FCC RF Test Report

APPLICANT	:	FUJITSU LIMITED
EQUIPMENT	:	Mobile Phone
BRAND NAME	:	Xi
MODEL NAME	:	F-06E
FCC ID	:	VQK-F06E
STANDARD	:	FCC 47 CFR Part 2, 22(H), 24(E)
CLASSIFICATION	:	PCS Licensed Transmitter Held to Ear (PCE)

The product was received on Mar. 05, 2013 and completely tested on Apr. 07, 2013. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI / TIA / EIA-603-C-2004 and shown compliance with the applicable technical standards.

The test results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC., the test report shall not be reproduced except in full.

Reviewed by: Joseph Lin / Supervisor

Approved by: Jones Tsai / Manager

Testing Laboratory 1190

SPORTON INTERNATIONAL INC.
No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C.

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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FG322231	Rev. 01	Initial issue of report	Apr. 22, 2013

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	§2.1046	RSS-132 (5.4) RSS-133 (6.4)	Conducted Output Power	N/A	PASS	-
3.2	§24.232(d)	RSS-132 (5.4) RSS-133(6.4)	Peak-to-Average Ratio	< 13 dB	PASS	-
3.3	§22.913(a)(2)	RSS-132(5.4) SRSP-503(5.1.3)	Effective Radiated Power	< 7 Watts	PASS	
3.3	§24.232(c)	RSS-133 (6.4) SRSP-510(5.1.2)	Equivalent Isotropic Radiated Power	< 2 Watts	PASS	
3.4	§2.1049 §22.917(a) §24.238(a)	RSS-GEN(4.6.1) RSS-133(2.3)	Occupied Bandwidth	N/A	PASS	-
3.5	§2.1051 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Band Edge Measurement	< $43+10\log_{10}$(P[Watts])	PASS	-
3.6	§2.1051 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Conducted Spurious Emission	< $43+10\log_{10}$(P[Watts])	PASS	-
3.7	§2.1053 §22.917(a) §24.238(a)	RSS-132 (5.5) RSS-133 (6.5)	Field Strength of Spurious Radiation	< $43+10\log_{10}$(P[Watts])	PASS	Under limit 10.57 dB at 1696.000 MHz
3.8	§2.1055 §22.355 §24.235	RSS-132(5.3) RSS-133(6.3)	Frequency Stability for Temperature & Voltage	< 2.5 ppm	PASS	-

1 General Description

1.1 Applicant

FUJITSU LIMITED

1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588, Japan

1.2 Manufacturer

FUJITSU LIMITED

1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki 211-8588, Japan

1.3 Feature of Equipment Under Test

Product Feature	
Equipment	Mobile Phone
Brand Name	Xi
Model Name	F-06E
FCC ID	VQK-F06E
IMEI Code	355250050001900 355250050007774
EUT supports Radios application	GSM/GPRS/WCDMA/HSPA/ WLAN 11abgn / WLAN 11ac /Bluetooth BR/EDR/LE / RFID / NFC
HW Version	V2.1.0
SW Version	R20.3e
EUT Stage	Pre-Production

Remark:

1. The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.
2. IEEE 11ac standard is still "Draft" version.

1.4 Product Specification of Equipment Under Test

Product Specification subjective to this standard	
Tx Frequency	GSM850: 824.2 MHz ~ 848.8 MHz GSM1900: 1850.2 MHz ~ 1909.8MHz WCDMA Band V: 826.4 MHz ~ 846.6 MHz
Rx Frequency	GSM850: 869.2 MHz ~ 893.8 MHz GSM1900: 1930.2 MHz ~ 1989.8 MHz WCDMA Band V: 871.4 MHz ~ 891.6 MHz
Maximum Output Power to Antenna	GSM850 : 33.08 dBm GSM1900 : 30.00 dBm WCDMA Band V : 24.21 dBm
Antenna Type	λ/4 Monopole Antenna
Type of Modulation	GSM: GMSK GPRS: GMSK WCDMA: QPSK (Uplink) HSDPA: QPSK (Uplink) HSUPA: QPSK (Uplink)

1.5 Maximum ERP/EIRP Power, Frequency Tolerance, and Emission Designator

FCC Rule	System	Type of Modulation	Maximum ERP/EIRP (W)	Frequency Tolerance (%, Hz, ppm)	Emission Designator
Part 22	GSM850 GSM	GMSK	0.8260	0.02 ppm	248KGXW
Part 22	WCDMA Band V RMC 12.2Kbps	QPSK	0.1229	0.01 ppm	4M16F9W
Part 24	GSM1900 GSM	GMSK	0.5715	0.01 ppm	250KGXW

1.6 Testing Site

Test Site	SPORTON INTERNATIONAL INC.			
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: +886-3-328-4978			
Test Site No.	**Sporton Site No.**			**FCC/IC Registration No.**
	TH02-HY	03CH05-HY	03CH07-HY	722060/4086B-1

1.7 Applied Standards

According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards:

- FCC 47 CFR Part 2, 22(H), 24(E)
- ANSI / TIA / EIA-603-C-2004
- FCC KDB 971168 D01 Power Meas. License Digital Systems v01

Remark:

1. All test items were verified and recorded according to the standards and without any deviation during the test.
2. This EUT has also been tested and complied with the requirements of FCC Part 15, Subpart B, recorded in a separate test report.

2 Test Configuration of Equipment Under Test

2.1 Test Mode

During all testing, EUT is in link mode with base station emulator at maximum power level. The spurious emission measurements were carried out in semi-anechoic chamber with 3-meter test range, and EUT is rotated on three test planes to find out the worst emission.

Frequency range investigated for radiated emission is as follows:

1. 30 MHz to 9000 MHz for GSM850 and WCDMA Band V.
2. 30 MHz to 19000 MHz for GSM1900.

Test Modes		
Band	**Radiated TCs**	**Conducted TCs**
GSM 850	■ GSM Link	■ GSM Link
GSM 1900	■ GSM Link	■ GSM Link
WCDMA Band V	■ RMC 12.2Kbps Link	■ RMC 12.2Kbps Link

Note:

1. The maximum power levels are GSM mode for GMSK link and RMC 12.2Kbps mode for WCDMA band V, only these modes were used for all tests.

2. Because there are individual antennas for each WWAN, WLAN, and Bluetooth, the co-location test modes are not required.

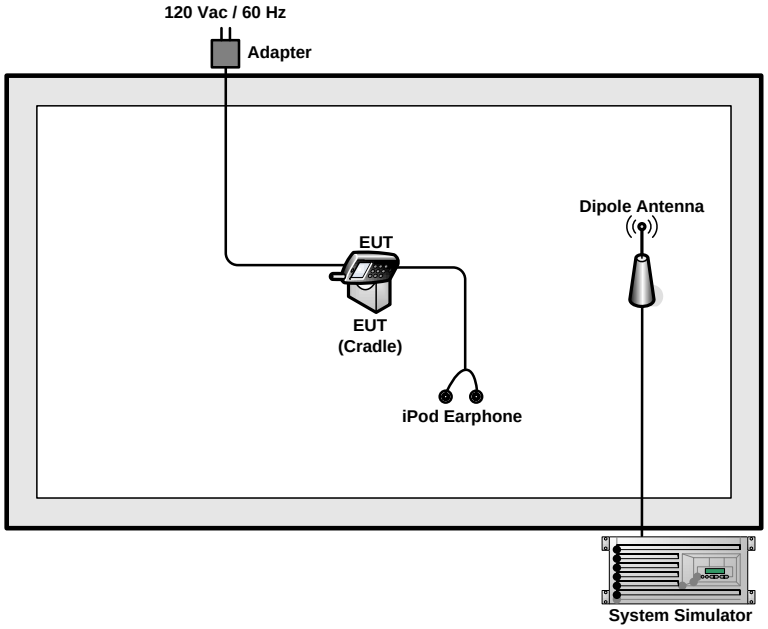
The conducted power tables are as follows:

Conducted Power (*Unit: dBm)						
Band	**GSM850**			**GSM1900**		
Channel	**128**	**189**	**251**	**512**	**661**	**810**
Frequency	**824.2**	**836.4**	**848.8**	**1850.2**	**1880.0**	**1909.8**
GSM	32.88	33.05	**33.08**	29.93	29.85	**30.00**
GPRS class 8	32.91	33.04	33.07	29.88	29.87	29.94
GPRS class 10	29.25	29.27	29.33	26.80	26.74	26.86
GPRS class 11	27.63	27.64	27.64	25.42	25.34	25.48
GPRS class 12	25.02	25.02	25.04	24.47	24.34	24.56

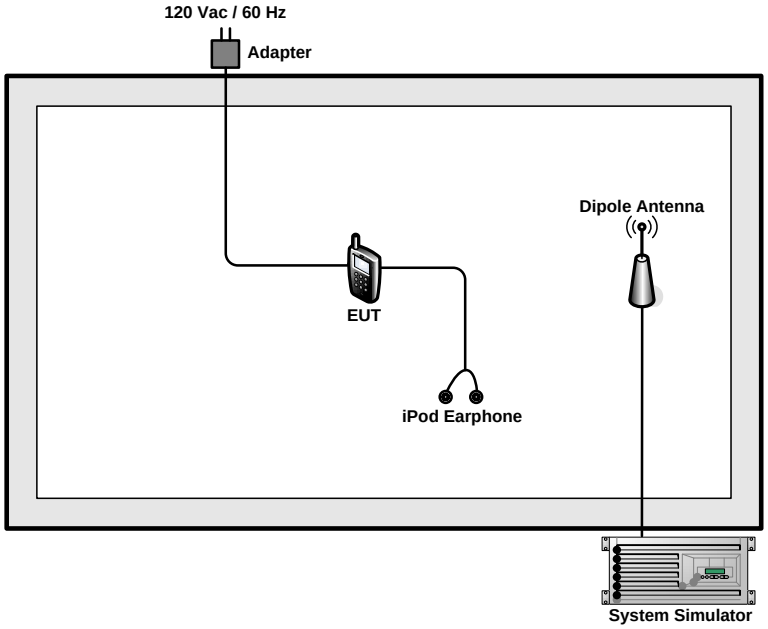
Conducted Power (*Unit: dBm)			
Band	**WCDMA Band V**		
Channel	**4132**	**4182**	**4233**
Frequency	**826.4**	**836.4**	**846.6**
RMC 12.2K	23.59	**24.21**	23.82
HSDPA Subtest-1	22.87	23.27	22.96
HSDPA Subtest-2	22.91	23.11	22.85
HSDPA Subtest-3	22.34	22.57	22.35
HSDPA Subtest-4	22.38	22.57	22.34
HSUPA Subtest-1	22.77	22.86	22.81
HSUPA Subtest-2	21.42	21.62	21.55
HSUPA Subtest-3	21.52	21.90	21.79
HSUPA Subtest-4	22.13	22.40	22.35
HSUPA Subtest-5	22.92	23.18	22.97

2.2 Connection Diagram of Test System

<Cellular Band>



<PCS Band>



2.3 Support Unit used in test configuration and system

Item	Equipment	Trade Name	Model No.	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	iPod Earphone	Apple	N/A	FCC DoC	Unshielded, 1.0 m	N/A

2.4 EUT accessory used in test configuration and system

Item	Equipment	Trade Name	Model Name	Spec.
1.	Cradle	Fujitsu limited	CA50601-1791	5.0Vdc, 1.5A
2.	Battery	Fujitsu limited	CA54310-0046	3.8V, 3,020mA Li-ion

2.5 Measurement Results Explanation Example

For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuator factor between EUT conducted output port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly the EUT RF output level.

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

Offset = RF cable loss + attenuator factor.

Following shows an offset computation example with cable loss 4.2 dB and 10dB attenuator.

Example :

Offset(dB) = RF cable loss(dB) + attenuator factor(dB).

= 4.2 + 10 = 14.2 (dB)

3 Test Result

3.1 Conducted Output Power Measurement

3.1.1 Description of the Conducted Output Power Measurement

A base station simulator was used to establish communication with the EUT. Its parameters were set to transmit the maximum power on the EUT. The measured power in the radio frequency on the transmitter output terminals shall be reported.

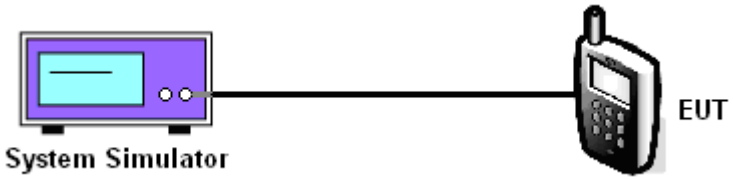
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedures

1. The transmitter output port was connected to base station.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. Set EUT at maximum power through base station.
4. Select lowest, middle, and highest channels for each band and different modulation.
5. Measure the maximum burst average power for GSM and maximum average power for other modulation signal.

3.1.4 Test Setup



3.1.5 Test Result of Conducted Output Power

Cellular Band						
Modes	**GSM850 (GSM)**			**WCDMA Band V (RMC 12.2Kbps)**		
Channel	**128 (Low)**	**189 (Mid)**	**251 (High)**	**4132 (Low)**	**4182 (Mid)**	**4233 (High)**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**826.4**	**836.4**	**846.6**
Conducted Power (dBm)	32.88	33.05	33.08	23.59	24.21	23.82
Conducted Power (Watts)	1.94	2.02	2.03	0.23	0.26	0.24

PCS Band			
Modes	**GSM1900 (GSM)**		
Channel	**512 (Low)**	**661 (Mid)**	**810 (High)**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**
Conducted Power (dBm)	29.93	29.85	30.00
Conducted Power (Watts)	0.98	0.97	1.00

Note: maximum burst average power for GSM, and maximum average power for WCDMA.

3.2 Peak-to-Average Ratio

3.2.1 Description of the PAR Measurement

The peak-to-average ratio (PAR) of the transmission may not exceed 13 dB.

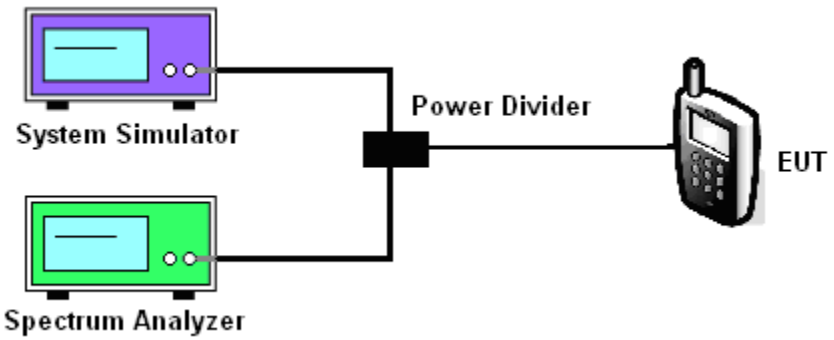
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and System Simulator via power divider.
2. For GSM/GPRS operating modes:
   a. Set EUT in maximum power output.
   b. Set the RBW = 1MHz, VBW = 3MHz, Peak detector in spectrum analyzer for first trace.
   c. Set the RBW = 1MHz, VBW = 3MHz, RMS detector in spectrum analyzer for second trace.
   d. The wanted burst signal is triggered by spectrum analyzer, and measured respectively the peak level and Mean level without burst-off time, after system simulator synchronized with the spectrum analyzer.
3. For UMTS operating modes:
   a. Set the CCDF (Complementary Cumulative Distribution Function) option in spectrum analyzer.
   b. The highest RF powers were measured and recorded the maximum PAPR level associated with a probability of 0.1 %.
4. Record the deviation as Peak to Average Ratio.

3.2.4 Test Setup



3.2.5 Test Result of Peak-to-Average Ratio

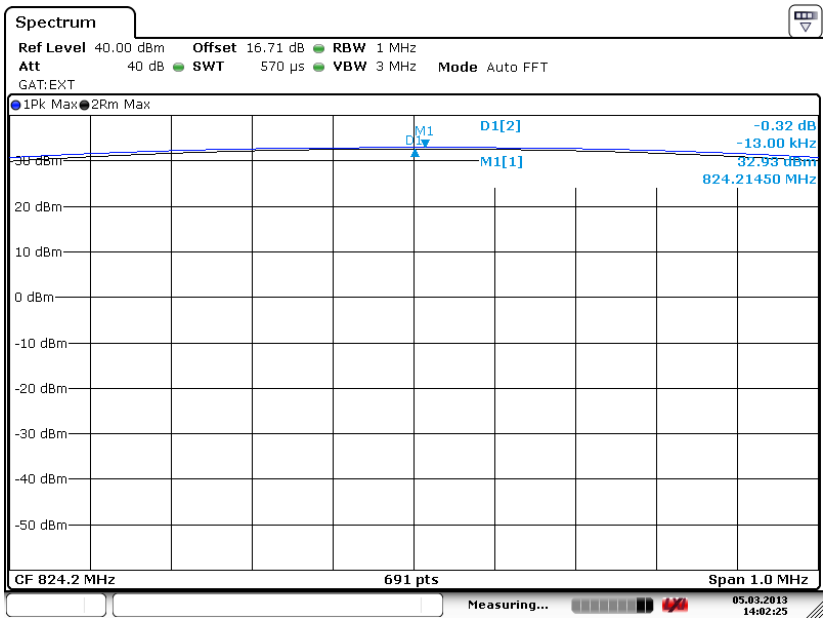
Cellular Band						
Modes	**GSM850 (GSM)**			**WCDMA Band V (RMC 12.2Kbps)**		
Channel	**128 (Low)**	**189 (Mid)**	**251 (High)**	**4132 (Low)**	**4182 (Mid)**	**4233 (High)**
Frequency (MHz)	**824.2**	**836.4**	**848.8**	**826.4**	**836.4**	**846.6**
Peak-to-Average Ratio (dB)	-0.32	-0.31	-0.32	3.36	3.24	3.40

PCS Band			
Modes	**GSM1900 (GSM)**		
Channel	**512 (Low)**	**661 (Mid)**	**810 (High)**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**
Peak-to-Average Ratio (dB)	-0.21	-0.21	-0.26

3.2.6 Test Result (Plots) of Peak-to-Average Ratio

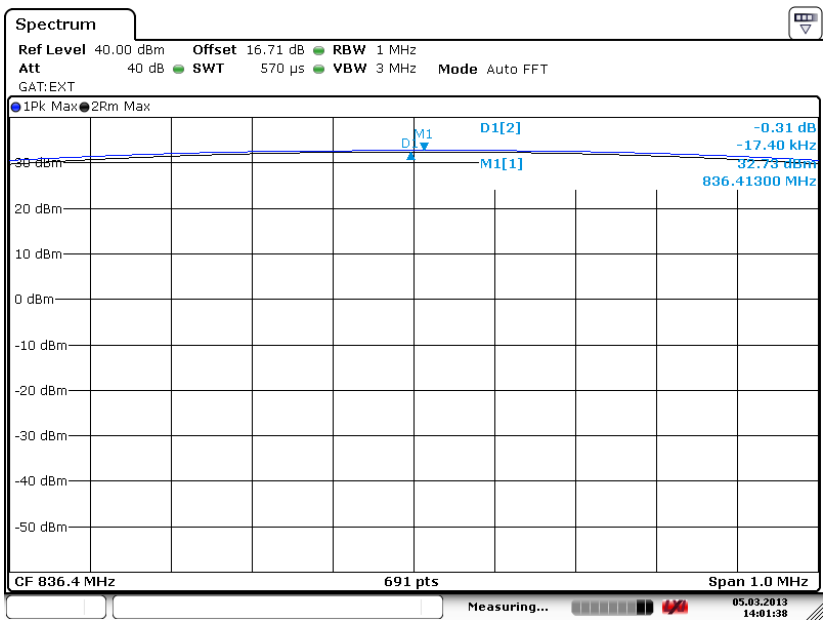
Band :	GSM 850	Test Mode :	GSM Link (GMSK)

Peak-to-Average Ratio on Channel 128 (824.2 MHz)



