



FCC TEST REPORT

for

47 CFR Part 22H, 24E, IC RSS-132 and IC RSS-133

Equipment : TomTom GO - GPS Navigator with Bluetooth and GPRS
Trade Name : TomTom
Model No. : GO 715
FCC ID : S4LGO715
IC ID : 5767A-GO715
Tx Frequency Range : GSM850 : 824~849 MHz
PCS1900 : 1850~1910 MHz
Max. ERP/EIRP Power : GSM850 (GSM) : 0.75 W
PCS1900 (GSM) : 0.52 W
Emission Designator : 300KGXW
Applicant : TomTom International BV.
Rembrandtplein 35, 1017CT Amsterdam The Netherlands

- The test result refers exclusively to the test presented test model / sample.
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- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**
- The data shown in this test report were carried out on Feb. 28, 2007 at **Sporton International Inc. LAB.**
- Report No.: FG6D2003-B, Report Version: Rev. 03.

Roy Wu
Deputy Manager

SPORTON International Inc.

6F, No.106, Sec. 1, Hsin Tai Wu Rd., Hsi Chih, Taipei Hsien, Taiwan, R.O.C.



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Appendix A - Setup Photographs



History of this test report

Report Issue Date: Feb. 28, 2007

Report No.	Description



1. General Information

1.1. Applicant

TomTom International BV.

Rembrandtplein 35, 1017CT Amsterdam The Netherlands

1.2 Manufacturer

Quanta Computer Inc.

No. 188, Wen Hwa 2nd Road, Kuei Shan Hsiang, Tao Yuan Shien, Taiwan, R.O.C.

1.3 Basic Description of Equipment under Test

Equipment	: TomTom GO - GPS Navigator with Bluetooth and GPRS
Trade Name	: TomTom
Model No.	: GO 715
FCC ID	: S4LGO715
IC ID	: 5767A-GO715
Power Supply Type	: Switching
AC Power Cord	: AC 120V, Wall-mount, 1.6 meter, 2 pin
Adapter 1	: AKII, A10P1-05MP
Adapter 2	: PHIHONG, PSC11R-050
Battery	: Welldone, OE1-00VF5A-01G
Car Charger	: SUPA Technology, S-0201-0001-1-01

**1.4 Feature of Equipment under Test**

DUT Type :	TomTom GO - GPS Navigator with Bluetooth and GPRS
Trade Name :	TomTom
Model Name :	GO 715
FCC ID :	S4LGO715
Tx Frequency :	GSM850 : 824 ~ 849 MHz PCS1900 : 1850 ~1910 MHz
Rx Frequency :	GSM850 : 869 ~ 894 MHz PCS1900 : 1930 ~ 1990 MHz
Maximum Output Power to Antenna :	GSM850(GSM) : 33.0 dBm PCS1900(GSM) : 29.99 dBm
Maximum ERP/EIRP :	GSM850(GSM) : 0.75 W (28.73 dBm) PCS1900(GSM) : 0.52 W (27.20 dBm)
Antenna Type :	Fixed Internal
Antenna Gain :	GSM850 / PCS1900 : -3 dBi Bluetooth : -3 dBi
HW Version :	Murcia M/B V3.0
SW Version :	6.57.8010
Power Rating (DC/AC , Voltage and Current of RF element or PA) :	DC 5V
Digital Modulation Emission :	GMSK
Type of Emission :	300KGXW
Device Power Class :	GSM850 : 4 PCS1900 : 1
DUT Stage :	Identical Prototype

1.5 Report Date

EUT Received : Dec. 20, 2006

Report Date : Feb. 28, 2007

2 Test Configuration of Equipment under Test

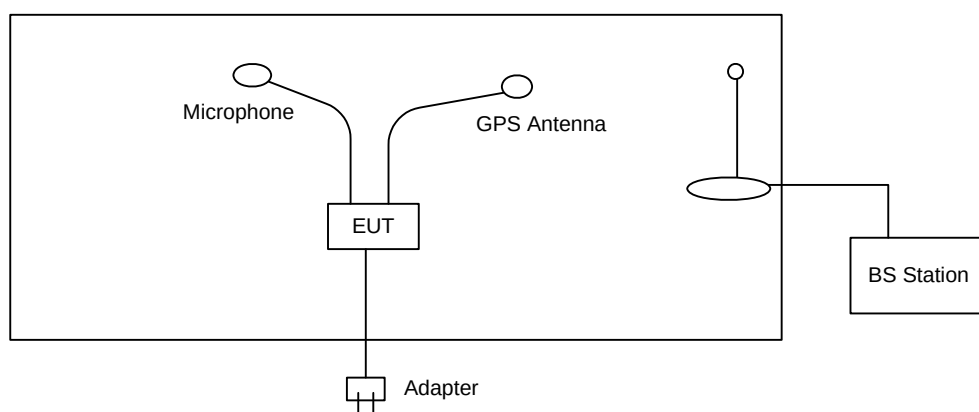
2.1 Test Manner

- The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range.
- During all testings, EUT is in link mode with base station emulator at maximum power level.
- Frequency range investigated: radiated emission 30 MHz to 9000 MHz for GSM850; 30MHz to 19000 MHz for PCS.

2.2 Test Mode

Application	GSM850	PCS1900
Radiated Emission	☒ Mode 1: GSM Link_CH 189	☒ Mode 2: GSM Link_CH 661
Conducted Measurement	☒ Mode 1: GSM_Link CH 189	☒ Mode 2: GSM Link_CH 661

2.3 Connection Diagram of Test System



2.4 Ancillary Equipment List

Item	Equipment	Model No.	Serial No.
1.	Base Station(R&S)	CMU200	106656



3. General Information of Test Site

Test Site Location : No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park,
Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.
TEL : 886-3-327-3456
FAX : 886-3-318-0055

Test Site No : 03CH06-HY

The chamber meets the characteristics of ANSI C63.4-2003. This site is on file with the FCC.

3.1 Test Voltage

120V/ 60Hz

3.2 Test in Compliance with

47 CFR Part 22H, 24E, Part 2, IC RSS-132 Issued 2 and IC RSS-133 Issued 3

3.3 Frequency Range Investigated

- a. Radiation: from 30MHz to 9000MHz for GSM850.
- b. Radiation: from 30 MHz to 19000 MHz for PCS.

3.4 Test Distance

The test distance of radiated emission from antenna to EUT is 3 m.



4. Test Data and Test Result

4.1 List of Measurements and Examinations

FCC Rule	IC Rule	DESCRIPTION OF TEST	Result	Section
§2.1046	RSS-132 §4.4 RSS-133 §6.4	RF Output Power	Passed	4.2
§ 22.913 §24.232	RSS-132 §4.4 RSS-133 §6.4	ERP / EIRP	Passed	4.3
§2.1049, § 22.917, § 24.238(b)	RSS-132 §4.5 RSS-133 §6.5	Occupied Bandwidth & Band Edge Measurement	Passed	4.4
§2.1051	RSS-132 §4.5 RSS-133 §6.5	Conducted Emission	Passed	4.5
§2.1053	RSS-132 §4.5 RSS-133 §6.5	Field Strength of Spurious Radiation	Passed	4.6
§2.1055, § 22.355, §24.235	RSS-132 §4.3 RSS-133 §6.3	Frequency Stability vs. Temperature	Passed	4.7
§2.1055, §22.355, §24.235	RSS-132 §4.3 RSS-133 §6.3	Frequency Stability vs. Voltage	Passed	4.8

4.2 RF Output Power

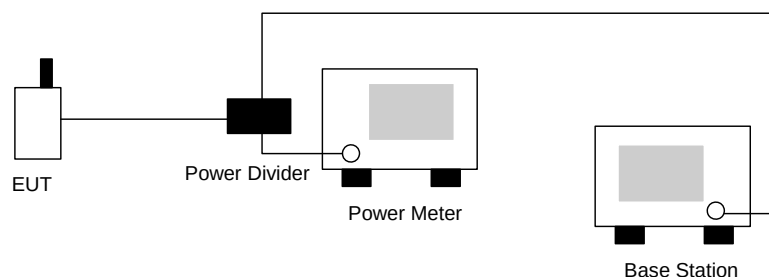
4.2.1 Measurement Instruments :

As described in chapter 5 of this test report.

4.2.2 Test Procedure :

1. The transmitter output was connected to power meter and base station through power divider.
2. Set EUT at PCL=5 for GSM850 and/or PCL=0 for PCS1900 maximum power through base station.
3. Select lowest, middle, and highest channels for each band.

4.2.3 Test Setup Layout :



4.2.4 Test Result :

Bands	Channel	Frequency (MHz)	Conducted Power (dBm)	Conducted Power (Watts)
GSM850	128	824.2 (Low)	32.7	1.862
	189	836.4 (Mid)	32.9	1.950
	251	848.8 (High)	33.0	1.995
PCS1900	512	1850.2 (Low)	29.40	0.871
	661	1880.0 (Mid)	29.99	0.998
	810	1909.8 (High)	29.93	0.984



4.3 ERP / EIRP Measurement

Equivalent isotropic radiated power measurements by substitution method according to ANSI/TIA/EIA-603-C.

4.3.1 Measurement Instruments

As described in chapter 5 of this test report.

4.3.2 Test Procedure

1. The EUT was placed on a rotatable table with 1.0 meter height in an fully anechoic chamber.
2. The EUT was set 1.2 meters from the receiving antenna which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiated power.
4. The height of the receiving antenna is also kept at 1.0M height.
5. Taking the record of maximum ERP/EIRP.
6. A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
7. The conducted power at the terminal of the dipole antenna is measured.
8. Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
9. $ERP/EIRP = P_s + E_t - E_s + G_s = P_s + R_t - R_s + G_s$

P_s (dBm) : Input power to substitution antenna.

G_s (dBi or dBd) : Substitution antenna Gain.

$E_t = R_t + AF$

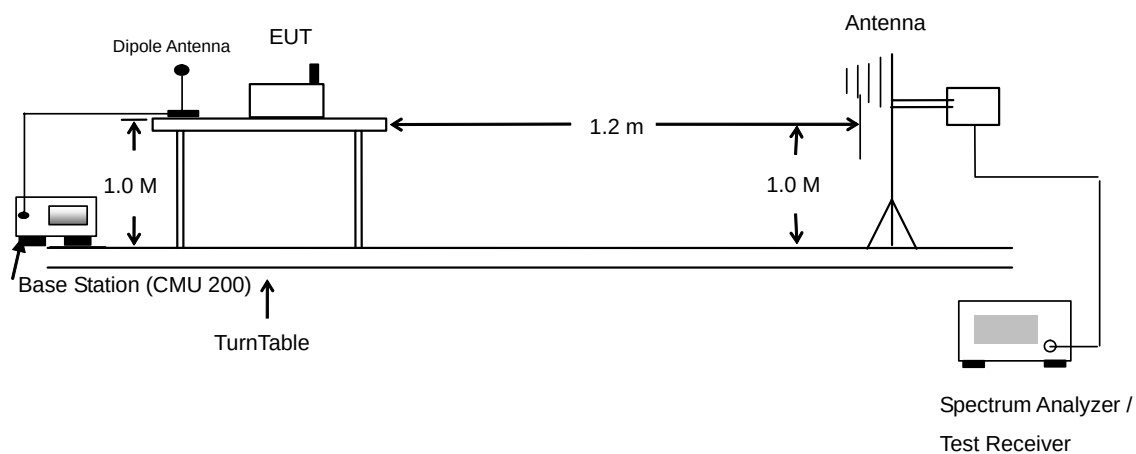
$E_s = R_s + AF$

AF (dB/m) : Receive antenna factor

R_t : The highest received signal in Spectrum Analyzer for EUT.

R_s : The highest received signal in spectrum analyzer for substitution antenna.

4.3.3 Test Setup Layout of ERP/EIRP



**4.3.4 Test Result**

GSM850 Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-34.47	-48.12	0.00	-1.08	12.57	0.02
836.40	-33.04	-48.28	0.00	-0.93	14.31	0.03
848.80	-34.91	-48.35	0.00	-0.76	12.68	0.02
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBd)	ERP (dBm)	ERP (W)
824.20	-20.16	-47.97	0.00	-1.08	26.73	0.47
836.40	-18.35	-48.01	0.00	-0.93	28.73	0.75
848.80	-19.84	-48.05	0.00	-0.76	27.45	0.56

PCS1900 Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-29.65	-51.88	0.00	1.96	24.19	0.26
1880.00	-28.93	-52.99	0.00	2.00	26.06	0.40
1909.80	-29.14	-54.28	0.00	1.98	27.12	0.52
Vertical Polarization						
Frequency (MHz)	Rt (dBm)	Rs (dBm)	Ps (dBm)	Gs (dBi)	EIRP (dBm)	EIRP (W)
1850.20	-28.66	-52.13	0.00	1.96	25.43	0.35
1880.00	-28.43	-53.17	0.00	2.00	26.74	0.47
1909.80	-28.91	-54.13	0.00	1.98	27.20	0.52

4.4 Occupied Bandwidth and Band Edge Measurement

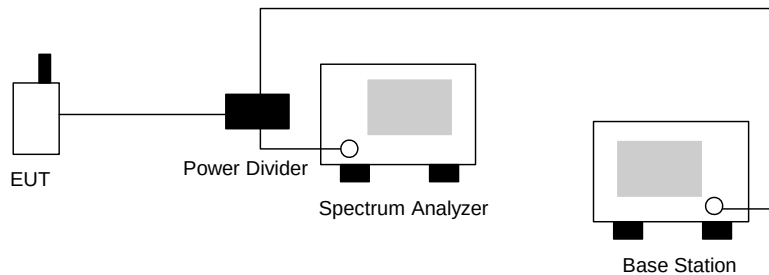
4.4.1 Measurement Instruments

As described in chapter 5 of this test report.

4.4.2 Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The 99% occupied bandwidth of middle channel for the highest and lowest RF powers were measured.
3. The bandedge of low and high channels for the highest RF powers within the transmitting frequency band were measured. Setting RBW as roughly BW/100.

