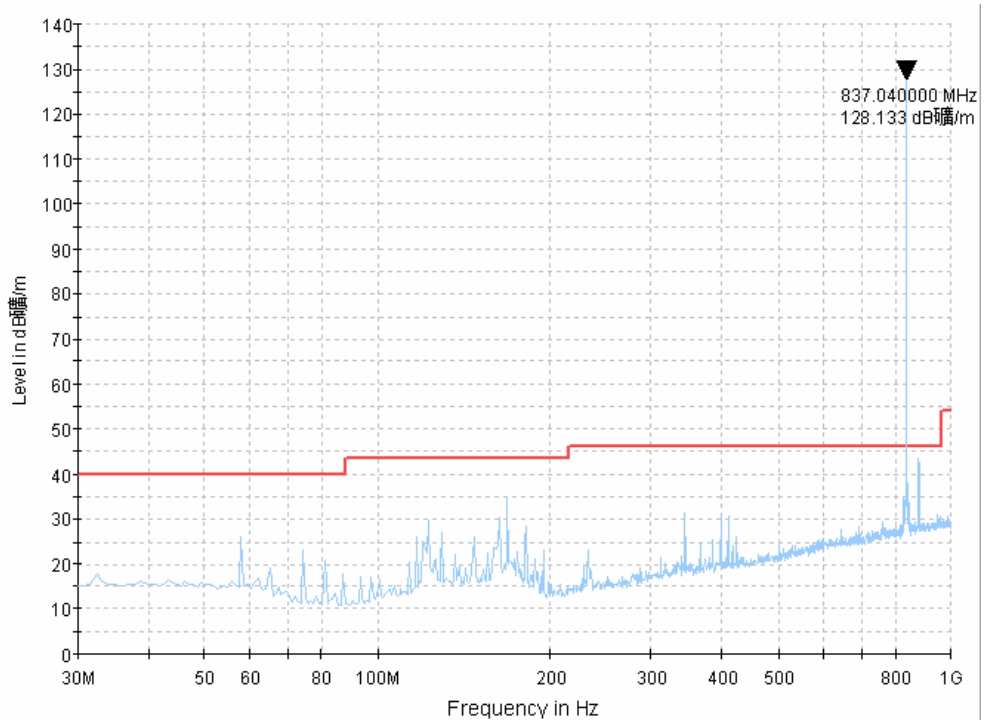
dBuV/m



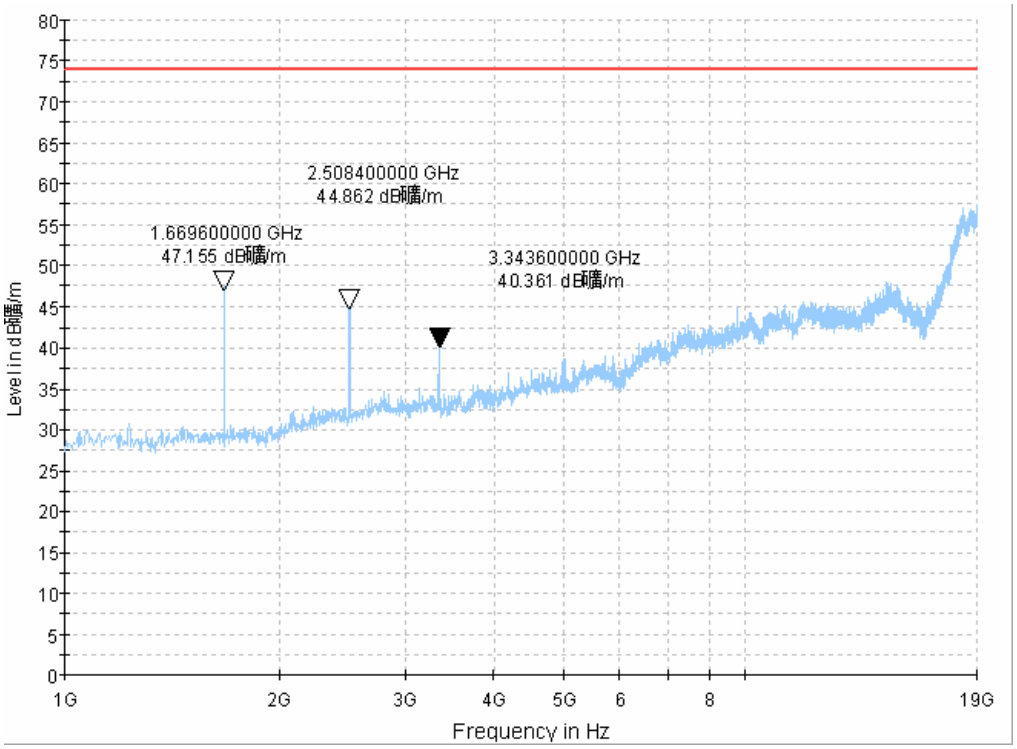
F9500AAA

GSM850

dBuV/m

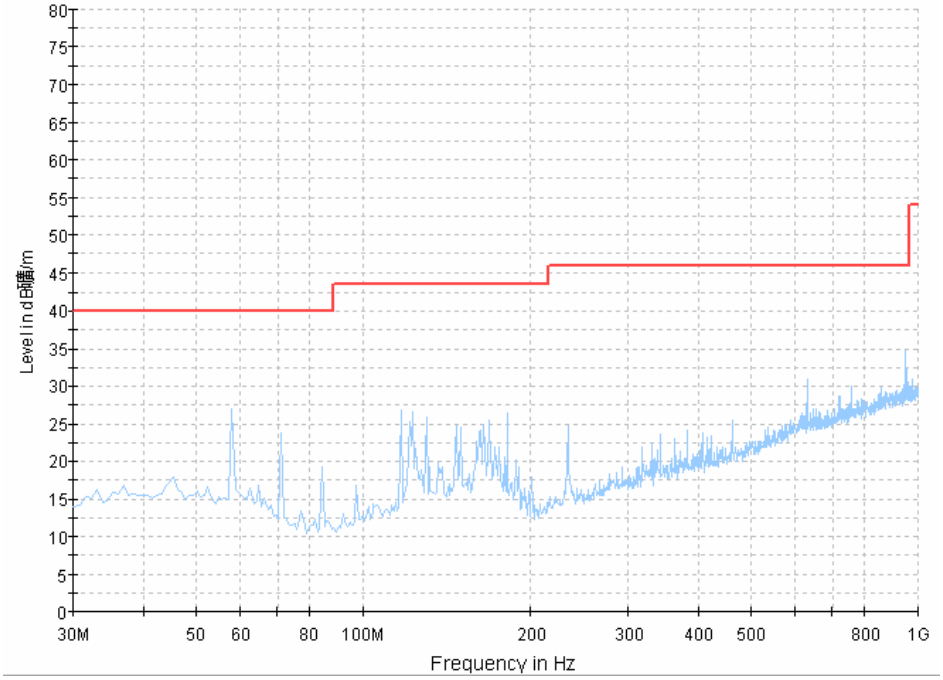


dBuV/m

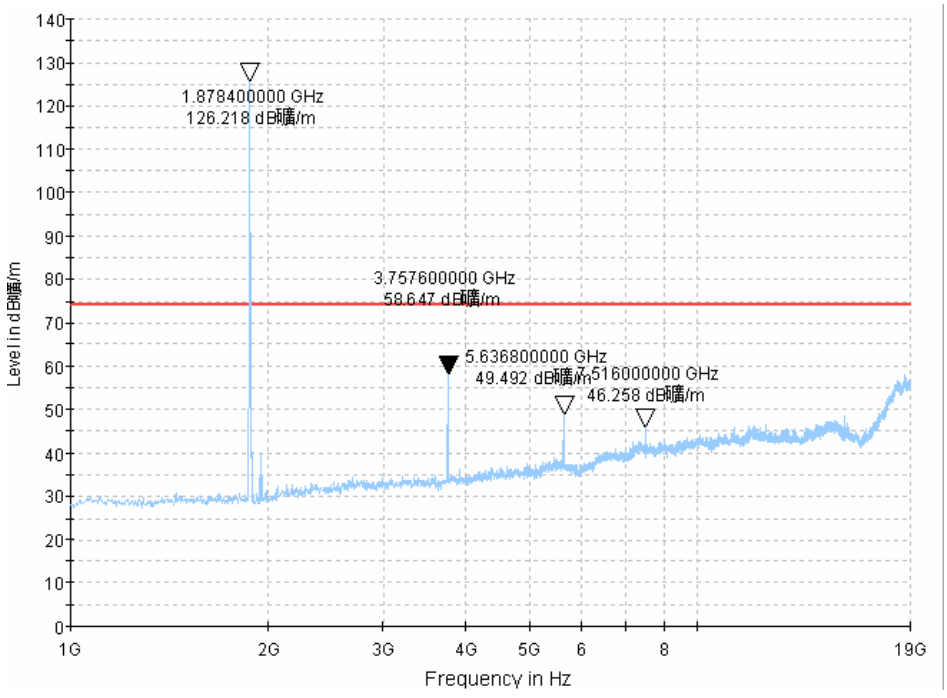


PCS 1900

dBuV/m



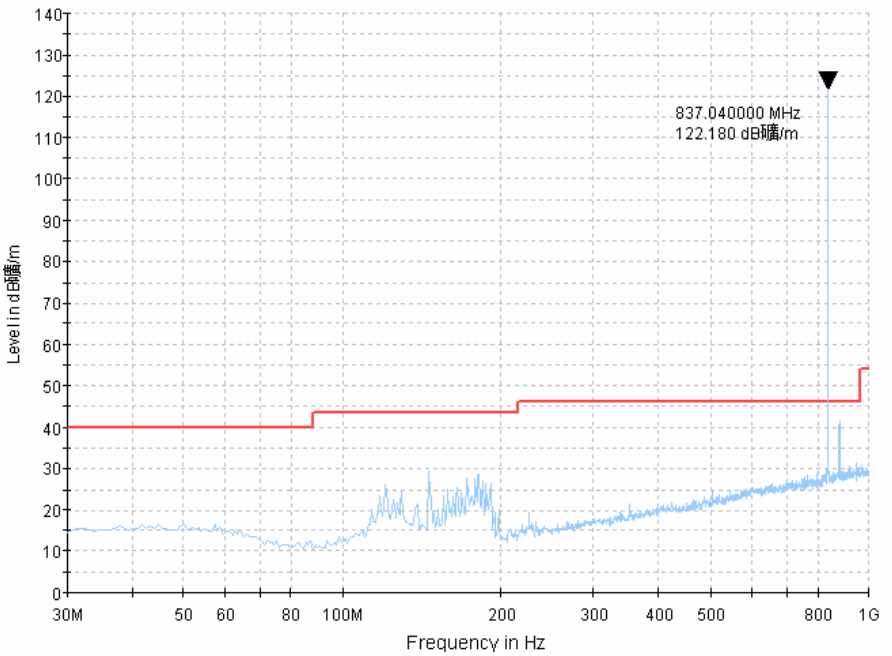
dBuV/m



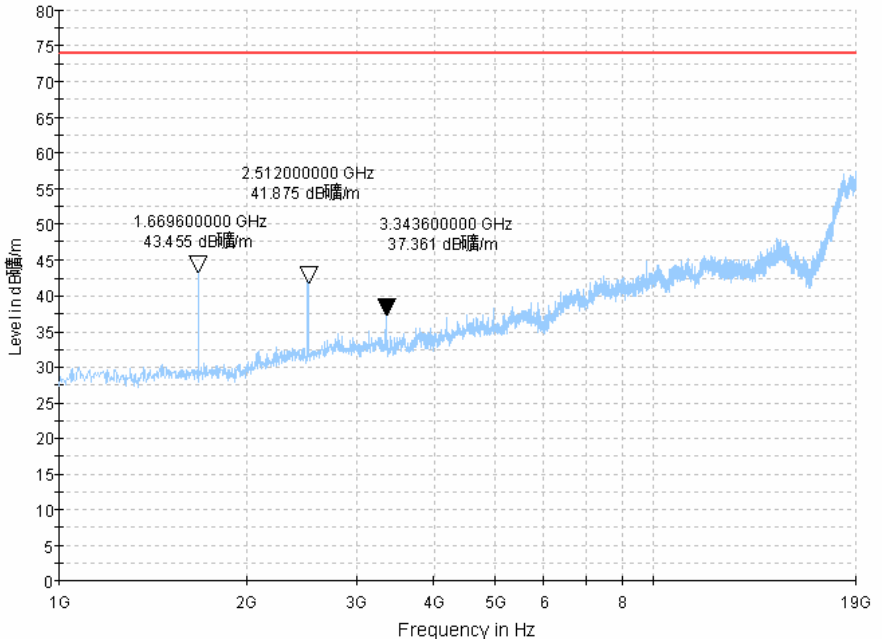
F9200AAA

GSM850

dBuV/m

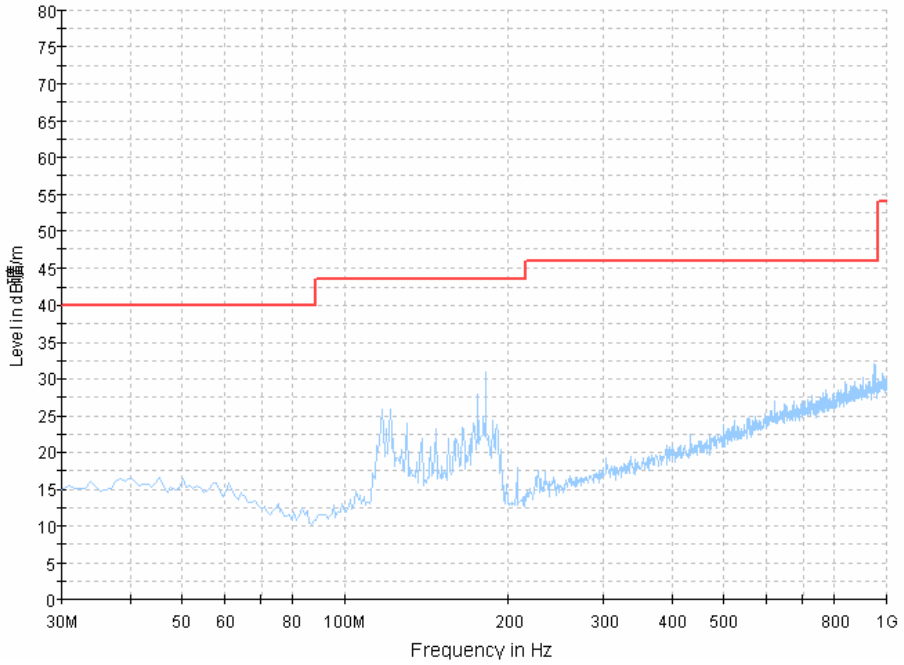