Date: 5.MAR.2013 14:02:26

Peak-to-Average Ratio on Channel 189 (836.4 MHz)



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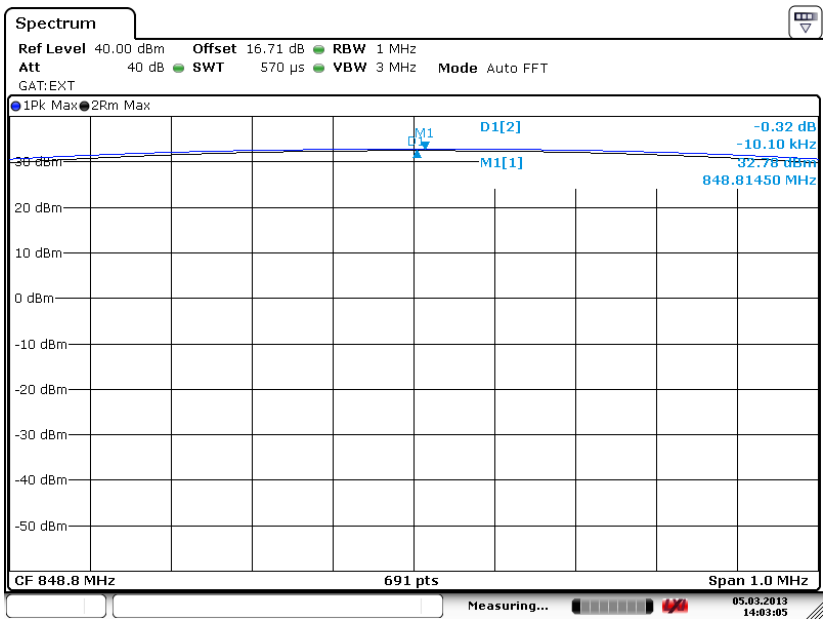
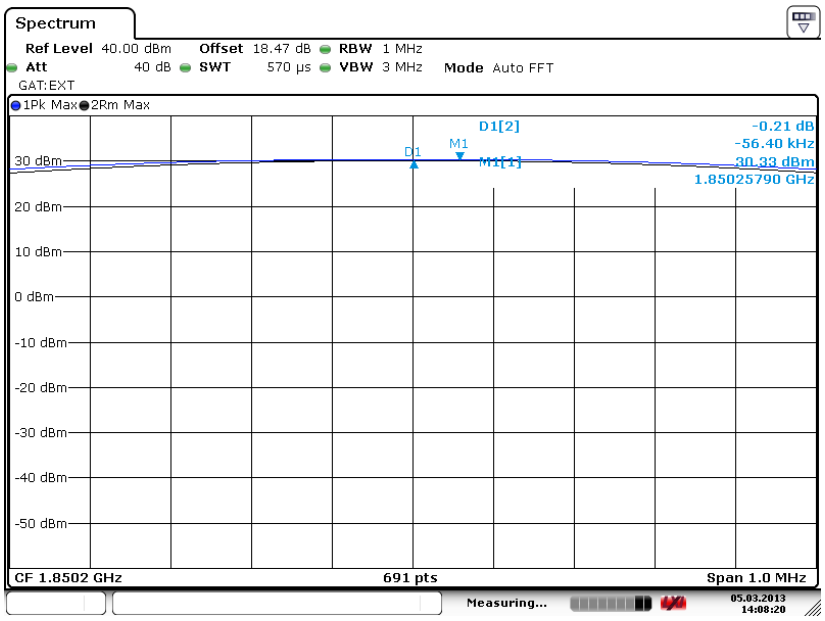
Peak-to-Average Ratio on Channel 251 (848.8 MHz)



Date: 5.MAR.2013 14:03:06

Band :	GSM 1900	Test Mode :	GSM Link (GMSK)

Peak-to-Average Ratio on Channel 512 (1850.2 MHz)



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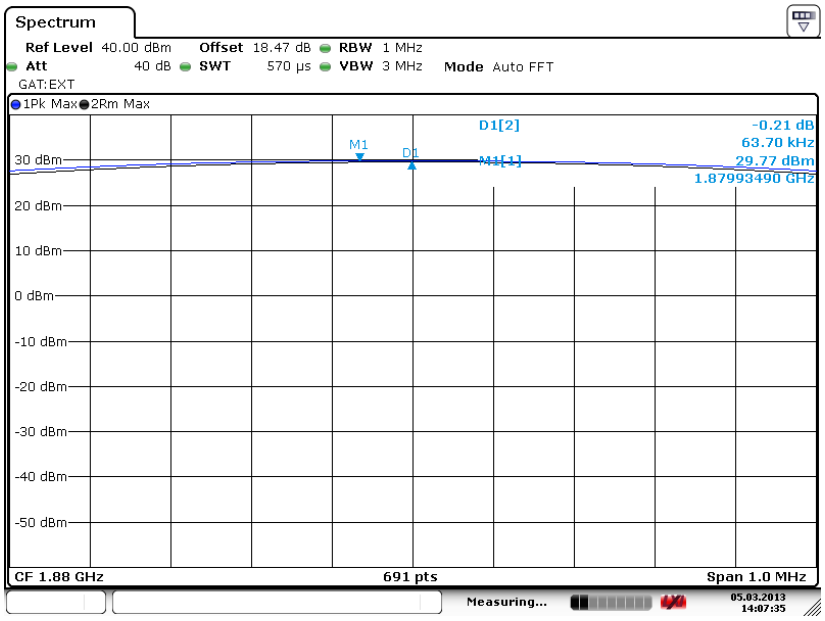
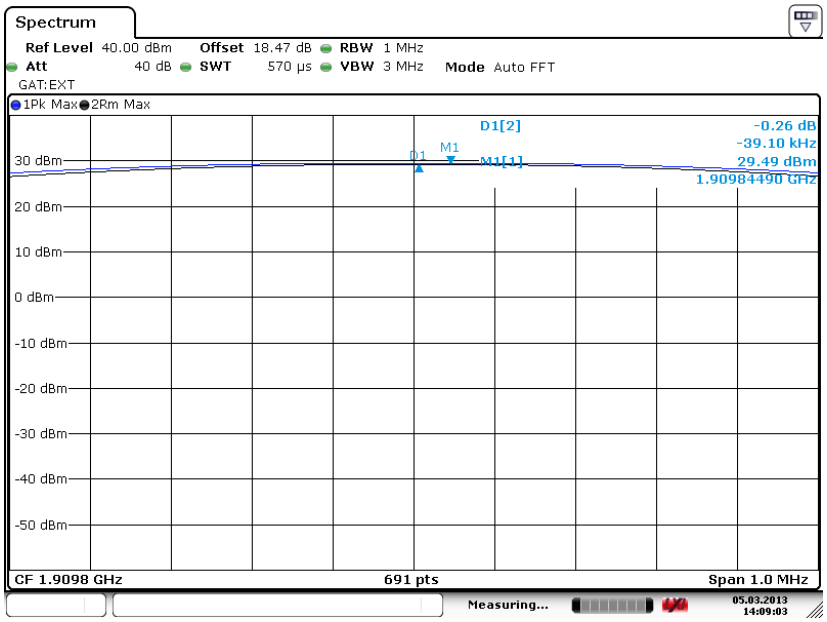
Peak-to-Average Ratio on Channel 661 (1880.0 MHz)



Date: 5.MAR.2013 14:07:35

Peak-to-Average Ratio on Channel 810 (1909.8 MHz)



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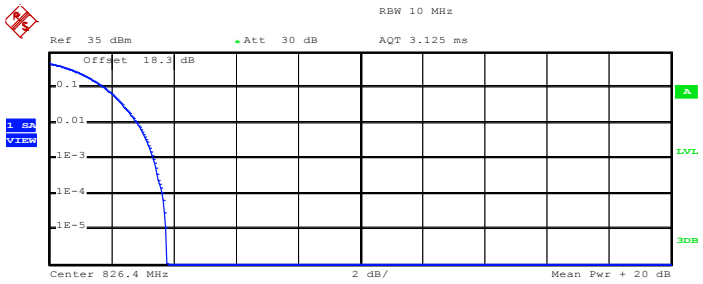
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

Peak-to-Average Ratio on Channel 4132 (826.4 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	25.46 dBm
Peak	29.25 dBm
Crest	3.79 dB
10 %	1.80 dB
1 %	2.84 dB
.1 %	3.36 dB
.01 %	3.64 dB

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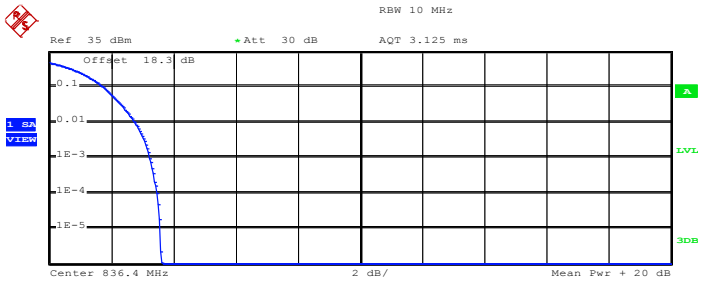
Peak-to-Average Ratio on Channel 4182 (836.4 MHz)

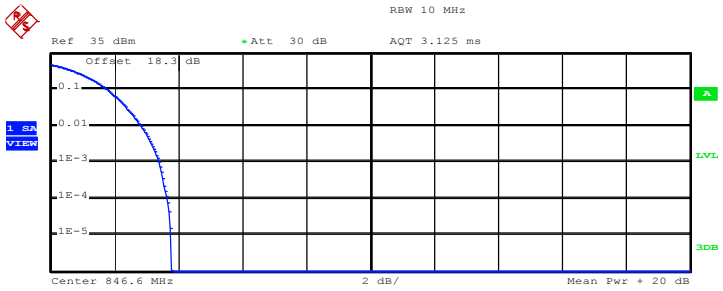


Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	25.23 dBm
Peak	28.83 dBm
Crest	3.60 dB
10 %	1.76 dB
1 %	2.76 dB
.1 %	3.24 dB
.01 %	3.48 dB

Date: 5.MAR.2013 03:42:24

Peak-to-Average Ratio on Channel 4233 (846.6 MHz)



Complementary Cumulative Distribution Function (100000 samples)

	Trace 1
Mean	24.98 dBm
Peak	28.76 dBm
Crest	3.78 dB
10 %	1.80 dB
1 %	2.84 dB
.1 %	3.40 dB
.01 %	3.68 dB

Date: 5.MAR.2013 03:41:33

3.3 Effective Radiated Power and Effective Isotropic Radiated Power Measurement

3.3.1 Description of the ERP/EIRP Measurement

The substitution method, in ANSI / TIA / EIA-603-C-2004, was used for ERP/EIRP measurement, and the spectrum analyzer configuration follows KDB 971168 D01 Power Meas. License Digital Systems v01. The ERP of mobile transmitters must not exceed 7 Watts and the EIRP of mobile transmitters are limited to 2 Watts.

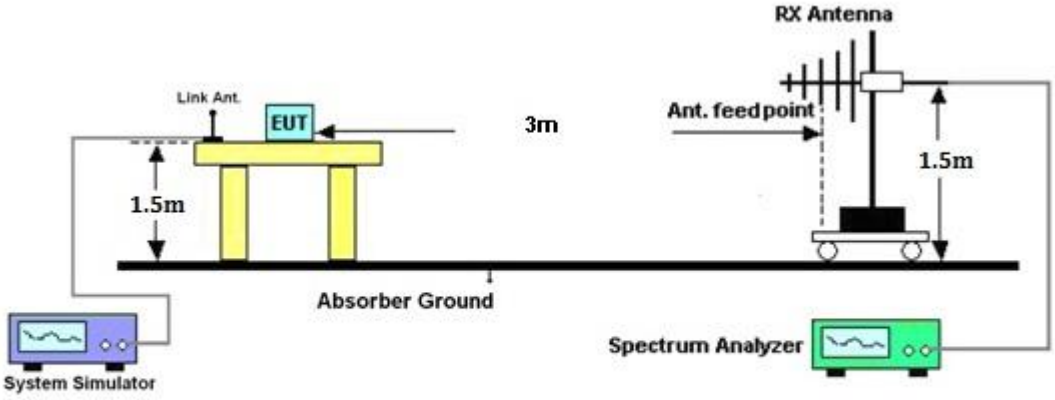
3.3.2 Measuring Instruments

See list of measuring instruments of this test report.

3.3.3 Test Procedures

1. The EUT was placed on a turntable with 1.5 meter height in a fully anechoic chamber.
   The EUT was set at 3 meters from the receiving antenna, which was mounted on the antenna tower.
2. GSM operating modes: Set RBW= 1MHz, VBW= 3MHz, RMS detector over burst;
   UMTS operating modes: Set RBW= 100 KHz, VBW= 300 KHz, RMS detector over frame, and use channel power option with bandwidth=5MHz, per section 4.0 of KDB 971168 D01.
   The table was rotated 360 degrees to determine the position of the highest radiated power.
   The height of the receiving antenna is adjusted to look for the maximum ERP/EIRP.
   Taking the record of maximum ERP/EIRP.
   A dipole antenna was substituted in place of the EUT and was driven by a signal generator.
   The conducted power at the terminal of the dipole antenna is measured.
   Repeat step 3 to step 5 to get the maximum ERP/EIRP of the substitution antenna.
   ERP/EIRP = Ps + Et – Es + Gs = Ps + Rt – Rs + Gs
   Ps (dBm)：Input power to substitution antenna.
   Gs (dBi or dBd)：Substitution antenna Gain.
   Et = Rt + AF
   Es = Rs + AF
   AF (dB/m)：Receive antenna factor
   Rt：The highest received signal in spectrum analyzer for EUT.
   Rs：The highest received signal in spectrum analyzer for substitution antenna.

3.3.4 Test Setup



3.3.5 Test Result of ERP

GSM850 (GSM) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-17.87	-48.12	0.00	-1.08	29.17	0.8260
836.40	-19.38	-48.28	0.00	-0.93	27.97	0.6266
848.80	-20.56	-48.35	0.00	-0.76	27.03	0.5047
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
824.20	-29.77	-47.97	0.00	-1.08	17.12	0.0515
836.40	-30.88	-48.01	0.00	-0.93	16.20	0.0417
848.80	-31.39	-48.05	0.00	-0.76	15.90	0.0389

WCDMA Band V (RMC 12.2Kbps) Radiated Power ERP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
826.40	-26.15	-48.12	0.00	-1.08	20.89	0.1229
836.40	-27.44	-48.28	0.00	-0.93	19.91	0.0979
846.60	-28.26	-48.35	0.00	-0.76	19.33	0.0857
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBd)**	**ERP (dBm)**	**ERP (W)**
826.40	-38.14	-47.97	0.00	-1.08	8.75	0.0075
836.40	-38.92	-48.01	0.00	-0.93	8.16	0.0065
846.60	-39.80	-48.05	0.00	-0.76	7.49	0.0056

3.3.6 Test Result of EIRP

GSM1900 (GSM) Radiated Power EIRP						
Horizontal Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-26.27	-51.88	0.00	1.96	27.57	0.5715
1880.00	-27.99	-52.99	0.00	2.00	27.00	0.5015
1909.80	-29.64	-54.28	0.00	1.98	26.62	0.4594
Vertical Polarization						
Frequency (MHz)	**Rt (dBm)**	**Rs (dBm)**	**Ps (dBm)**	**Gs (dBi)**	**EIRP (dBm)**	**EIRP (W)**
1850.20	-27.46	-52.13	0.00	1.96	26.63	0.4598
1880.00	-28.54	-53.17	0.00	2.00	26.63	0.4598
1909.80	-30.85	-54.13	0.00	1.98	25.26	0.3354

3.4 99% Occupied Bandwidth and 26dB Bandwidth Measurement

3.4.1 Description of 99% Occupied Bandwidth and 26dB Bandwidth Measurement

The 99% occupied bandwidth is the width of a frequency band such that, below the lower and above the upper frequency limits, the mean powers emitted are each equal to a specified percentage 0.5% of the total mean transmitted power.

The emission bandwidth is defined as the width of the signal between two points, located at the 2 sides of the carrier frequency, outside of which all emissions are attenuated at least 26 dB below the transmitter power.

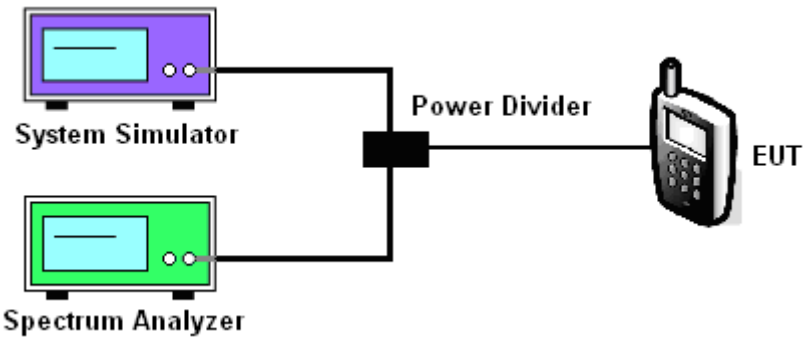
3.4.2 Measuring Instruments

See list of measuring instruments of this test report.

3.4.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The 99% occupied bandwidth and 26 dB bandwidth of the middle channel for the highest RF powers were measured.