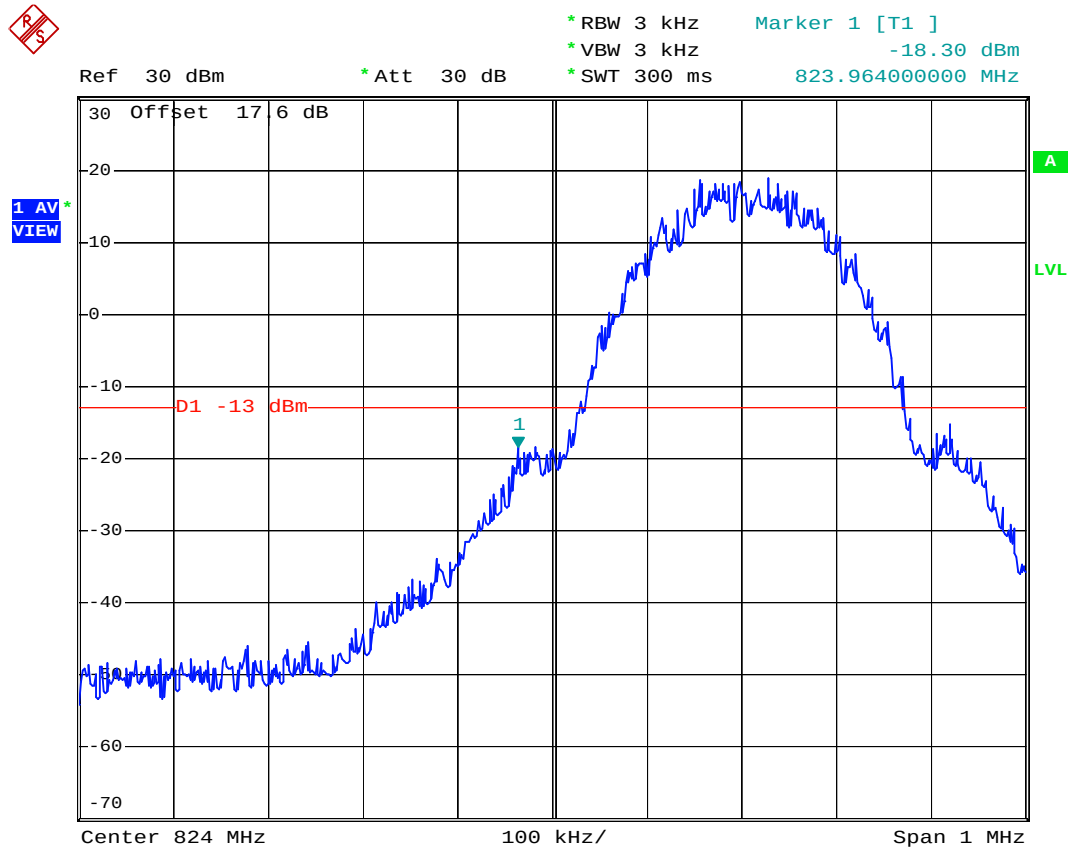
4.4.3 Test Setup Layout





4.4.4 Test Result

- Mode 1
- Test Mode : GSM850 CH128 Lower Band Edge
- Power State : High



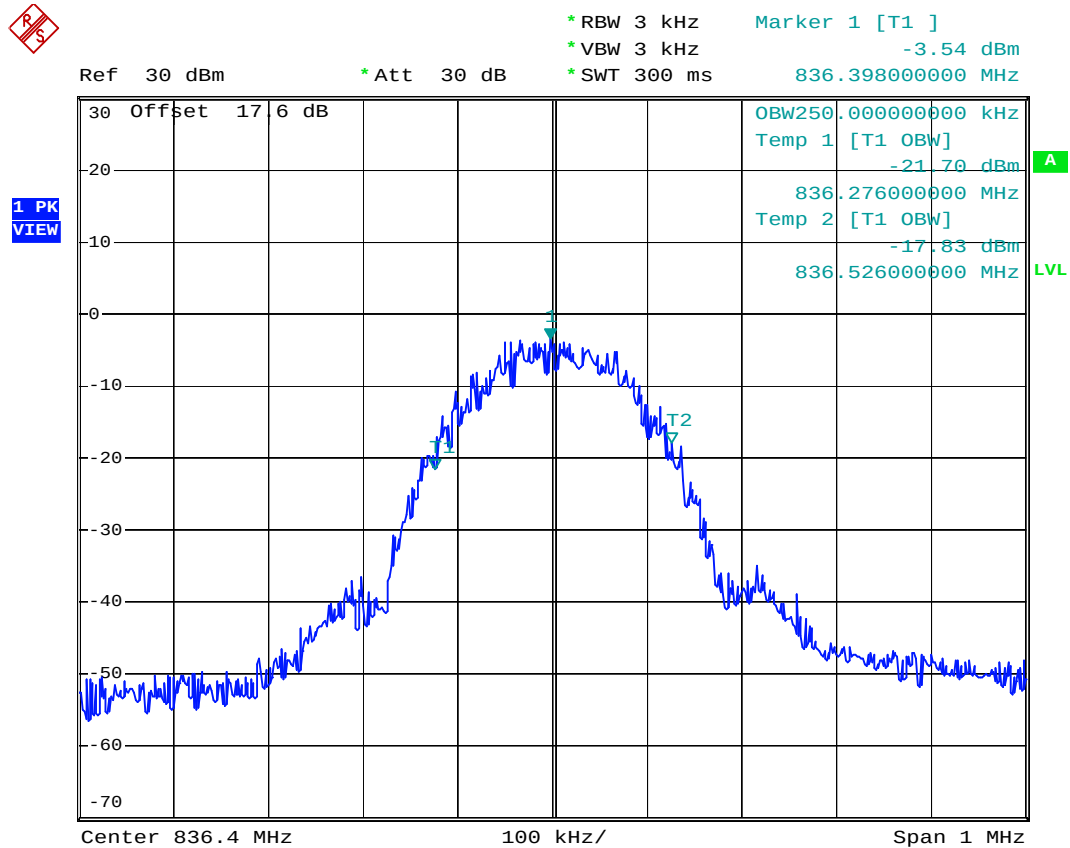
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FCC/IC TEST REPORT

Report No. : FG6D2003-B

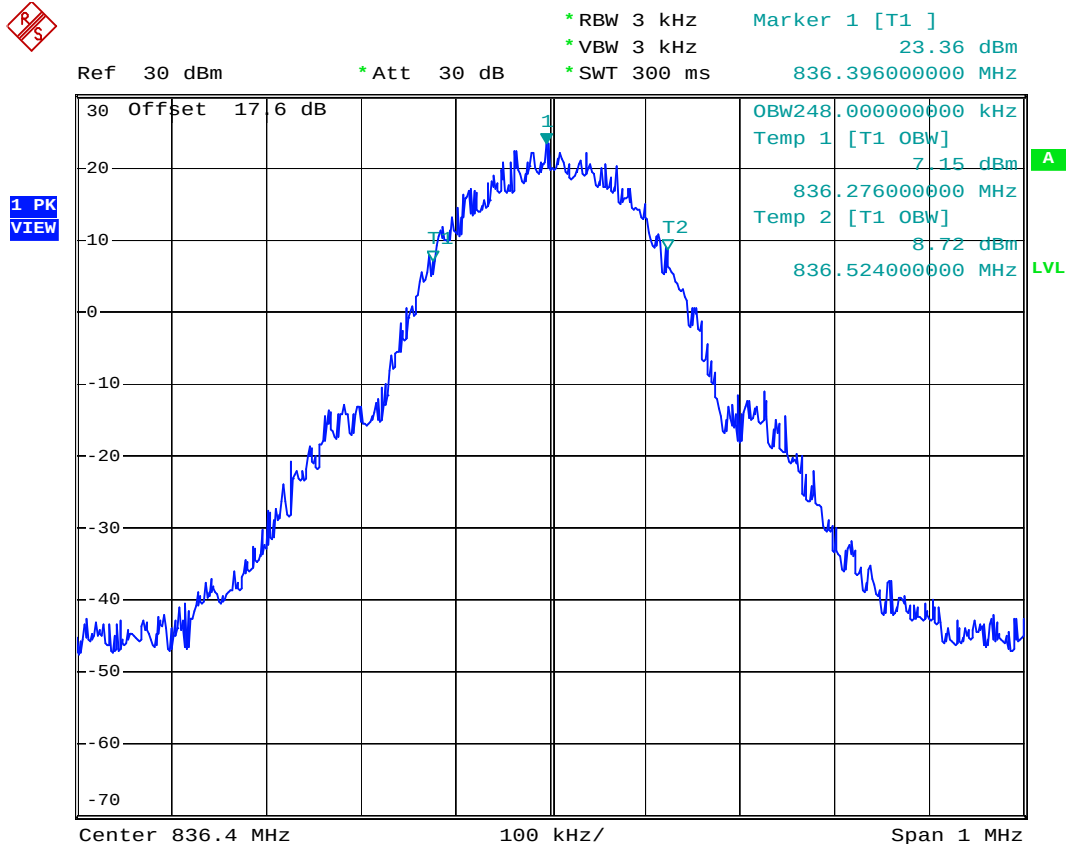
- Test Mode : GSM850 CH189 99% Occupied Bandwidth
- Power State : Low



Date: 26.DEC.2006 16:45:38



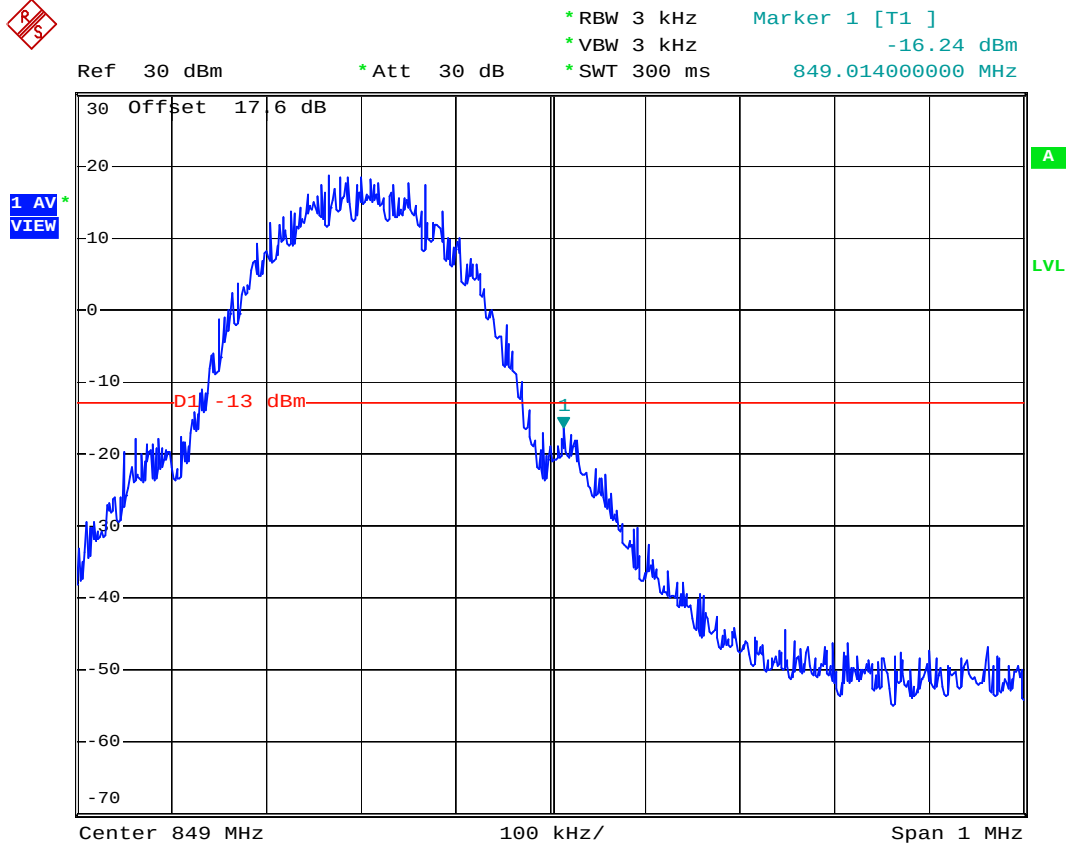
- Test Mode : GSM850 CH189 99% Occupied Bandwidth
- Power State : High