dBuV/m

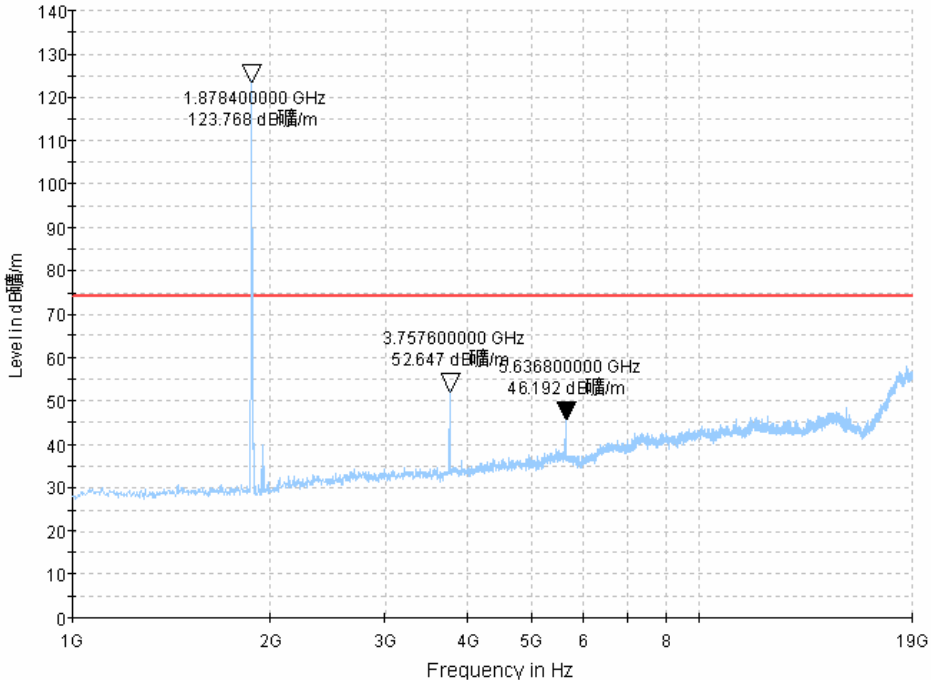


PCS 1900

dBuV/m



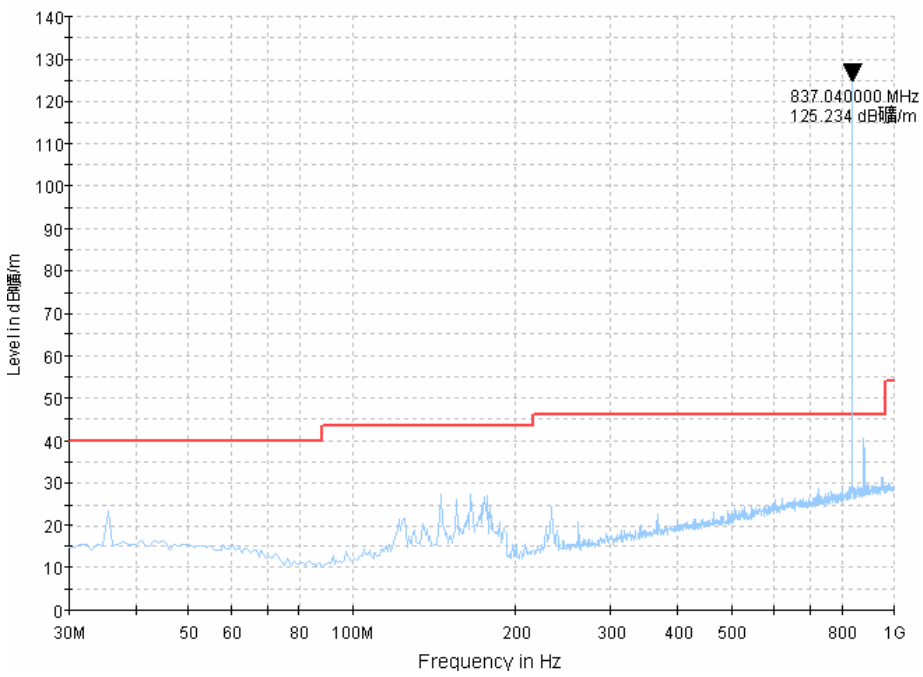
dBuV/m



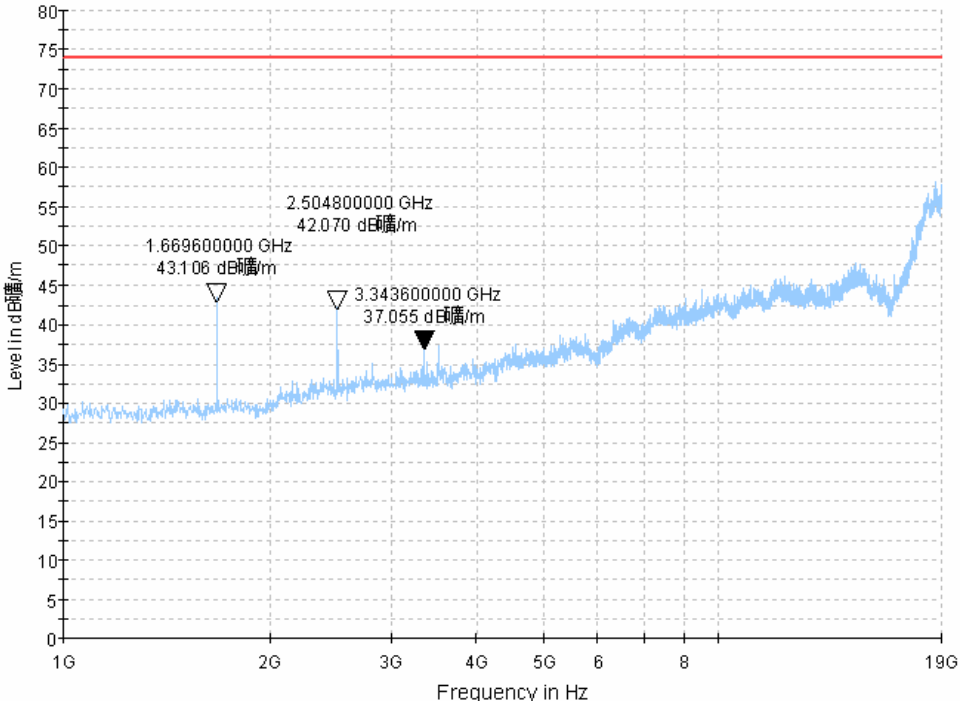
F9400 AAA

GSM 850

dBuV/m

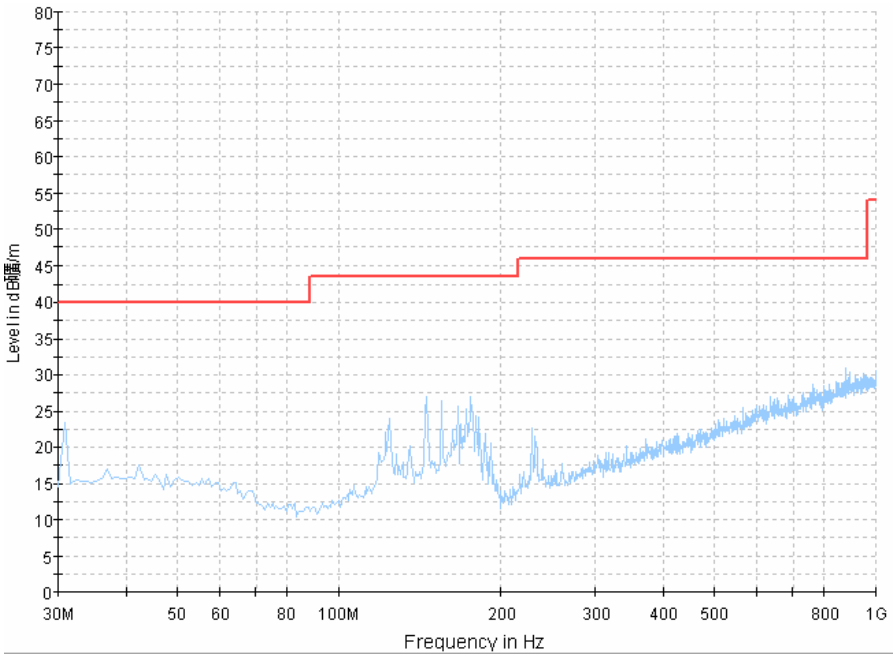


dBuV/m



PCS 1900

dBuV/m



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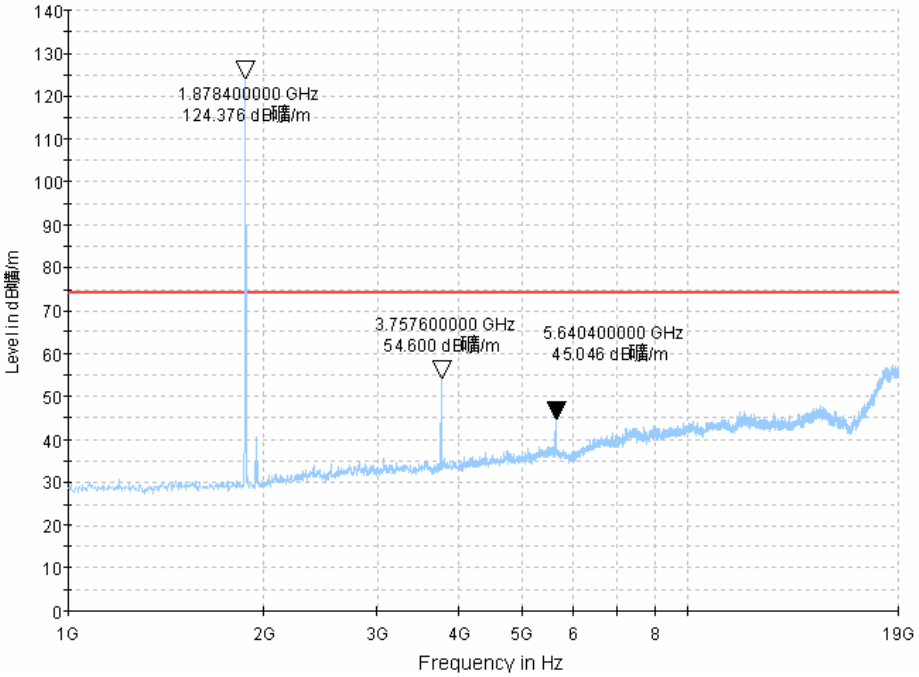
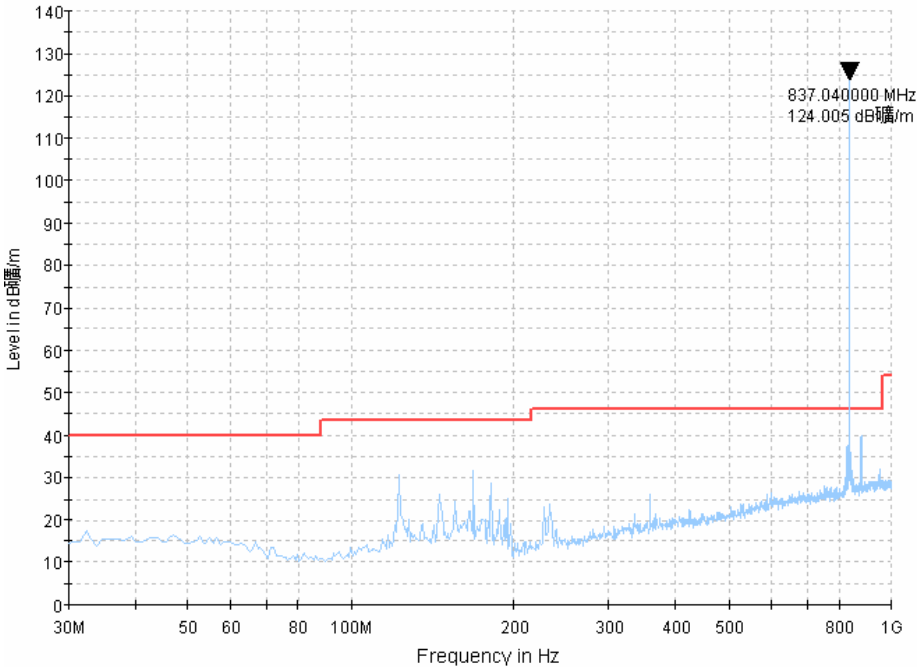