3.4.4 Test Setup



3.4.5 Test Result of Occupied Bandwidth and 26dB Bandwidth

Cellular Band			
Modes	**GSM850 (GSM)**		
Channel	**128 (Low)**	**189 (Mid)**	**251 (High)**
Frequency (MHz)	**824.2**	**836.4**	**848.8**
99% OBW (KHz)	242.00	248.00	240.00
26dB BW (KHz)	318.00	318.00	316.00

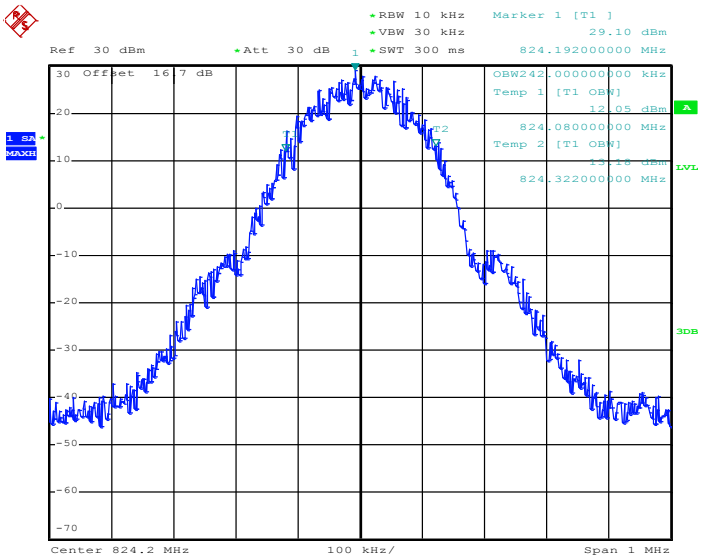
PCS Band			
Modes	**GSM1900 (GSM)**		
Channel	**512 (Low)**	**661 (Mid)**	**810 (High)**
Frequency (MHz)	**1850.2**	**1880**	**1909.8**
99% OBW (KHz)	250.00	248.00	248.00
26dB BW (KHz)	316.00	318.00	318.00

Cellular Band			
Modes	**WCDMA Band V (RMC 12.2Kbps)**		
Channel	**4132 (Low)**	**4182 (Mid)**	**4233 (High)**
Frequency (MHz)	**826.4**	**836.4**	**846.6**
99% OBW (MHz)	4.14	4.16	4.14
26dB BW (MHz)	4.68	4.68	4.68

3.4.6 Test Result (Plots) of Occupied Bandwidth and 26dB Bandwidth

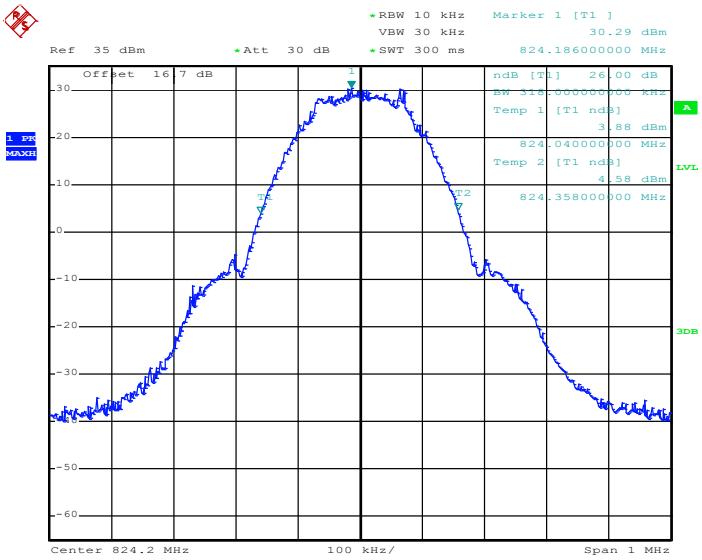
Band :	GSM 850	Test Mode :	GSM Link (GMSK)

99% Occupied Bandwidth Plot on Channel 128 (824.2 MHz)



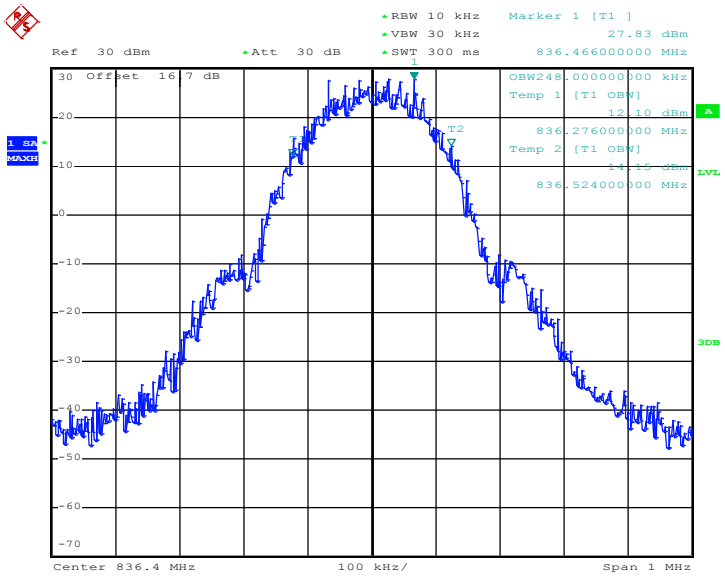
Date: 5.MAR.2013 02:12:30

26dB Bandwidth Plot on Channel 128 (824.2 MHz)



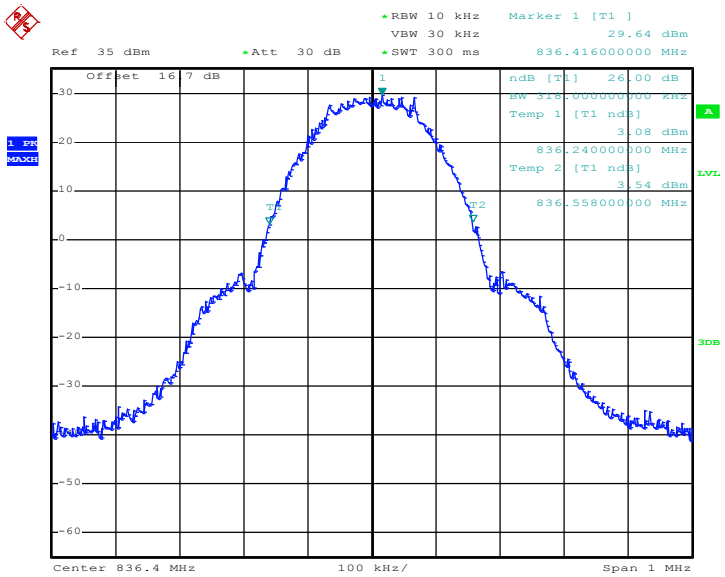
Date: 5.MAR.2013 02:17:38

99% Occupied Bandwidth Plot on Channel 189 (836.4 MHz)



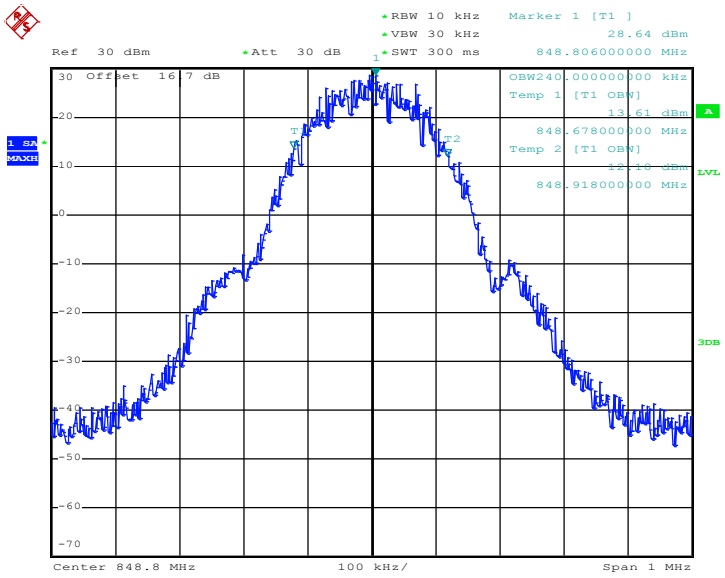
Date: 5.MAR.2013 02:12:56

26dB Bandwidth Plot on Channel 189 (836.4 MHz)



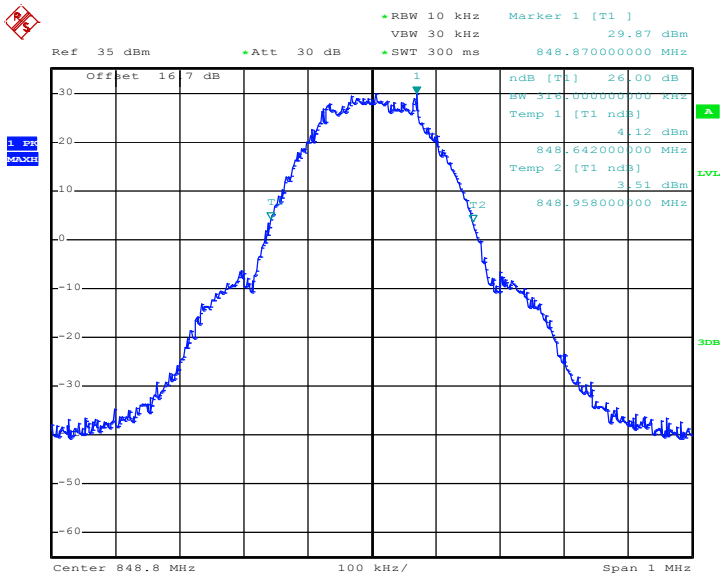
Date: 5.MAR.2013 02:18:34

99% Occupied Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 5.MAR.2013 02:13:22

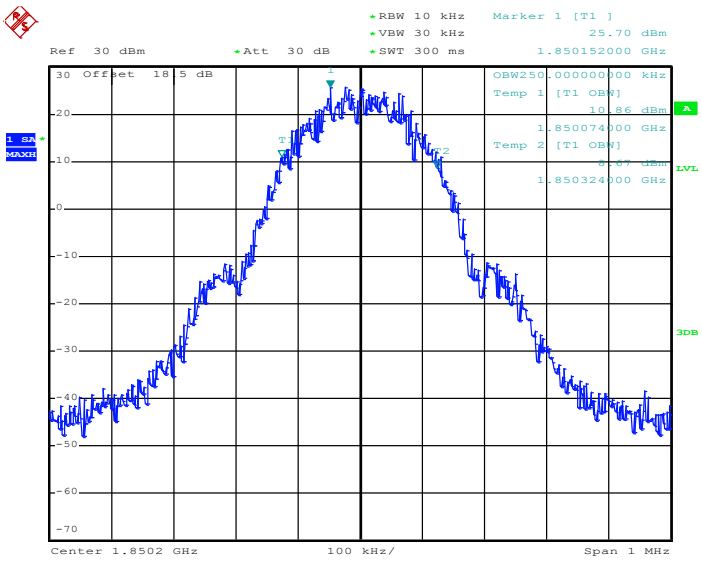
26dB Bandwidth Plot on Channel 251 (848.8 MHz)



Date: 5.MAR.2013 02:19:27

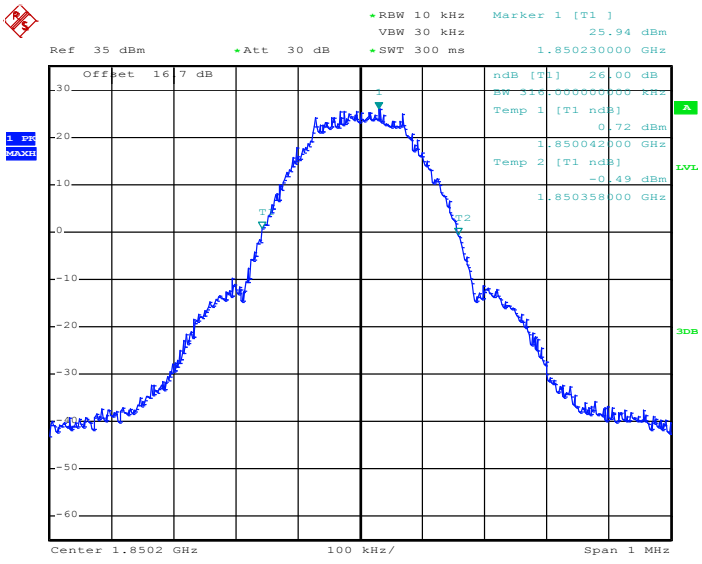
Band :	GSM 1900	Test Mode :	GSM Link (GMSK)

99% Occupied Bandwidth Plot on Channel 512 (1850.2 MHz)



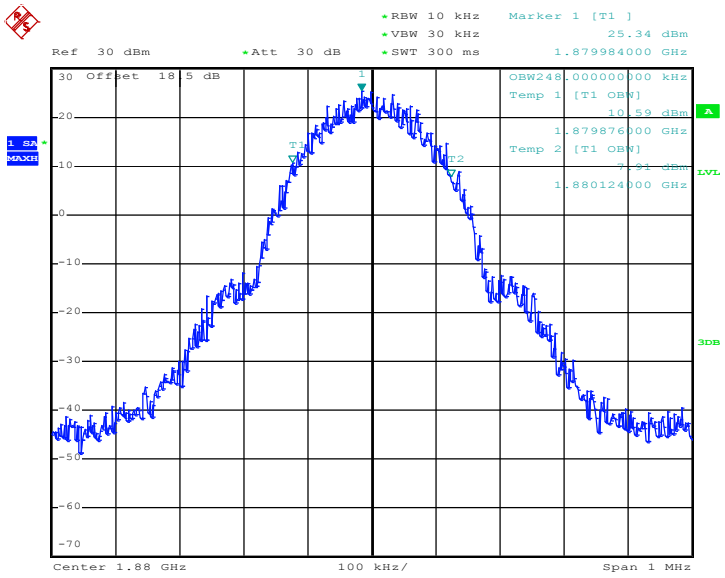
Date: 5.MAR.2013 02:41:00

26dB Bandwidth Plot on Channel 512 (1850.2 MHz)



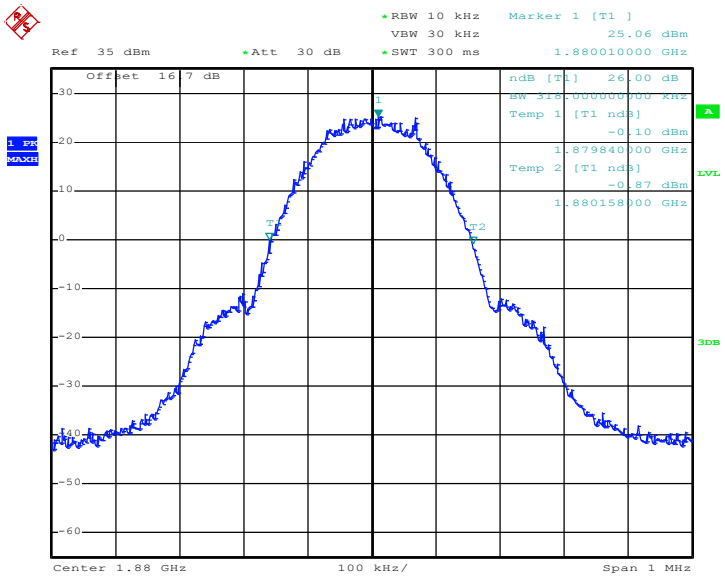
Date: 5.MAR.2013 02:26:16

99% Occupied Bandwidth Plot on Channel 661 (1880.0 MHz)



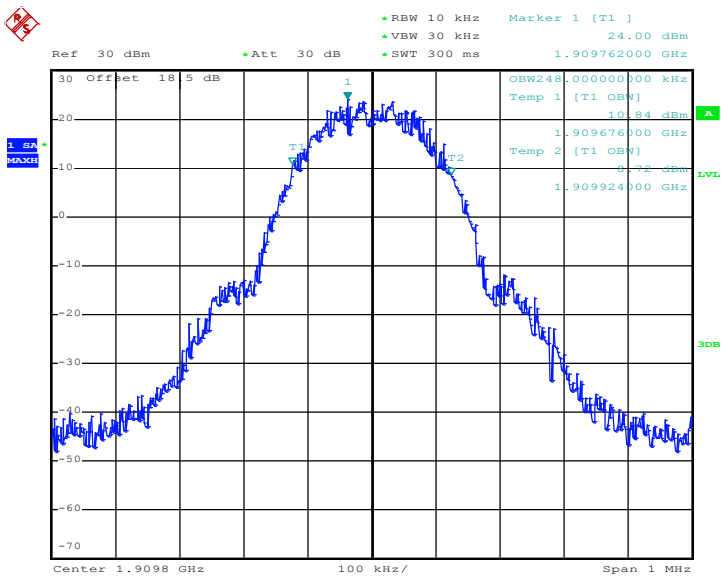
Date: 5.MAR.2013 02:41:26

26dB Bandwidth Plot on Channel 661 (1880.0 MHz)



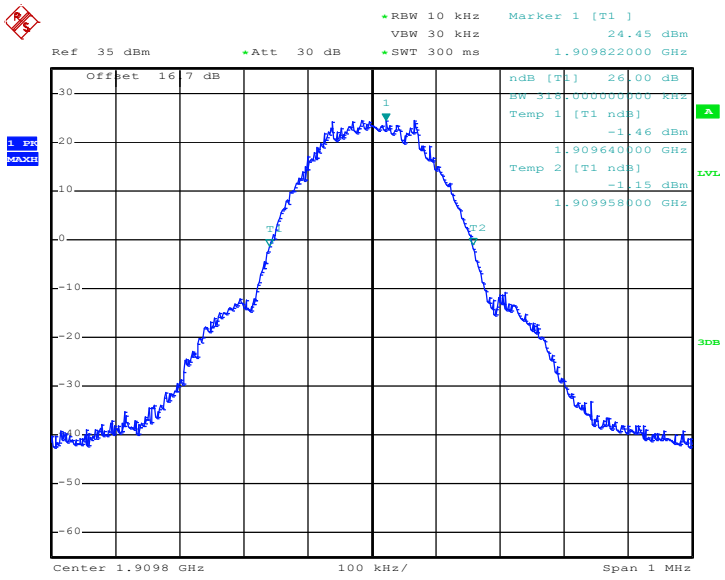
Date: 5.MAR.2013 02:24:47

99% Occupied Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 5.MAR.2013 02:46:54

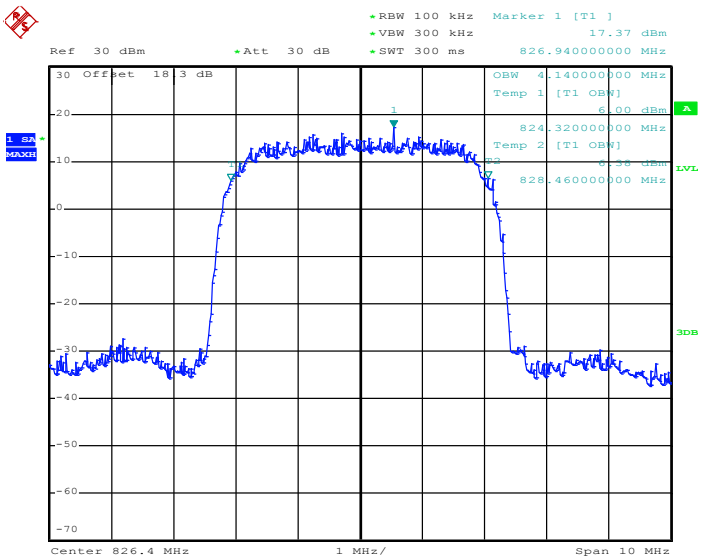
26dB Bandwidth Plot on Channel 810 (1909.8 MHz)



Date: 5.MAR.2013 02:27:06

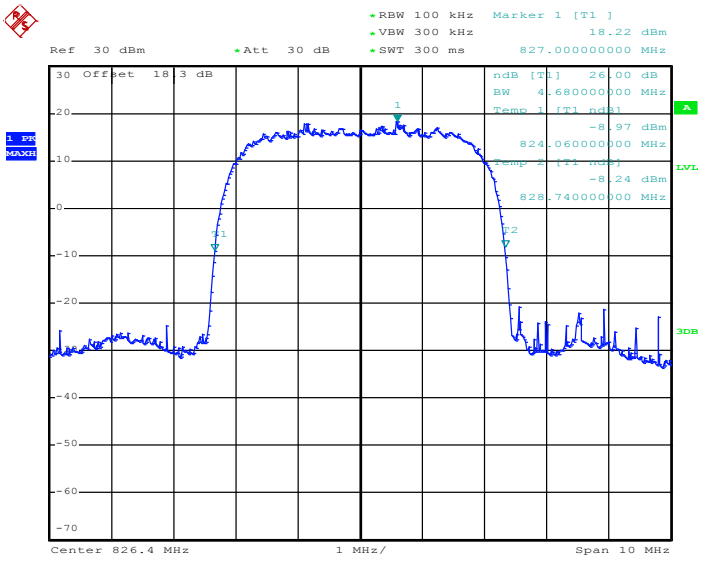
Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)

99% Occupied Bandwidth Plot on Channel 4132 (826.4 MHz)



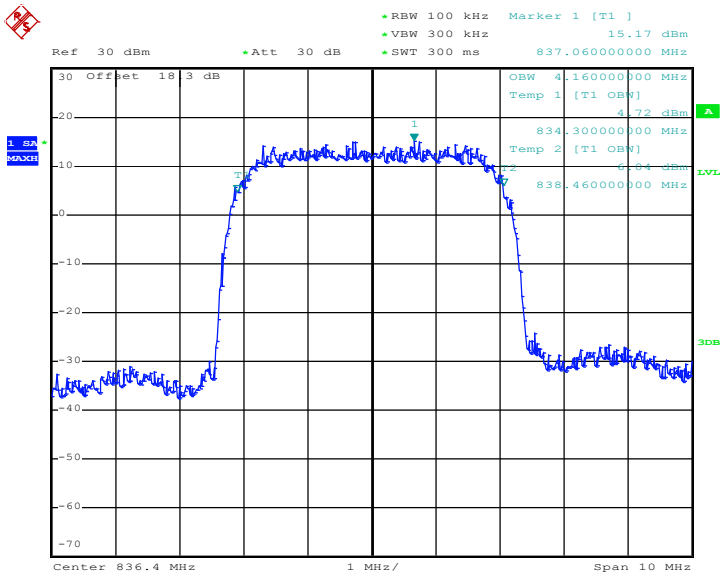
Date: 5.MAR.2013 03:28:26

26dB Bandwidth Plot on Channel 4132 (826.4 MHz)