Date: 26.DEC.2006 16:43:45

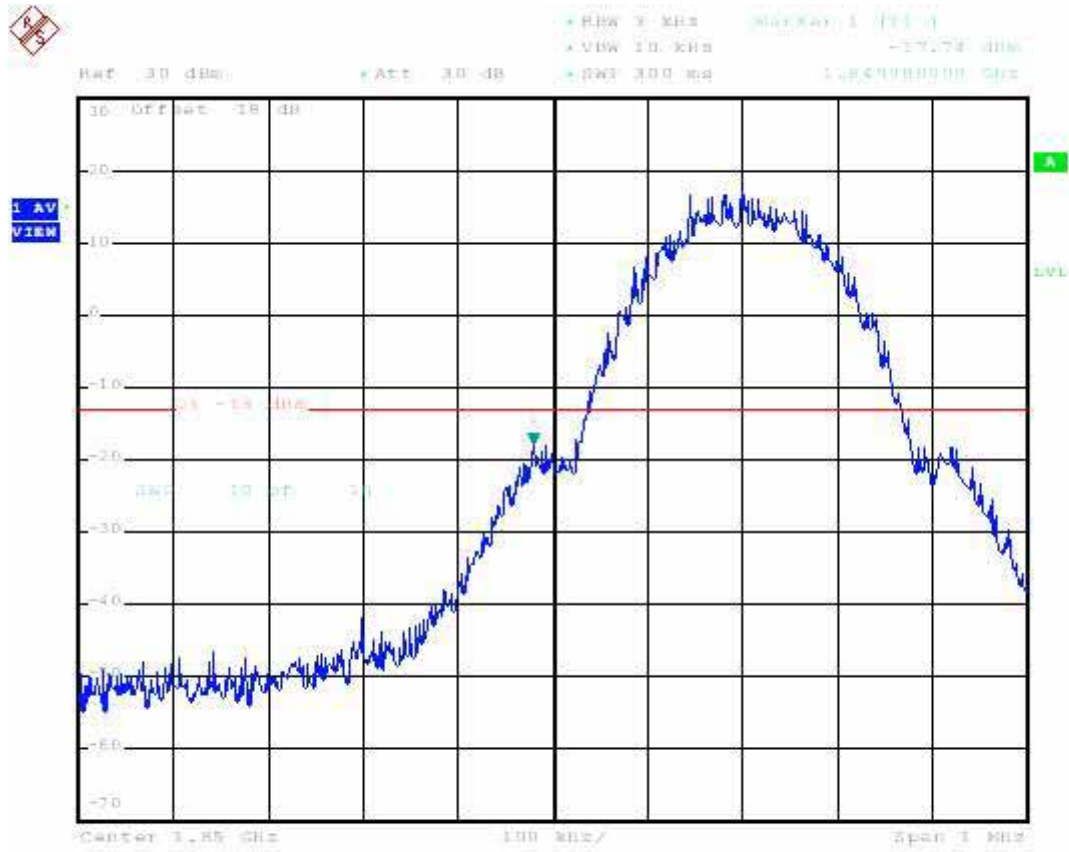


- Test Mode : GSM850 CH251 Higher Band Edge
- Power State : High



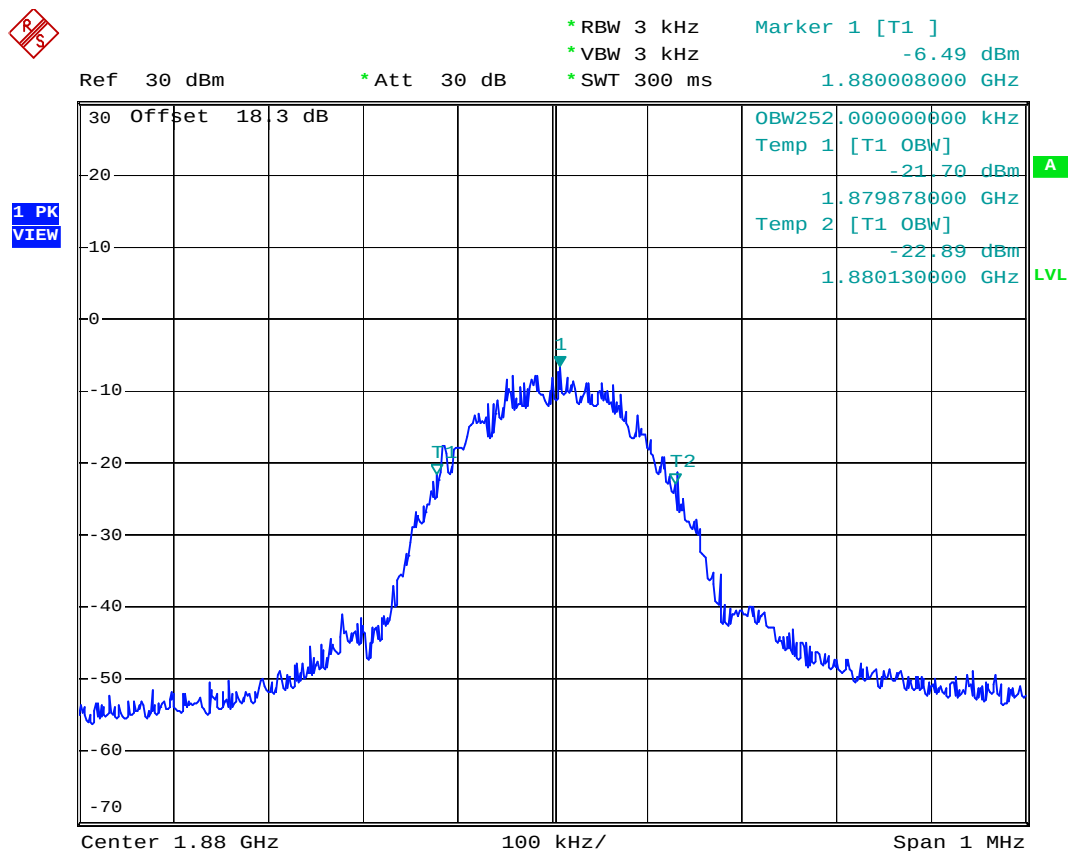
Date: 26.DEC.2006 16:47:43

- Mode 2
- Test Mode : PCS1900 CH512 Lower Band Edge
- Power State : High



Date: 28.FEB.2007 03:45:42

- Test Mode : PCS1900 CH661 99% Occupied Bandwidth
- Power State : Low



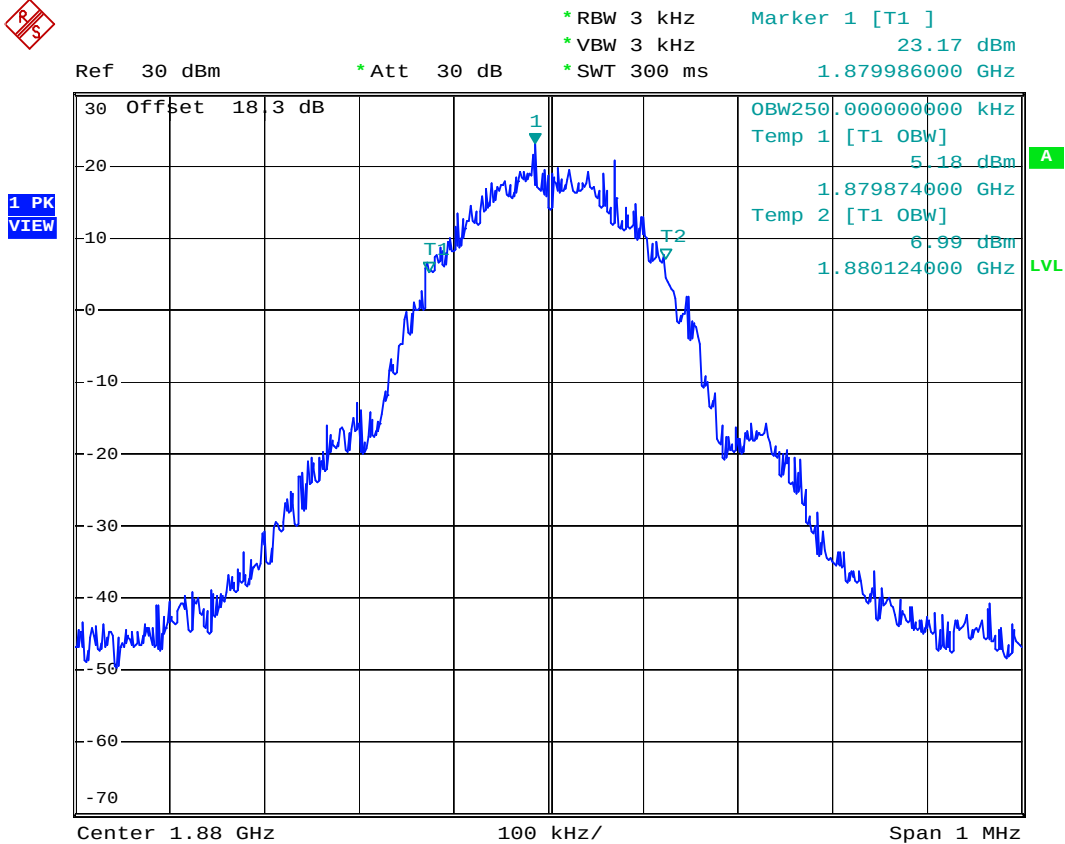
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FCC/IC TEST REPORT

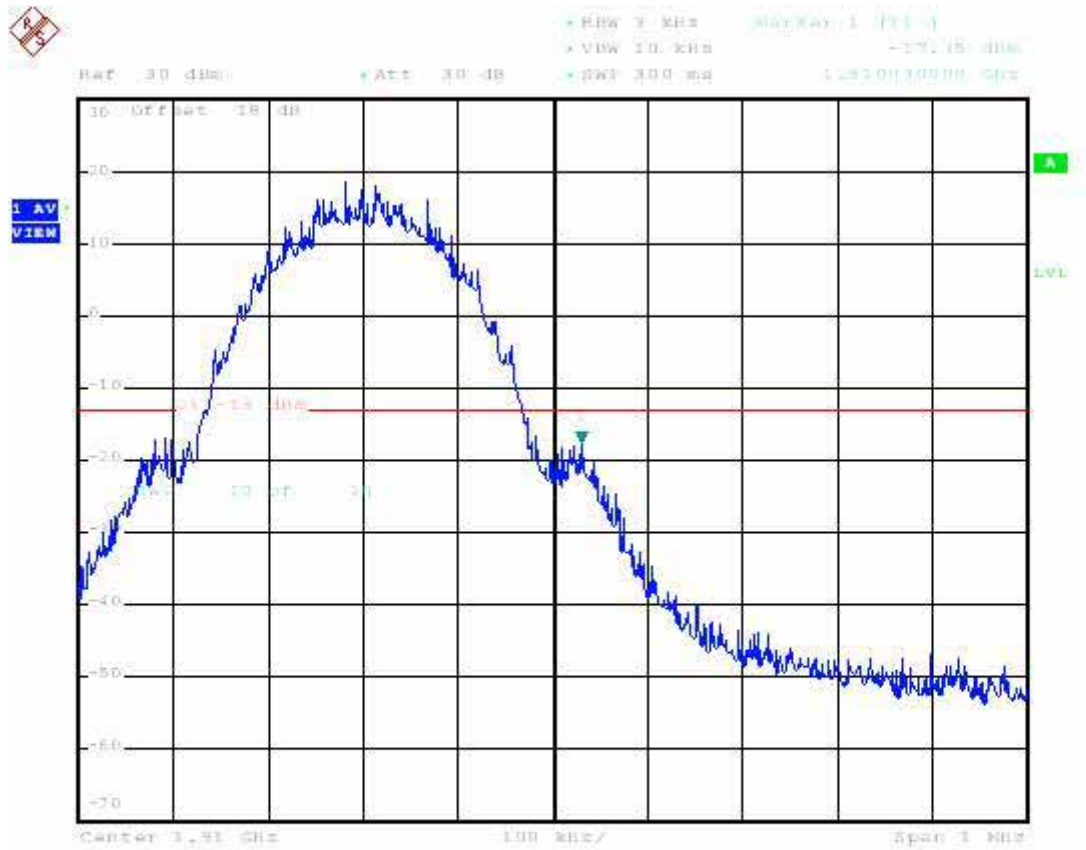
Report No. : FG6D2003-B

- Test Mode : PCS1900 CH661 99% Occupied Bandwidth
- Power State : High



Date: 26.DEC.2006 17:25:35

- Test Mode : PCS1900 CH810 Higher Band Edge
- Power State : High



Date: 28.FEB.2007 03:46:43

4.5 Conducted Emission

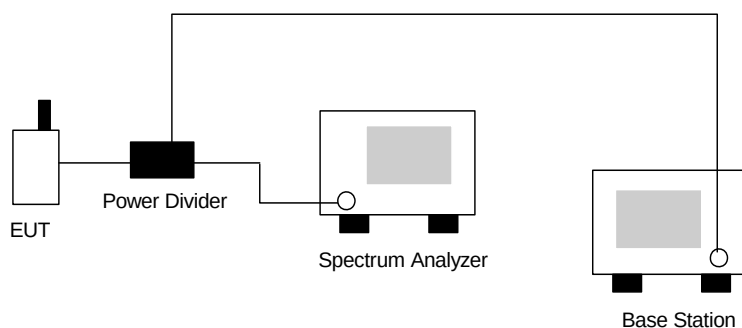
4.5.1 Measurement Instruments

As described in chapter 5 of this test report.

4.5.2 Test Procedure

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The middle channel for the highest RF power within the transmitting frequency was measured.
3. The conducted spurious emission for the whole frequency range was taken.