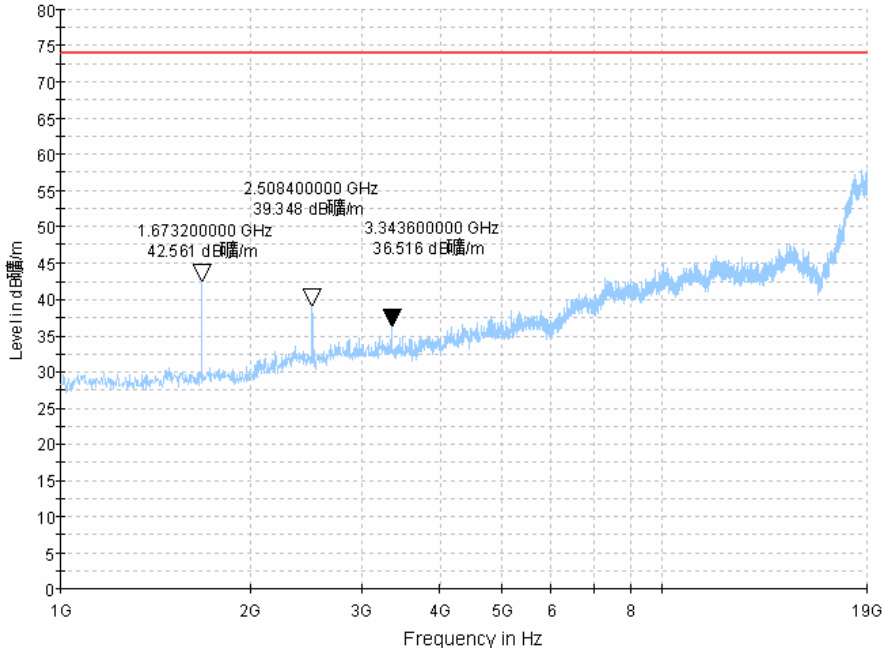
F9300AAA

GSM 850

dBuV/m

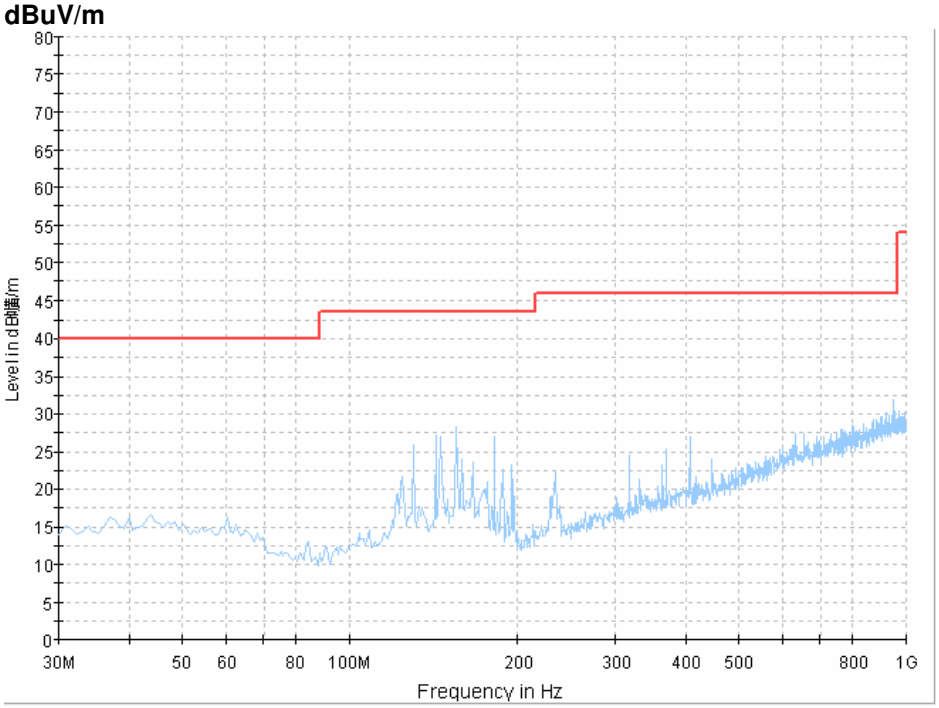


dBuV/m

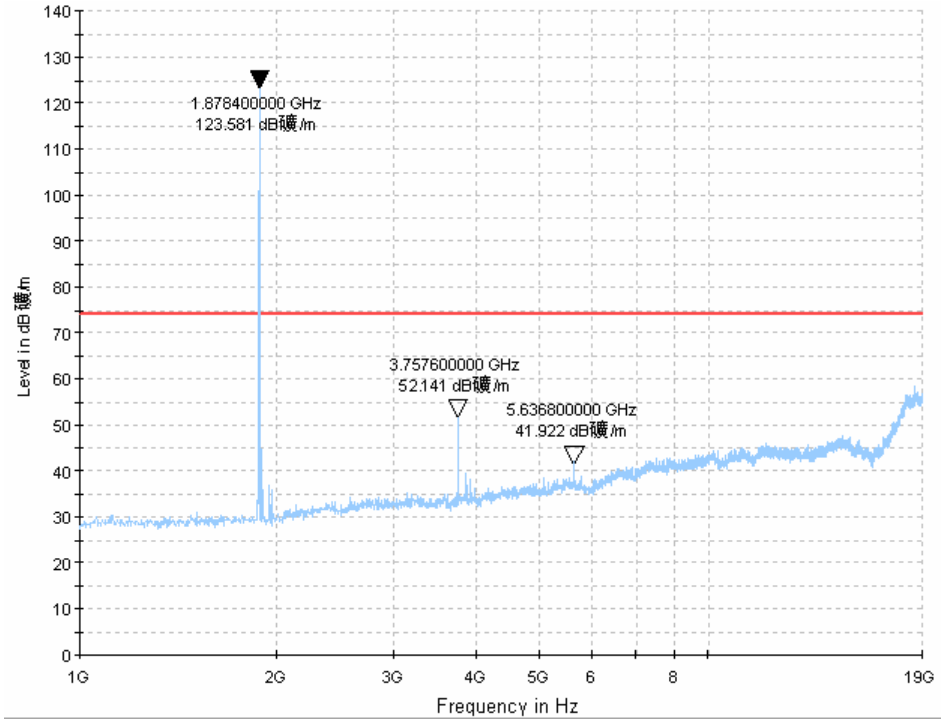


PCS 1900

dBuV/m



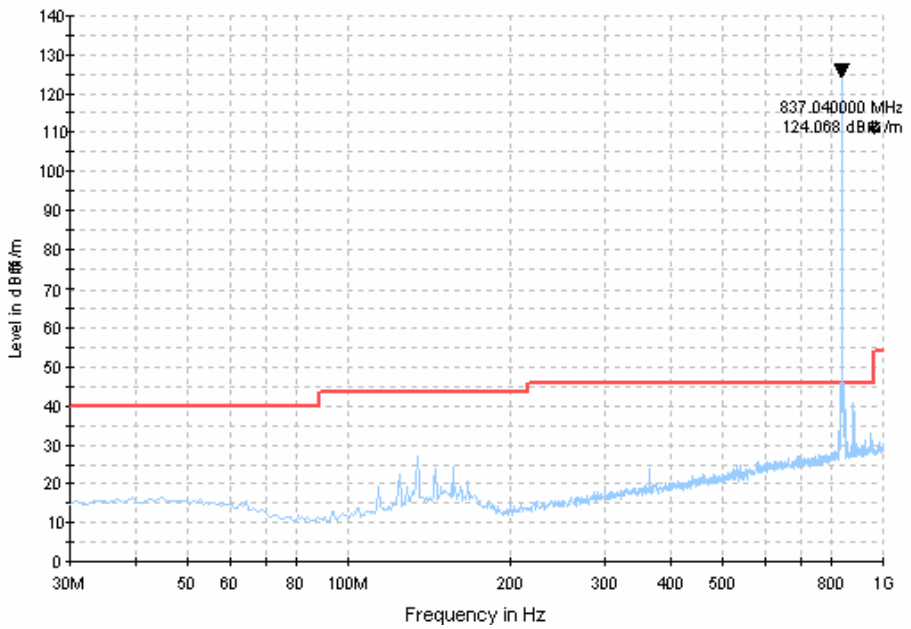
dBuV/m



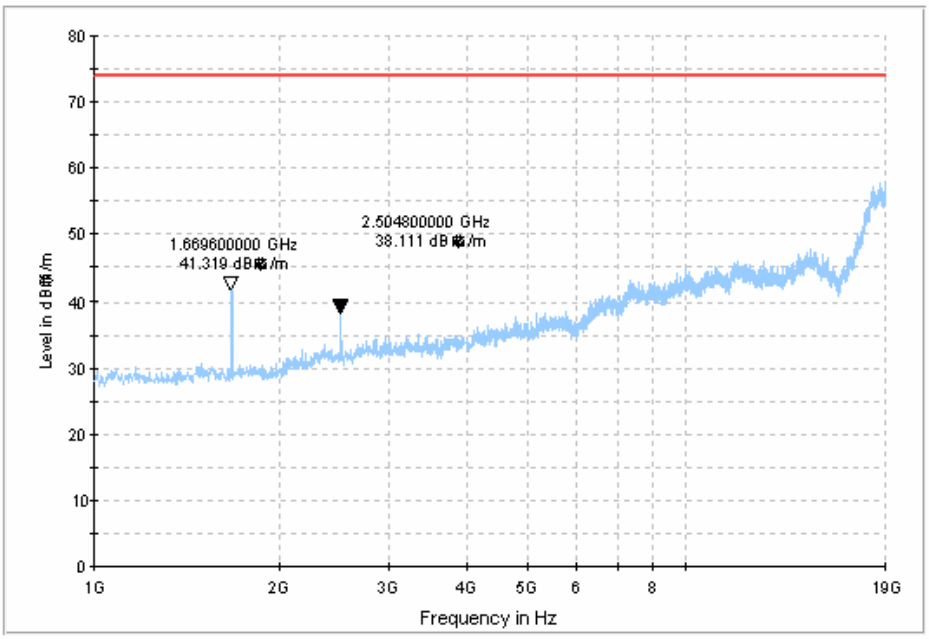
F9000ABA

GSM 850

dBuV/m

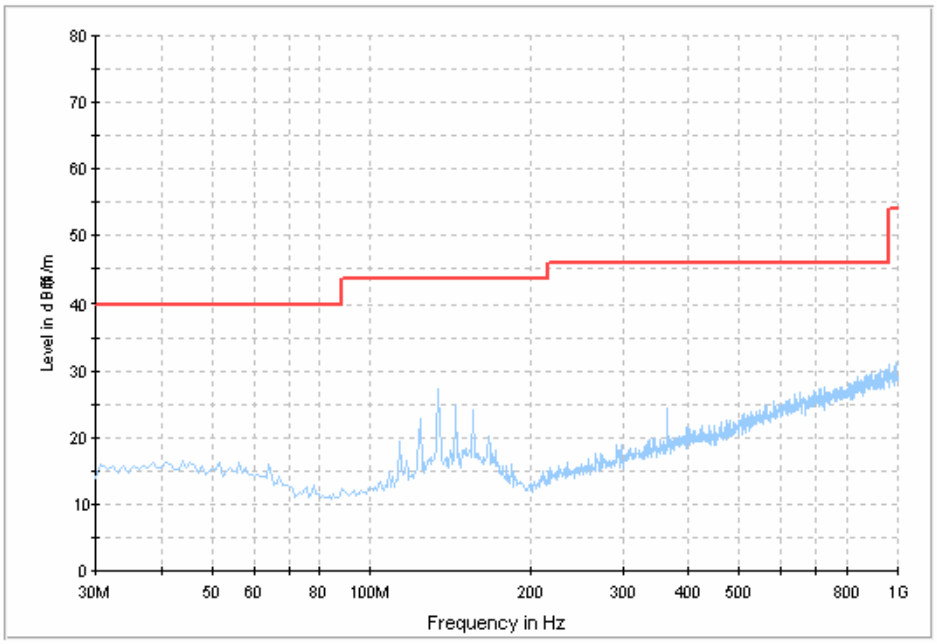


dBuV/m

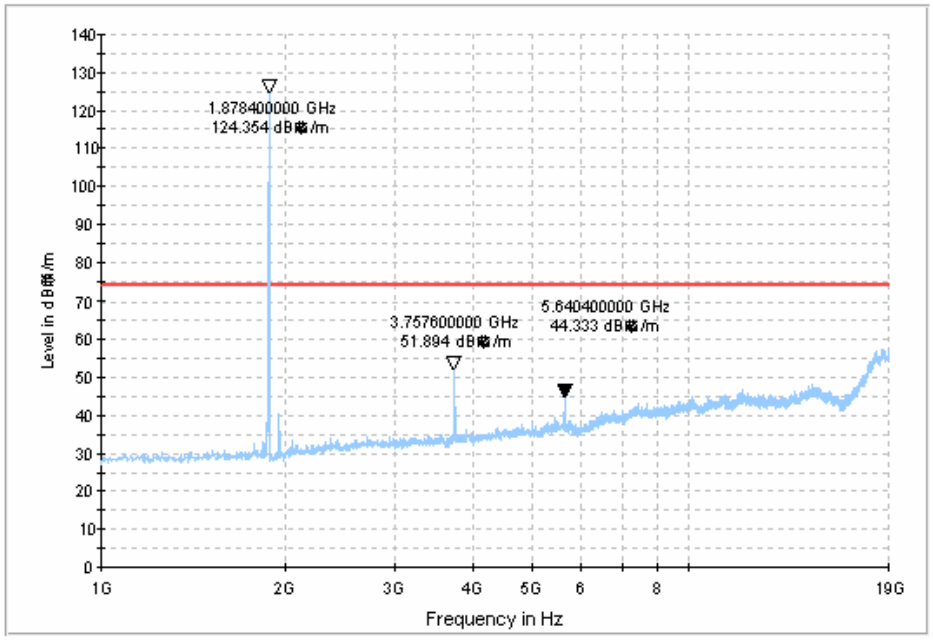


PCS 1900

dBuV/m



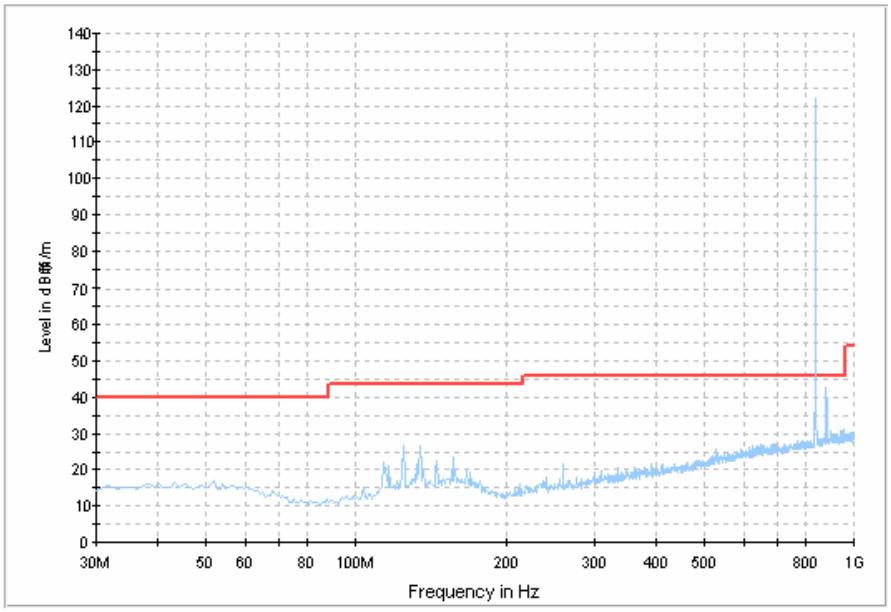
dBuV/m



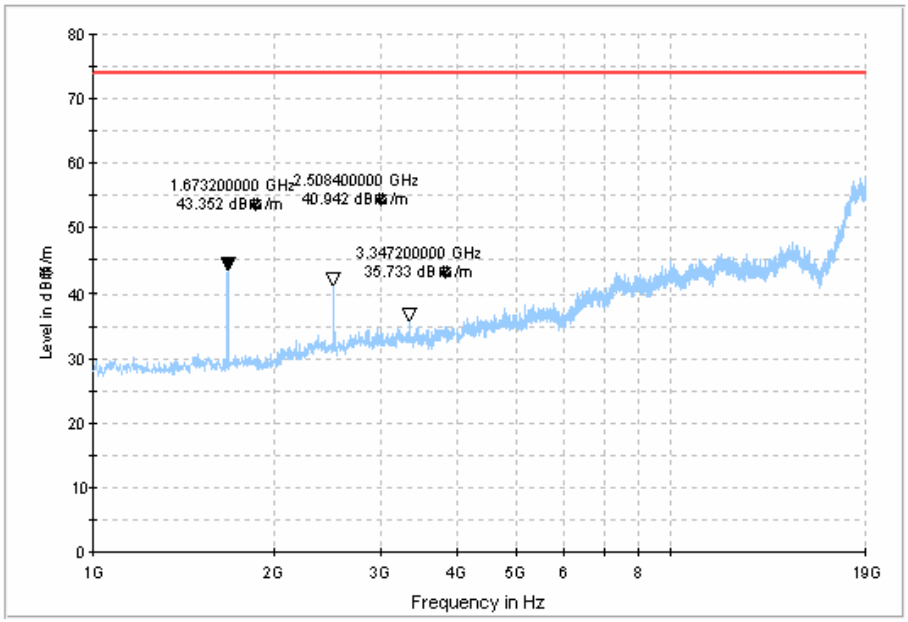
F9100ABA

GSM 850

dBuV/m



dBuV/m



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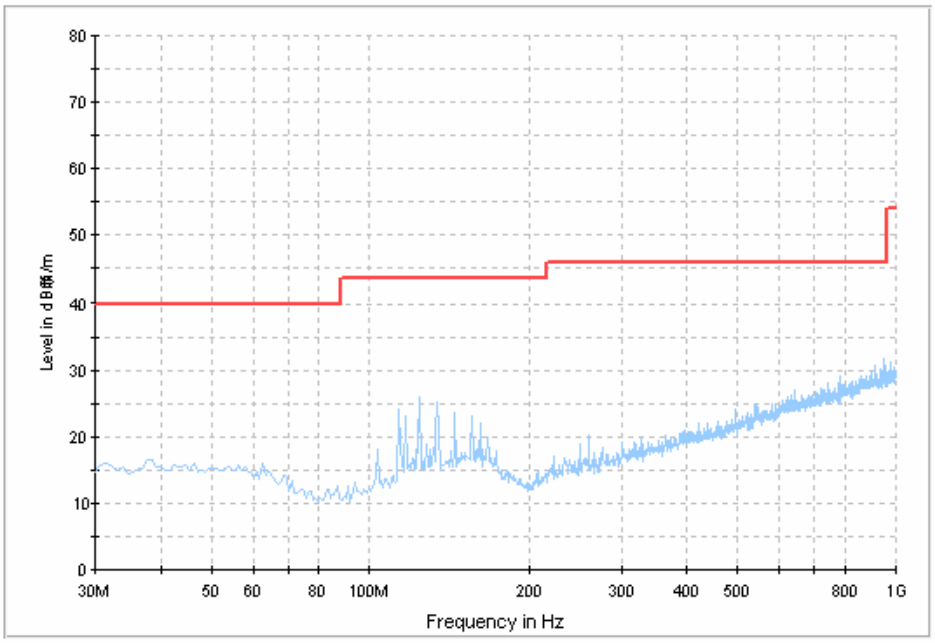
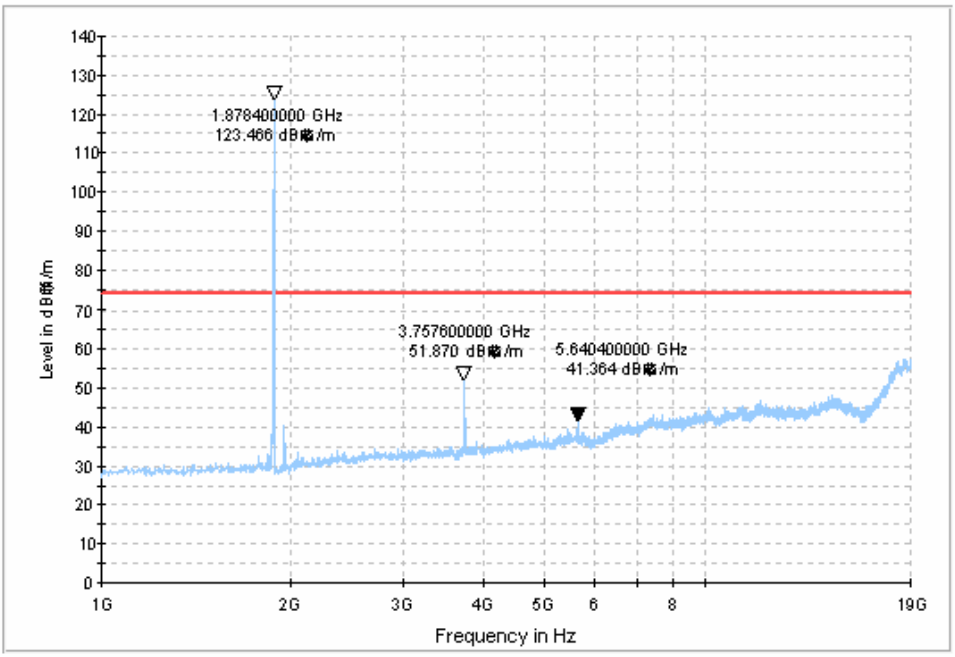
dBuV/m