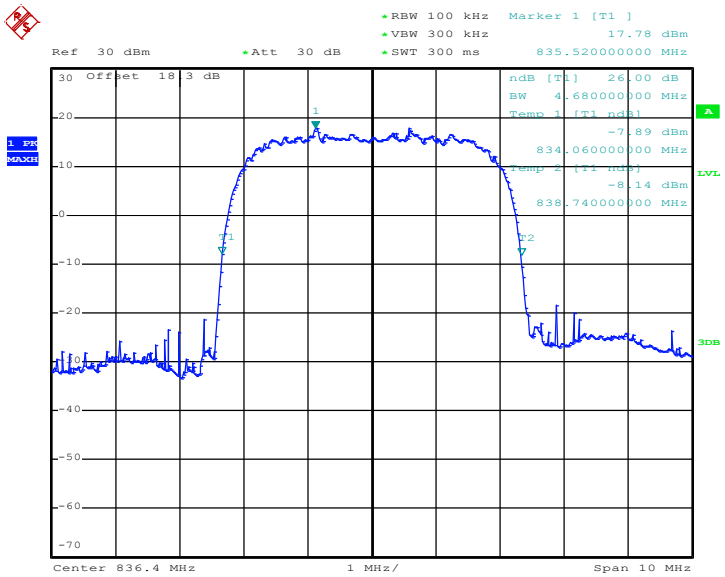
Date: 5.MAR.2013 03:32:50

99% Occupied Bandwidth Plot on Channel 4182 (836.4 MHz)



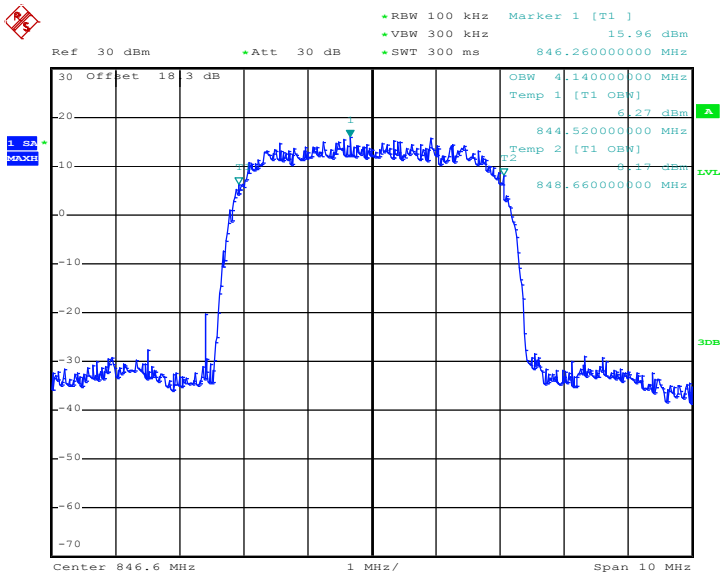
Date: 5.MAR.2013 03:28:52

26dB Bandwidth Plot on Channel 4182 (836.4 MHz)



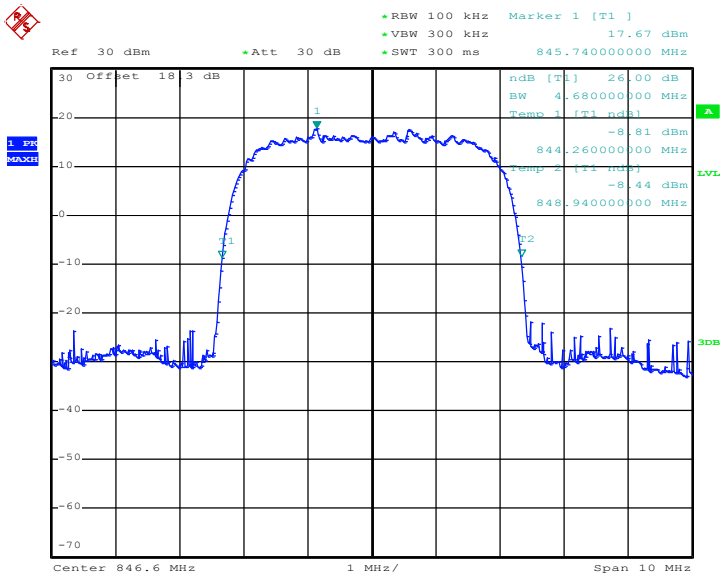
Date: 5.MAR.2013 03:33:16

99% Occupied Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 5.MAR.2013 03:29:18

26dB Bandwidth Plot on Channel 4233 (846.6 MHz)



Date: 5.MAR.2013 03:27:59

3.5 Band Edge Measurement

3.5.1 Description of Band Edge Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

3.5.2 Measuring Instruments

See list of measuring instruments of this test report.

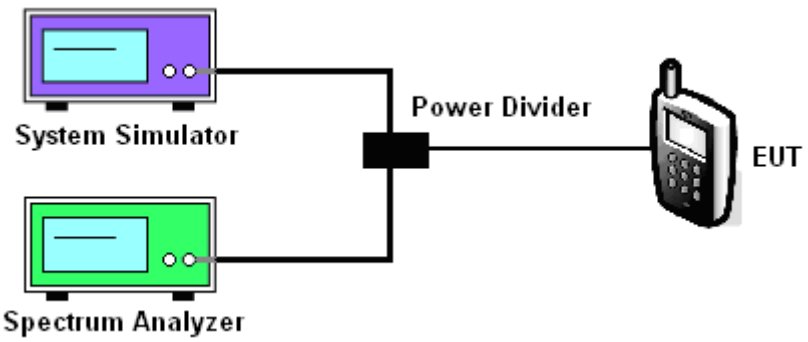
3.5.3 Test Procedures

1. The EUT was connected to Spectrum Analyzer and Base Station via power divider.
   The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
   The band edges of low and high channels for the highest RF powers were measured. Setting RBW as roughly BW/100.

The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)

= P(W) - [43 + 10log(P)] (dB)
= [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
= -13dBm.

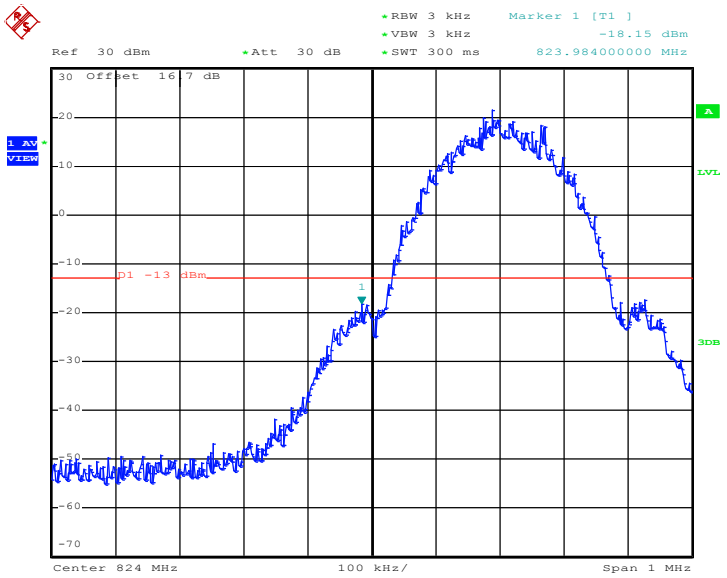
3.5.4 Test Setup



3.5.5 Test Result (Plots) of Conducted Band Edge

Band :	GSM850	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.25dB	Maximum 26dB Bandwidth :	0.318MHz
Band Edge :	-17.90dBm	Measurement Value :	-18.15dBm

Lower Band Edge Plot on Channel 128 (824.2 MHz)



Date: 5.MAR.2013 02:10:39

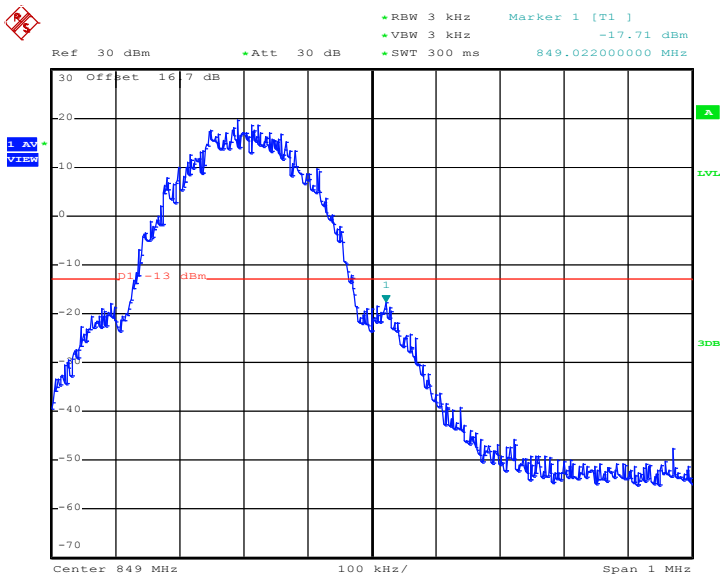
1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

For example, -18.15dBm + 0.25dB = -17.90dBm

Band :	GSM850	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.25dB	Maximum 26dB Bandwidth :	0.318MHz
Band Edge :	-17.46dBm	Measurement Value :	-17.71dBm

Higher Band Edge Plot on Channel 251 (848.8 MHz)



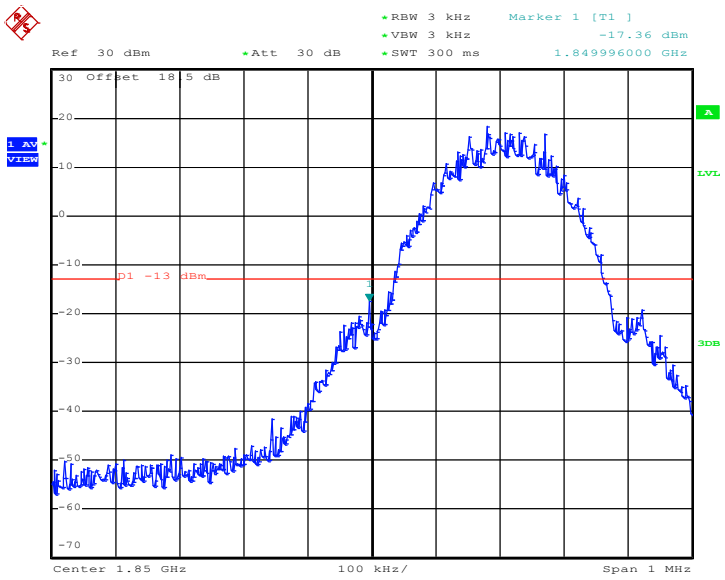
Date: 5.MAR.2013 02:11:05

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM1900	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.25dB	Maximum 26dB Bandwidth :	0.318MHz
Band Edge :	-17.11dBm	Measurement Value :	-17.36dBm

Lower Band Edge Plot on Channel 512 (1850.2 MHz)



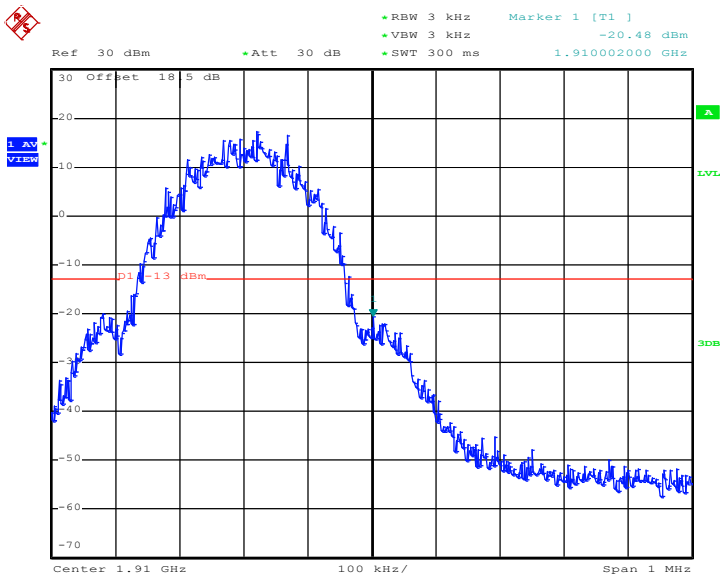
Date: 5.MAR.2013 02:44:06

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	GSM1900	Test Mode :	GSM Link (GMSK)
Correction Factor :	0.25dB	Maximum 26dB Bandwidth :	0.318MHz
Band Edge :	-20.23dBm	Measurement Value :	-20.48dBm

Higher Band Edge Plot on Channel 810 (1909.8 MHz)



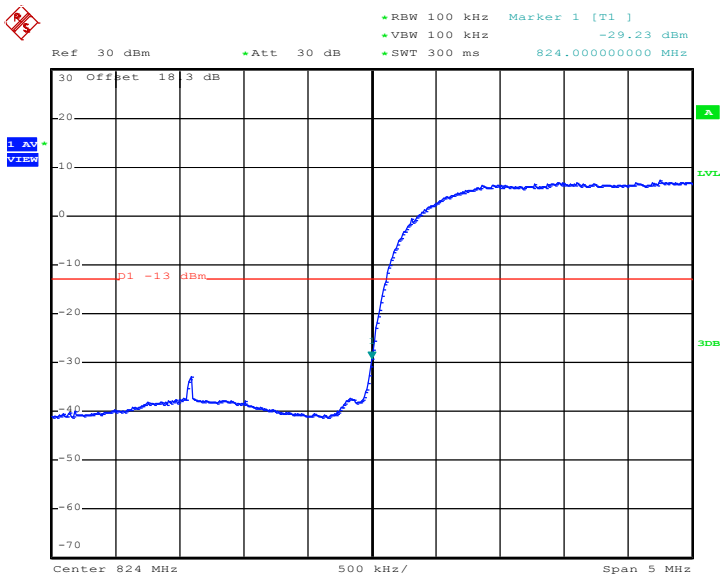
Date: 5.MAR.2013 02:44:32

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.30dB	Maximum 26dB Bandwidth :	4.68MHz
Band Edge :	-32.53dBm	Measurement Value :	-29.23dBm

Lower Band Edge Plot on Channel 4132 (826.4 MHz)



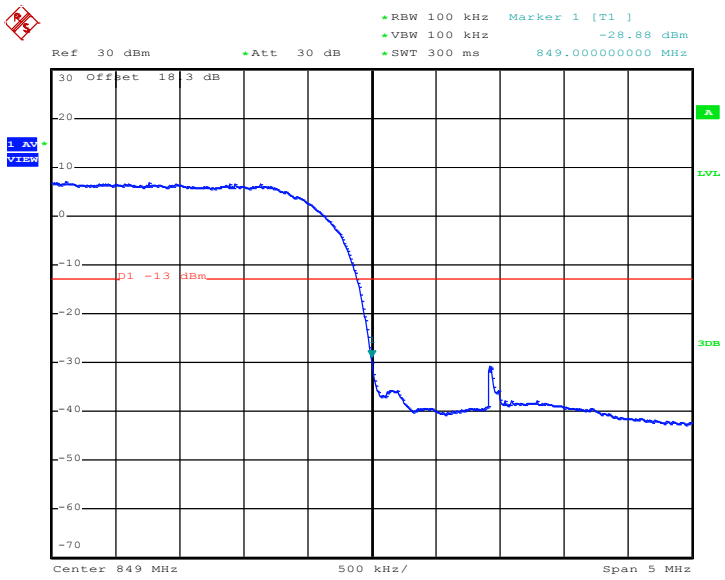
Date: 5.MAR.2013 03:29:44

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

Band :	WCDMA Band V	Test Mode :	RMC 12.2Kbps Link (QPSK)
Correction Factor :	-3.30dB	Maximum 26dB Bandwidth :	4.68MHz
Band Edge :	-32.18dBm	Measurement Value :	-28.88dBm

Higher Band Edge Plot on Channel 4233 (846.6 MHz)



Date: 5.MAR.2013 03:30:11

1. Correction Factor(dB)= 10log(1% Emission BW/RBW)

2. Band Edge= Measurement Value + Correction Factor(dB)

3.6 Conducted Spurious Emission Measurement

3.6.1 Description of Conducted Spurious Emission Measurement

The power of any emission outside of the authorized operating frequency ranges must be lower than the transmitter power (P) by a factor of at least 43 + 10 log (P) dB.

It is measured by means of a calibrated spectrum analyzer and scanned from 30 MHz up to a frequency including its 10^{th} harmonic.

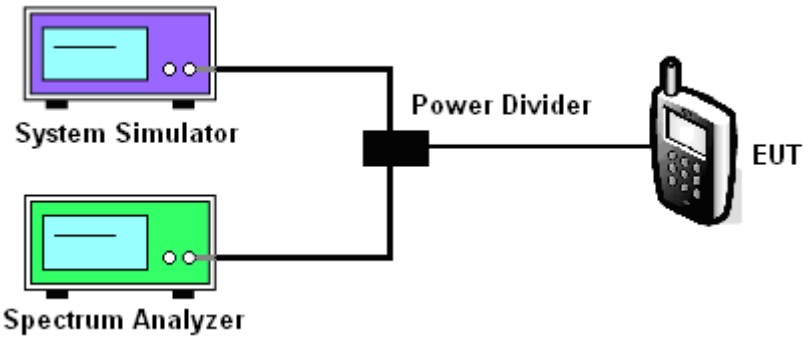
3.6.2 Measuring Instruments

See list of measuring instruments of this test report.

3.6.3 Test Procedures

1. The EUT was connected to spectrum analyzer and base station via power divider.
2. The RF output of EUT was connected to the spectrum analyzer by RF cable and attenuator. The path loss was compensated to the results for each measurement.
3. The middle channel for the highest RF power within the transmitting frequency was measured.
4. The conducted spurious emission for the whole frequency range was taken.
5. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
6. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
   = P(W) - [43 + 10log(P)] (dB)
   = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
   = -13dBm.

