FCC TEST REPORT

for

47 CFR, Part 24E

Equipment	:	Flybook
Model No.	:	A33i series
FCC ID	:	JYV-A33iG
Filing Type	:	Certification
Applicant	:	Dialogue Technology Corp. 10F, No. 196, Sec. 2, Jungshing Rd., Shindian City, Taipei 231, Taiwan, R.O.C.

SPORTON International Inc.

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

The applicant has been cautioned as to the following:

15.21 Information to User.

The users manual or instruction manual for an intentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

15.27(a) Special Accessories.

Equipment marketed to a consumer must be capable of complying with the necessary regulations in the configuration in which the equipment is marketed. Where special accessories, such as shielded cables and/or special connectors are required to enable an unintentional or intentional radiator to comply with the emission limits in this part, the equipment must be marketed with, i.e. shipped and sold with, those special accessories. However, in lieu of shipping or packaging the special accessories with the unintentional or intentional radiator, the responsible party may employ other methods of ensuring that the special accessories are provided to the consumer, without additional charge.

Information detailing any alternative method used to supply the special accessories for a grant of equipment authorization or retained in the verification records, as appropriate. The party responsible for the equipment, as detailed in § 2.909 of this chapter, shall ensure that these special accessories are provided with the equipment. The instruction manual for such devices shall include appropriate instructions on the first page of text concerned with the installation of the device that these special accessories must be used with the device. It is the responsibility of the user to use the needed special accessories supplied with the equipment.

Table of Contents

Required information per ISO/IEC Guide 25-1990, paragraph 13.2:

a) **Test Report**

b) Laboratory: Sporton International Inc.
No.52, Hwa-Ya 1st RD., Hwa Ya Technology Park, Kwei-Shan Hsiang, TaoYuan Hsien, Taiwan, R.O.C.

c) Report Number: F3D3125

d) Client: Dialogue Technology Corp.
10F, No. 196, Sec. 2, Jungshing Rd., Shindian City, Taipei 231, Taiwan, R.O.C.

e) Identification: A33i series
FCC ID : JYV-A33iG
Description: GSM/GPRS 1900 Radio

f) EUT Condition: Not required unless specified in individual tests.

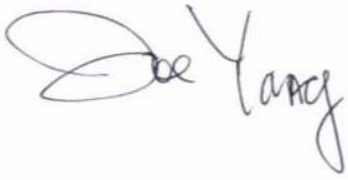
g) Report Date: January 19, 2004
EUT Received: January 19, 2004

h, j, k): As indicated in individual tests.

i) Sampling method: No sampling procedure used.

l) Uncertainty: In accordance with Sporton internal quality manual.

m) Supervised by:



Joe Yang

n) Results: The results presented in this report relate only to the item tested.

o) Reproduction: This report must not be reproduced, except in full, without written permission from this laboratory.

Accessories Used During Testing:

Type	**Model**
EUT	A33i series
AC Adapter	ADP-50SB H

List of General Information Required for Certification

In Accordance with FCC Rules and Regulations,
Volume II, Part 2 and to

24E, Confidentiality

Sub-Part 2.1033

(c)(1): **Name and Address of Applicant**:

Dialogue Technology Corp.
10F, No. 196, Sec. 2, Jungshing Rd., Shindien City, Taipei 231, Taiwan, R.O.C.

Manufacturer

As above

(c)(2): **FCC ID**: JYV-A33iG

Model Number: A33i series

(c)(3): **Instruction Manual(s)**:

Please See Attached Exhibits

(c)(4): **Type of Emission**: GSM/GPRS 1900 Link mode with Bluetooth Continuous Tx

(c)(5): **FREQUENCY RANGE, MHz**: 1850.2 to 1909.8 GSM1900

(c)(6): **Power Rating, Watts**: 0.117 EIRP (1900)

Switchable x Variable N/A

(c)(7): **Maximum Power Rating, Watts**: 1 GSM1900

Subpart 2.1033 (continued)
(c)(8): Voltages & Currents in All Elements in Final RF Stage, Including Final Transistor or Solid State Device:

Collector Current, A =	2.64
Collector Voltage, Vdc =	19.0
Supply Voltage, Vdc =	19.0

(c)(9): **Tune-Up Procedure**:

Please See Attached Exhibits

(c)(10): **Circuit Diagram/Circuit Description**:
Including description of circuitry & devices provided for determining and stabilizing frequency, for suppression of spurious radiation, for limiting modulation and limiting power.