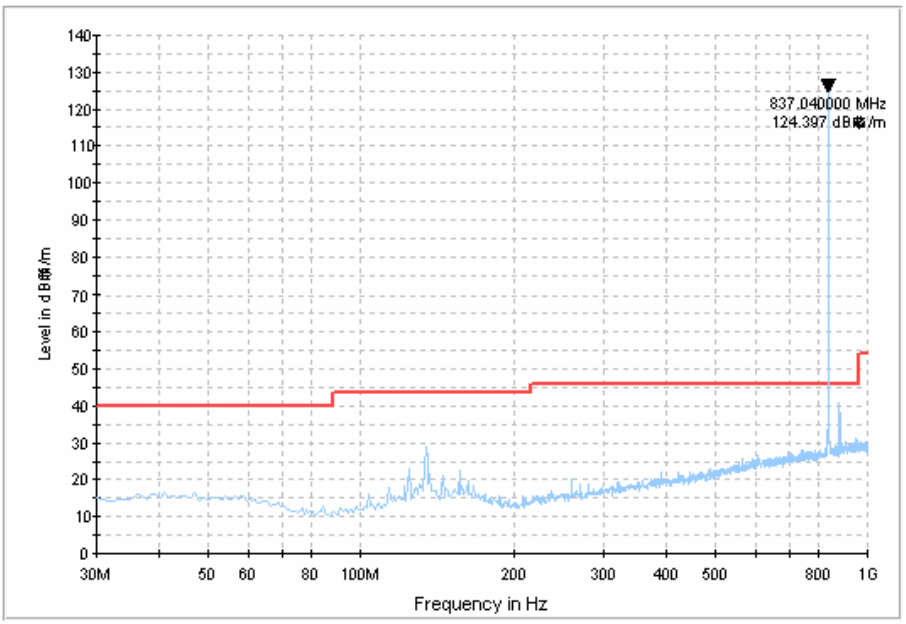
dBuV/m



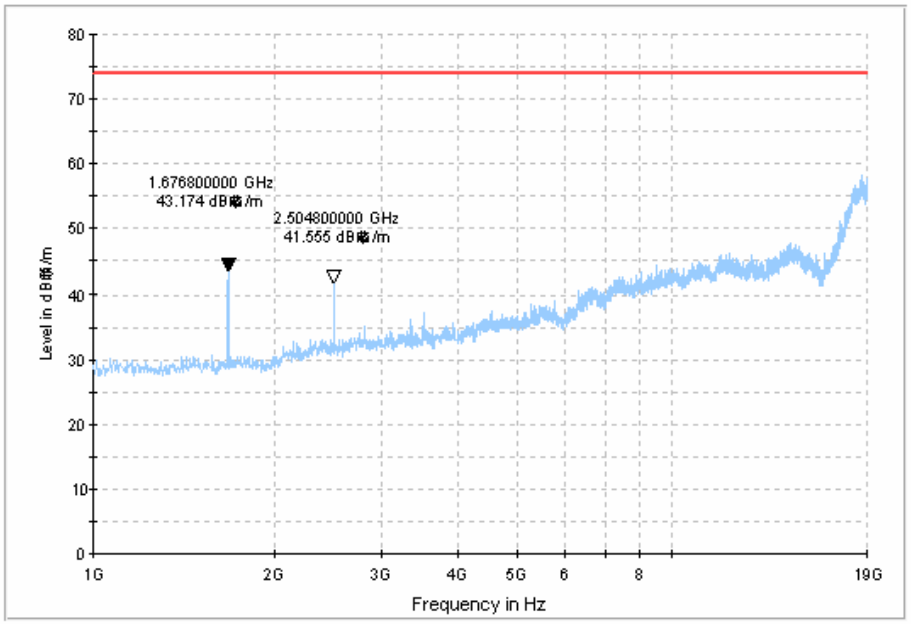
F9200ABA

GSM 850

dBuV/m

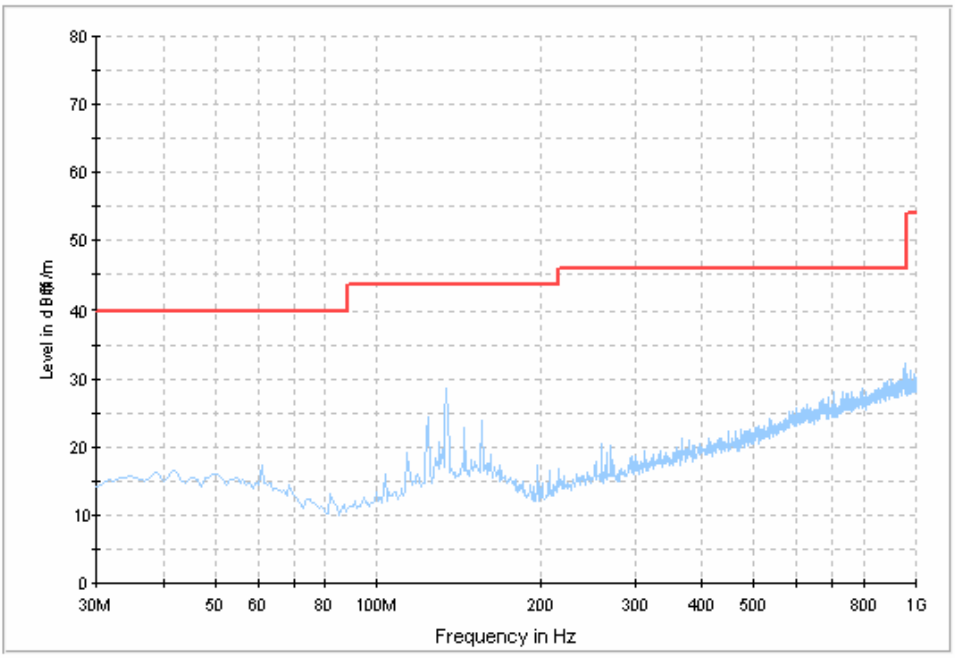


dBuV/m

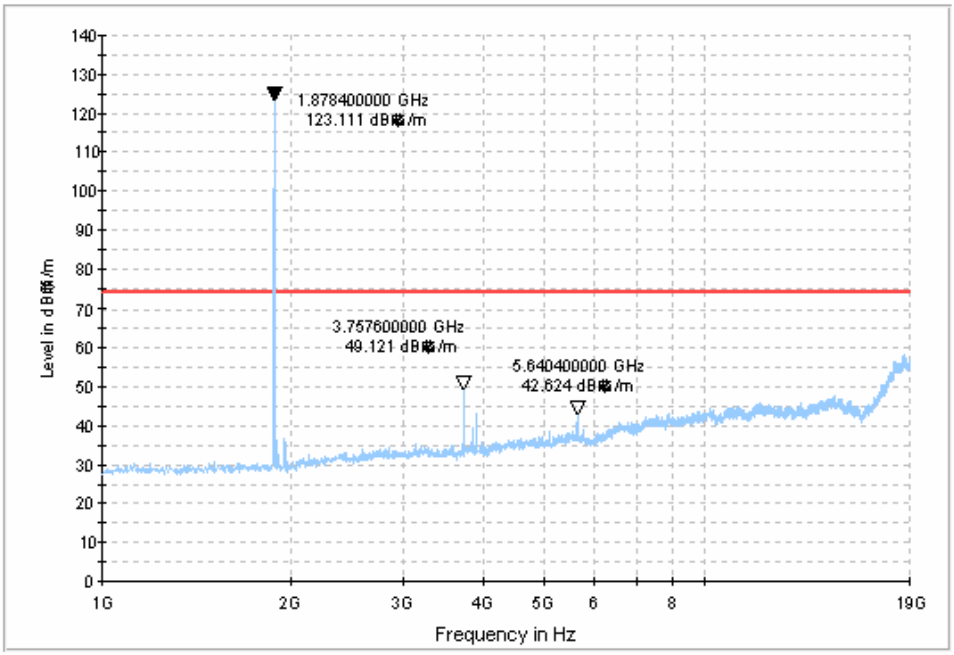


PCS 1900

dBuV/m



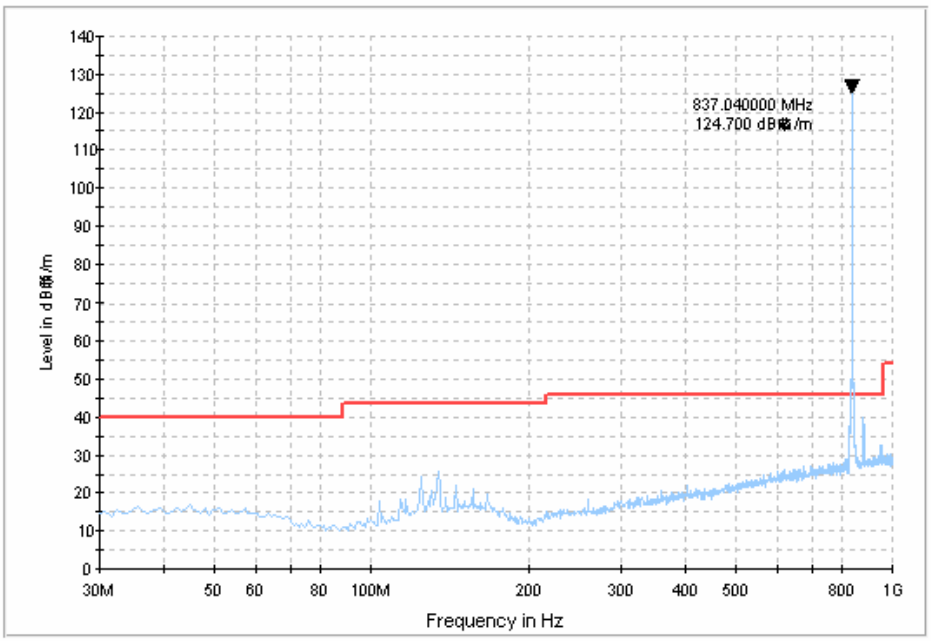
dBuV/m



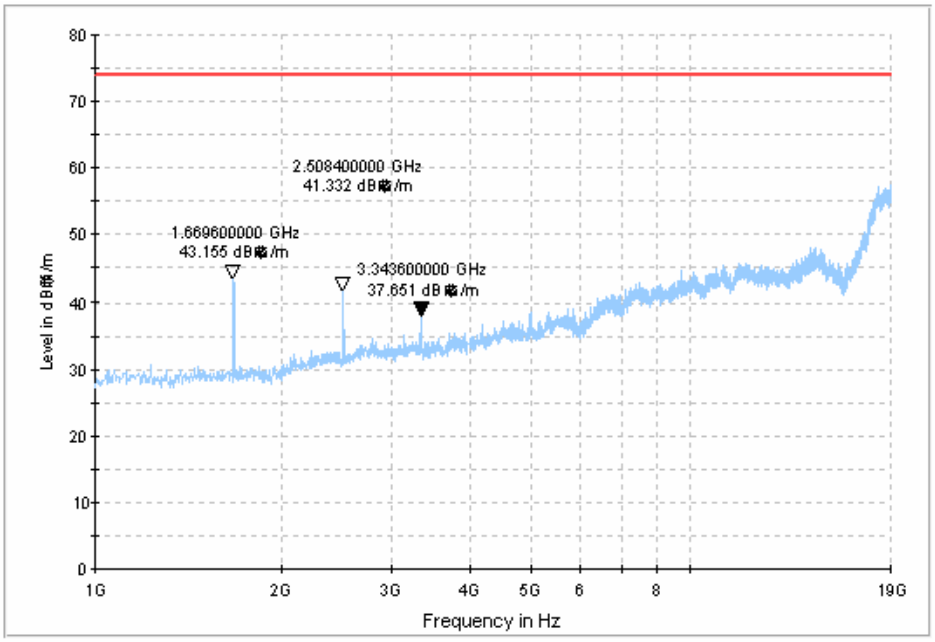
F9300ABA

GSM 850

dBuV/m

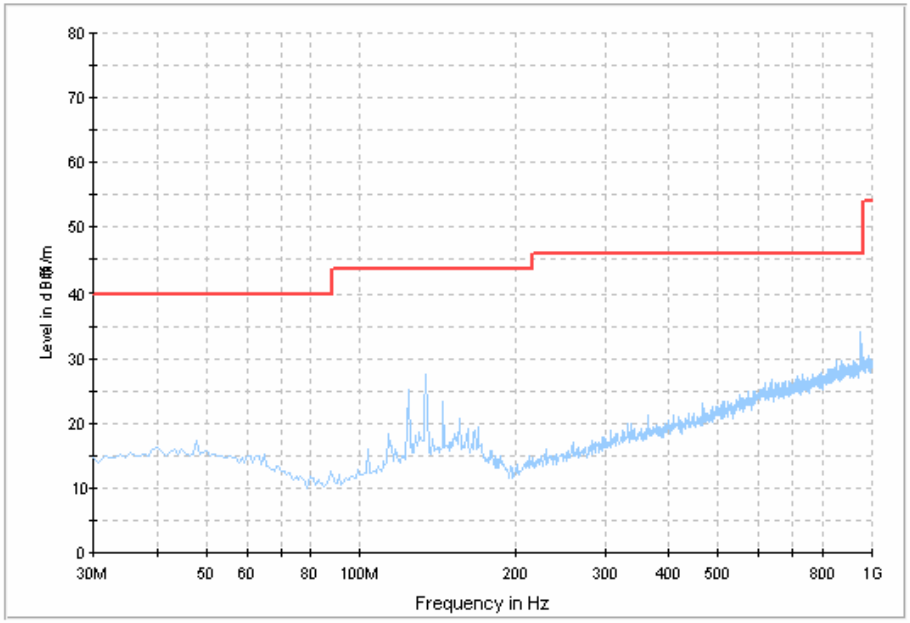


dBuV/m

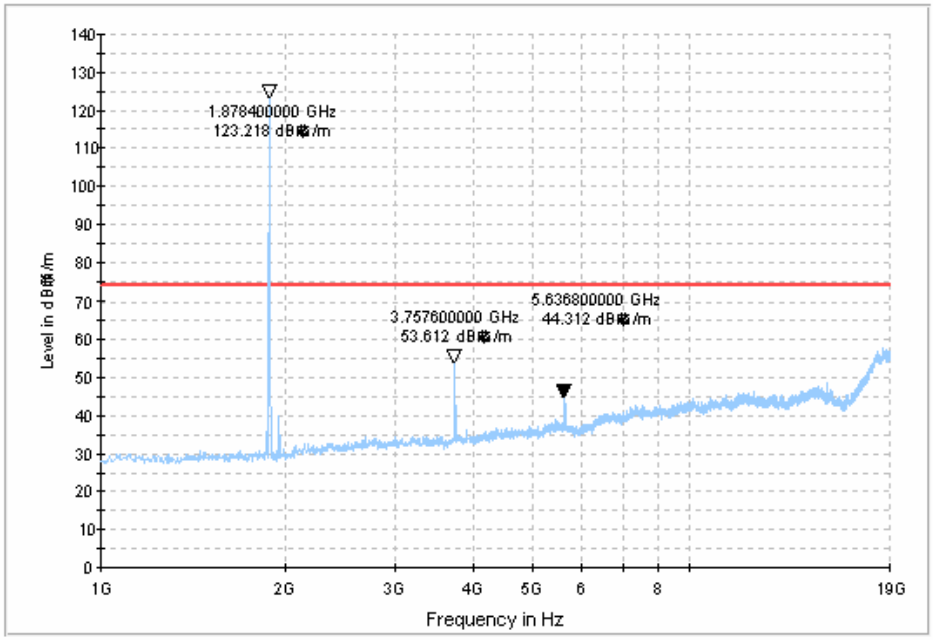


PCS 1900

dBuV/m



dBuV/m



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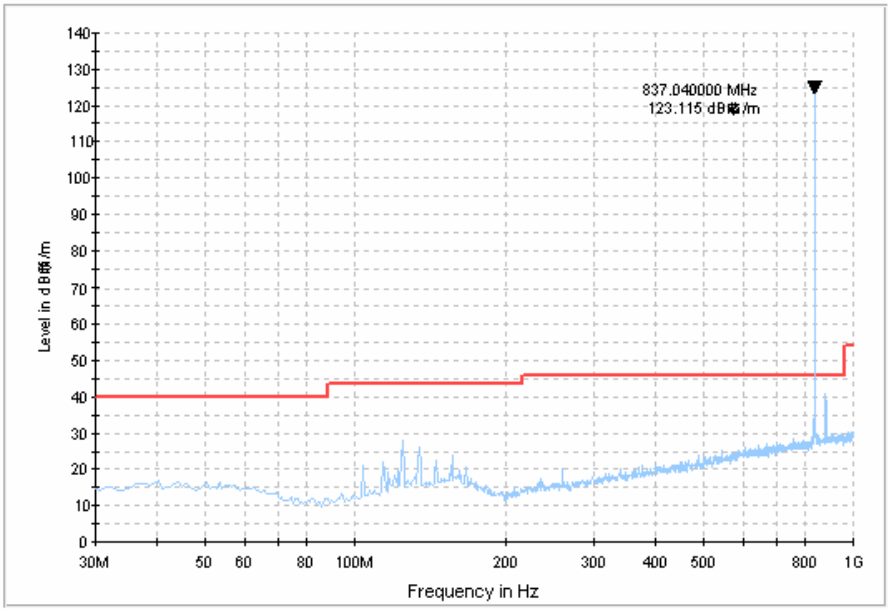
GSM 850

dBuV/m



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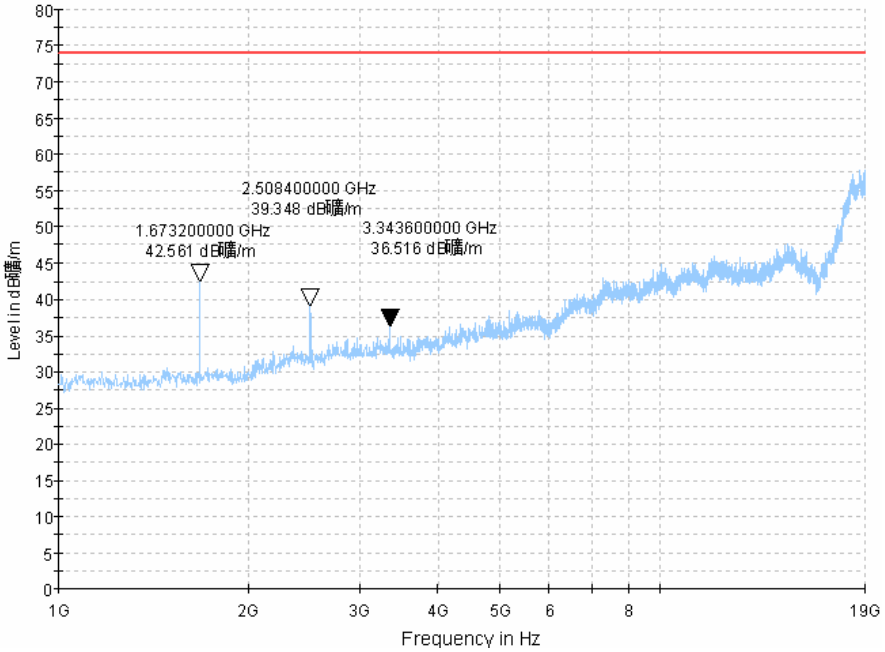
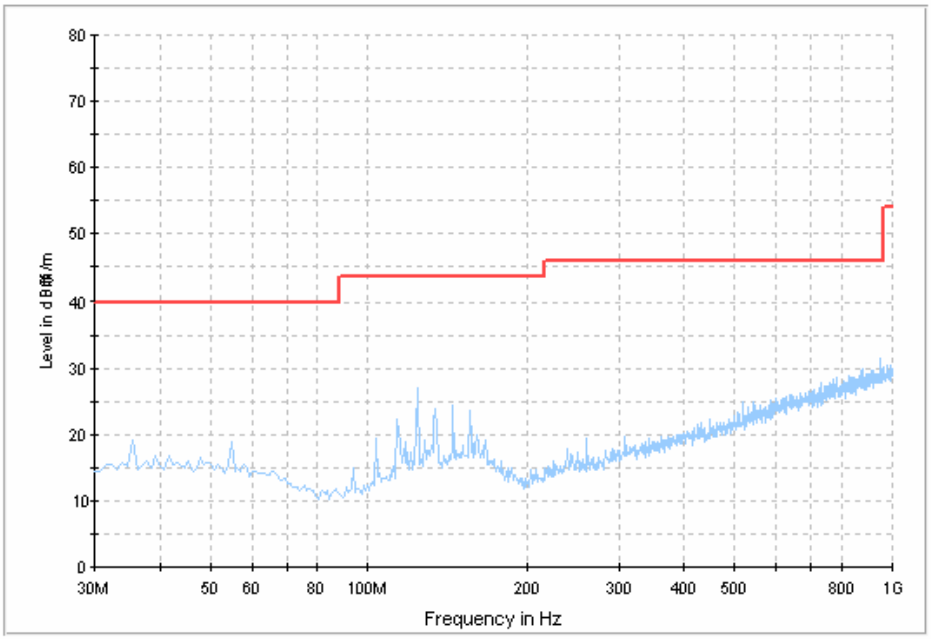