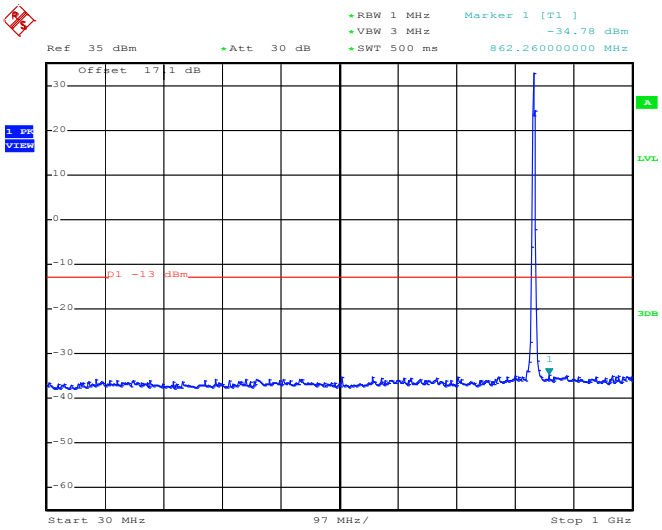
3.6.4 Test Setup



3.6.5 Test Result (Plots) of Conducted Spurious Emission

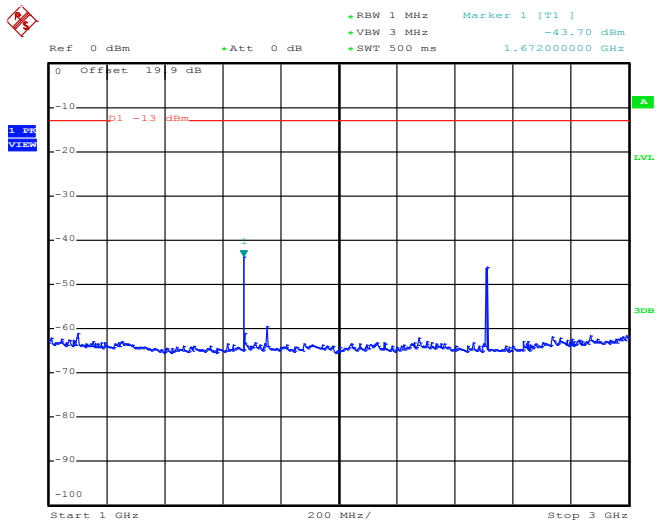
Band :	GSM850	Channel :	CH189
Test Mode :	GSM Link (GMSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



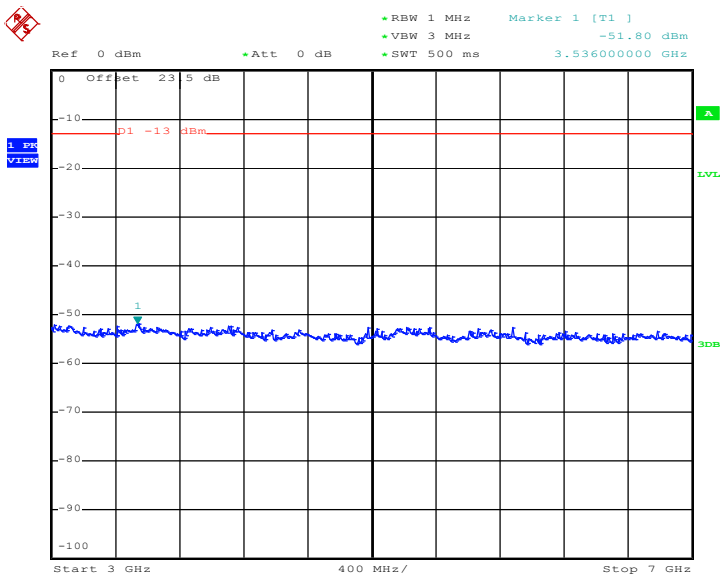
Date: 5.MAR.2013 01:56:19

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



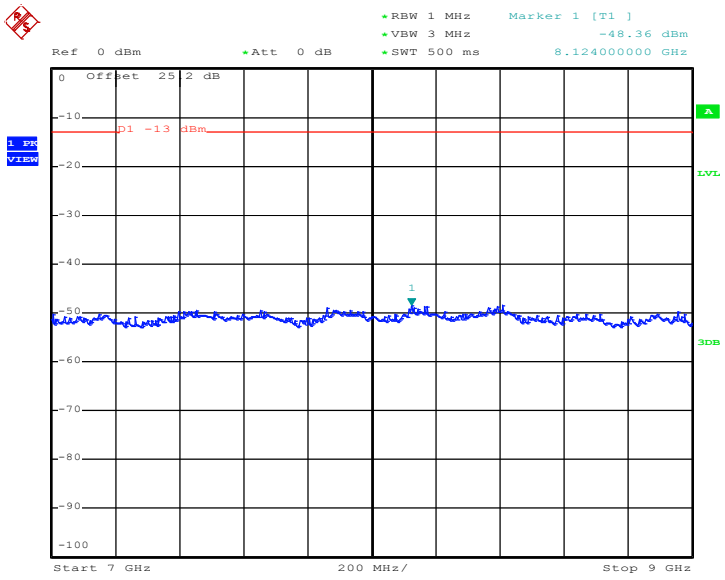
Date: 5.MAR.2013 01:56:37

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 5.MAR.2013 01:56:49

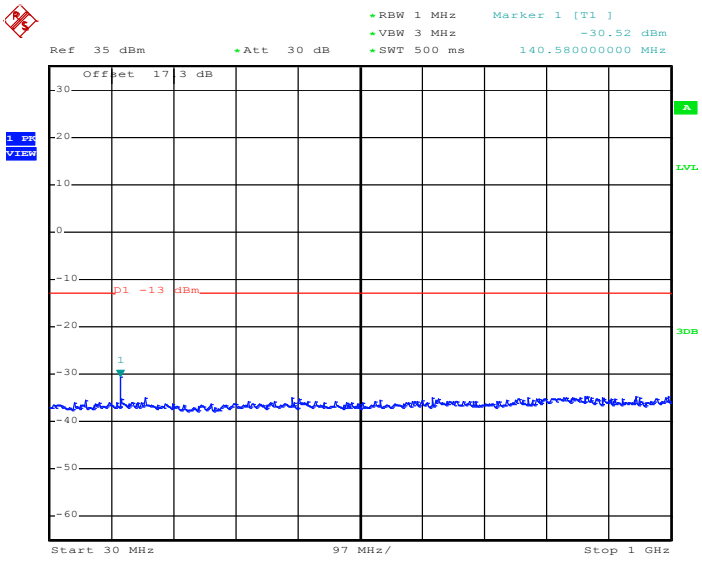
Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 5.MAR.2013 01:57:02

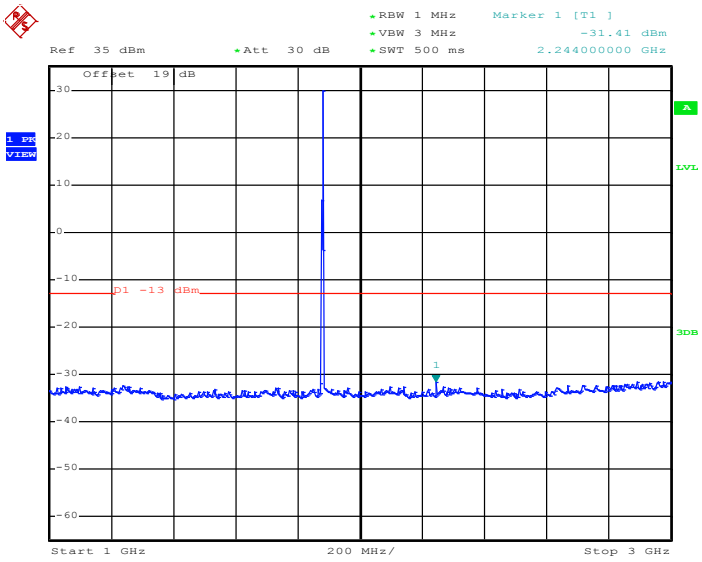
Band :	GSM1900	Channel :	CH661
Test Mode :	GSM Link (GMSK)	Frequency :	1880.0 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



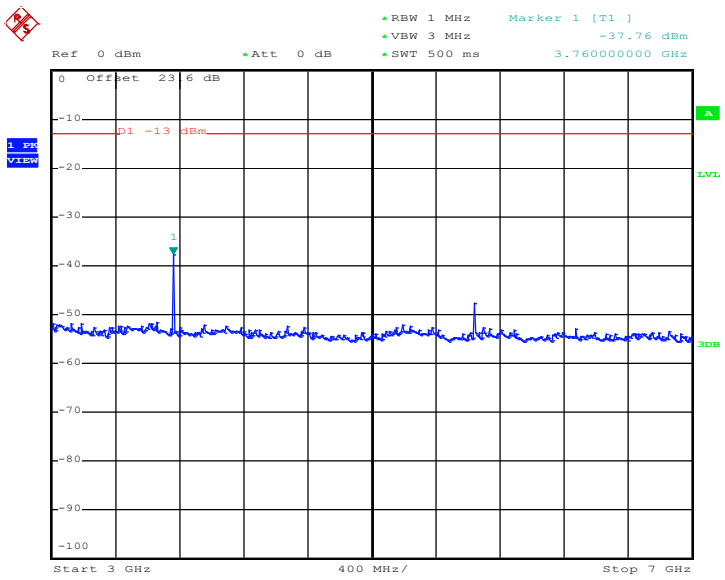
Date: 5.MAR.2013 02:34:58

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



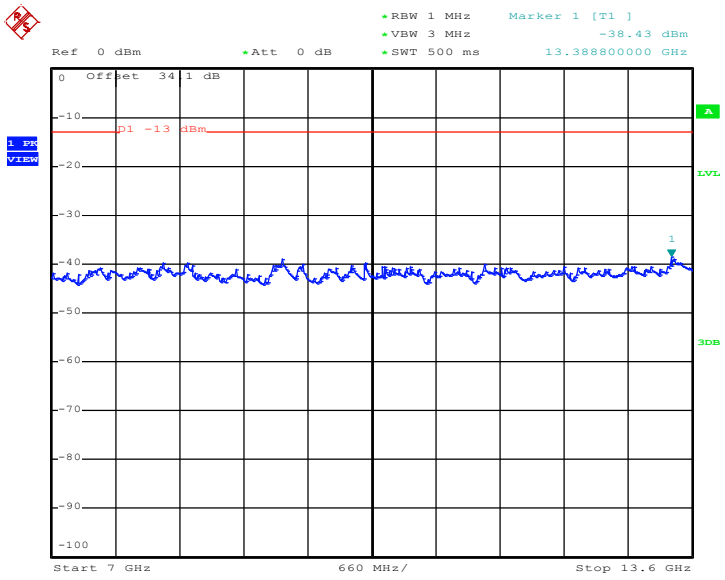
Date: 5.MAR.2013 02:35:10

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



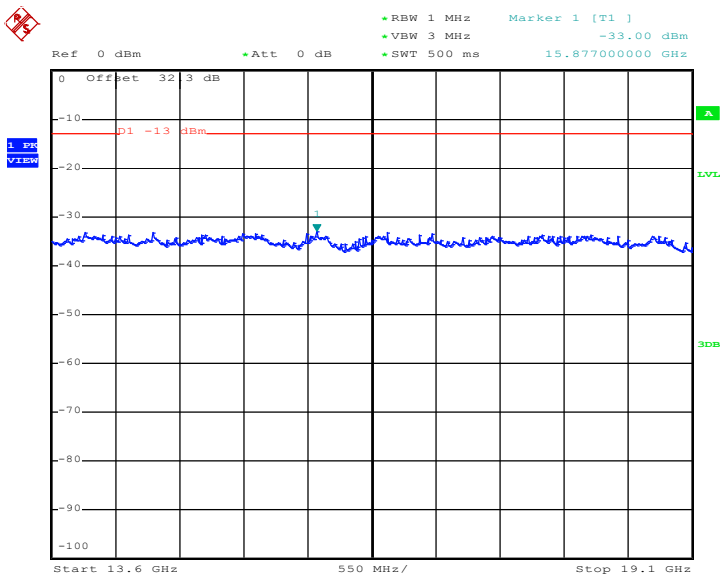
Date: 5.MAR.2013 02:35:28

Conducted Emission Plot between 7GHz ~ 13.6GHz



Date: 5.MAR.2013 02:35:40

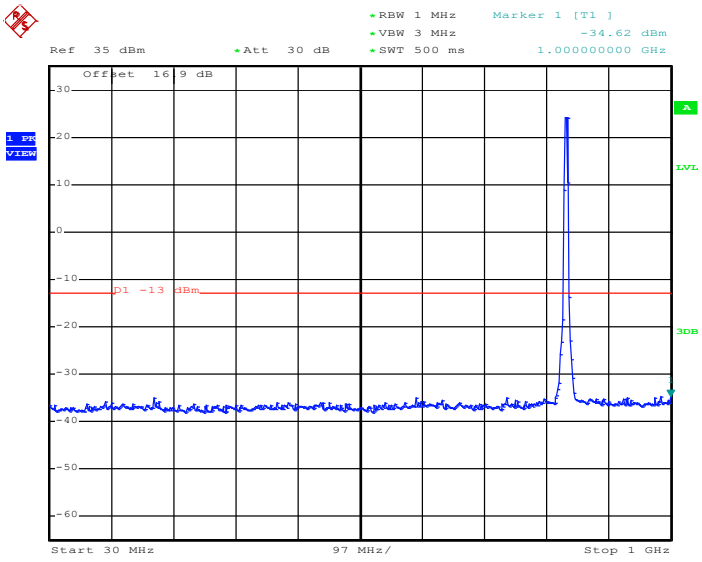
Conducted Spurious Emission Plot between 13.6GHz ~ 19.1GHz



Date: 5.MAR.2013 02:35:53

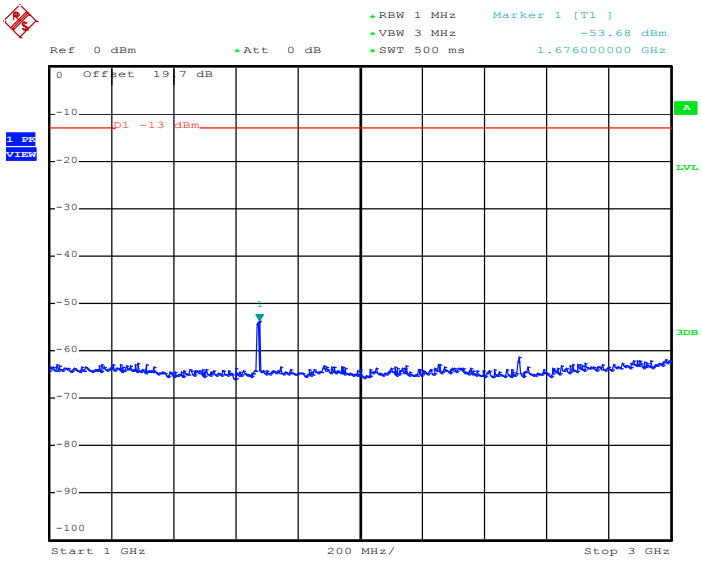
Band :	WCDMA Band V	Channel :	CH4182
Test Mode :	RMC 12.2Kbps Link (QPSK)	Frequency :	836.4 MHz

Conducted Spurious Emission Plot between 30MHz ~ 1GHz



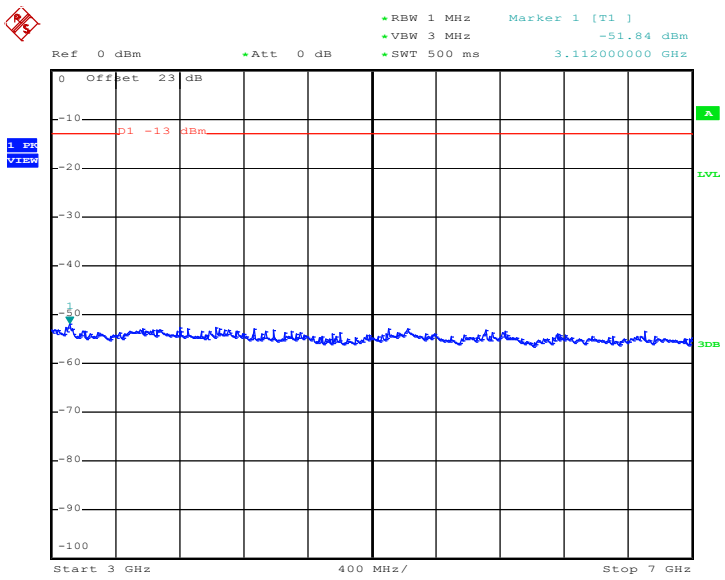
Date: 5.MAR.2013 03:24:50

Conducted Spurious Emission Plot between 1GHz ~ 3GHz



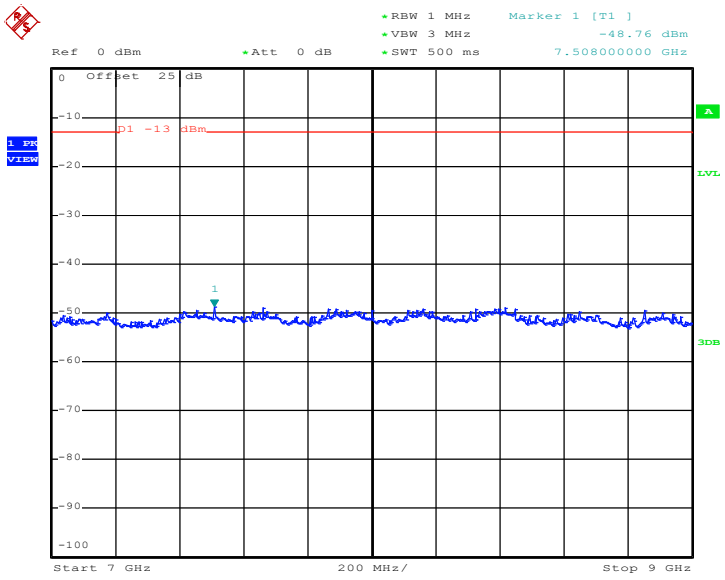
Date: 5.MAR.2013 03:25:07

Conducted Spurious Emission Plot between 3GHz ~ 7GHz



Date: 5.MAR.2013 03:25:20

Conducted Spurious Emission Plot between 7GHz ~ 9GHz



Date: 5.MAR.2013 03:25:32

3.7 Field Strength of Spurious Radiation Measurement

3.7.1 Description of Field Strength of Spurious Radiated Measurement

The power of any emission outside of the authorized operating frequency ranges must be attenuated below the transmitter power (P) by a factor of at least 43 + 10 log (P) dB. The spectrum is scanned from 30 MHz up to a frequency including its 10th harmonic.

3.7.2 Measuring Instruments

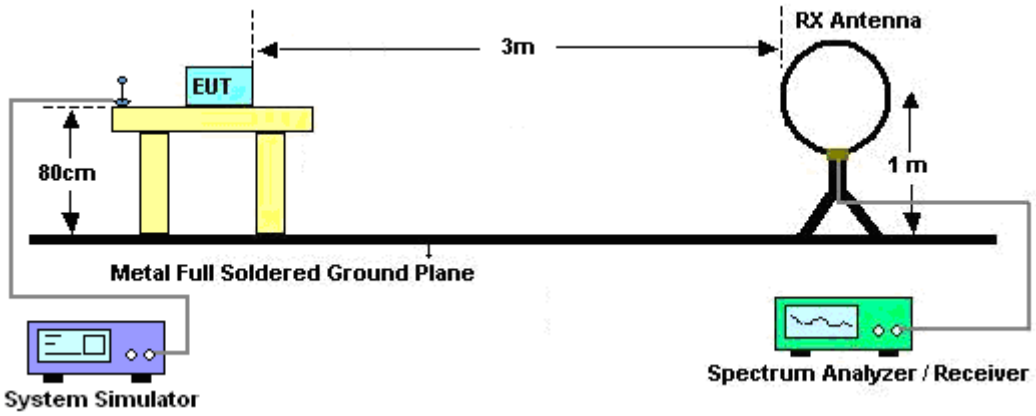
See list of measuring instruments of this test report.

3.7.3 Test Procedures

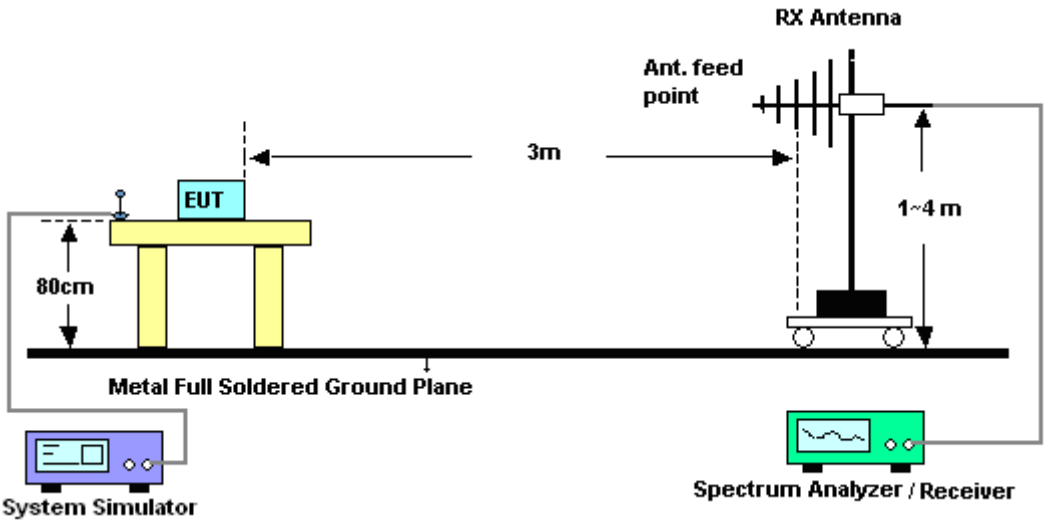
1. The EUT was placed on a rotatable wooden table with 0.8 meter above ground.
2. The EUT was set 3 meters from the receiving antenna, which was mounted on the antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest spurious emission.
4. The height of the receiving antenna is varied between one meter and four meters to search the maximum spurious emission for both horizontal and vertical polarizations.
5. Make the measurement with the spectrum analyzer's RBW = 1MHz, VBW = 3MHz, 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. EIRP (dBm) = S.G. Power – Tx Cable Loss + Tx Antenna Gain
11. ERP (dBm) = EIRP - 2.15
12. The RF fundamental frequency should be excluded against the limit line in the operating frequency band.
13. The limit line is derived from 43 + 10log(P) dB below the transmitter power P(Watts)
    = P(W) - [43 + 10log(P)] (dB)
    = [30 + 10log(P)] (dBm) - [43 + 10log(P)] (dB)
    = -13dBm.