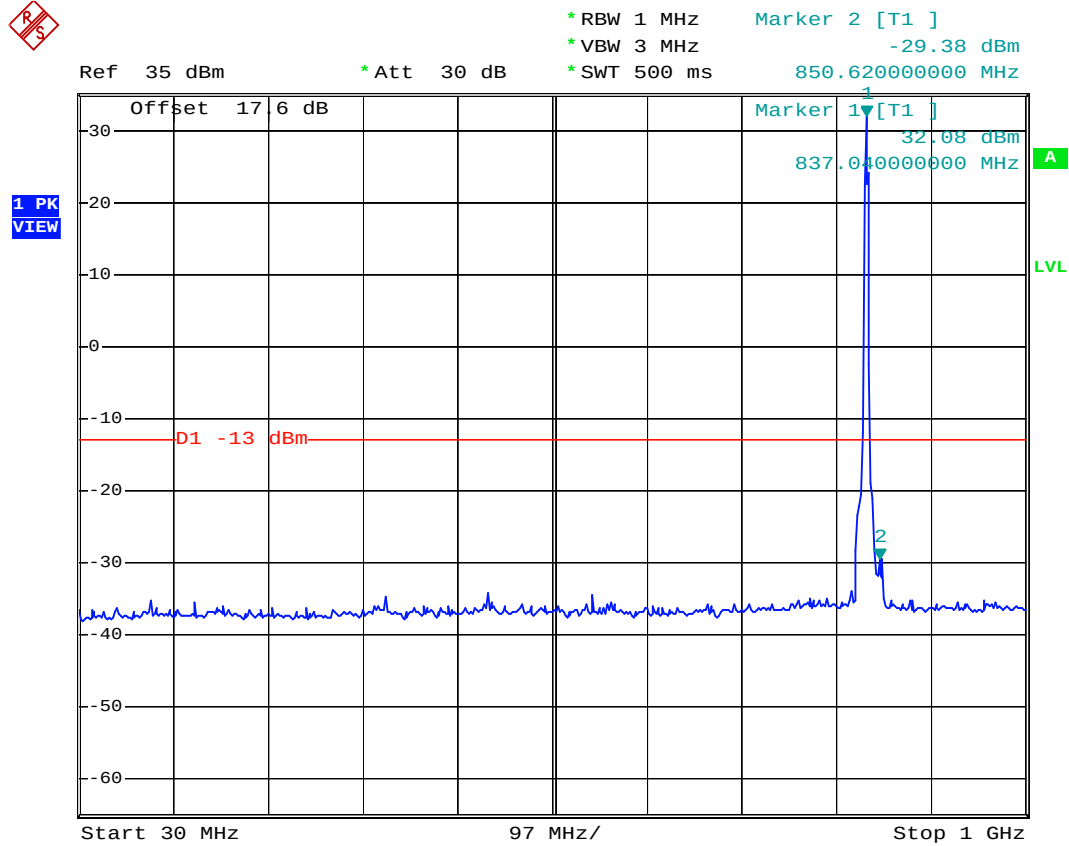
4.5.3 Test Setup Layout





4.5.4 Test Result

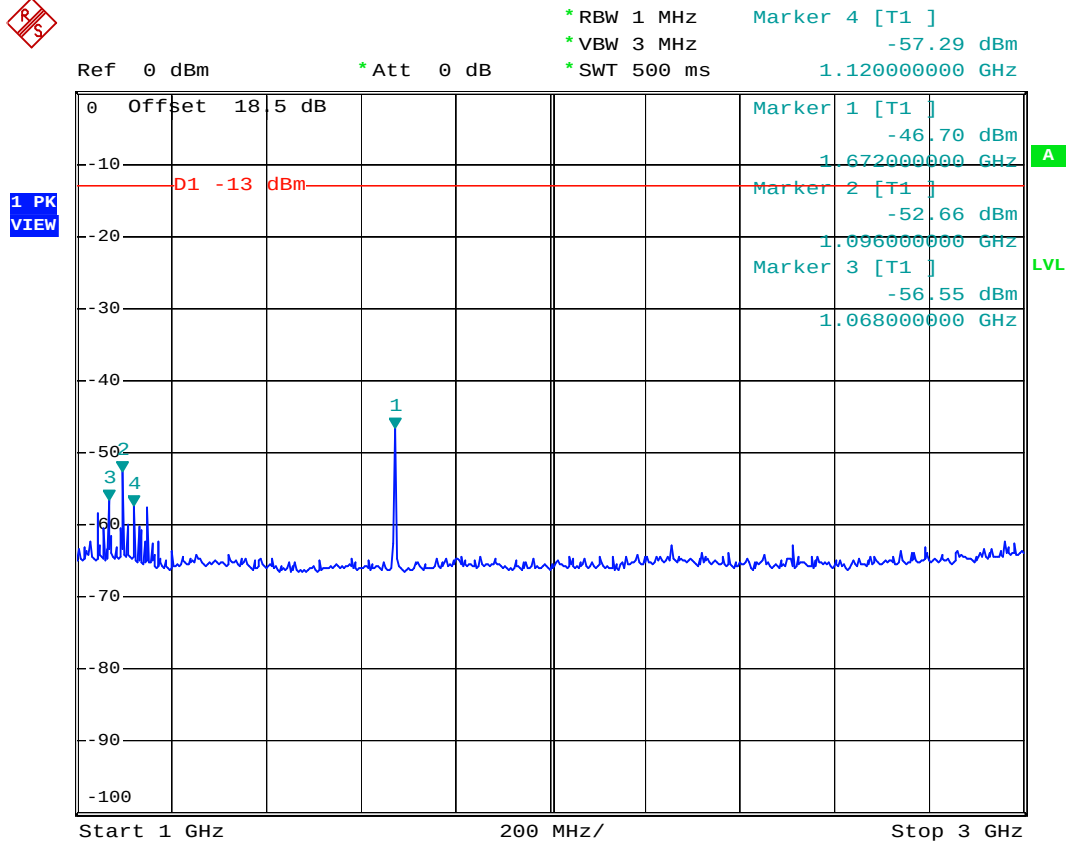
- Mode 1
- Test Mode : GSM850 CH189
- Frequency Range : 30M-1G



Date: 26.DEC.2006 16:54:33



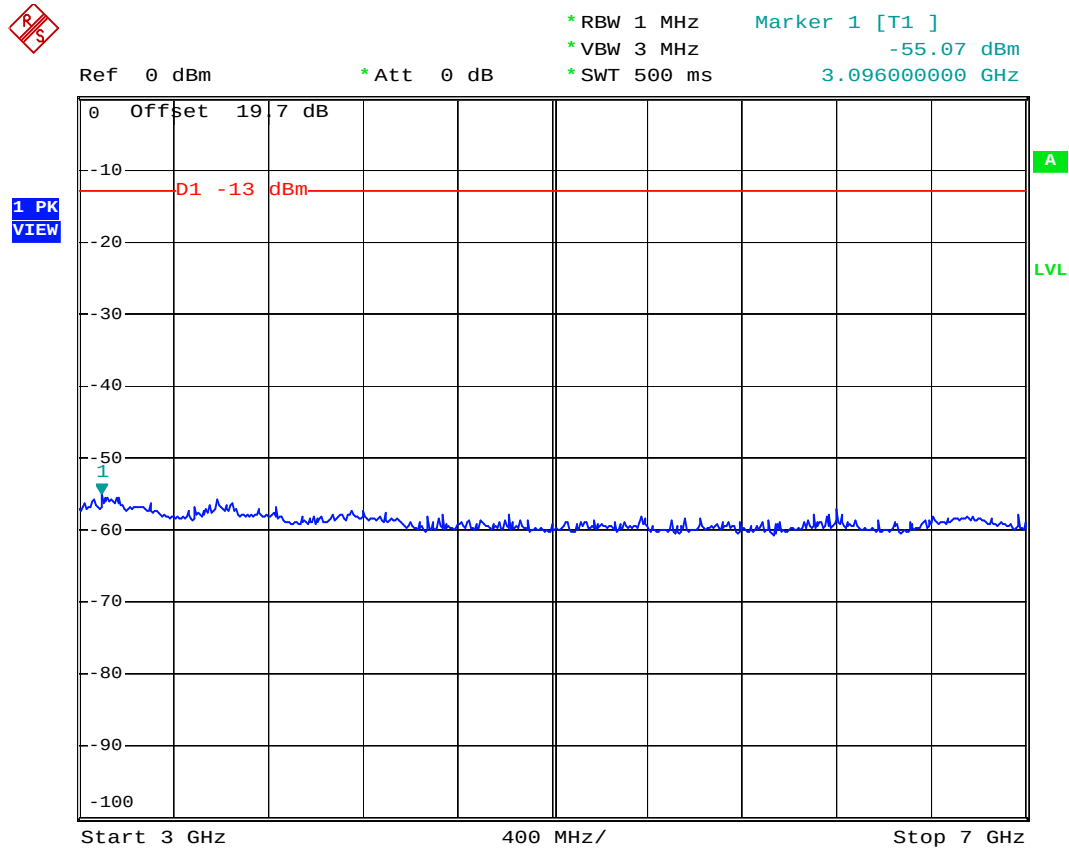
- Test Mode : GSM850 CH189
- Frequency Range : 1G-3G



Date: 26.DEC.2006 16:56:14



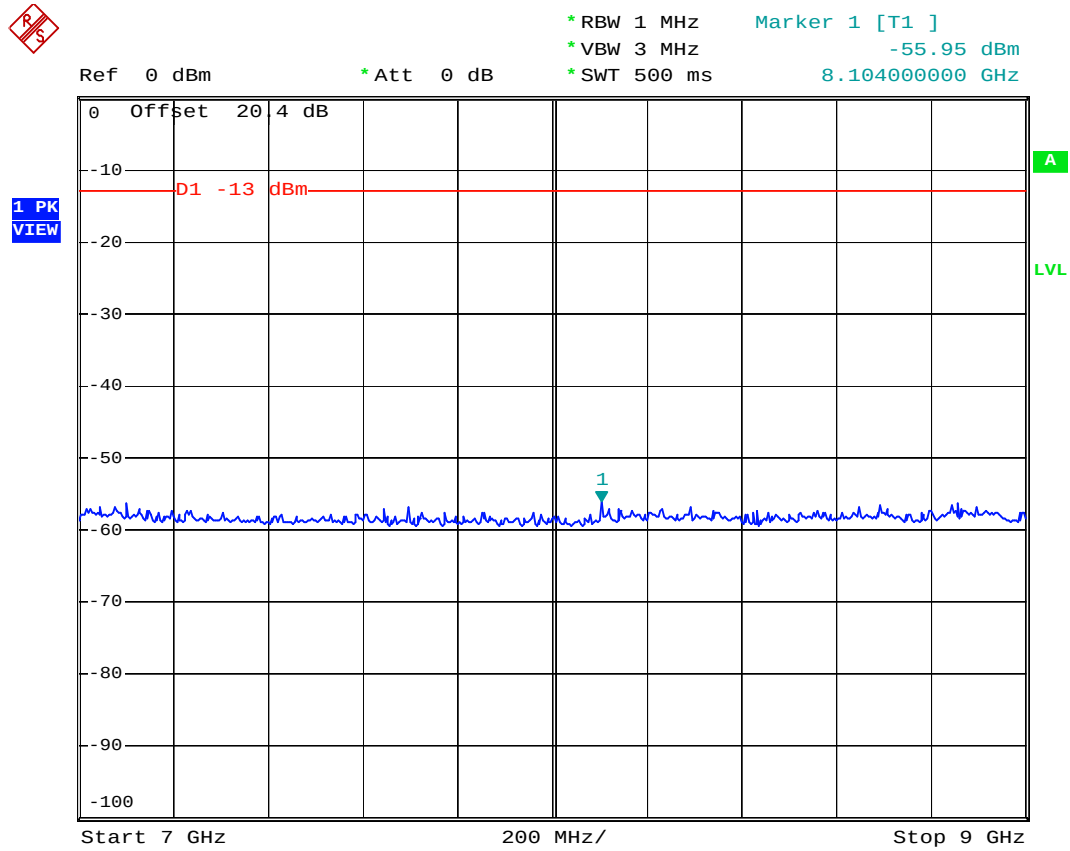
- Test Mode : GSM850 CH189
- Frequency Range : 3G-7G



Date: 26.DEC.2006 16:57:34



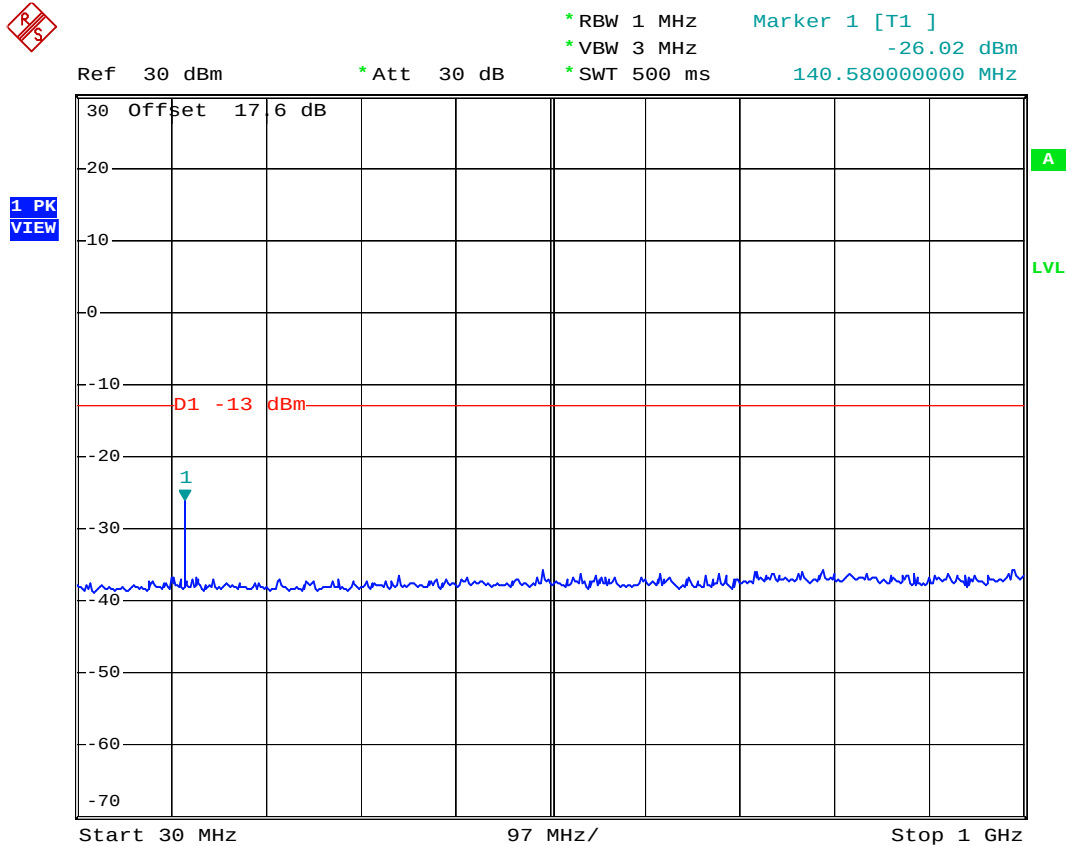
- Test Mode : GSM850 CH189
- Frequency Range : 7G-9G