PCS 1900

dBuV/m



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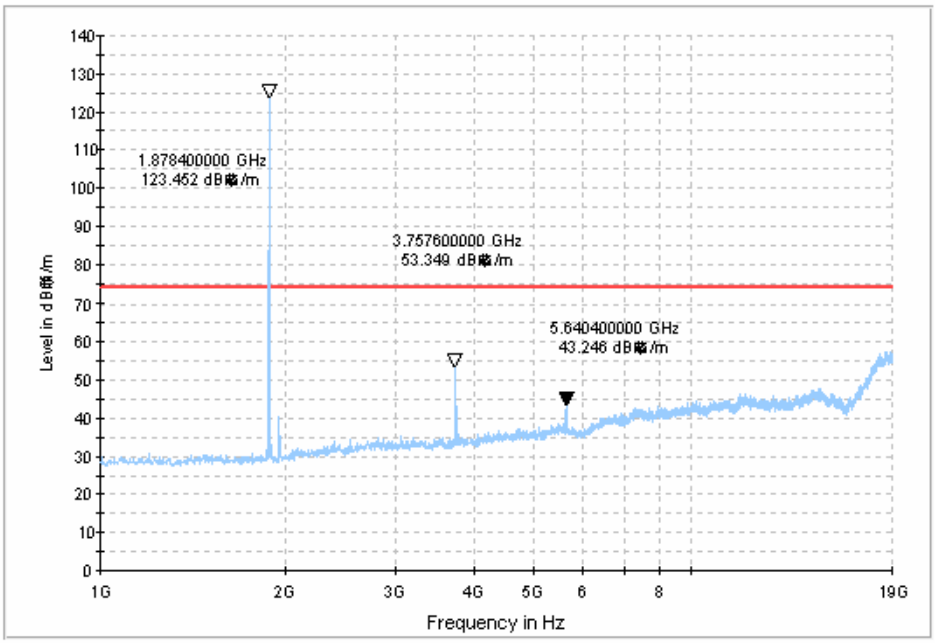

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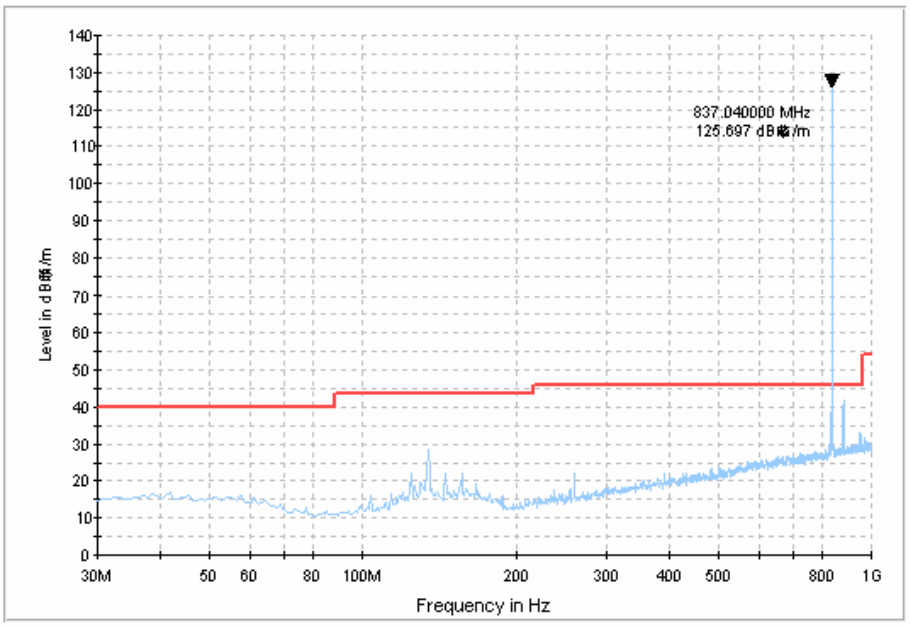
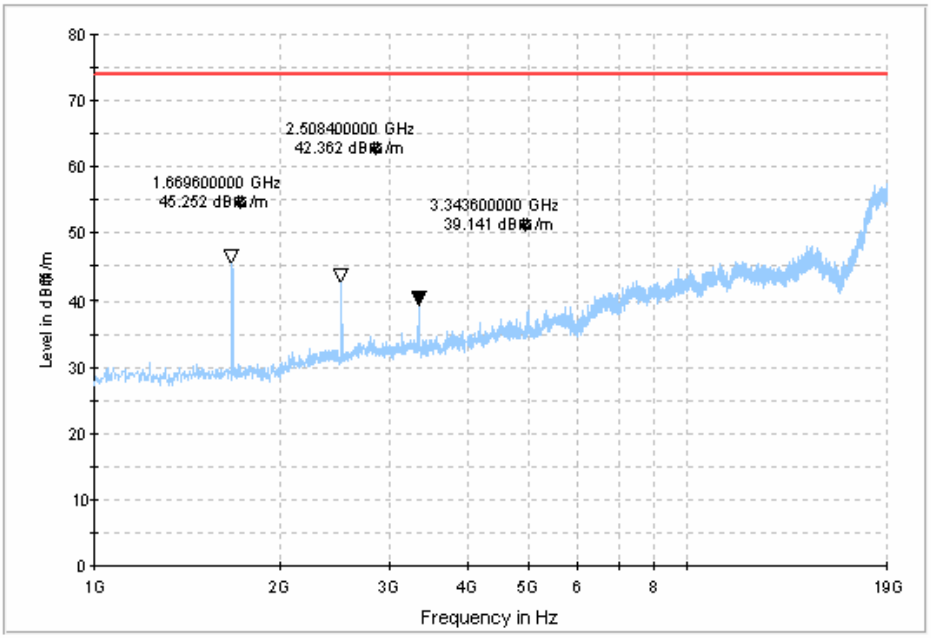
GSM 850

dBuV/m



dBuV/m



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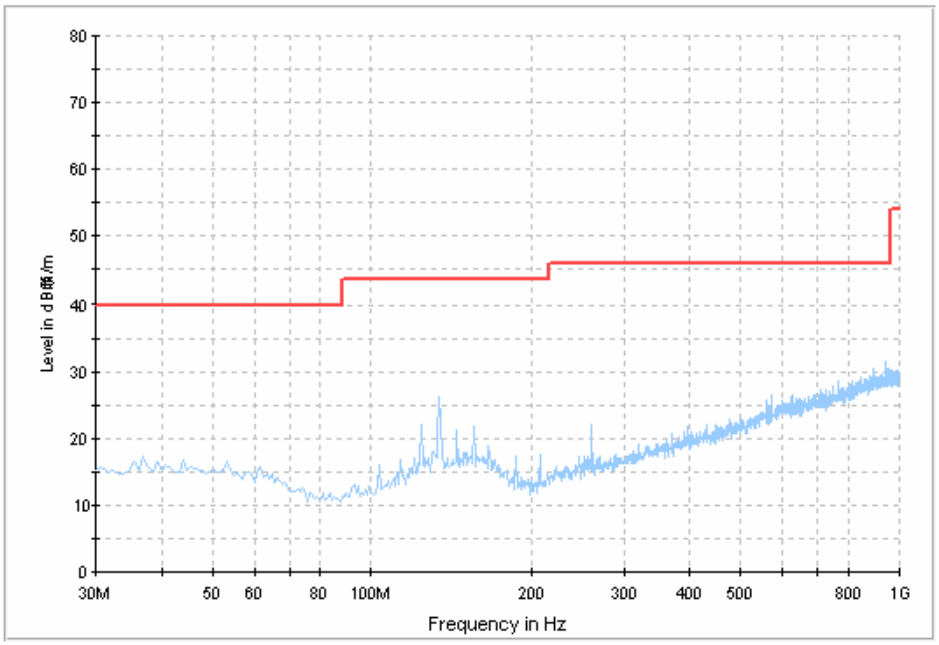
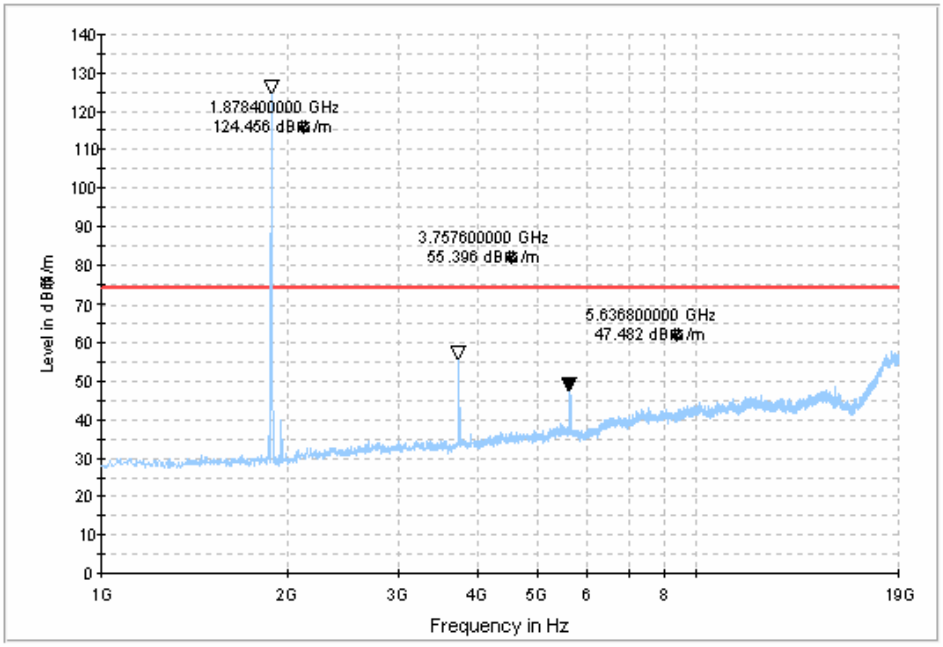
dBuV/m



dBuV/m



(1) The RBW, VBW of SPA for frequency

Below 1GHz was RBW=300KHz, VBW=1MHz;

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

F9500AAA:

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	824.2	128	H	V	100.90	16.91	8.4	2.89	21.92	38.45
				H	97.62	13.16	8.4	2.89	18.17	38.45
	836.6	190	H	V	102.05	18.02	8.45	2.93	23.04	38.45
				H	98.28	13.81	8.45	2.93	18.83	38.45
	848.8	251	H	V	100.57	16.40	8.76	2.97	21.69	38.45
				H	97.17	12.02	8.76	2.97	17.31	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	1850.2	512	H	V	96.92	9.57	7.05	4.45	18.78	33.00
				H	93.76	7.63	7.05	4.45	16.16	33.00
	1880.0	661	H	V	95.83	7.71	7.13	4.57	18.46	33.00
				H	93.74	6.44	7.13	4.57	15.71	33.00
	1909.8	810	H	V	96.15	8.05	7.25	4.48	18.34	33.00
				H	94.21	7.16	7.25	4.48	16.39	33.00

6.5 Out of band emissions at antenna Terminals

6.5.1 Band edges emissions

Test Requirement: Part 2.1051

FCC part 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 specification in the instruction manual and/or alignment procedure, shall not be less than 43+10log(Mean power in watts) dBc below the mean power output outside a license's frequency block(-13dBm).

Test Date: Dec 02, 2009

Test Procedure:

The RF output of the transceiver was connected to a spectrum analyzer through appropriate attenuation. The resolution bandwidth of spectrum analyzer was set at 1MHz, sufficient scans were taken to show the out of band Emission is any up to 10^{th} harmonic.

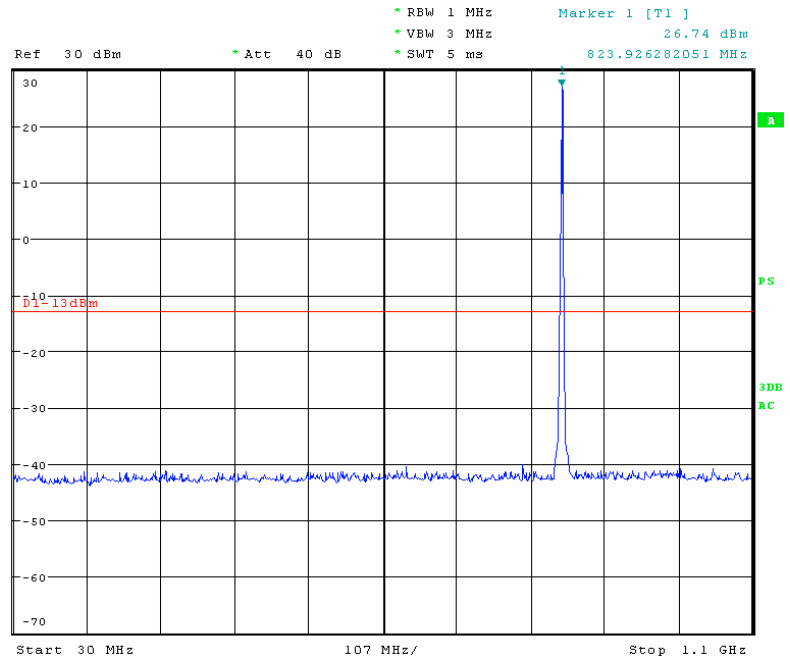
For the out of band: set RBW, VBW=1MHz, stat=30MHz, stop= 10 th harmonic. Limit= -13dBm

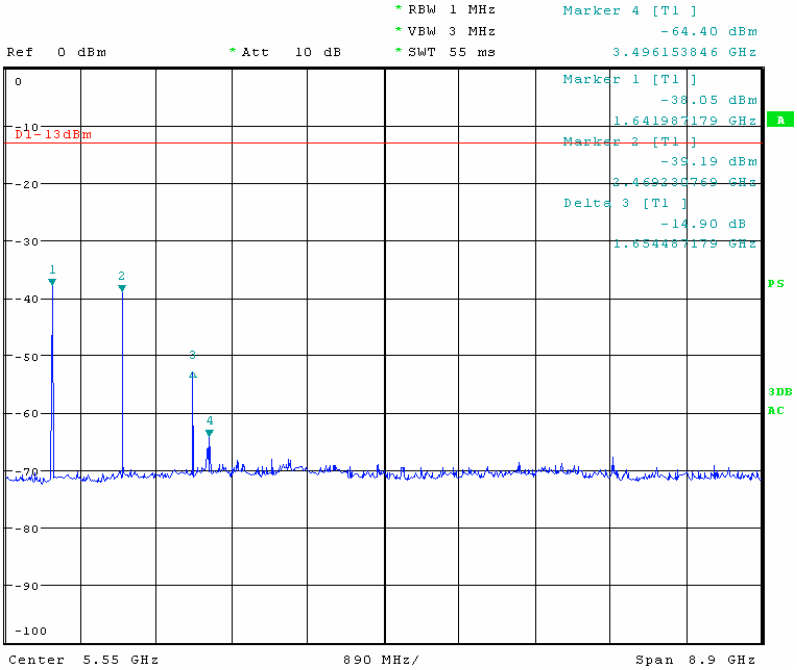
Band Edge requirements: In 1Mhz bands immediately outside and adjacent to the frequency block, a resolution bandwidth of at least 1 % of bandwidth of fundamental emission of the transmitter any be employed to measure the out of band emission. Limit=-13dBm.