3.7.4 Test Setup

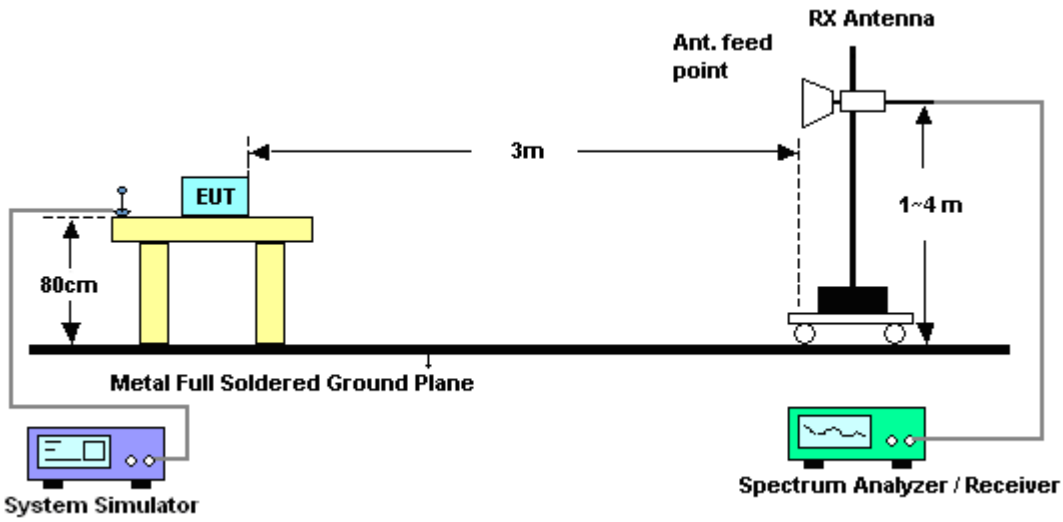
For radiated emissions below 30MHz



For radiated emissions from 30MHz to 1GHz



For radiated emissions above 1GHz



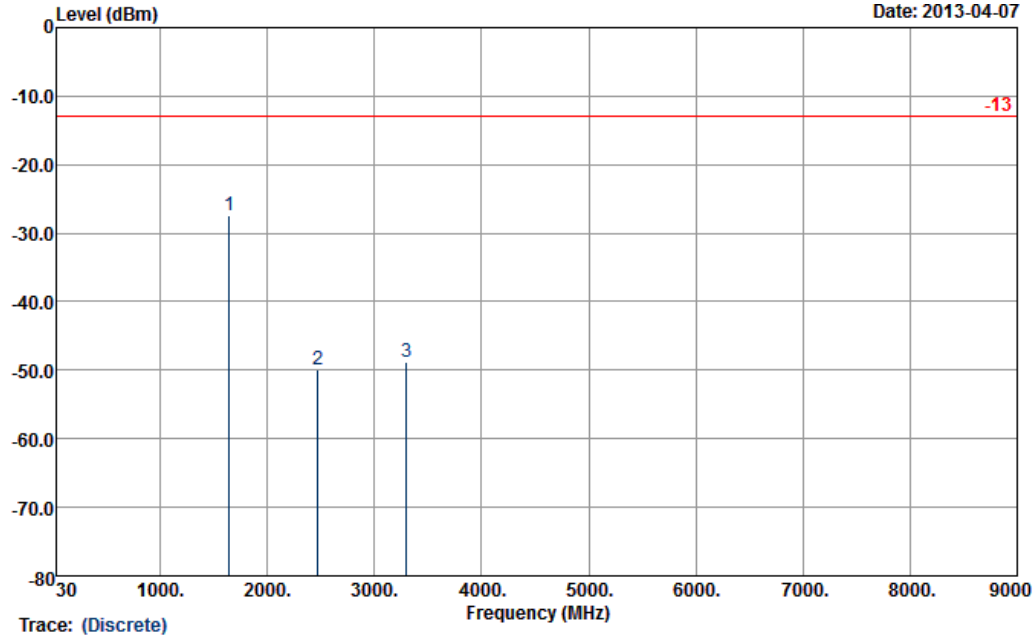
3.7.5 Test Results of Radiated Emissions (9 KHz ~ 30 MHz)

The low frequency, which started from 9 KHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit line per 15.31(o) was not reported.

3.7.6 Test Result of Field Strength of Spurious Radiated

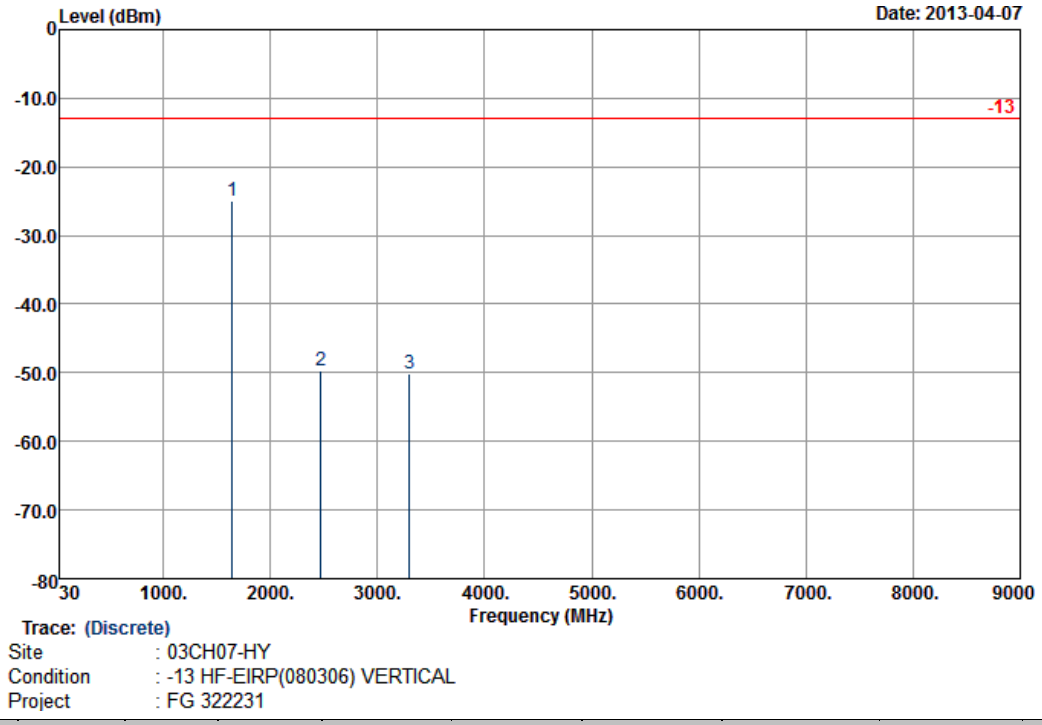
<Low Channel>

Band :	GSM850	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648	-27.45	-13	-14.45	-35.23	-29.3	1.53	5.53	H	Pass
2473	-49.86	-13	-36.86	-62.22	-51.8	2.06	6.15	H	Pass
3298	-48.80	-13	-35.80	-62.4	-52.1	2.48	7.93	H	Pass

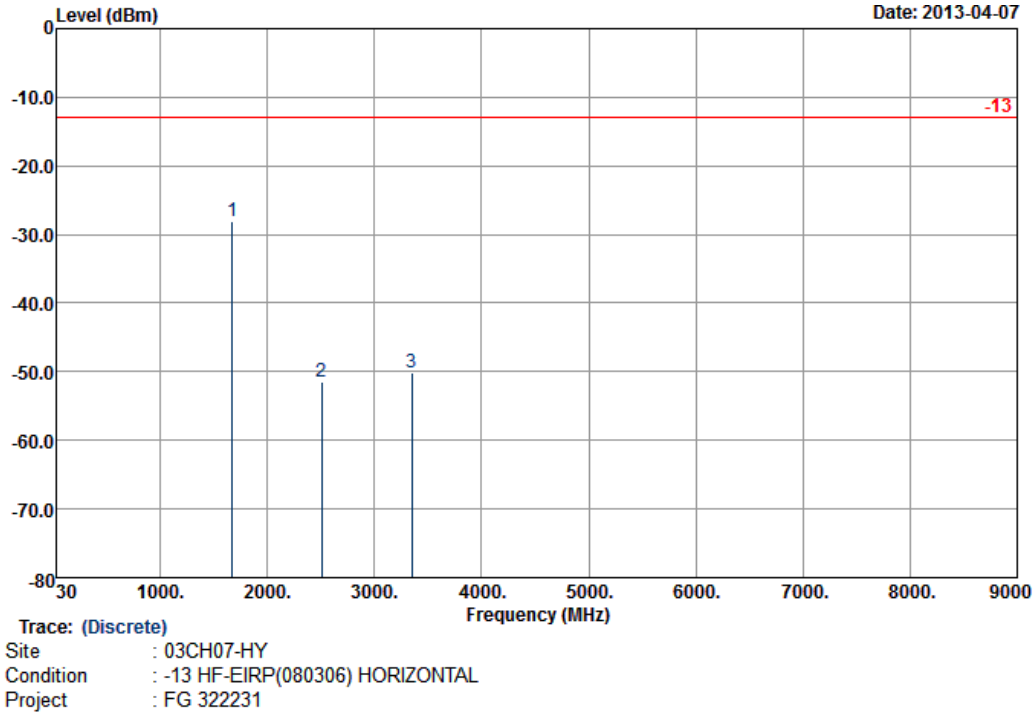
Band :	GSM850	Temperature :	24~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1648	-24.95	-13	-11.95	-35.09	-26.8	1.53	5.53	V	Pass
2473	-49.66	-13	-36.66	-62.46	-51.6	2.06	6.15	V	Pass
3298	-50.10	-13	-37.10	-64.9	-53.4	2.48	7.93	V	Pass

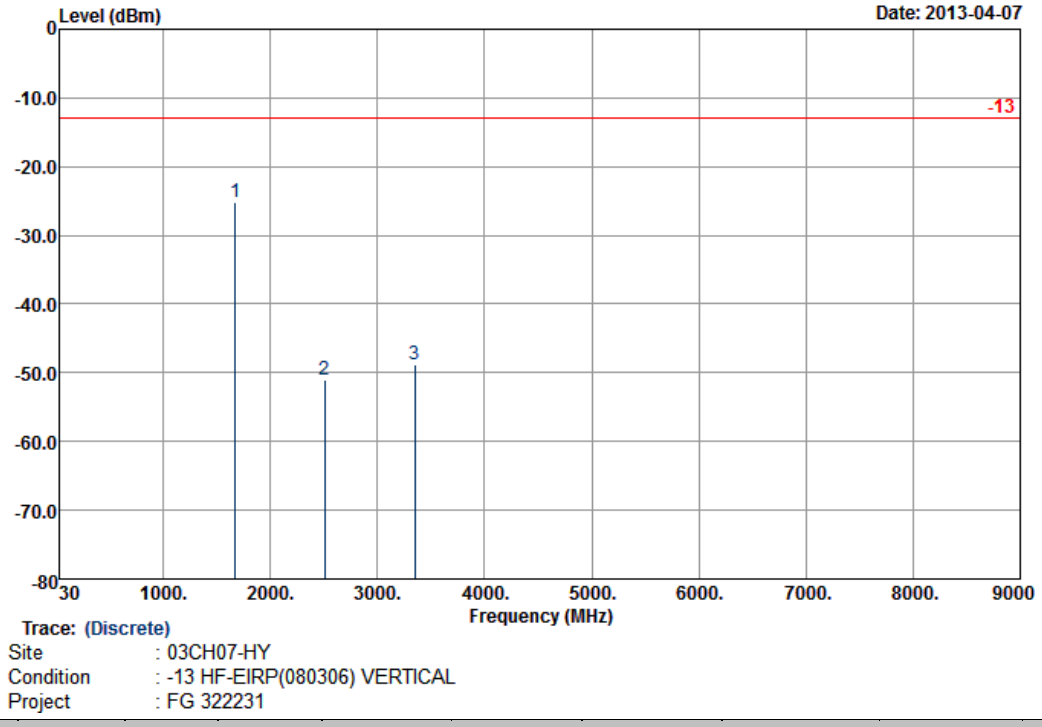
<Middle Channel>

Band :	GSM850	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-28.08	-13	-15.08	-36.2	-29.8	1.62	5.49	H	Pass
2509	-51.43	-13	-38.43	-64.29	-53.4	2.1	6.22	H	Pass
3346	-50.11	-13	-37.11	-63.29	-53	3.03	8.07	H	Pass

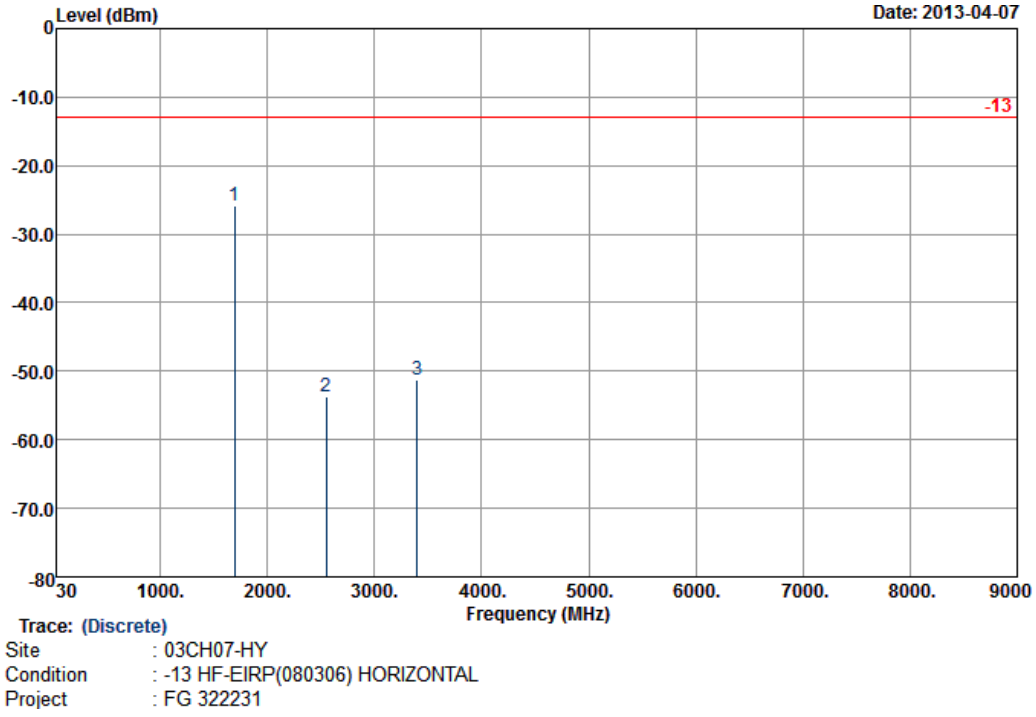
Band :	GSM850	Temperature :	24~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-25.08	-13	-12.08	-35.61	-26.8	1.62	5.49	V	Pass
2509	-51.03	-13	-38.03	-63.95	-53	2.1	6.22	V	Pass
3346	-48.91	-13	-35.91	-63.9	-51.8	3.03	8.07	V	Pass

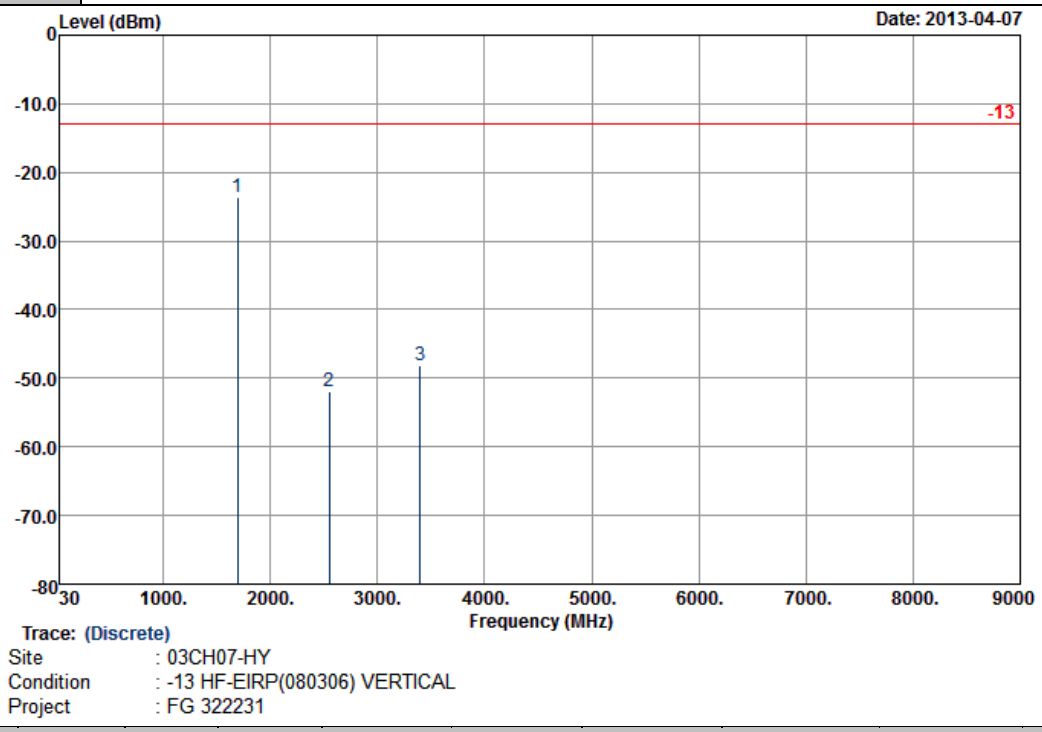
<High Channel>

Band :	GSM850	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1696	-25.87	-13	-12.87	-34.05	-27.6	1.57	5.45	H	Pass
2548	-53.79	-13	-40.79	-66.35	-55.9	2.02	6.28	H	Pass
3397	-51.25	-13	-38.25	-64.43	-55	2.3	8.20	H	Pass