Date: 26.DEC.2006 16:58:16

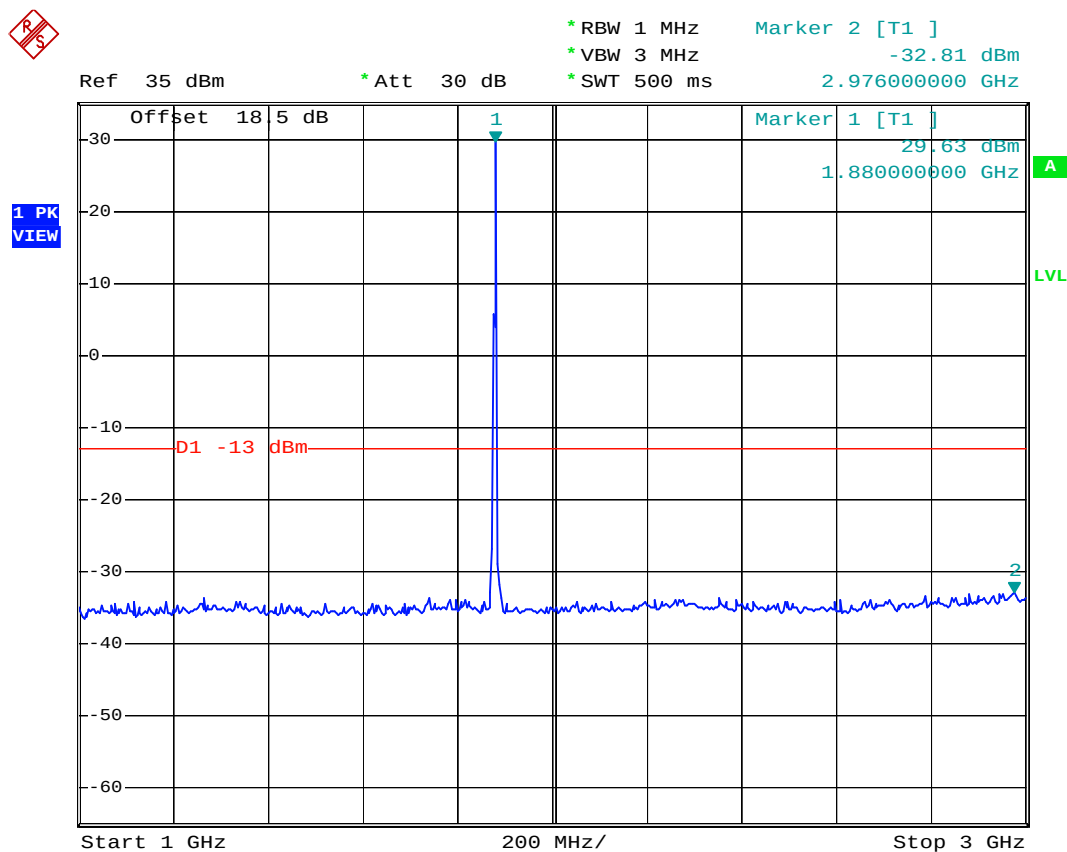


- Mode 2
- Test Mode : PCS1900 CH661
- Frequency Range : 30M-1G



Date: 26.DEC.2006 17:19:37

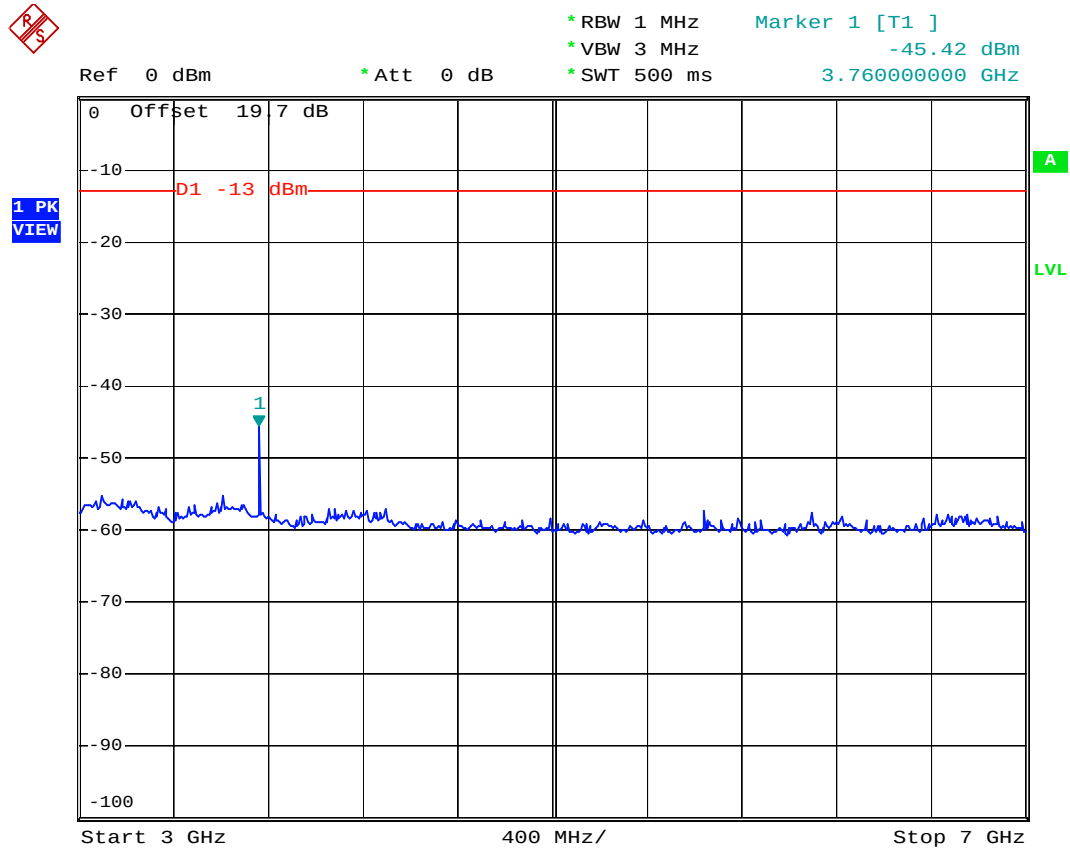
- Test Mode : PCS1900 CH661
- Frequency Range : 1G-3G



Date: 26.DEC.2006 17:21:25



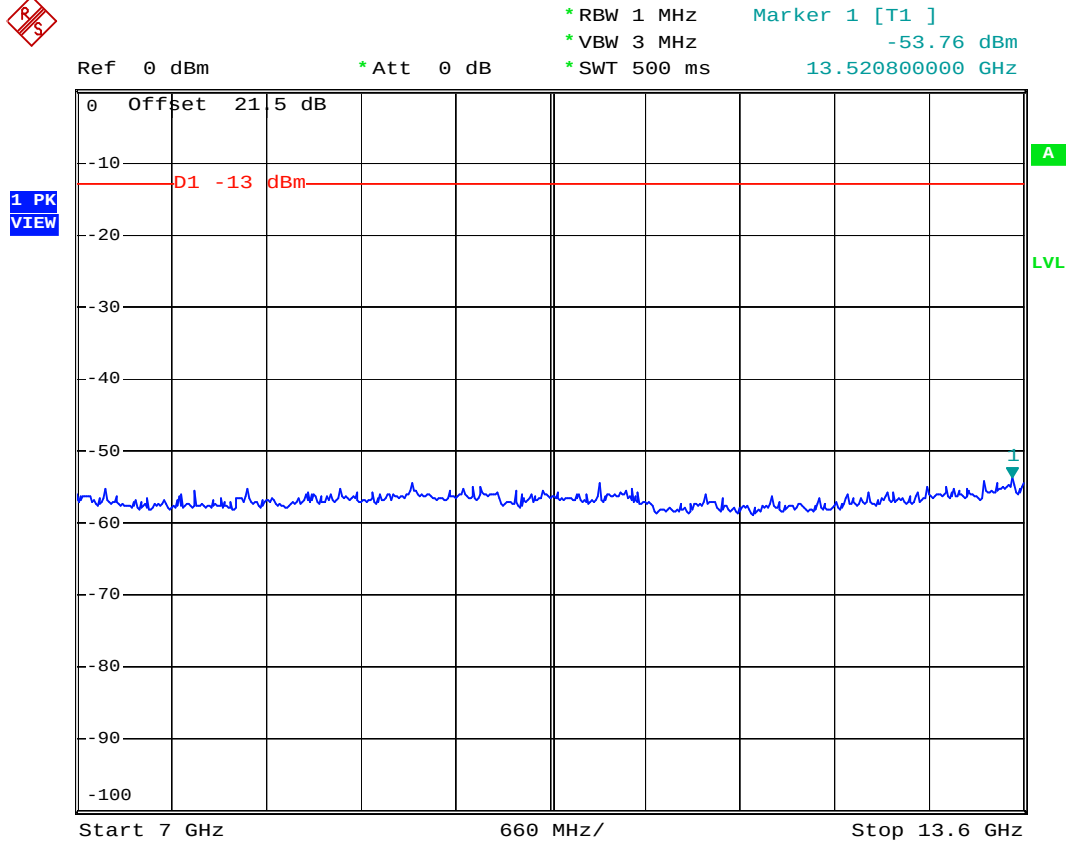
- Test Mode : PCS1900 CH661
- Frequency Range : 3G-7G



Date: 26.DEC.2006 17:22:13



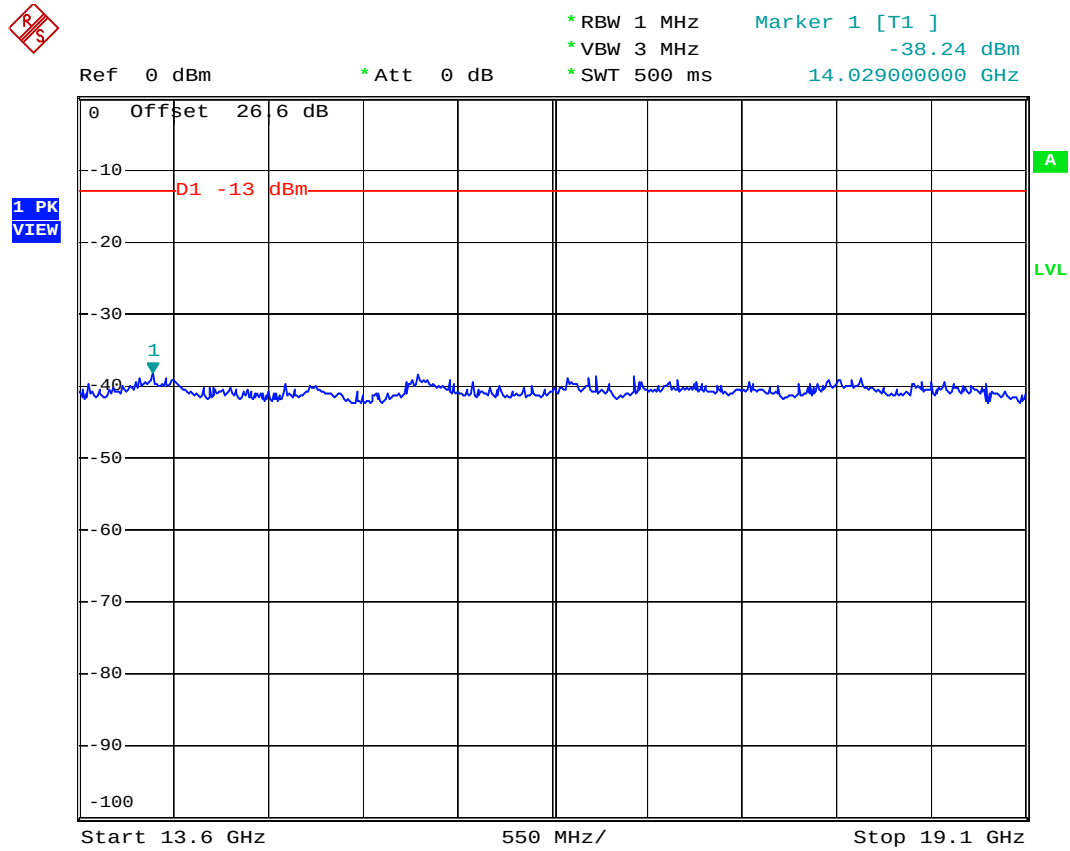
- Test Mode : PCS1900 CH661
- Frequency Range : 7G-13.6G



Date: 26.DEC.2006 17:23:15



- Test Mode : PCS1900 CH661
- Frequency Range : 13.6G-19.1G



Date: 26.DEC.2006 17:24:01

4.6 Field Strength of Spurious Radiation

Equivalent isotropic radiated Power Measurements by substitution method according to ANSI/TIA/EIA-603-A.

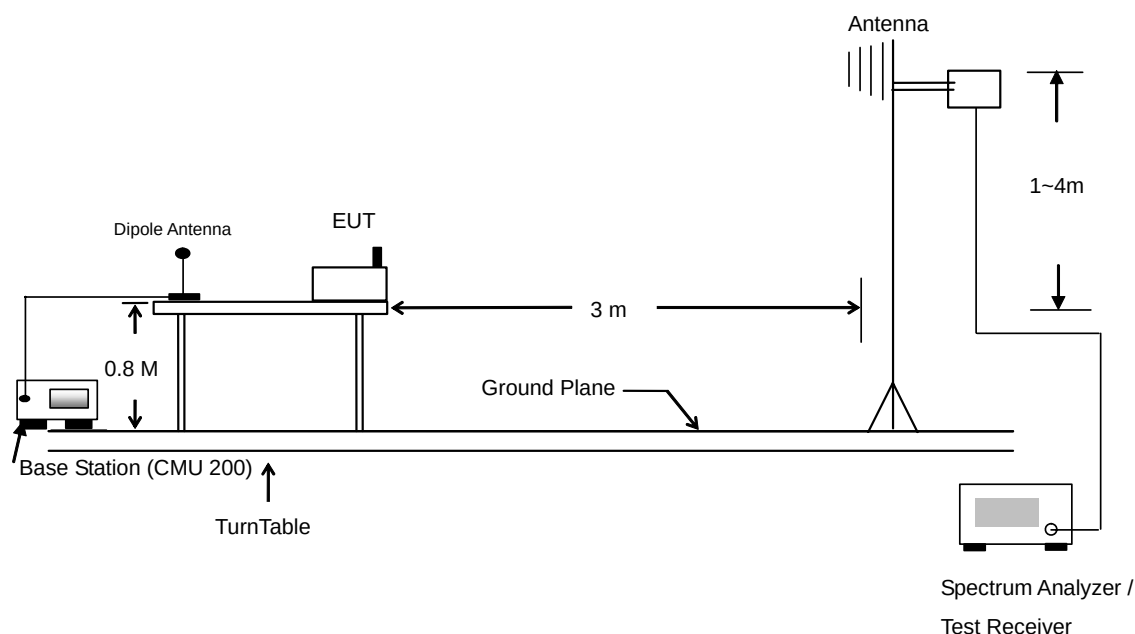
4.6.1 Measurement Instruments

As described in chapter 5 of this test report.

4.6.2 Test Procedure

1. The EUT was placed on a rotatable wooden table with 0.8 meter about ground.
2. The EUT was set 3 meters from the receiving antenna which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to reach the maximum spurious emission for both horizontal and vertical polarizations.
5. Taking the record of maximum spurious emission.
6. A Horn antenna was substituted in place of the EUT and was driven by a signal generator.
7. Tune the output power of signal generator to the same emission level with EUT maximum spurious emission.
8. Taking the record of output power at antenna port.
9. Repeat step 7 to step 8 for another polarization.
10. Emission level (dBm) = output power + substitution Gain.