Measurement result:

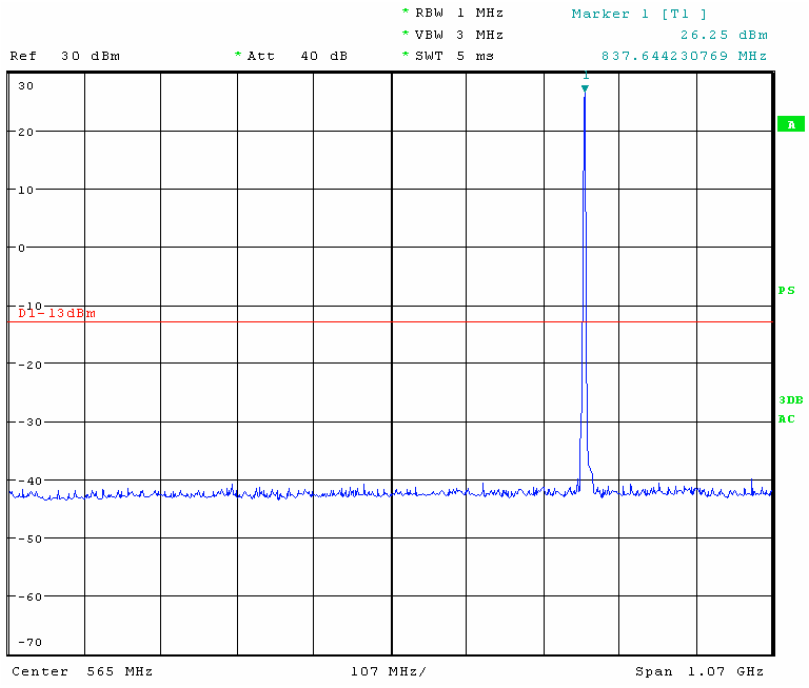
F9500AAA

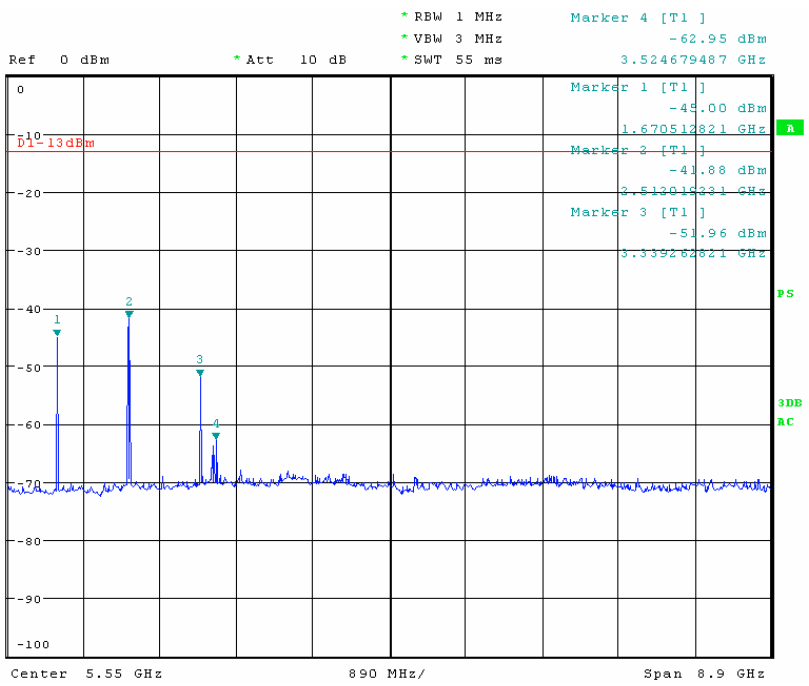
GSM 850 Channel Low



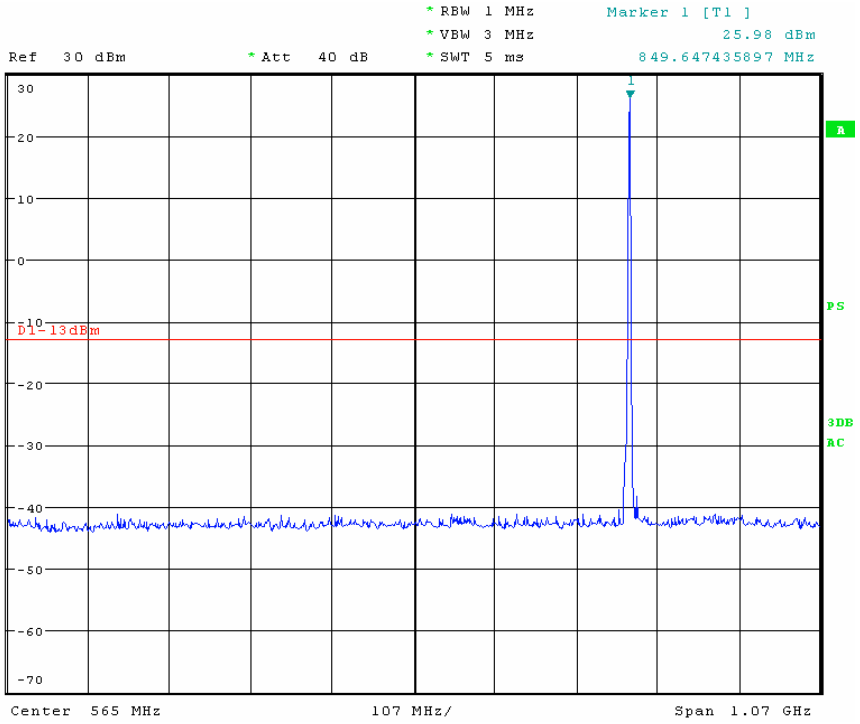


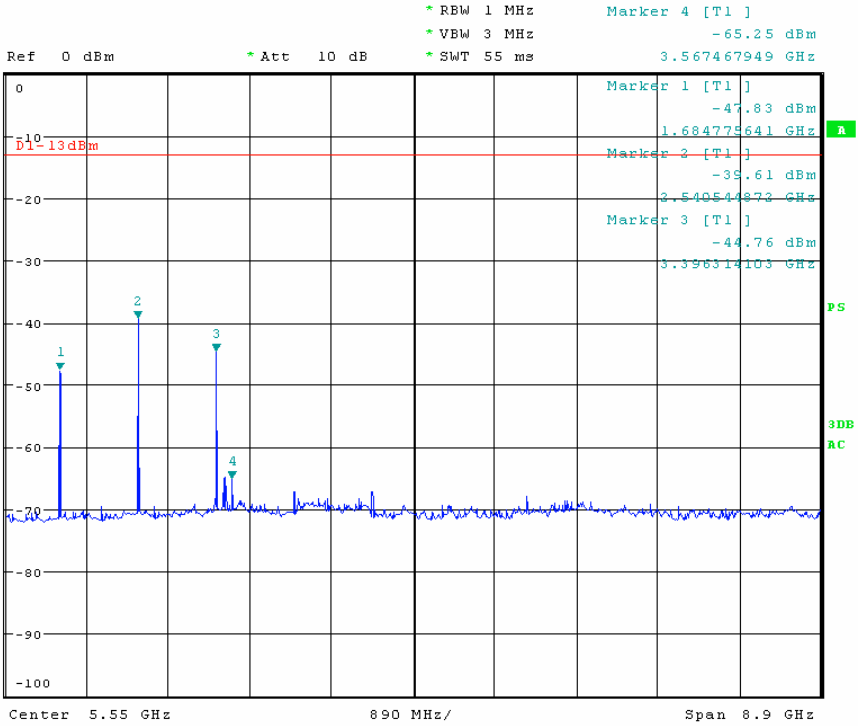
GSM 850 Channel Mid



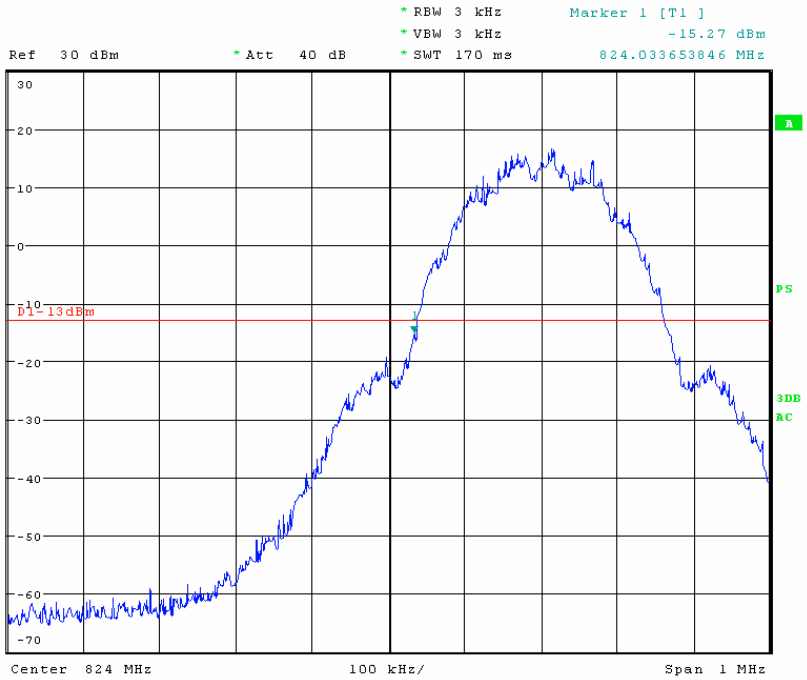


GSM 850 Channel High

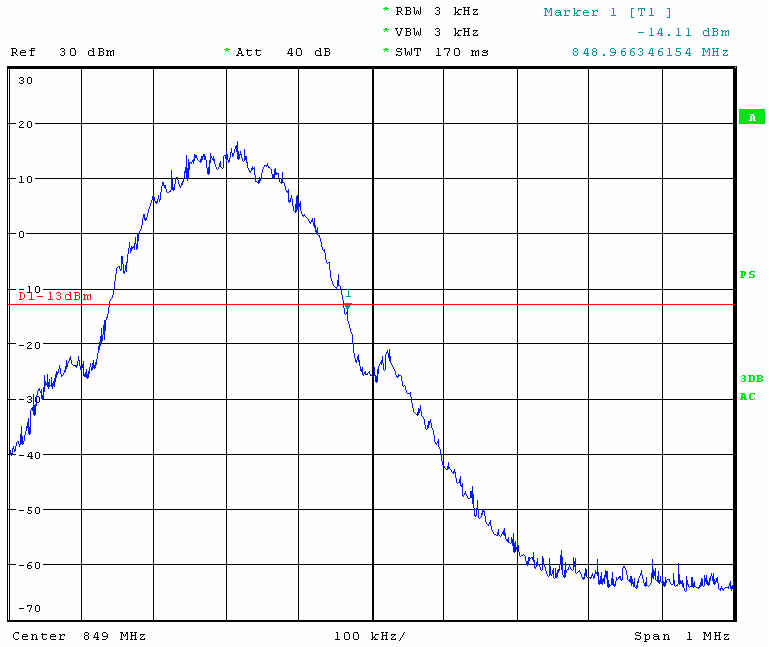




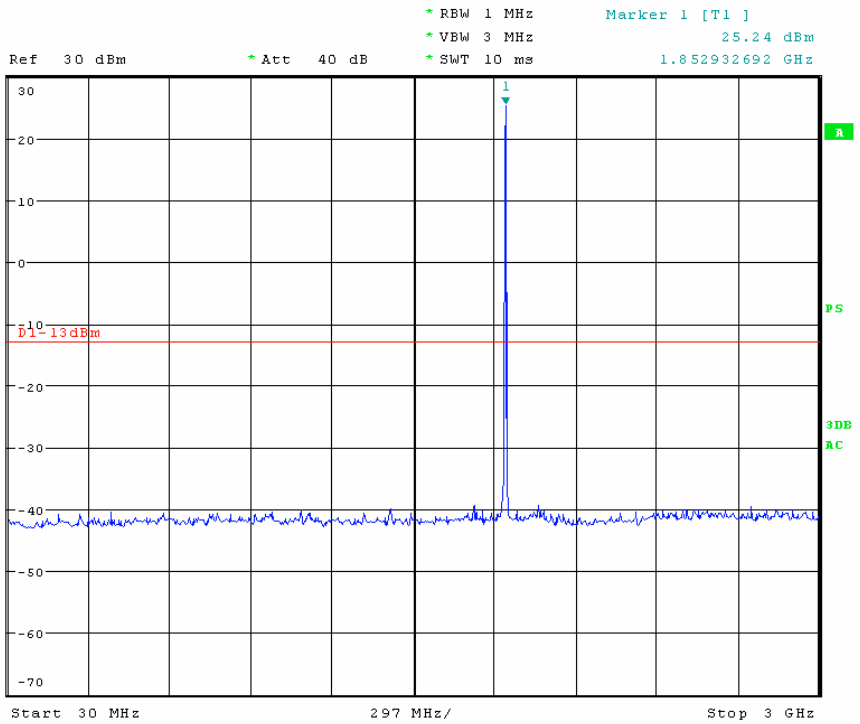
Band Edge emission GSM 850 Channel Low

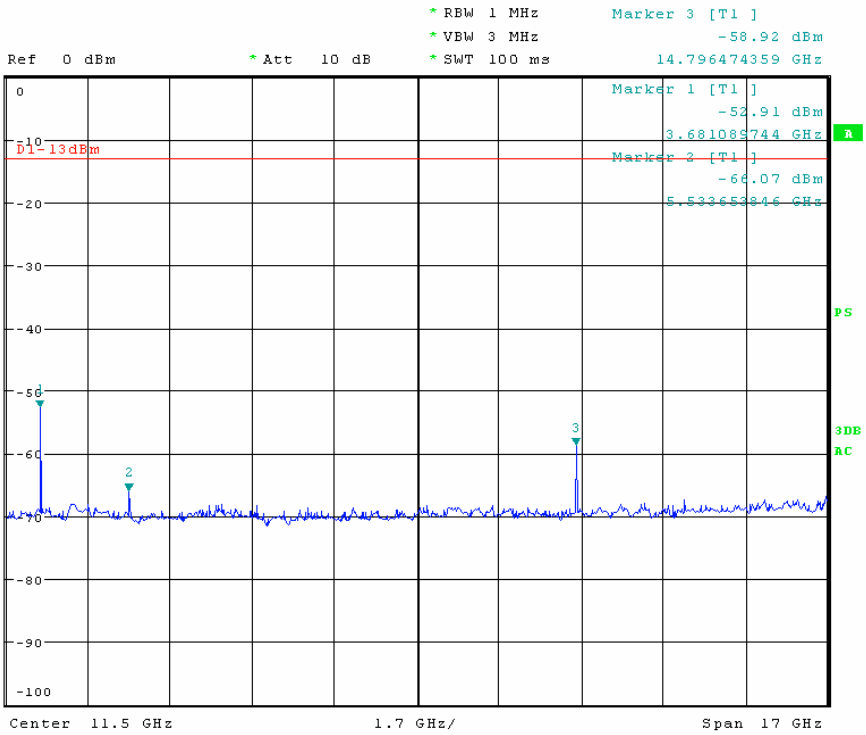


Band Edge emission GSM 850 Channel high

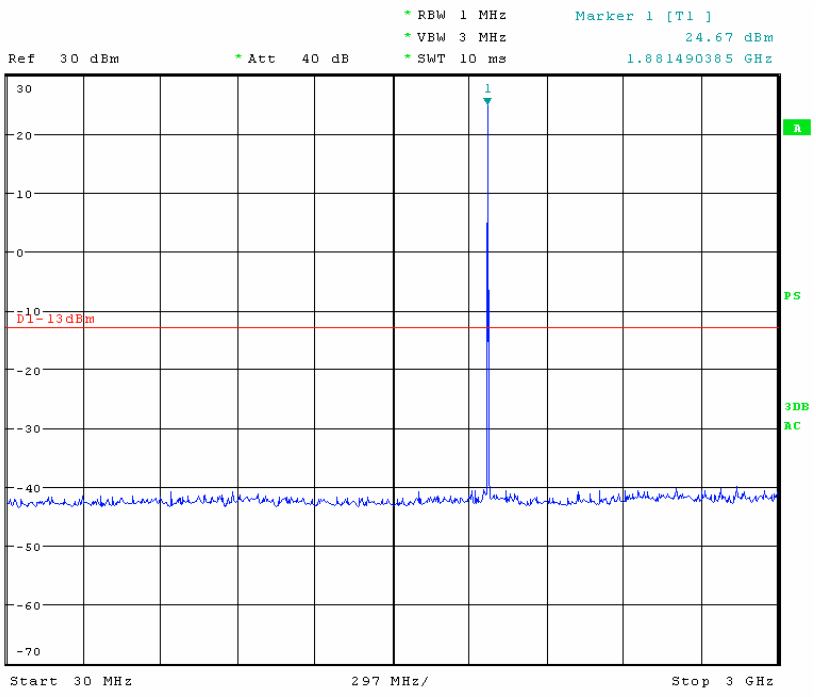


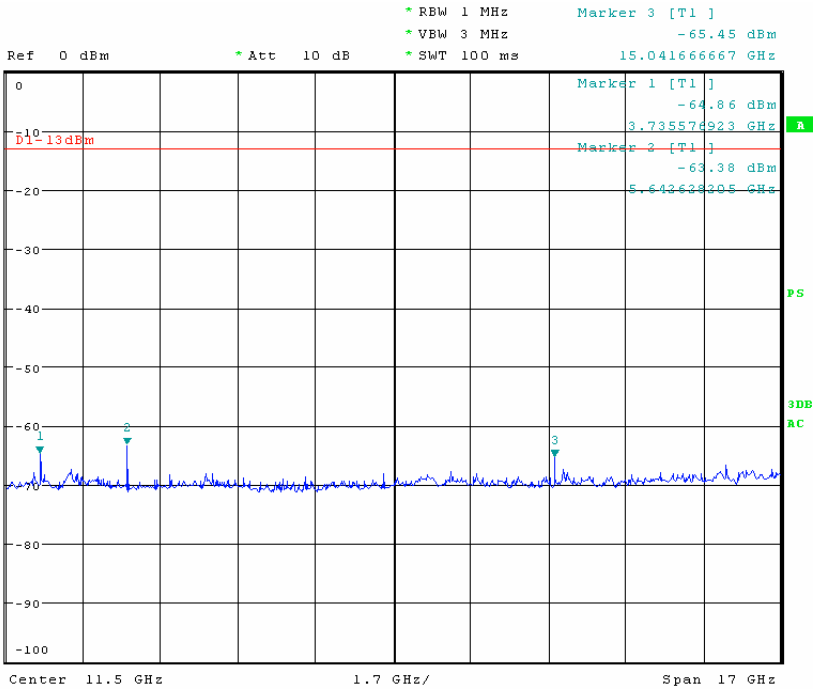
PCS 1900 Channel Low



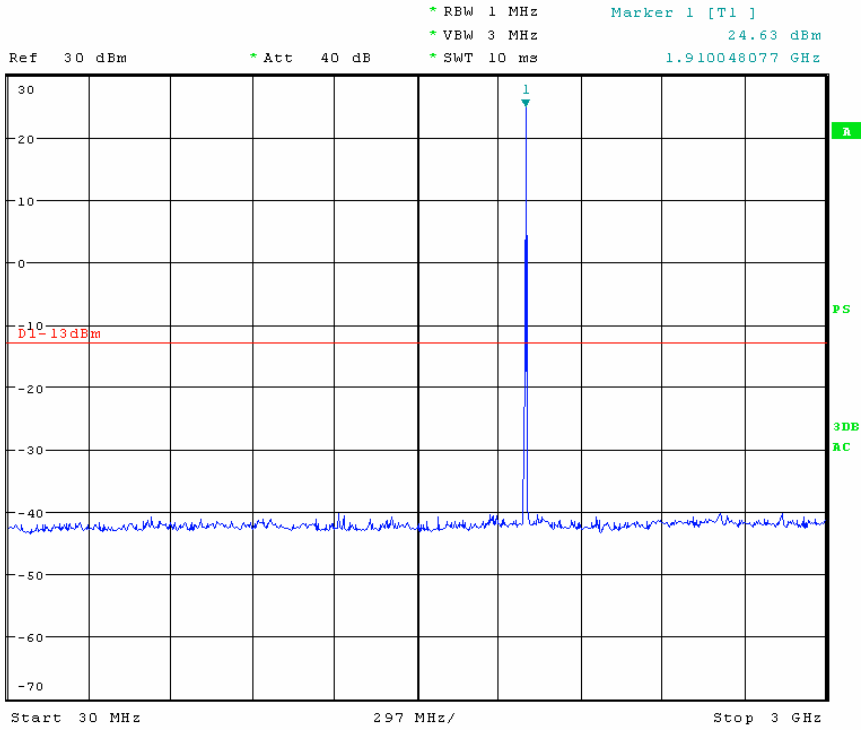


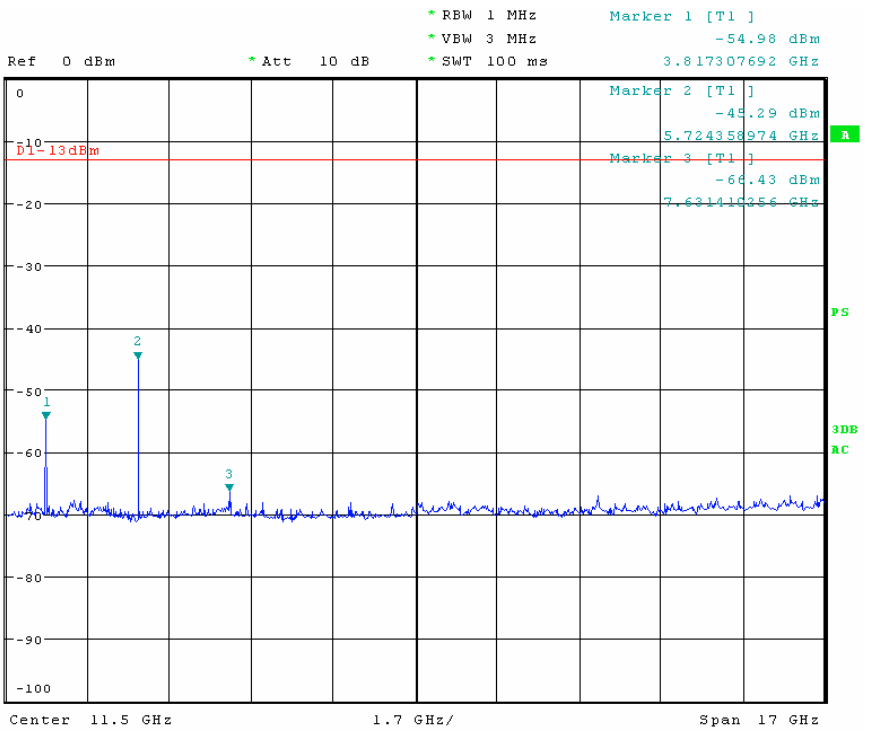
PCS 1900 Channel Mid



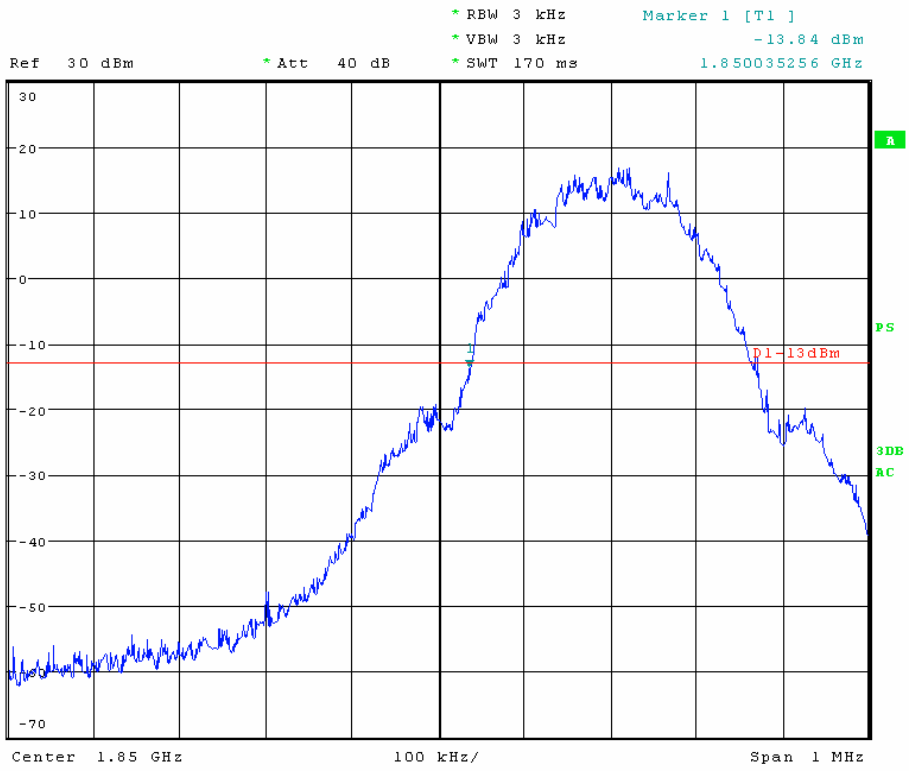


PCS 1900 Channel High





Band Edge emission PCS 1900 Channel Low



Band Edge emission PCS 1900 Channel high

6.6 Field Strength of Radiated Spurious Emissions

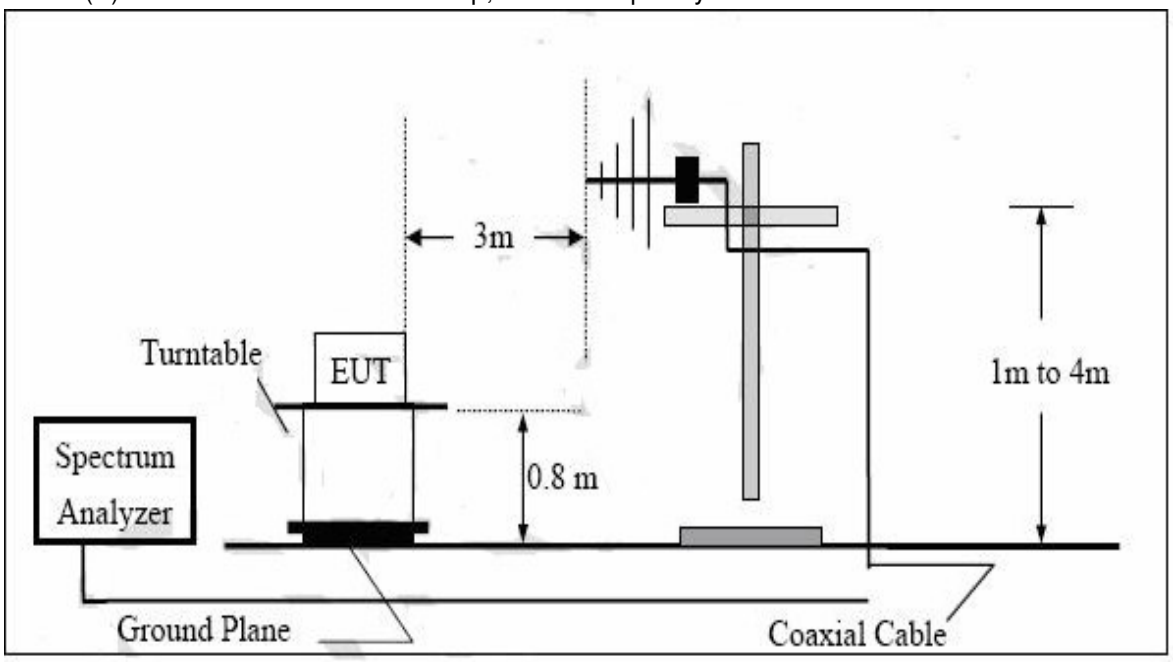
Test Requirement: Part 2.1053