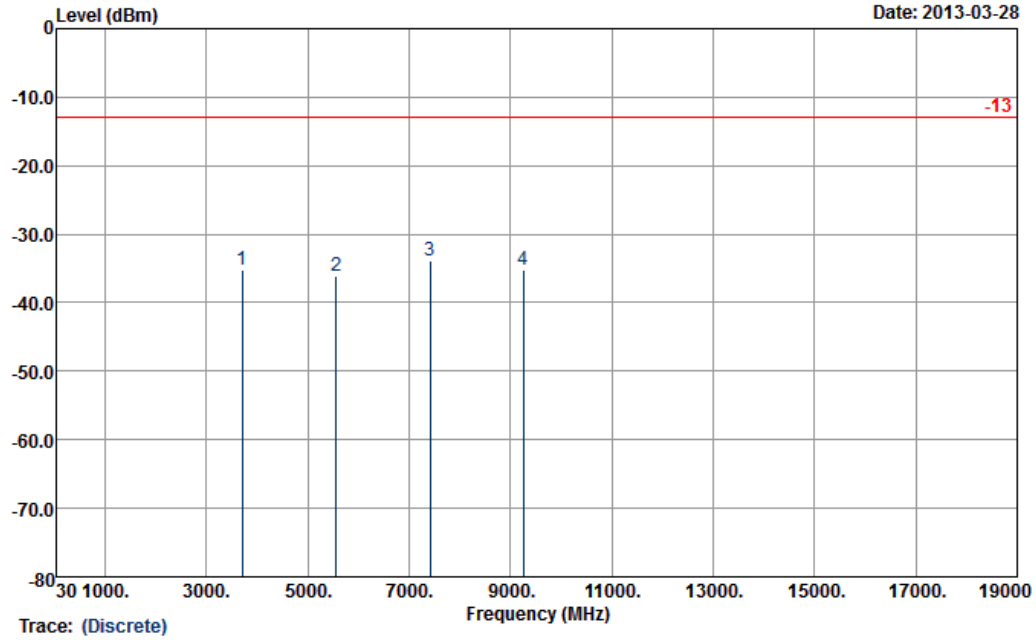
Band :	GSM850	Temperature :	24~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1696	-23.57	-13	-10.57	-35.09	-25.3	1.57	5.45	V	Pass
2548	-51.99	-13	-38.99	-65.31	-54.1	2.02	6.28	V	Pass
3397	-48.05	-13	-35.05	-62.88	-51.8	2.3	8.20	V	Pass

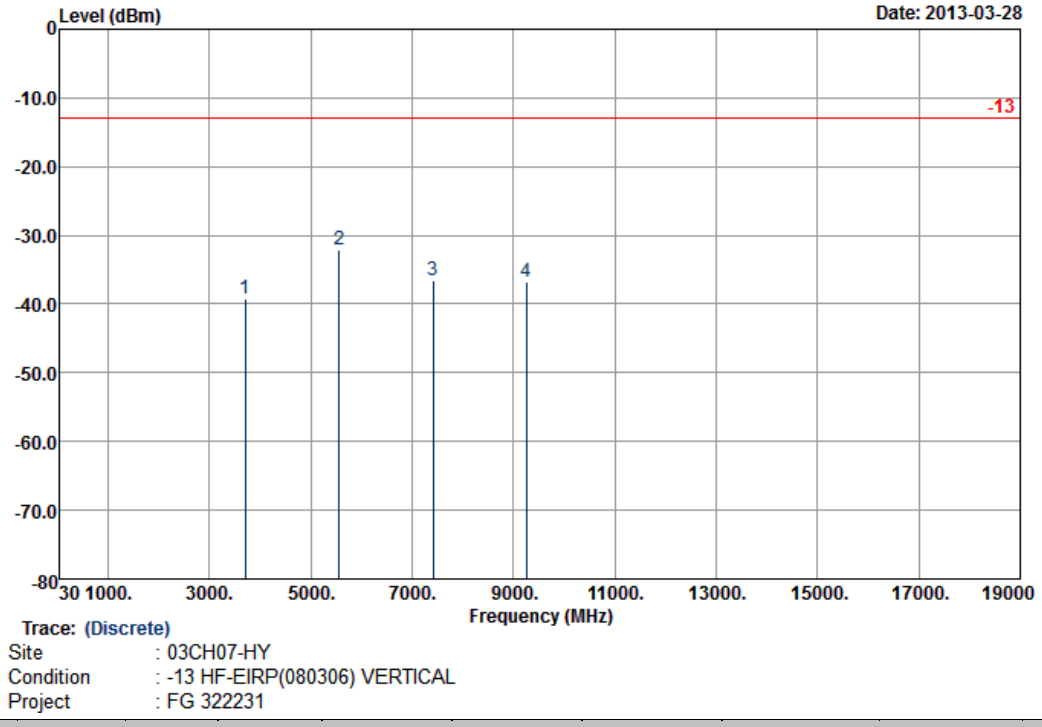
<Low Channel>

Band :	GSM1900	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3702	-35.11	-13	-22.11	-51.43	-41.26	2.59	8.74	H	Pass
5553	-36.00	-13	-23.00	-56.82	-43.66	3.04	10.70	H	Pass
7405	-33.84	-13	-20.84	-61.39	-42.58	3.28	12.02	H	Pass
9256	-35.17	-13	-22.17	-61.5	-44.47	3.9	13.20	H	Pass

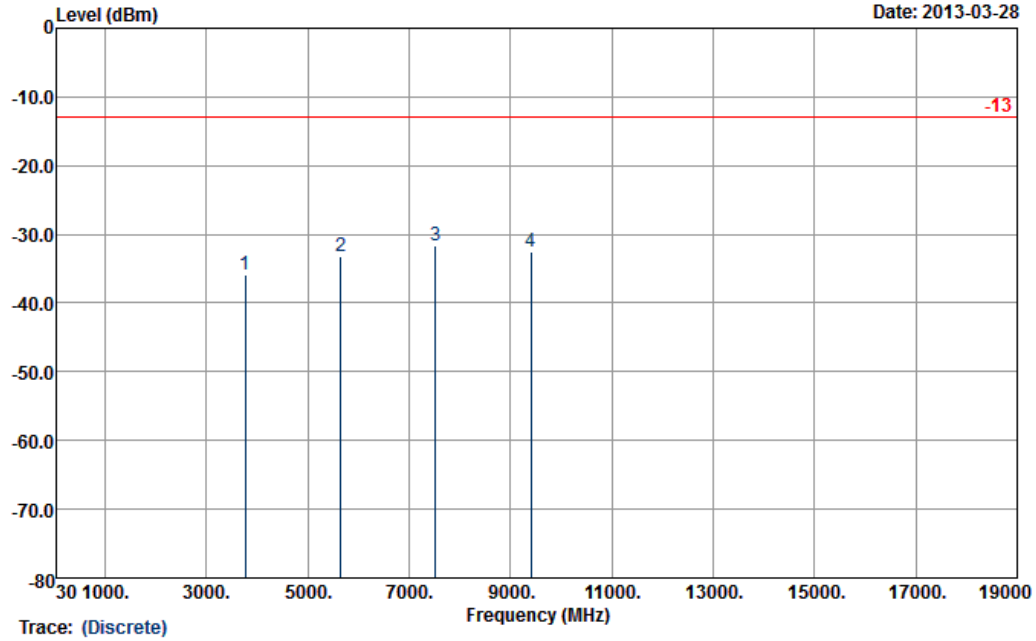
Band :	GSM1900	Temperature :	24~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3702	-39.11	-13	-26.11	-55.26	-45.26	2.59	8.74	V	Pass
5553	-32.08	-13	-19.08	-52.93	-39.74	3.04	10.70	V	Pass
7405	-36.51	-13	-23.51	-63.33	-45.25	3.28	12.02	V	Pass
9256	-36.83	-13	-23.83	-63.25	-46.13	3.9	13.20	V	Pass

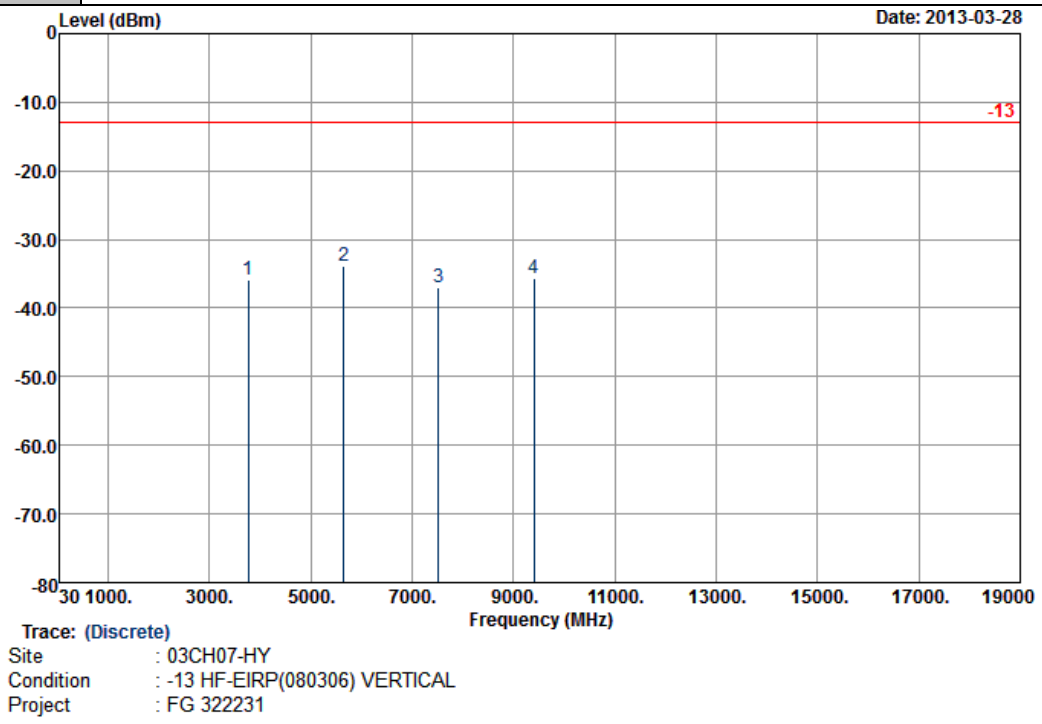
<Middle Channel>

Band :	GSM1900	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-35.96	-13	-22.96	-50.92	-42.26	2.51	8.81	H	Pass
5640	-33.14	-13	-20.14	-55.09	-40.85	2.99	10.70	H	Pass
7520	-31.72	-13	-18.72	-58.83	-40.25	3.59	12.12	H	Pass
9400	-32.48	-13	-19.48	-59.34	-41.58	4.1	13.20	H	Pass

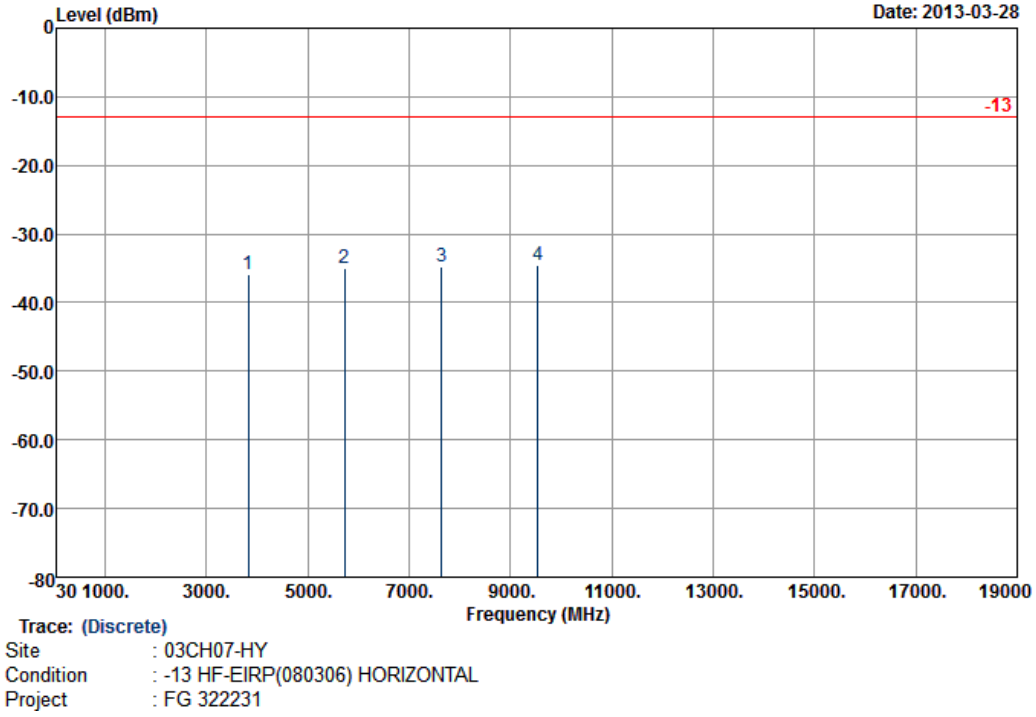
Band :	GSM1900	Temperature :	24~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3760	-35.96	-13	-22.96	-53.23	-42.26	2.51	8.81	V	Pass
5640	-33.87	-13	-20.87	-54.84	-41.58	2.99	10.70	V	Pass
7520	-36.97	-13	-23.97	-63.27	-45.5	3.59	12.12	V	Pass
9400	-35.67	-13	-22.67	-61.8	-44.77	4.1	13.20	V	Pass

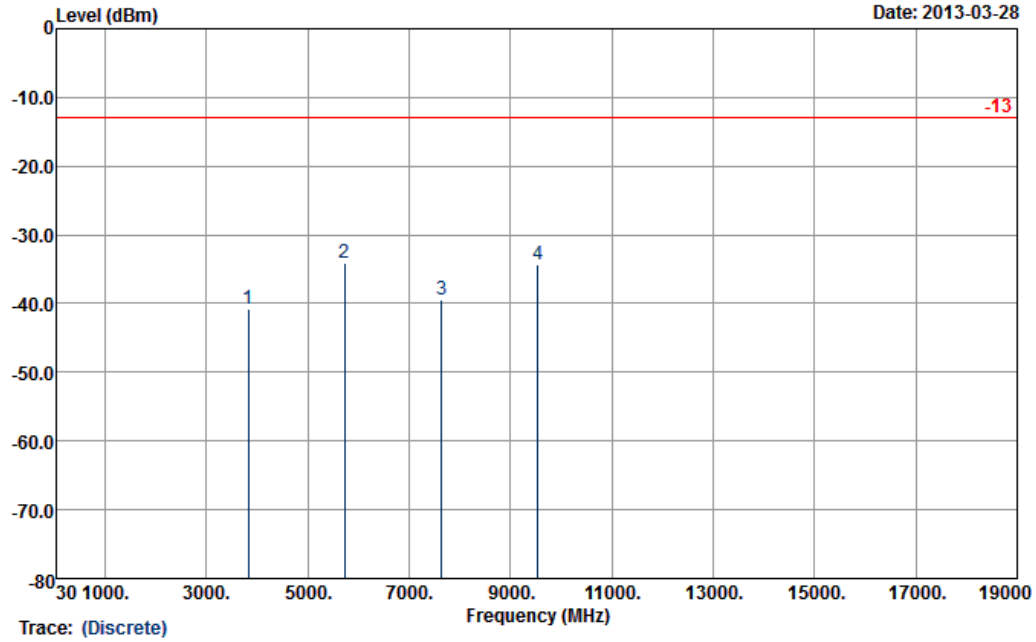
<High Channel>

Band :	GSM1900	**Temperature :**	24~25°C
Test Mode :	GSM Link (GMSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3820	-35.85	-13	-22.85	-51.71	-42.26	2.47	8.88	H	Pass
5726	-34.88	-13	-21.88	-55.16	-42.58	3	10.70	H	Pass
7635	-34.74	-13	-21.74	-62.32	-43.52	3.43	12.21	H	Pass
9543	-34.57	-13	-21.57	-61.02	-43.78	3.99	13.20	H	Pass

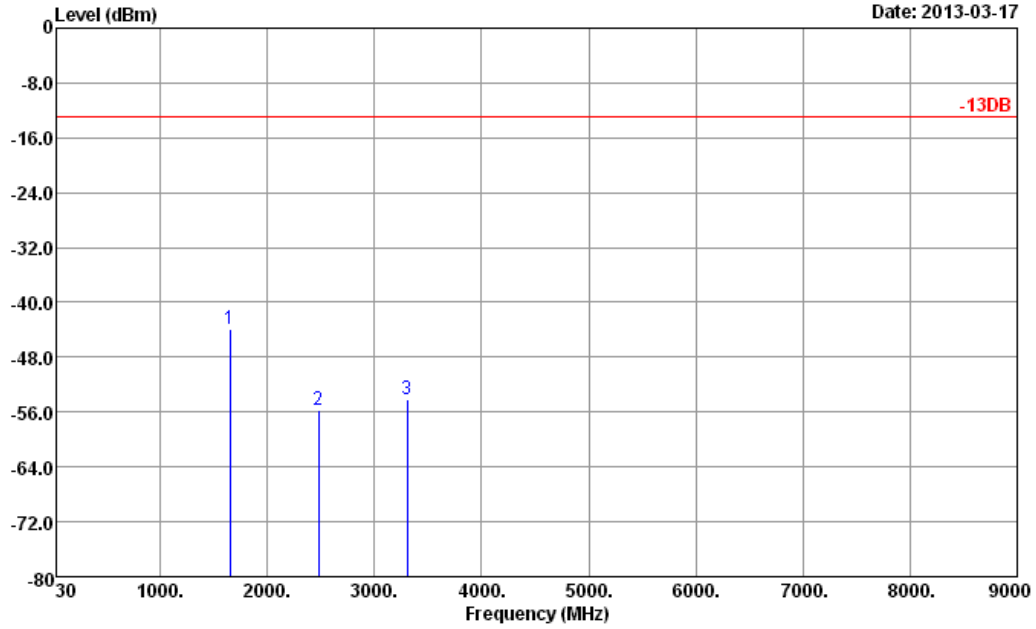
Band :	GSM1900	Temperature :	24~25°C
Test Mode :	GSM Link (GMSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	EIRP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
3820	-40.85	-13	-27.85	-57.12	-47.26	2.47	8.88	V	Pass
5726	-34.08	-13	-21.08	-55.15	-41.78	3	10.70	V	Pass
7635	-39.48	-13	-26.48	-64.39	-48.26	3.43	12.21	V	Pass
9543	-34.37	-13	-21.37	-61.95	-43.58	3.99	13.20	V	Pass

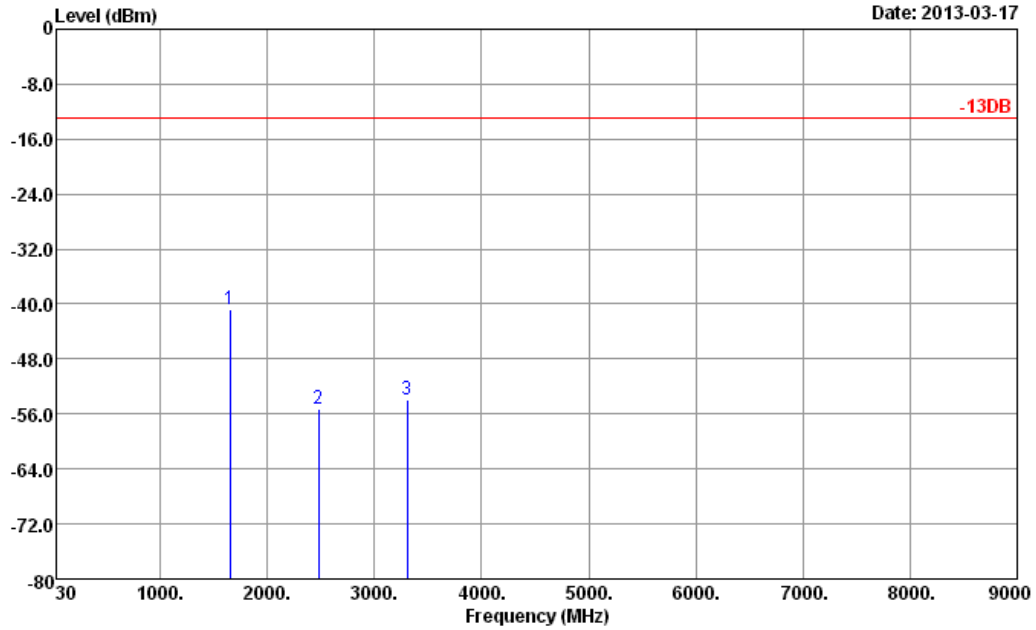
<Low Channel>

Band :	WCDMA Band V	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1651	-43.85	-13	-30.85	-49.64	-45.65	1.34	5.29	H	Pass
2479	-55.80	-13	-42.80	-64.94	-58.12	1.57	6.04	H	Pass
3304	-54.08	-13	-41.08	-65.54	-57.84	1.91	7.82	H	Pass