4.6.3 Test Setup Layout



4.6.4 Test Result

- Test Mode : Mode 1

GSM850 Radiated Spurious ERP							
H Polarization				V Polarization			
Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	ERP (dBm)	Limit (dBm)	Margin (dB)
82.380	-48.500	-13	-35.50	81.030	-43.960	-13	-30.96
148.530	-46.990	-13	-33.99	145.830	-46.020	-13	-33.02
168.780	-44.390	-13	-31.39	170.130	-44.500	-13	-31.50
789.300	-58.510	-13	-45.51	791.400	-54.440	-13	-41.44
1674.000	-47.930	-13	-34.93	1674.000	-53.120	-13	-40.12

- Test Mode : Mode 2

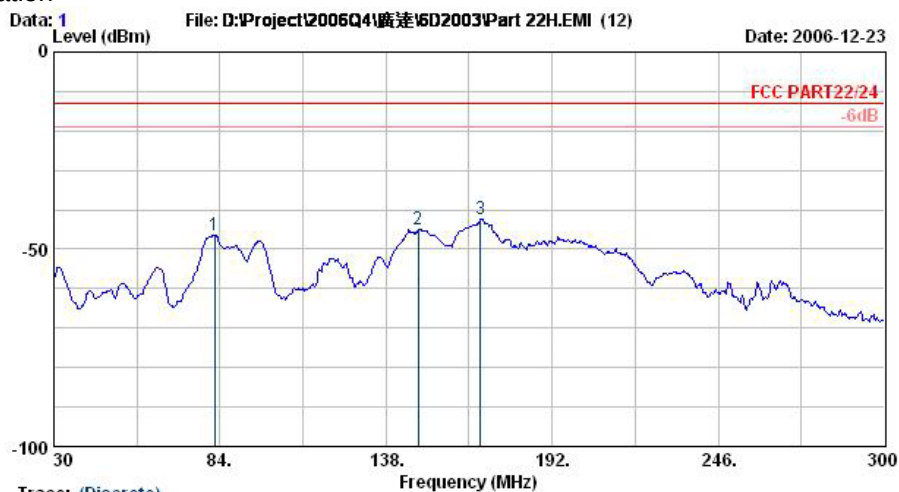
PCS1900 Radiated Spurious EIRP							
H Polarization				V Polarization			
Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)	Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Margin (dB)
32.430	-48.840	-13	-35.84	31.890	-47.050	-13	-34.05
150.690	-49.460	-13	-36.46	168.240	-43.290	-13	-30.29
174.180	-46.680	-13	-33.68	184.440	-45.610	-13	-32.61
315.400	-66.210	-13	-53.21	752.900	-59.470	-13	-46.47
857.900	-64.330	-13	-51.33	876.800	-61.700	-13	-48.70
966.400	-63.990	-13	-50.99	987.400	-61.500	-13	-48.50
1938.000	-56.220	-13	-43.22	3758.000	-43.600	-13	-30.60
3758.000	-49.340	-13	-36.34	5638.000	-52.090	-13	-39.09
5638.000	-156.870	-13	-143.87				



4.6.5 Test Data

4.6.5.1 Mode 1

Horizontal Polarization



Site : 09CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Wac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;CH189+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H

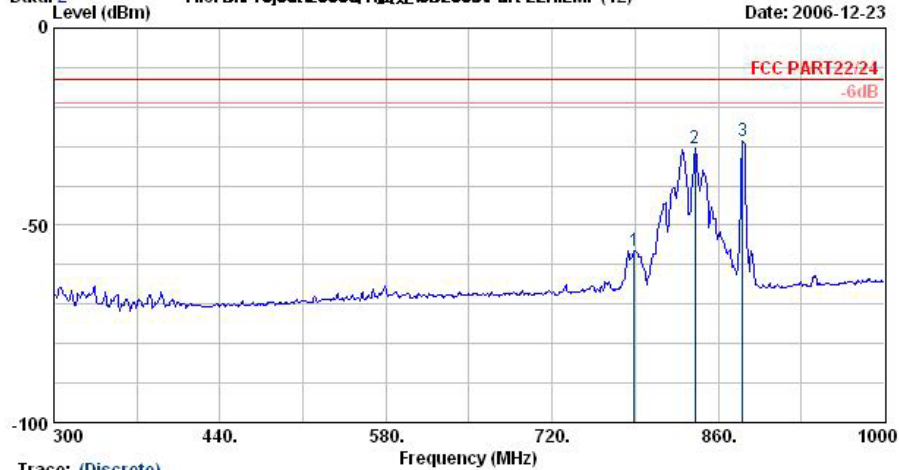
	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	82.4	-46.35	-33.35	-13.00	-34.04	-12.31	Peak
2	148.5	-44.84	-31.84	-13.00	-32.04	-12.80	Peak
3 @	168.8	-42.24	-29.24	-13.00	-29.21	-13.03	Peak



FCC/IC TEST REPORT

Report No. : FG6D2003-B

Data: 2 File: D:\Project\2006Q4\廣達\6D2003\Part 22H.EMI (12) Date: 2006-12-23



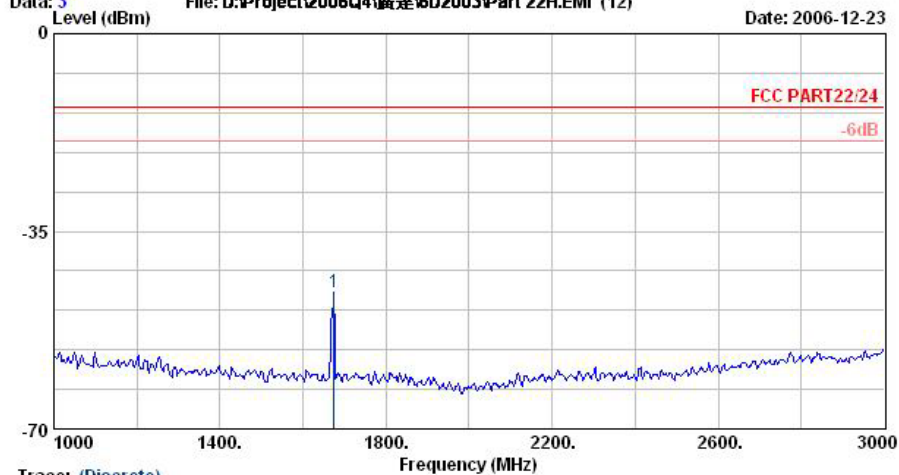
Trace: (Discrete)
Site : 03CH06-HY
Condition : LF-SPURIOUS HORIZONTAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;Ch189+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	789.3	-56.36	-43.36	-13.00	-54.56	-1.80	Peak
2 @	840.4	-30.50			-29.19	-1.31	Peak
3 @	880.3	-28.56			-27.65	-0.91	Peak

Remark:

1. #2: MS Signal
2. #3: BS Signal

Data: 3 File: D:\Project\2006Q4\廣達\6D2003\Part 22H.EMI (12) Date: 2006-12-23



Trace: (Discrete)
Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;Ch189+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1	1674.0	-45.78	-32.78	-13.00	-46.00	0.22	Peak

SPORTON International Inc.

TEL : 886-2-2696-2468

FAX : 886-2-2696-2255

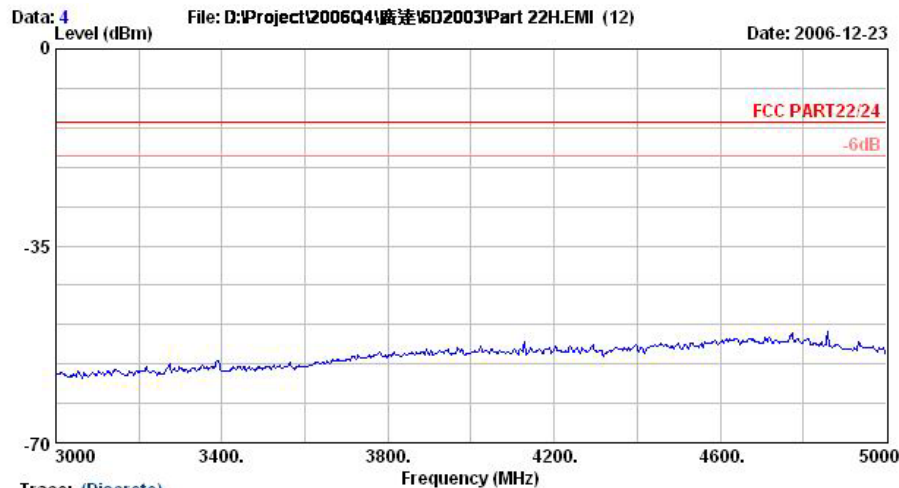
FCC ID : S4LGO715

IC ID : 5767A-GO715

Page No. : 32 of 47

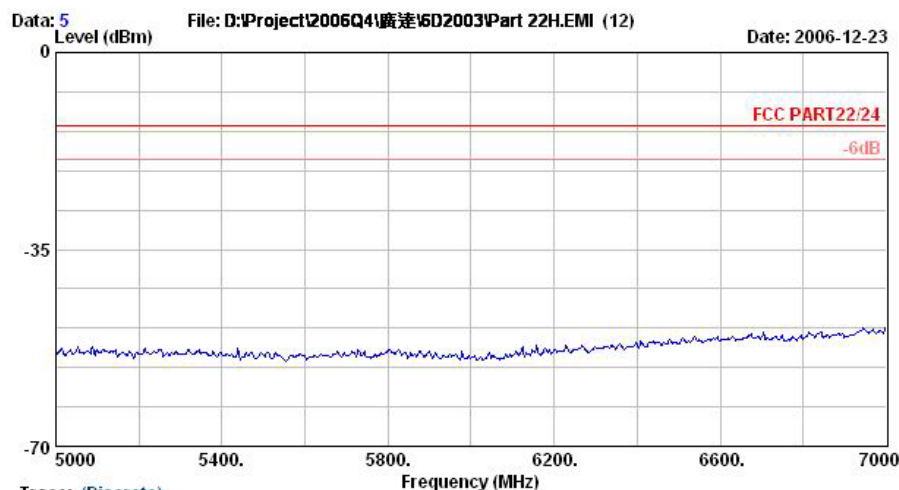
Report Issued Date : Feb. 28, 2007

Report Version : Rev. 03



Trace: (Discrete)

Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;Ch189+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H



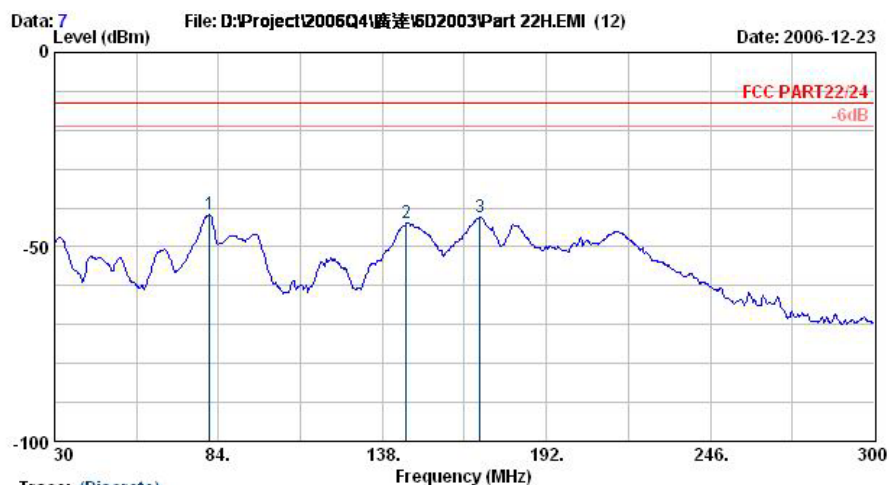
Trace: (Discrete)

Site : 03CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;Ch189+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H

Remark: There's no more obvious spurious emission except the listings above.



Vertical Polarization

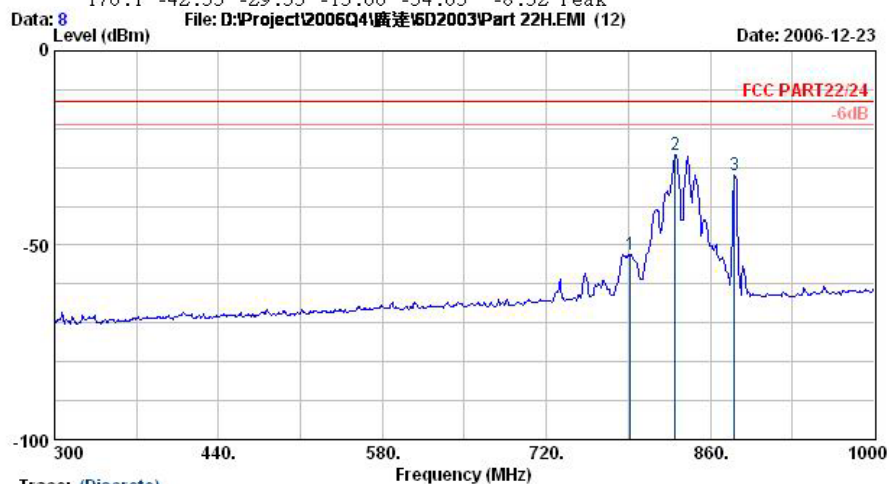


Trace: (Discrete)

Site : 08CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : CAR device with GPS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;Ch189+Cradle+Microphone
Plane : +GPS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor Remark
			dB	dBm	dBm	dB

1 @	81.0	-41.81	-28.81	-13.00	-31.46	-10.35 Peak
2	145.8	-43.87	-30.87	-13.00	-35.77	-8.10 Peak
3	170.1	-42.35	-29.35	-13.00	-34.03	-8.32 Peak



Trace: (Discrete)

Site : 08CH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : CAR device with GPS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;Ch189+Cradle+Microphone
Plane : +GPS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor Remark
			dB	dBm	dBm	dB

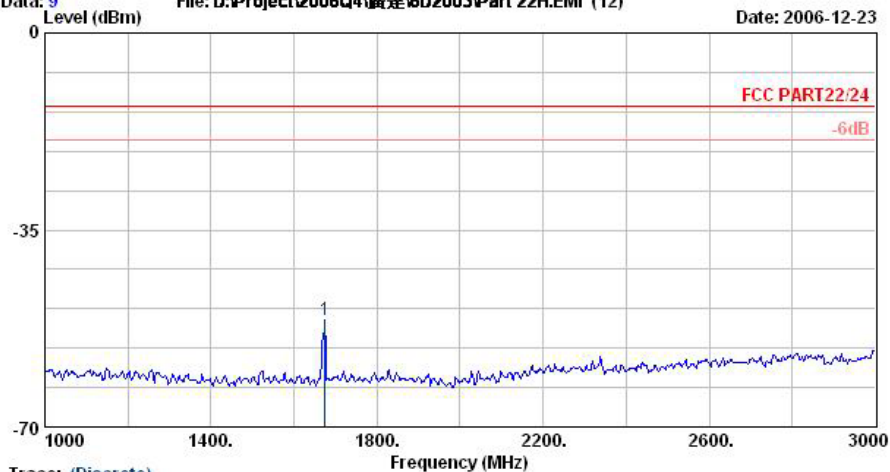
1	791.4	-52.29	-39.29	-13.00	-53.23	0.94 Peak
2 @	829.9	-26.64	-13.64	-13.00	-27.95	1.31 Peak
3 @	880.3	-32.04	-19.04	-13.00	-33.75	1.71 Peak

Remark:

- #2: MS Signal
- #3: BS Signal



Data: 9 File: D:\Project\2006Q4\廣達\6D2003\Part 22H.EMI (12) Date: 2006-12-23

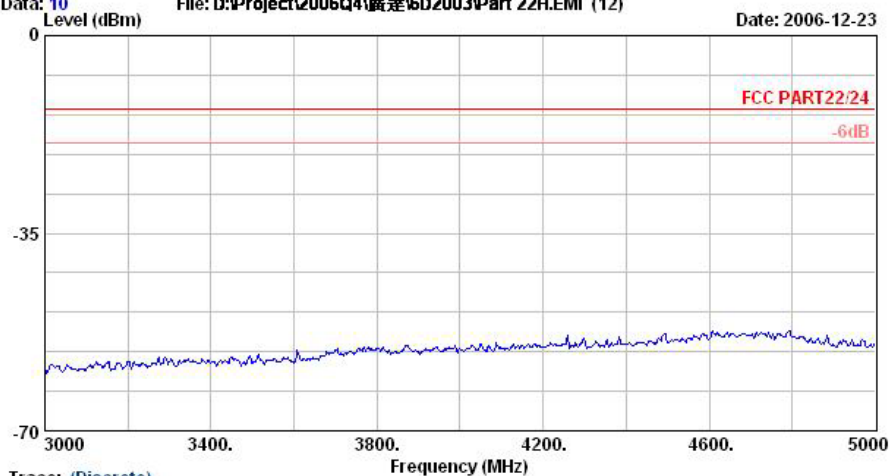


Trace: (Discrete)

Site : 08CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;CM189+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H

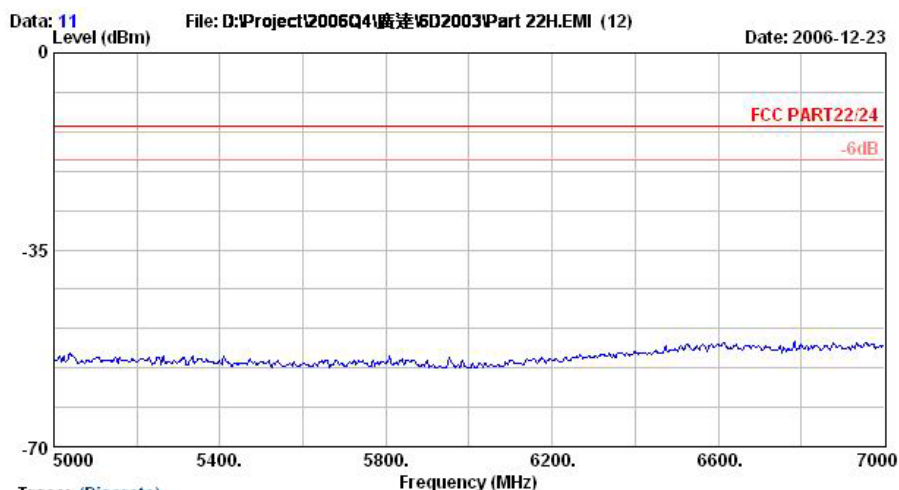
	Freq	Level	Over	Limit	Read	
	MHz	dBm	dB	dBm	dBm	dB
1	1674.0	-50.97	-37.97	-13.00	-50.49	-0.48 Peak

Data: 10 File: D:\Project\2006Q4\廣達\6D2003\Part 22H.EMI (12) Date: 2006-12-23



Trace: (Discrete)

Site : 08CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;CM189+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H



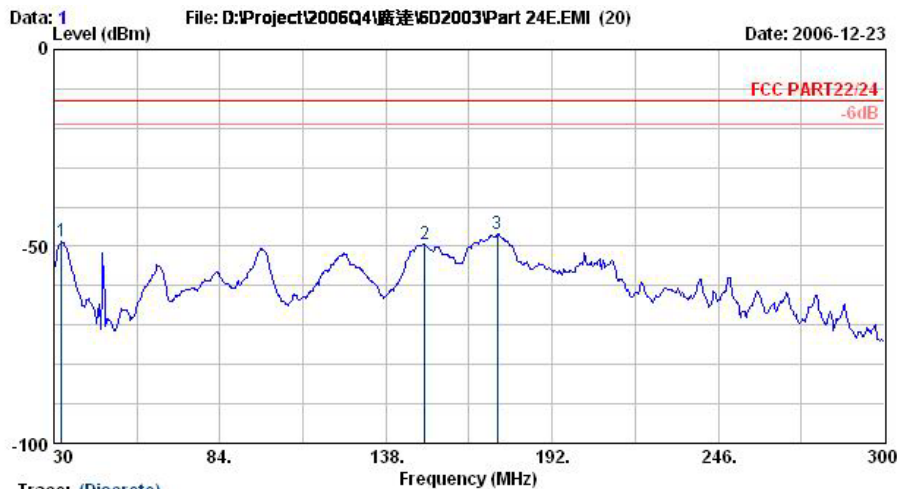
Site : 03CH06-HY
Condition : HP-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : GSM 850 Link;CM189+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H

Remark : There is no more obvious emission except the listings above.

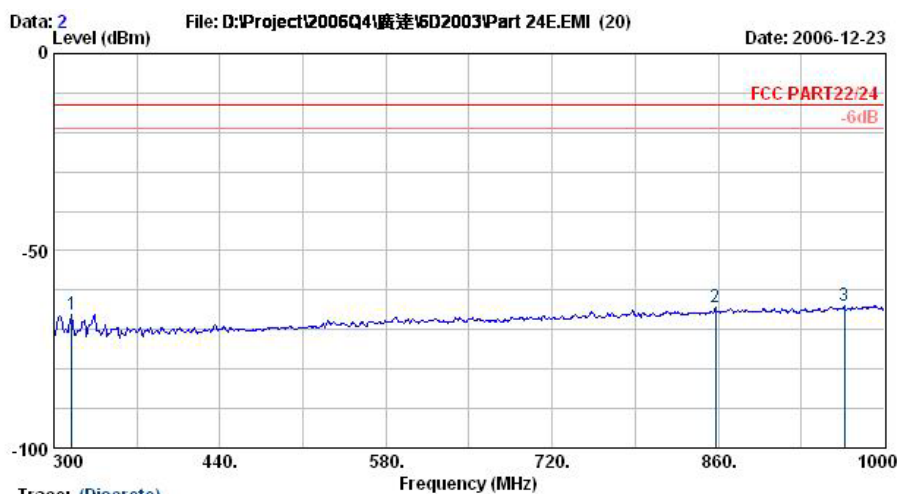


4.6.5.2 Mode 2

Horizontal Polarization



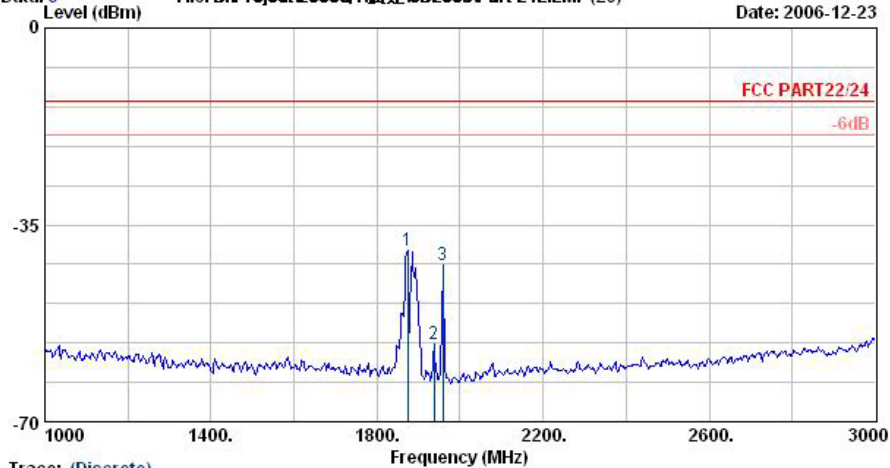
	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor Remark
		dB	dBm	dB		
1 @	32.4	-48.84	-35.84	-13.00	-47.37	-1.47 Peak
2 @	150.7	-49.46	-36.46	-13.00	-36.64	-12.82 Peak
3 @	174.2	-46.68	-33.68	-13.00	-33.58	-13.10 Peak



	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor Remark
		dB	dBm	dB		
1	315.4	-66.21	-53.21	-13.00	-56.80	-9.41 Peak
2	857.9	-64.33	-51.33	-13.00	-63.21	-1.13 Peak
3	966.4	-63.99	-50.99	-13.00	-63.90	-0.09 Peak



Data: 3 File: D:\Project\2006Q4\廣達\6D2003\Part 24E.EMI (20) Date: 2006-12-23



Trace: (Discrete)

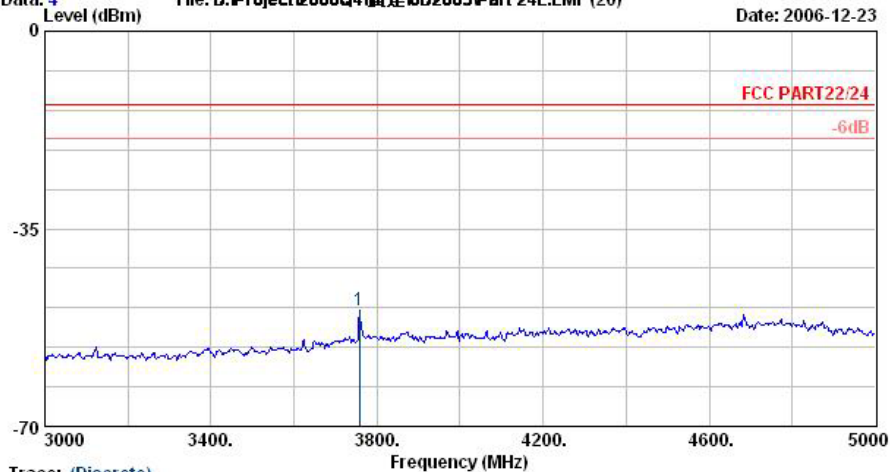
Site : 09CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : CAR device with GPS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1 @	1874.0	-39.62			-39.11	-0.51	Peak
2 @	1938.0	-56.22	-43.22	-13.00	-55.28	-0.94	Peak
3 @	1958.0	-42.14			-41.03	-1.11	Peak

Remark:

1. #1: MS Signal
2. #3: BS Signal

Data: 4 File: D:\Project\2006Q4\廣達\6D2003\Part 24E.EMI (20) Date: 2006-12-23



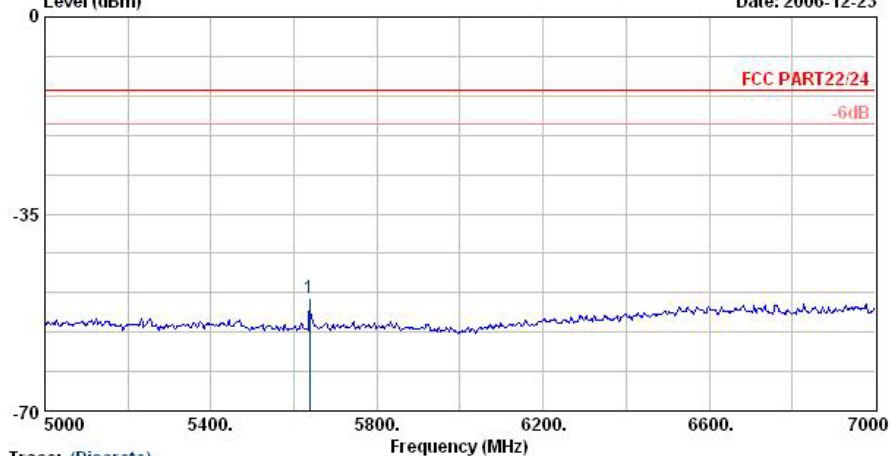
Trace: (Discrete)

Site : 09CH06-HY
Condition : HF-SPURIOUS HORIZONTAL
EUT : CAR device with GPS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
			dB	dBm	dBm	dB	
1 @	3758.0	-49.34	-36.34	-13.00	-57.27	7.92	Peak



Data: 5 File: D:\Project\2006Q4\廣達\6D2003\Part 24E.EMI (20) Date: 2006-12-23

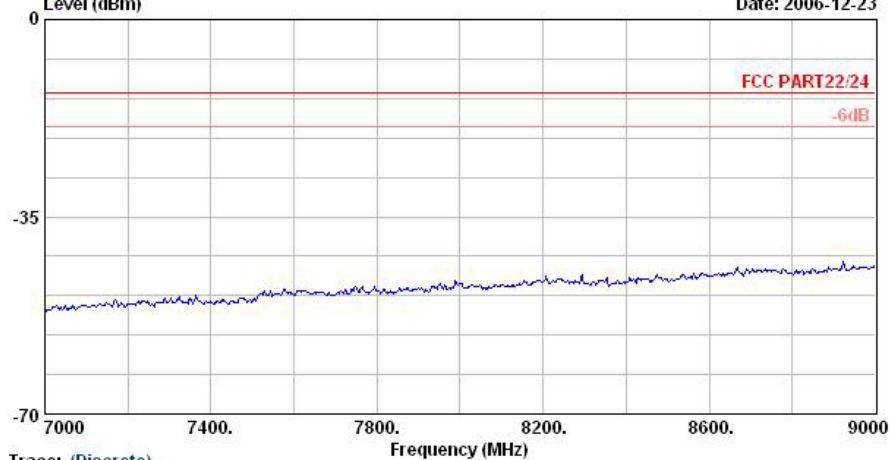


Trace: (Discrete)

Site : 03CH06-HY
Condition : HP-SPURIOUS HORIZONTAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read	
	MHz	dBm	dB	dBm	dBm	dB
1 @	5638.0	-49.87	-36.87	-13.00	-59.84	9.97 Peak

Data: 6 File: D:\Project\2006Q4\廣達\6D2003\Part 24E.EMI (20) Date: 2006-12-23



Trace: (Discrete)

Site : 03CH06-HY
Condition : HP-SPURIOUS HORIZONTAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H

Remark: There's no more obvious spurious emission except the listings above.