FCC part 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 specification in the instruction manual and/or alignment procedure, shall not be less than 43+10log(Mean power in watts) dBc below the mean power output outside a license's frequency block(-13dBm).

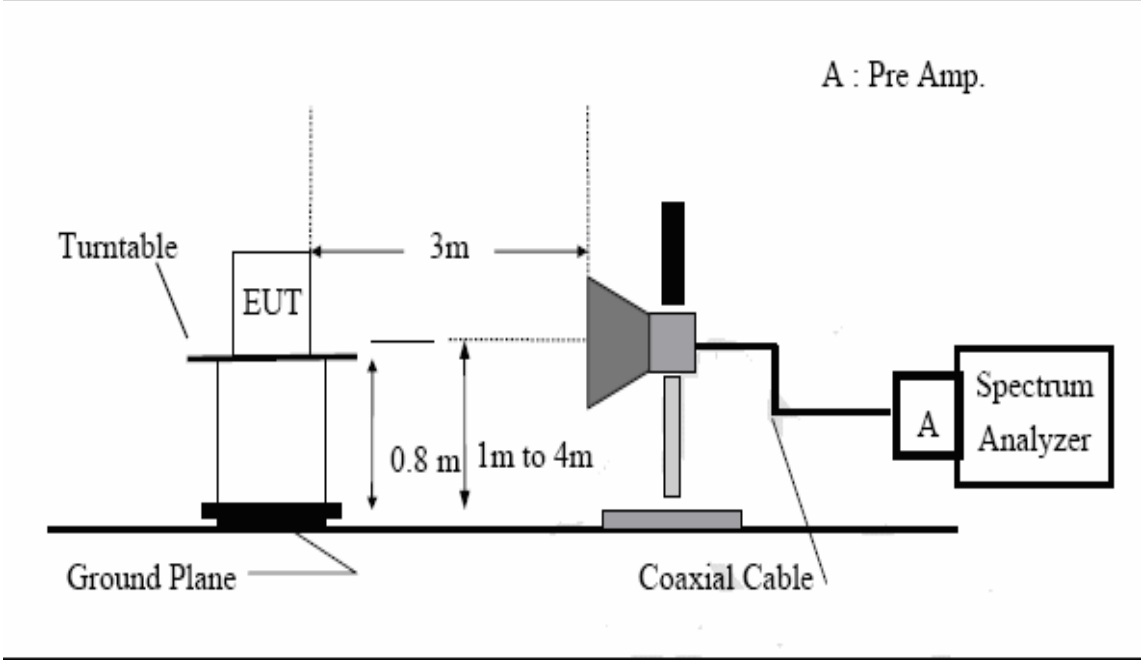
Test Date: Dec 01, 2009

Test Setup:

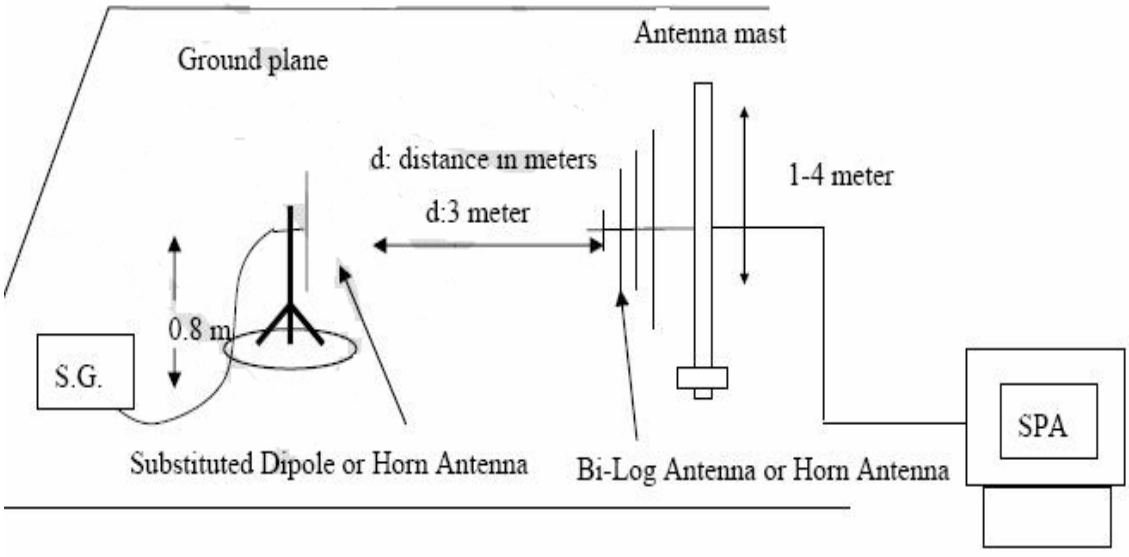
(A) Radiated emission Test setup, Below Frequency 1000MHz:



(B) Radiated emission Test setup frequency over 1GHz:



(C) Substituted Method Test setup:



Test 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 communication with the station. The highest emission was recorded with the rotation of the turntable and lowering of the test antenna from 4m to 1m.

ERP in frequency band 824.2-848.8MHz were measured using substitution method. The EUT was replaced by dipole antenna connected, the S.G. output was recorded and ERP was calculated as follow:

EIRP in frequency band 1850.5-1909.8MHz 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:

ERP=S.G. output (dBm) + Antenna Gain (dBd)-Cable Loss (dB)
EIRP=S.G. output (dBm) + Antenna Gain (dBi)-Cable Loss (dB)
Note:refer to section 6.4.