Band :	WCDMA Band V	Temperature :	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

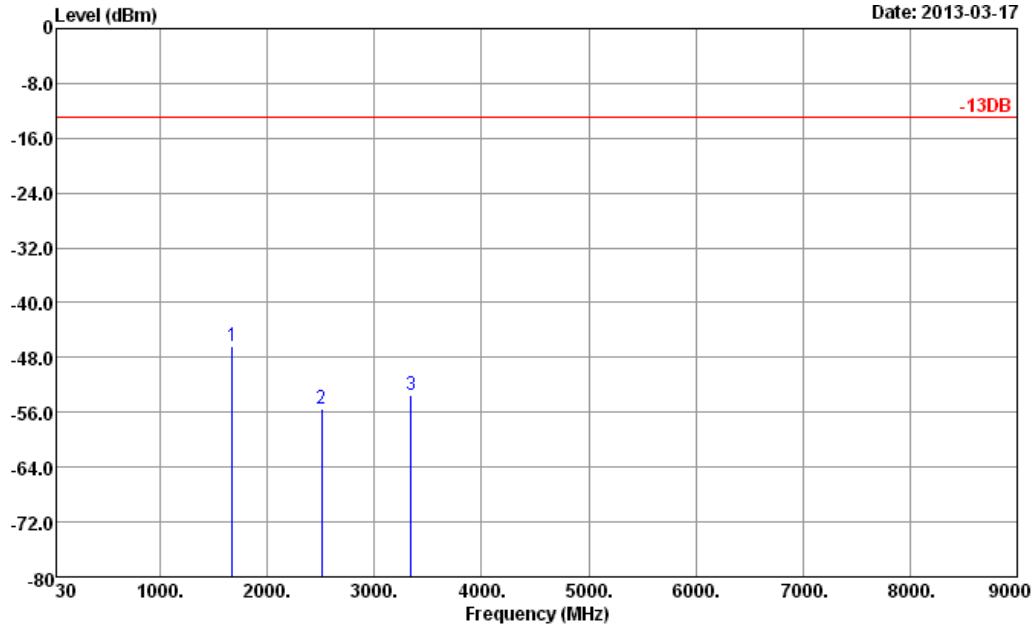


Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 VERTICAL
Project : FG 322231

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1651	-40.73	-13	-27.73	-46.57	-42.53	1.34	5.29	V	Pass
2479	-55.32	-13	-42.32	-64.58	-57.64	1.57	6.04	V	Pass
3304	-53.85	-13	-40.85	-65.26	-57.61	1.91	7.82	V	Pass

<Middle Channel>

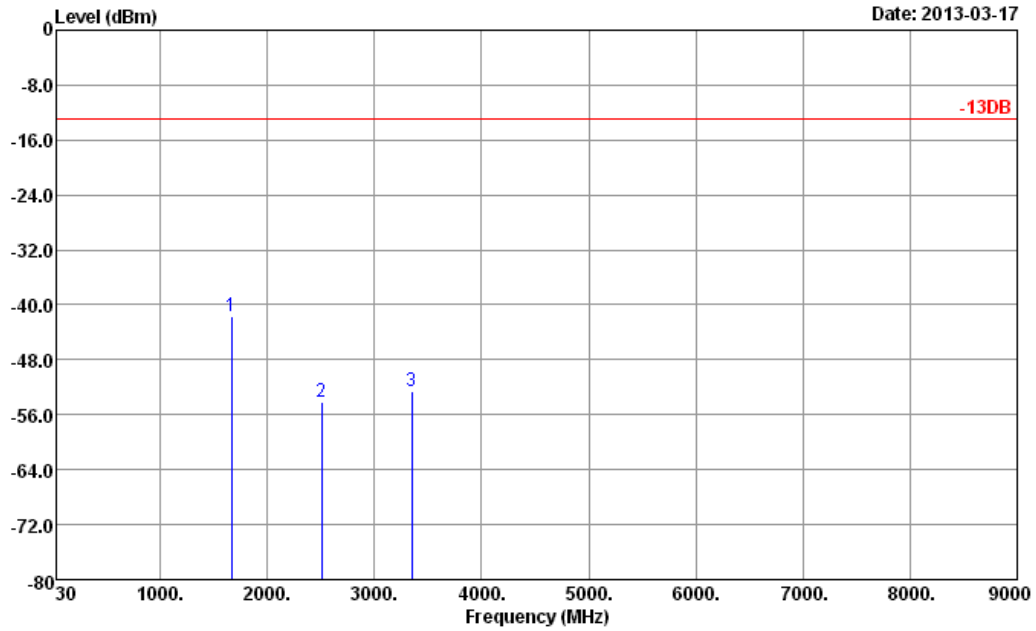
Band :	WCDMA Band V	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 HORIZONTAL
Project : FG 322231

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1672	-46.45	-13	-33.45	-52.49	-48.21	1.35	5.25	H	Pass
2509	-55.53	-13	-42.53	-64.84	-57.91	1.58	6.11	H	Pass
3345	-53.50	-13	-40.50	-65.04	-57.35	1.94	7.94	H	Pass

Band :	WCDMA Band V	Temperature :	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		

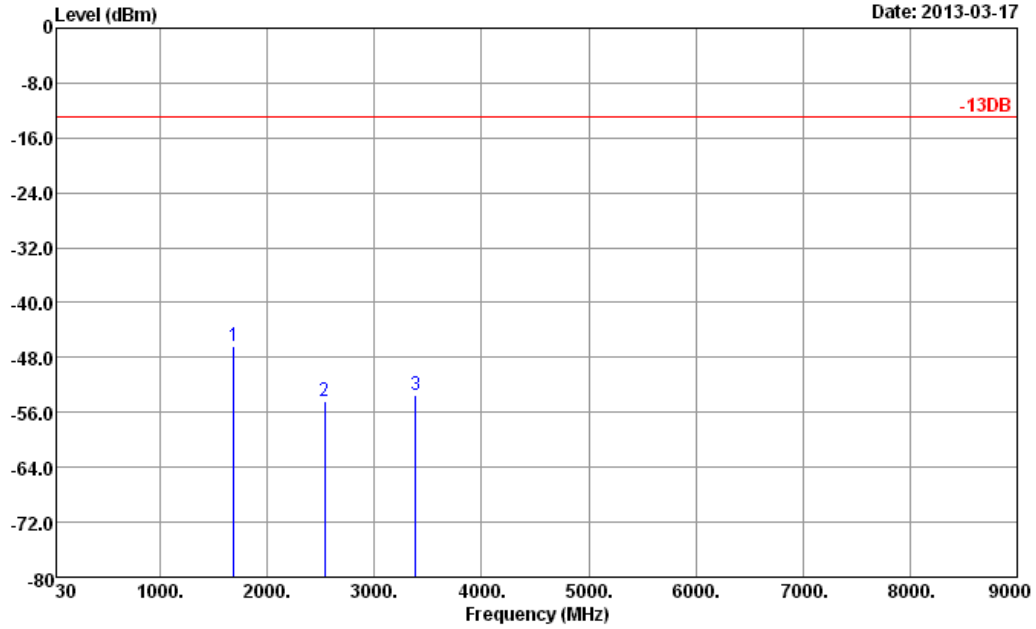


Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 VERTICAL
Project : FG 322231

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1669	-41.68	-13	-28.68	-47.53	-43.44	1.35	5.25	V	Pass
2509	-54.13	-13	-41.13	-63.44	-56.51	1.58	6.11	V	Pass
3346	-52.56	-13	-39.56	-64.12	-56.41	1.94	7.94	V	Pass

<High Channel>

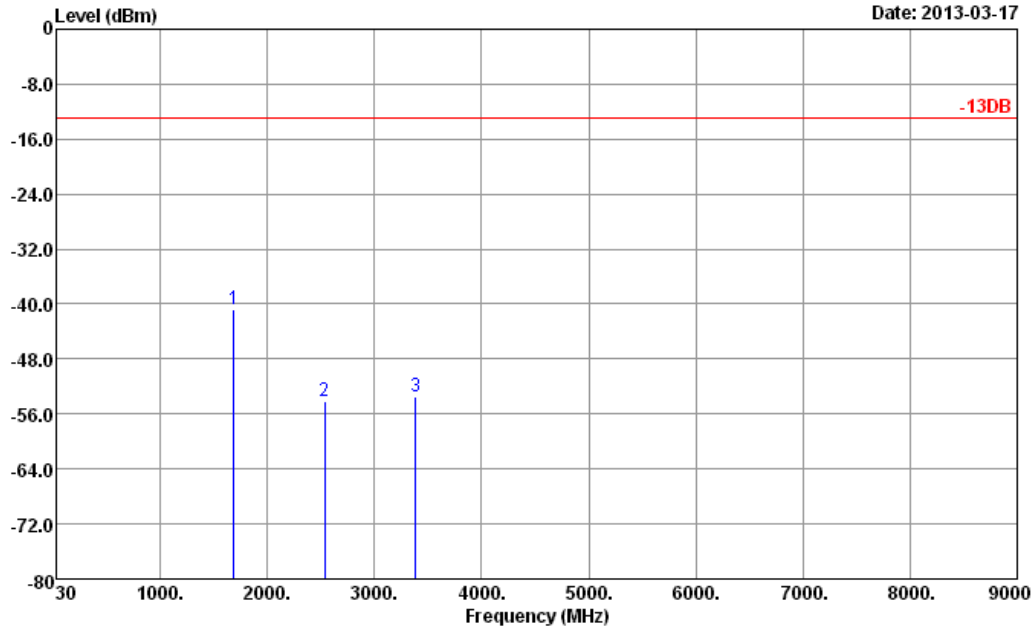
Band :	WCDMA Band V	**Temperature :**	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	**Relative Humidity :**	50~51%
Test Engineer :	Gavin Wu	**Polarization :**	Horizontal
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 HORIZONTAL
Project : FG 322231

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1690	-46.41	-13	-33.41	-52.47	-48.12	1.35	5.21	H	Pass
2539	-54.42	-13	-41.42	-63.79	-56.84	1.59	6.16	H	Pass
3385	-53.51	-13	-40.51	-65.36	-57.46	1.96	8.06	H	Pass

Band :	WCDMA Band V	Temperature :	24~25°C
Test Mode :	RMC 12.2Kbps Link (QPSK)	Relative Humidity :	50~51%
Test Engineer :	Gavin Wu	Polarization :	Vertical
Remark :	Spurious emissions within 30-1000MHz were found more than 20dB below limit line.		



Site : 03CH05-HY
Condition : -13DB HF_EIRP_101221 VERTICAL
Project : FG 322231

Frequency (MHz)	ERP (dBm)	Limit (dBm)	Over Limit (dB)	SPA Reading (dBm)	S.G. Power (dBm)	TX Cable loss (dB)	TX Antenna Gain (dBi)	Polarization (H/V)	Result
1690	-40.81	-13	-27.81	-46.89	-42.52	1.35	5.21	V	Pass
2539	-54.08	-13	-41.08	-63.45	-56.5	1.59	6.16	V	Pass
3385	-53.47	-13	-40.47	-65.06	-57.42	1.96	8.06	V	Pass

3.8 Frequency Stability Measurement

3.8.1 Description of Frequency Stability Measurement

The frequency stability shall be measured by variation of ambient temperature and variation of primary supply voltage to ensure that the fundamental emission stays within the authorized frequency block. The frequency stability of the transmitter shall be maintained within ±0.00025% (±2.5ppm) of the center frequency.

3.8.2 Measuring Instruments

See list of measuring instruments of this test report.

3.8.3 Test Procedures for Temperature Variation

1. The EUT was set up in the thermal chamber and connected with the base station.

With power OFF, the temperature was decreased to -30°C and the EUT was stabilized before testing. Power was applied and the maximum change in frequency was recorded within one minute.

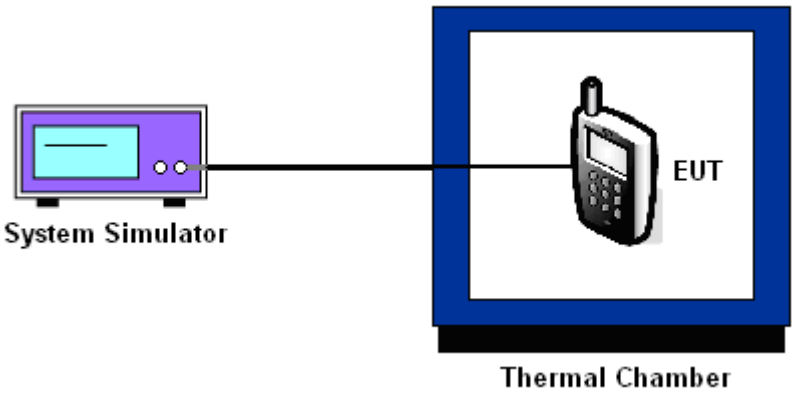
With power OFF, the temperature was raised in 10°C step up to 50°C. The EUT was stabilized at each step for at least half an hour. Power was applied and the maximum frequency change was recorded within one minute.

If the EUT cannot be turned on at -30°C, the testing lowest temperature will be raised in 10°C step until the EUT can be turned on.

3.8.4 Test Procedures for Voltage Variation

1. The EUT was placed in a temperature chamber at 25±5° C and connected with the base station.
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.

3.8.5 Test Setup



3.8.6 Test Result of Temperature Variation

Band :	GSM 850	Channel :	189
Limit (ppm) :	2.5	Frequency :	836.4 MHz

Temperature (°C)	GSM		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	-9	-0.01	PASS
-20	-12	-0.01	
-10	-11	-0.01	
0	-10	-0.01	
10	10	0.01	
20	-12	-0.01	
30	-13	-0.02	
40	-13	-0.02	
50	-15	-0.02	

Band :	GSM 1900	Channel :	661
Limit (ppm) :	2.5	Frequency :	1880.0 MHz

Temperature (°C)	GSM		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	-16	-0.01	PASS
-20	-15	-0.01	
-10	-18	-0.01	
0	-20	-0.01	
10	-22	-0.01	
20	-23	-0.01	
30	-22	-0.01	
40	-24	-0.01	
50	-27	-0.01	

Band :	WCDMA Band V	Channel :	4182
Limit (ppm) :	2.5	Frequency :	836.4 MHz

Temperature (°C)	RMC 12.2Kbps		Result
	Freq. Dev. (Hz)	Deviation (ppm)	
-30	4	0.00	PASS
-20	5	0.01	
-10	6	0.01	
0	5	0.01	
10	6	0.01	
20	6	0.01	
30	5	0.01	
40	7	0.01	
50	8	0.01	

3.8.7 Test Result of Voltage Variation

Band & Channel	Mode	Voltage (Volt)	Freq. Dev. (Hz)	Deviation (ppm)	Limit (ppm)	Result
GSM 850 CH189	GSM	3.90	10	0.01	2.5	PASS
		BEP	-11	-0.01		
		4.29	-14	-0.02		
GSM 1900 CH661	GSM	3.90	-23	-0.01		
		BEP	-17	-0.01		
		4.29	-26	-0.01		
WCDMA Band V CH4182	RMC 12.2Kbps	3.90	-4	0.00		
		BEP	4	0.00		
		4.29	-5	-0.01		

Note:

1. Normal Voltage = 3.90V.
2. Battery End Point (BEP) = 3.51 V

4 List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Test Date	Due Date	Remark
Spectrum Analyzer	R&S	FSP40	100055	9kHz~40GHz	Jun. 06, 2012	Mar. 05, 2013	Jun. 05, 2013	Conducted (TH02-HY)
Thermal Chamber	Ten Billion	TTH-D3SP	TBN-930701	N/A	Jul. 23, 2012	Mar. 05, 2013	Jul. 22, 2013	Conducted (TH02-HY)
Spectrum Analyzer	R&S	ESU26	100390	20Hz~26.5GHz	Dec. 14, 2012	Mar. 17, 2013	Dec. 13, 2013	Radiation (03CH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2725	30MHz~2GHz	Oct. 06, 2012	Mar. 17, 2013	Oct. 05, 2013	Radiation (03CH05-HY)
Turn Table	HD	Deis HD 2000	420/611	0 ~ 360 degree	N/A	Mar. 17, 2013	N/A	Radiation (03CH05-HY)
Antenna Mast	HD	MA 240	240/666	1 m ~ 4 m	N/A	Mar. 17, 2013	N/A	Radiation (03CH05-HY)
Horn Antenna	ESCO	3117	66584	1GHz~18GHz	Aug. 10, 2012	Mar. 17, 2013	Aug. 09, 2013	Radiation (03CH05-HY)
Pre Amplifier	Agilent	8449B	3008A02665	1GHz~26.5GHz	Aug. 28, 2012	Mar. 17, 2013	Aug. 27, 2013	Radiation (03CH05-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Sep. 28, 2012	Mar. 17, 2013	Sep. 27, 2013	Radiation (03CH05-HY)
Preamplifier	COM-POWER	PA-103	161075	10Hz~1000MHz Gain:32dB	Feb. 26, 2013	Mar. 17, 2013	Feb. 25, 2014	Radiation (03CH05-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Mar. 17, 2013	Jul. 02, 2013	Radiation (03CH05-HY)
Bilog Antenna	Schaffner	CBL6111C	2726	30MHz ~ 1GHz	Oct. 06, 2012	Mar. 28, 2013 ~ Apr. 07, 2013	Oct. 05, 2013	Radiation (03CH07-HY)
Spectrum Analyzer	Rohde & Schwarz	FSP30	101067	9KHz ~ 30GHz	Nov. 30, 2012	Mar. 28, 2013 ~ Apr. 07, 2013	Nov. 29, 2013	Radiation (03CH07-HY)
Double Ridge Horn Antenna	ESCO	3117	00075962	1GHz ~ 18GHz	Aug. 22, 2012	Mar. 28, 2013 ~ Apr. 07, 2013	Aug. 21, 2013	Radiation (03CH07-HY)
Preamplifier	Agilent	8449B	3008A02362	1GHz~ 26.5GHz	Dec. 01, 2012	Mar. 28, 2013 ~ Apr. 07, 2013	Nov. 30, 2013	Radiation (03CH07-HY)
Preamplifier	MITEQ	AMF-7D-00 101800-30-1	159088	1GHz ~ 18GHz	Feb. 27, 2013	Mar. 28, 2013 ~ Apr. 07, 2013	Feb. 26, 2014	Radiation (03CH07-HY)
Preamplifier	COM-POWER	PA-103A	161241	10-1000MHz. 32dB.GAIN	Feb. 26, 2013	Mar. 28, 2013 ~ Apr. 07, 2013	Feb. 25, 2014	Radiation (03CH07-HY)
EMI Test Receiver	Rohde & Schwarz	ESCI 7	100724	9kHz~7GHz	Sep. 03, 2012	Mar. 28, 2013 ~ Apr. 07, 2013	Sep. 02, 2013	Radiation (03CH07-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz ~ 40GHz	Sep. 28, 2012	Mar. 28, 2013 ~ Apr. 07, 2013	Sep. 27, 2013	Radiation (03CH07-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz ~ 30MHz	Jul. 03, 2012	Mar. 28, 2013 ~ Apr. 07, 2013	Jul. 02, 2013	Radiation (03CH07-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 21, 2011	Mar. 05, 2013 ~ Apr. 07, 2013	Oct. 20, 2013	-

5 Uncertainty of Evaluation

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**2.54**

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

Measuring Uncertainty for a Level of Confidence of 95% (U = 2Uc(y))	**4.72**