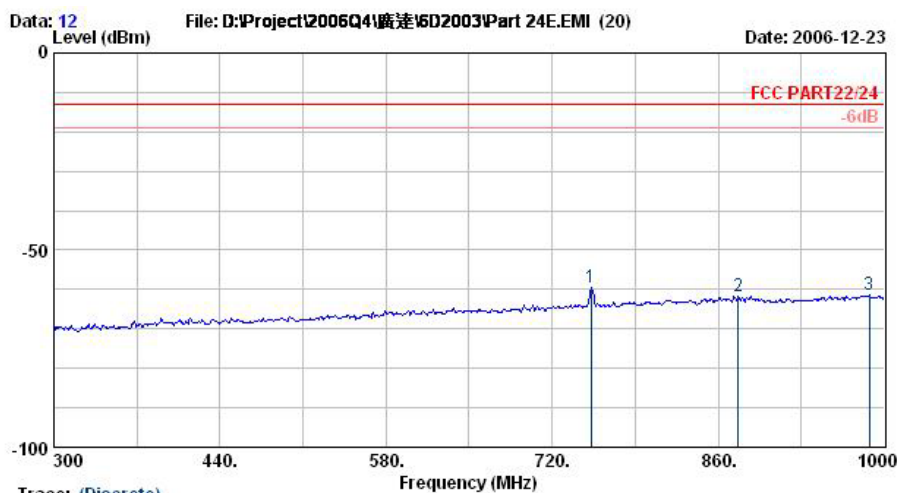
Vertical Polarization



Trace: (Discrete)

Site : GSCH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
		dBm	dB	dBm	dBm	dB	
1 @	31.9	-47.05	-34.05	-13.00	-37.43	-9.62	Peak
2 @	168.2	-43.29	-30.29	-13.00	-34.98	-8.31	Peak
3 @	184.4	-45.61	-32.61	-13.00	-37.16	-8.45	Peak



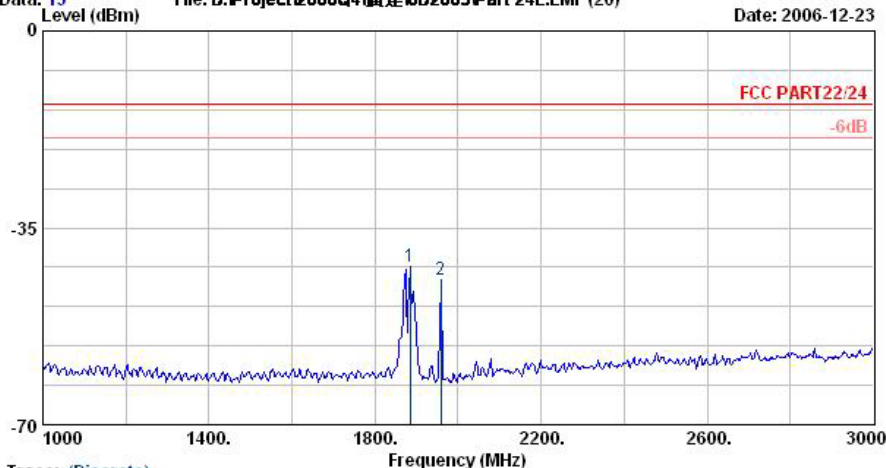
Trace: (Discrete)

Site : GSCH06-HY
Condition : LF-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read		
	MHz	dBm	Limit	Line	Level	Factor	Remark
		dBm	dB	dBm	dBm	dB	
1 @	752.9	-59.47	-46.47	-13.00	-59.83	0.36	Peak
2	876.8	-61.70	-48.70	-13.00	-63.38	1.68	Peak
3	987.4	-61.50	-48.50	-13.00	-64.06	2.56	Peak



Data: 13 File: D:\Project\2006Q4\廣達\6D2003\Part 24E.EMI (20) Date: 2006-12-23



Trace: (Discrete)

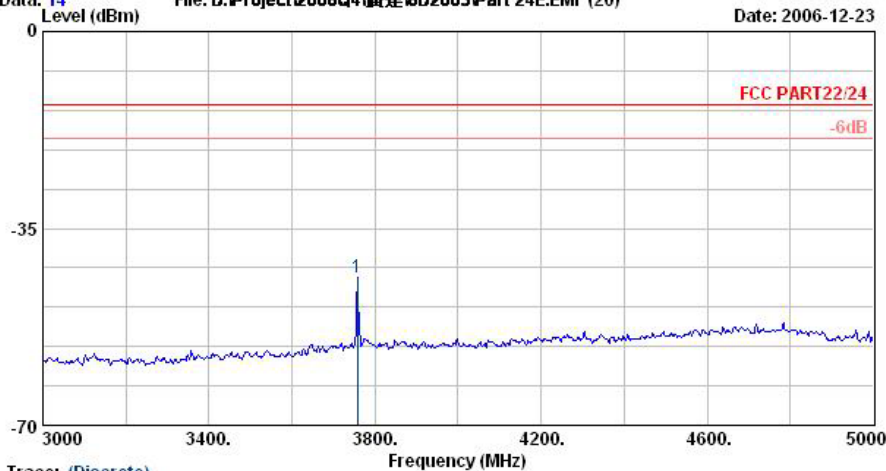
Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor Remark
			dB	dBm	dBm	dB
1 @	1884.0	-41.82			-41.32	-0.50 Peak
2 @	1958.0	-44.15			-43.55	-0.60 Peak

Remark:

1. #1: MS Signal
2. #2: BS Signal

Data: 14 File: D:\Project\2006Q4\廣達\6D2003\Part 24E.EMI (20) Date: 2006-12-23



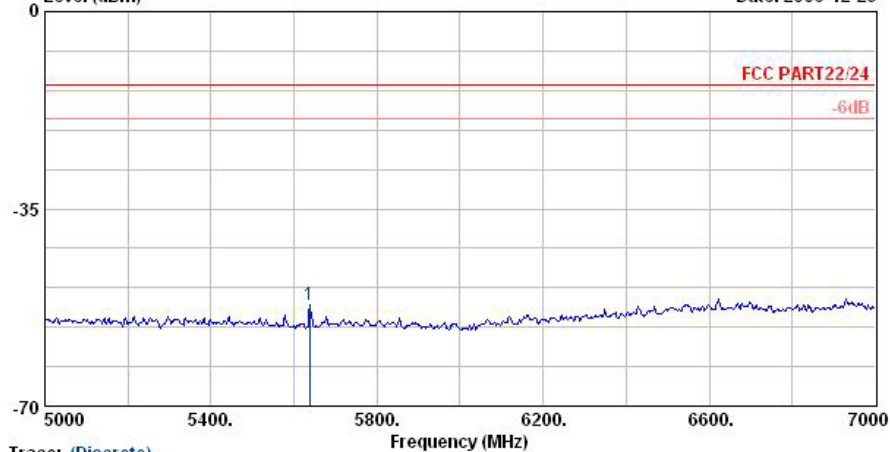
Trace: (Discrete)

Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPRS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read	
	MHz	dBm	Limit	Line	Level	Factor Remark
			dB	dBm	dBm	dB
1 @	3758.0	-43.60	-30.60	-13.00	-50.24	6.64 Peak



Data: 15 Level (dBm) File: D:\Project\2006Q4\廣達\6D2003\Part 24E.EMI (20) Date: 2006-12-23

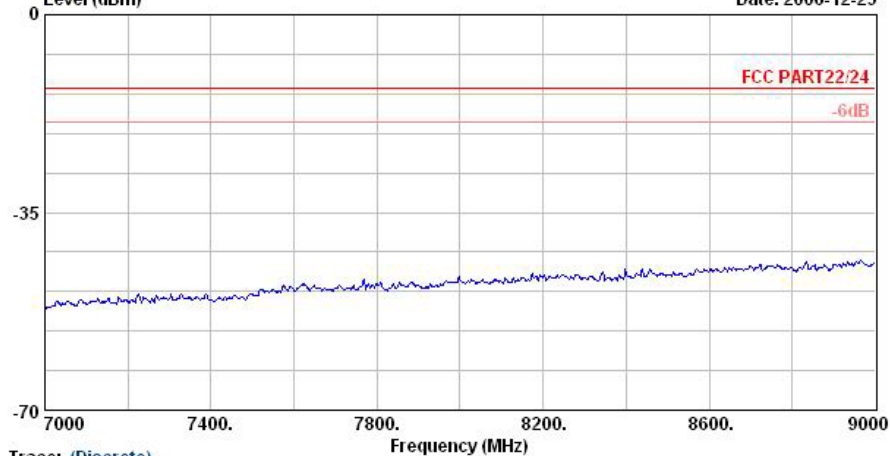


Trace: (Discrete)

Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H

	Freq	Level	Over	Limit	Read	
	MHz	dBm	dB	dBm	dBm	dB
1 @	5638.0	-52.09	-39.09	-13.00	-60.74	8.65 Peak

Data: 16 Level (dBm) File: D:\Project\2006Q4\廣達\6D2003\Part 24E.EMI (20) Date: 2006-12-23



Trace: (Discrete)

Site : 03CH06-HY
Condition : HF-SPURIOUS VERTICAL
EUT : CAR device with GPRS/Bluetooth/remote
EUT : controller
Power : 120Vac/60Hz
Model : FG 6D2003
Mode : PCS 1900 Link;Ch661+Cradle+Microphone
Mode : +GPS Antenna+Adaptor
Plane : H

Remark : There is no more obvious emission except the listings above.

4.7 Frequency Stability (Temperature Variation)

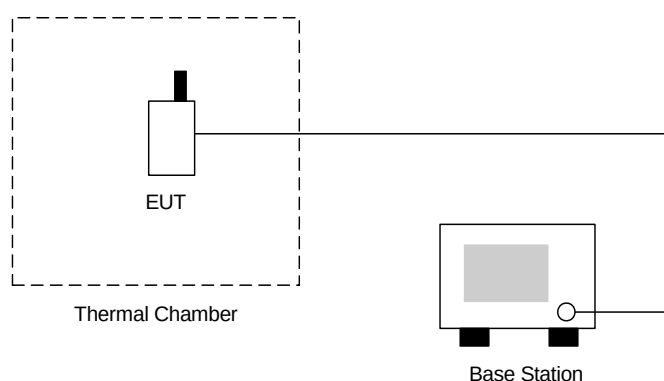
4.7.1 Measurement Instrument

As described in chapter 5 of this test report.

4.7.2 Test Procedure

1. The EUT and test equipment were set up as shown on the following section.
2. With all power removed, the temperature was decreased to -30°C and permitted to stabilize for three hours. Power was applied and the maximum change in frequency was noted within one minute.
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.
4. The temperature tests were performed for the worst case.
5. Test data was recorded.

4.7.3 Test Setup Layout



4.7.4 Test Result

▪ Test Mode : GSM850 CH189

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	69	0.04	2.5	Passed
-20	55	0.03		
-10	-52	-0.03		
0	44	0.02		
10	28	0.01		
20	35	0.02		
30	-38	-0.02		
40	48	0.03		
50	-52	-0.03		

▪ Test Mode : PCS1900 CH661

Temperature(°C)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
-30	-58	-0.03	2.5	Passed
-20	47	0.02		
-10	-25	-0.01		
0	24	0.01		
10	-22	-0.01		
20	26	0.01		
30	31	0.02		
40	28	0.01		
50	-38	-0.02		

4.8 Frequency Stability (Voltage Variation)

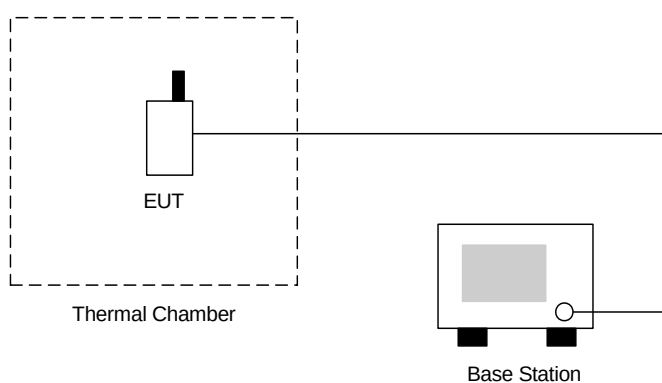
4.8.1 Measurement Instrument

As described in chapter 5 of this test report.

4.8.2 Test Procedure

1. The EUT was placed in a temperature chamber at $25 \pm 5^{\circ}\text{C}$ and connected as the following section.
2. The power supply voltage to the EUT was varied from BEP to 115% of the nominal value measured at the input to the EUT.
3. The variation in frequency was measured for the worst case.

4.8.3 Test Setup Layout



4.8.4 Test Result

- Test Mode : GSM850 CH189

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
5	24.0	0.01	2.5	Passed
BEP	33.0	0.02		
5.75	28.0	0.01		

- Test Mode : PCS1900 CH661

Voltage(Volt)	Change (Hz)	Change (ppm)	Limit (ppm)	Result
5	28.0	0.01	2.5	Passed
BEP	-22.0	-0.01		
5.75	25.0	0.01		

Remark:

1. Normal Voltage=5 V.
2. Battery End Point (BEP)=4.25 V.

5 List of Measurement Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Oct. 05, 2006	Oct. 04, 2007	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jul. 13, 2006	Jul. 12, 2007	Radiation (03CH06-HY)
Controller	INN-CO	CO2000	N/A	N/A	N/A	N/A	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Nov. 20, 2006	Nov. 19, 2007	Radiation (03CH06-HY)
Horn Antenna	Com-Power	AH118	071025	1G-18G	Mar. 29, 2006	Mar. 28, 2007	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Nov. 20, 2006	Nov. 19, 2008	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G - 26.5G	Nov. 15, 2006	Nov. 14, 2007	Radiation (03CH06-HY)
Pre Amplifier	Mini Circuits	ZKL-2	D092004-1	10~2500MHz	Nov. 15, 2006	Nov. 14, 2007	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0 ~ 360 degree	N/A	N/A	Radiation (03CH06-HY)
Antenna Mast	INN-CO	MM3000	114/8000604/ L	1 m - 4 m	N/A	N/A	Radiation (03CH06-HY)

6 Uncertainty Evaluation

Uncertainty of Radiated Emission Measurement (30MHz ~ 1000MHz)

Contribution	Uncertainty of X_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.41	Normal(k=2)	0.21
Antenna factor calibration	0.83	Normal(k=2)	0.42
Cable loss calibration	0.25	Normal(k=2)	0.13
Pre Amplifier Gain calibration	0.27	Normal(k=2)	0.14
RCV/SPA specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site imperfection	1.43	Rectangular	0.83
Mismatch	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	1.27		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	2.54		

Uncertainty of Radiated Emission Measurement (1GHz ~ 40GHz)

Contribution	Uncertainty of X_i		$u(x_i)$	C_i	$C_i * u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20 \log(1 - \Gamma_1 * \Gamma_2 * \Gamma_3)$	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	2.36				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	4.72				

END OF TEST REPORT