Radiated spurious Emission Measurement Result: GSM 850 mode

Operation mode: TX CH Low mode

Fundamental Frequency: 824.2MHz

Frequency (MHz)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	H	-61.09	2.60	1.00	-59.49	-13.0	46.49
200.00	H	-64.02	9.10	1.42	-56.34	-13.0	43.34
800.00	H	-58.5	8.70	2.86	-52.66	-13.0	39.66
1648.40	H	-53.8	6.95	4.17	-51.02	-13.0	38.02
2472.60	H	-44.44	8.35	5.24	-41.33	-13.0	28.33
3296.80	H	-49.36	8.15	6.11	-47.32	-13.0	34.32
4121.00	H	-50.62	8.45	6.94	-49.11	-13.0	36.11
100.00	V	-59.66	2.60	1.00	-58.06	-13.0	45.06
200.00	V	-63.00	9.10	1.42	-55.32	-13.0	42.32
800.00	V	-57.58	8.70	2.86	-51.74	-13.0	38.74
1648.40	V	-52.51	6.95	4.17	-49.73	-13.0	36.73
2472.60	V	-43.92	8.35	5.24	-40.81	-13.0	27.81
3296.80	V	-50.41	8.15	6.11	-48.37	-13.0	35.37
4121.00	V	-49.62	8.45	6.94	-48.11	-13.0	35.11

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: GSM 850 mode

Operation mode: TX CH Mid mode

Fundamental Frequency: 836.60MHz

Frequency (MHz)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	H	-61.99	2.6	1	-60.39	-13	47.39
200.00	H	-65.52	9.1	1.42	-57.84	-13	44.84
800.00	H	-59.32	8.7	2.86	-53.48	-13	40.48
1673.20	H	-53.12	6.95	4.2	-50.37	-13	37.37
2509.80	H	-43.77	8.35	5.36	-40.78	-13	27.78
3346.40	H	-48.15	8.15	6.25	-46.25	-13	33.25
4183.00	H	-49.02	8.45	6.98	-47.55	-13	34.55
100.00	V	-60.81	2.6	1	-59.21	-13	46.21
200.00	V	-63.62	9.1	1.42	-55.94	-13	42.94
800.00	V	-59.3	8.7	2.86	-53.46	-13	40.46
1673.20	V	-51.39	6.95	4.2	-48.64	-13	35.64
2509.80	V	-37.43	8.35	5.36	-34.44	-13	21.44
3346.40	V	-42.02	8.15	6.25	-40.12	-13	27.12
4183.00	V	-45.98	8.45	6.98	-44.51	-13	31.51

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: GSM 850 mode

Operation mode: TX CH High mode

Fundamental Frequency: 848.8MHz

Frequency (MHz)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	H	-60.41	2.6	1	-58.81	-13	45.81
200.00	H	-63.19	9.1	1.42	-55.51	-13	42.51
800.00	H	-58.23	8.7	2.86	-52.39	-13	39.39
1697.60	H	-52.97	6.95	4.22	-50.24	-13	37.24
2546.40	H	-46.15	8.35	5.39	-43.19	-13	30.19
3395.20	H	-49.46	8.15	6.35	-47.66	-13	34.66
4244.00	H	-50.92	8.45	7.04	-49.51	-13	36.51
100.00	V	-59.54	2.6	1	-57.94	-13	44.94
200.00	V	-62.55	9.1	1.42	-54.87	-13	41.87
800.00	V	-57.28	8.7	2.86	-51.44	-13	38.44
1697.60	V	-52.84	6.95	4.22	-50.11	-13	37.11
2546.40	V	-45.27	8.35	5.39	-42.31	-13	29.31
3395.20	V	-48.81	8.15	6.35	-47.01	-13	34.01
4244.00	V	-50.61	8.45	7.04	-49.20	-13	36.20

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: PCS 1900 mode

Operation mode: TX CH Low mode

Fundamental Frequency: 1850.2MHz

Frequency (MHz)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	H	-61.01	2.6	1	-59.41	-13	46.41
200.00	H	-64.82	9.1	1.42	-57.14	-13	44.14
800.00	H	-61.53	8.7	2.86	-55.69	-13	42.69
1800.00	H	-50.83	7	4.38	-48.21	-13	35.21
3700.40	H	-34.92	8.35	6.77	-33.34	-13	20.34
5550.60	H	-40.87	9.55	8.1	-39.42	-13	26.42
7400.80	H	-50.26	9.75	9.51	-50.02	-13	37.02
9251.00	H	-52.59	10.55	11.08	-53.12	-13	40.12
100.00	V	-59.84	2.6	1	-58.24	-13	45.24
200.00	V	-64.65	9.1	1.42	-56.97	-13	43.97
800.00	V	-60.71	8.7	2.86	-54.87	-13	41.87
1800.00	V	-50.27	7	4.38	-47.65	-13	34.65
3700.40	V	-26.08	8.35	6.77	-24.50	-13	11.50
5550.60	V	-29.06	9.55	8.1	-27.61	-13	14.61
7400.80	V	-49.35	9.75	9.51	-49.11	-13	36.11
9251.00	V	-51.90	10.55	11.08	-52.43	-13	39.43

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: PCS 1900 mode

Operation mode: TX CH mid mode

Fundamental Frequency: 1880.0MHz

Frequency (MHz)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	H	-60.38	2.6	1	-58.78	-13	45.78
200.00	H	-65.17	9.1	1.42	-57.49	-13	44.49
800.00	H	-62.06	8.7	2.86	-56.22	-13	43.22
1800.00	H	-51.95	7	4.38	-49.33	-13	36.33
3760.00	H	-32.63	8.42	6.84	-31.05	-13	18.05
5640.00	H	-39.59	9.5	8.31	-38.40	-13	25.40
7520.00	H	-48.70	9.78	9.6	-48.52	-13	35.52
9400.00	H	-51.63	10.61	11.32	-52.34	-13	39.34
100.00	V	-59.24	2.6	1	-57.64	-13	44.64
200.00	V	-64.42	9.1	1.42	-56.74	-13	43.74
800.00	V	-61.15	8.7	2.86	-55.31	-13	42.31
1800.00	V	-51.23	7	4.38	-48.61	-13	35.61
3760.00	V	-23.22	8.42	6.84	-21.64	-13	8.64
5640.00	V	-26.32	9.5	8.31	-25.13	-13	12.13
7520.00	V	-48.51	9.78	9.6	-48.33	-13	35.33
9400.00	V	-52.41	10.61	11.32	-53.12	-13	40.12

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

Radiated spurious Emission Measurement Result: PCS 1900 mode

Operation mode: TX CH High mode

Fundamental Frequency: 1909.8MHz

Frequency (MHz)	Ant.Pol. H/V	S.G Output (dBm)	Antenna Gain (dBi/dBd)	Cable Loss (dB)	ERP/ EIRP (dBm)	Limit (dBm)	Safe Margin (dB)
100.00	H	-60.36	2.6	1	-58.76	-13	45.76
200.00	H	-64.74	9.1	1.42	-57.06	-13	44.06
800.00	H	-60.45	8.7	2.86	-54.61	-13	41.61
1800.00	H	-51.63	7	4.38	-49.01	-13	36.01
3819.60	H	-37.75	8.42	6.88	-36.21	-13	23.21
5729.80	H	-39.48	9.5	8.48	-38.46	-13	25.46
7639.20	H	-50.02	9.78	9.7	-49.94	-13	36.94
9549.00	H	-53.19	10.61	11.64	-54.22	-13	41.22
100.00	V	-59.18	2.6	1	-57.58	-13	44.58
200.00	V	-63.99	9.1	1.42	-56.31	-13	43.31
800.00	V	-59.05	8.7	2.86	-53.21	-13	40.21
1800.00	V	-49.37	7	4.38	-46.75	-13	33.75
3819.60	V	-29.67	8.42	6.88	-28.13	-13	15.13
5729.80	V	-31.15	9.5	8.48	-30.13	-13	17.13
7639.20	V	-49.44	9.78	9.7	-49.36	-13	36.36
9549.00	V	-52.20	10.61	11.64	-53.23	-13	40.23

Remark:

1 emission behaviors belong to narrowband spurious emission.

2 The result basic equation calculation is as follow:

ERP/EIRP(dBm)=S.G. Output(dBm) + Antenna Gain(dBd/dBi)-Cable Loss

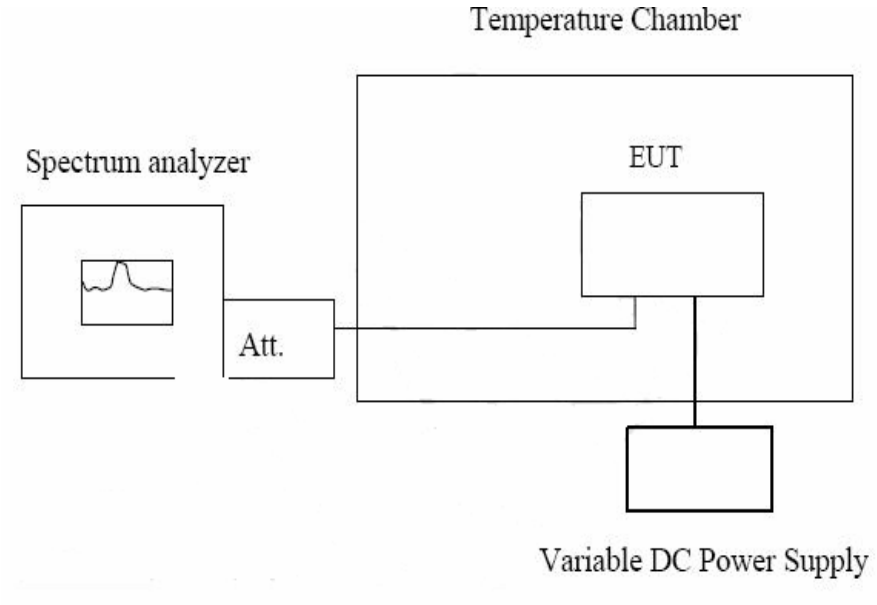
6.7 Frequency Stability V.S. TEMPERATURE MEASUREMENT

Test Requirement: Part 2.1055(a)(1)

Test Date: Dec 02, 2009; Jan 26,2010

Test Status: Test lowest channel, middle, highest channel.

Test Setup:



Note: Measurement setup for testing On antenna connector.

Test procedure:

The equipment under test was connected to an external DC power supply and input rated voltage. Reference power supply voltage for these tests is DC 3.80 V. 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 degree operating frequency as reference frequency. Turn EUT off and set the chamber temperature to -30 degree. After the temperature stabilized for approximately 30 minutes record the frequency. Repeat step measure with 10 degree per stage until the highest temperature of 50 degree reached.

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

Reference Frequency: GSM 850 Low channel 824.2MHz@ 25 degree			
Limit: +/- 2.5ppm = 2091Hz			
Environment Temperature(degree)	Frequency (MHz)	Delta (Hz)	Limit (Hz)
-30	824.199972	28	2091
-20	824.200019	-19	2091
-10	824.200011	-11	2091
10	824. 199992	8	2091
20	824.200005	-5	2091
30	824.200014	-14	2091
40	824.199984	16	2091
50	824.199975	25	2091

Reference Frequency: GSM 850 Mid channel 836.6MHz@ 25 degree			
Limit: +/- 2.5ppm = 2091Hz			
Environment Temperature(degree)	Frequency (MHz)	Delta (Hz)	Limit (Hz)
-30	836.599970	30	2091
-20	836.600021	-21	2091
-10	836.600013	-13	2091
10	836.599990	10	2091
20	836.600010	-10	2091
30	836.600019	-19	2091
40	836.599983	17	2091
50	836.599971	29	2091

Reference Frequency: GSM 850 High channel 848.8MHz@ 25 degree			
Limit: +/- 2.5ppm = 2091Hz			
Environment Temperature(degree)	Frequency (MHz)	Delta (Hz)	Limit (Hz)
-30	848.799975	25	2091
-20	848.800020	-20	2091
-10	848.800010	-10	2091
10	848.799991	9	2091
20	848.800010	-10	2091
30	848.800016	-16	2091
40	848.799985	15	2091
50	848.799976	24	2091

Reference Frequency: PCS 1900 Low channel 1850.2MHz@ 25 degree			
Limit: +/- 2.5ppm = 4700Hz			
Environment Temperature(degree)	Frequency (MHz)	Delta (Hz)	Limit (Hz)
-30	1850.199954	46	4700
-20	1850.199961	39	4700
-10	1850.199983	17	4700
10	1850.199989	11	4700
20	1850.199991	9	4700
30	1850.199981	19	4700
40	1850.199976	24	4700
50	1850.199964	36	4700

Reference Frequency: PCS 1900 Mid channel 1880MHz@ 25 degree			
Limit: +/- 2.5ppm = 4700Hz			
Environment Temperature(degree)	Frequency (MHz)	Delta (Hz)	Limit (Hz)
-30	1879.999943	57	4700
-20	1879.999959	41	4700
-10	1879.999975	25	4700
10	1879.999987	13	4700
20	1880.000009	-9	4700
30	1879.999976	24	4700
40	1879.999964	36	4700
50	1879.999958	42	4700

Reference Frequency: PCS 1900 High channel 1909.8MHz@ 25 degree			
Limit: +/- 2.5ppm = 4700Hz			
Environment Temperature(degree)	Frequency (MHz)	Delta (Hz)	Limit (Hz)
-30	1909.799950	50	4700
-20	1909.799965	35	4700
-10	1909.799981	19	4700
10	1909.799991	9	4700
20	1909.799994	6	4700
30	1909.799985	15	4700
40	1909.799975	25	4700
50	1909.799967	33	4700

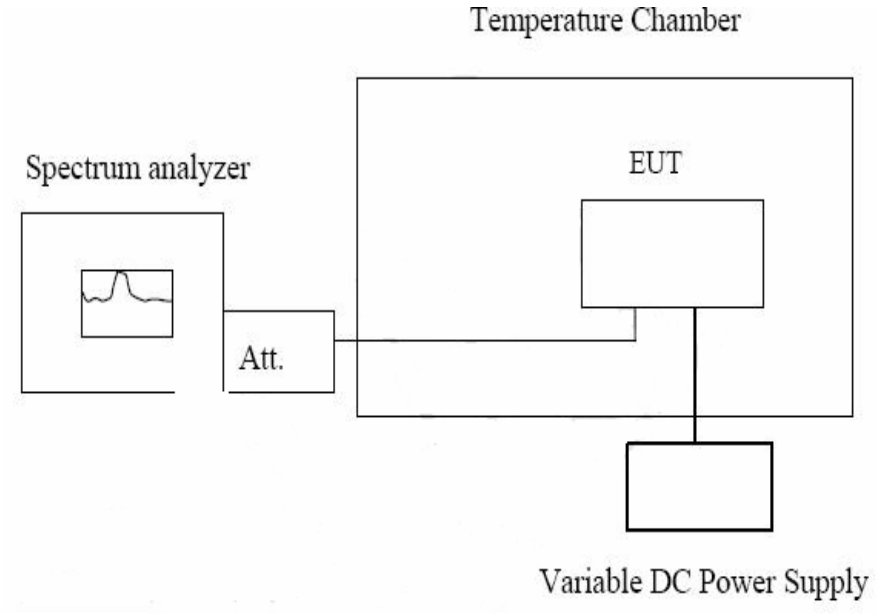
6.8 Frequency Stability V.S. VOLTAGE MEASUREMENT

Test Requirement: Part 2.1055(d)

Test Date: Dec 05, 2009;Jan 26,2010

Test Status: Test lowest channel, middle, highest channel.

Test Setup:



Note: Measurement setup for testing On antenna connector.

Test procedure:

Set chamber temperature to 25 degree. Use a variable DC power supply to power the EUT and set the Voltage to rated voltage. Reference power supply voltage for these tests is DC 3.80 V. Set the spectrum analyzer RBW 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.

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

Reference Frequency: GSM 850 Low channel 824.2MHz@ 25 degree			
Limit: +/- 2.5ppm = 2091Hz			
Power Supply Vdc	Frequency (MHz)	Delta (Hz)	Limit (Hz)
4.20	824.200016	-16	2091
3.80	824.200000	0	2091
3.30	824.199982	18	2091

Reference Frequency: GSM 850 Mid channel 836.6MHz@ 25 degree			
Limit: +/- 2.5ppm = 2091Hz			
Power Supply Vdc	Frequency (MHz)	Delta (Hz)	Limit (Hz)
4.20	836.600032	-32	2091
3.80	836.600000	0	2091
3.30	836.599980	20	2091

Reference Frequency: GSM 850 High channel 848.8MHz@ 25 degree			
Limit: +/- 2.5ppm = 2091Hz			
Power Supply Vdc	Frequency (MHz)	Delta (Hz)	Limit (Hz)
4.20	848.800024	-24	2091
3.80	848.800000	0	2091
3.30	848.799985	15	2091

Reference Frequency: PCS 1900 Low channel 1850.2MHz@ 25 degree			
Limit: +/- 2.5ppm = 4700Hz			
Power Supply Vdc	Frequency (MHz)	Delta (Hz)	Limit (Hz)
4.20	1850.199977	23	4700
3.80	1850.200000	0	4700
3.30	1850.199983	17	4700

Reference Frequency: PCS 1900 Mid channel 1880MHz@ 25 degree			
Limit: +/- 2.5ppm = 4700Hz			
Power Supply Vdc	Frequency (MHz)	Delta (Hz)	Limit (Hz)
4.20	1879.999975	25	4700
3.80	1880.000000	0	4700
3.30	1879.999981	19	4700

Reference Frequency: PCS 1900 High channel 1909.8MHz@ 25 degree			
Limit: +/- 2.5ppm = 4700Hz			
Power Supply Vdc	Frequency (MHz)	Delta (Hz)	Limit (Hz)
4.20	1909.799984	16	4700
3.80	1909.800000	0	4700
3.30	1909.799986	14	4700

~End of Report~