Please See Attached Exhibits

(c)(11): **Label Information**:

Please See Attached Exhibits

(c)(12): **Photographs**:

Please See Attached Exhibits

(c)(13): **Digital Modulation Description**:

___ Attached Exhibits
_x_ N/A

(c)(14): **Test and Measurement Data**:

Follows

Certificate of NVLAP Accreditation

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

ISO/IEC 17025:1999
ISO 9002:1994

Certificate of Accreditation

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

SPORTON INTERNATIONAL, INC.
TAIPEI HSIEN 221
TAIWAN

is recognized by the National Voluntary Laboratory Accreditation Program for satisfactory compliance with criteria set forth in NIST Handbook 150:2001, all requirements of ISO/IEC 17025:1999, and relevant requirements of ISO 9002:1994. Accreditation is awarded for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

December 31, 2003
Effective through

For the National Institute of Standards and Technology
NVLAP Lab Code: 200079-0

NVLAP-01C (06-01)

Sub-part
2.1033(c)(14): **Test and Measurement Data**

All tests and measurement data shown were performed in accordance with FCC Rules and Regulations, Volume II; Part 2, Sub-part J, Sections 2.947, 2.1033(c), 2.1041, 2.1046, 2.1047, 2.1079, 2.1051, 2.1053, 2.1055, 2.1057 and the following individual Parts:

21 – Domestic Public Fixed Radio Services
22 – Public Mobile Services
22 Subpart H - Cellular Radiotelephone Service
22.901(d) - Alternative technologies and auxiliary services
23 – International Fixed Public Radiocommunication services
x 24 – Personal Communications Services
74 Subpart H - Low Power Auxiliary Stations
80 – Stations in the Maritime Services
80 Subpart E - General Technical Standards
80 Subpart F - Equipment Authorization for Compulsory Ships
80 Subpart K - Private Coast Stations and Marine Utility Stations
80 Subpart S - Compulsory Radiotelephone Installations for Small Passenger Boats
80 Subpart T - Radiotelephone Installation Required for Vessels on the Great Lakes
80 Subpart U - Radiotelephone Installations Required by the Bridge-to-Bridge Act
80 Subpart V - Emergency Position Indicating Radiobeacons (EPIRB'S)
80 Subpart W - Global Maritime Distress and Safety System (GMDSS)
80 Subpart X - Voluntary Radio Installations
87 – Aviation Services
90 – Private Land Mobile Radio Services
94 – Private Operational-Fixed Microwave Service
95 Subpart A - General Mobile Radio Service (GMRS)
95 Subpart C - Radio Control (R/C) Radio Service
95 Subpart D - Citizens Band (CB) Radio Service
95 Subpart E - Family Radio Service
95 Subpart F - Interactive Video and Data Service (IVDS)
97 - Amateur Radio Service
101 – Fixed Microwave Services

General Information

Product Feature & Specification	
1. Host/Radio Interface	FPC Connector(Radio Equipment is a embedded module)
2. Type of Modulation	GMSK
3. Number of Channels	GSM1900 : 512 to 810
4. Tx Frequency Band , MHz	GSM1900 : 1850 to 1910
5. Bandwidth of each channel	200 kHz
6. Maximum Output Power to Antenna	GSM1900 : 30 dBm
7. Power Rating (DC/AC , Voltage)	AC 100-240V, 1.5A max/AC 1.9V, 2.64A max
8. Duty Cycle	12% ~ 24%
9. Basic function of product	GPRS Muti-Slot Class 10 / Bluetooth
10. Temperature Range (Operating)	0~60C
11. Humidity	0~95%
12. Other Special	N/A
13. Remark	N/A

Standard Test Conditions

and

Engineering Practices

Except as noted herein, the following conditions and procedures were observed during the testing:

In accordance with TIA603, and unless otherwise indicated in the specific measurement results, the ambient temperature of the actual EUT was maintained within the range of 10° to 40°C (50° to 104 °F) unless the particular equipment requirements specify testing over a different temperature range. Also, unless otherwise indicated, the humidity levels were in the range of 10% to 90% relative humidity.

Prior to testing, the EUT was tuned up in accordance with the manufacturer's alignment procedures. All external gain controls were maintained at the position of maximum and/or optimum gain throughout the testing.

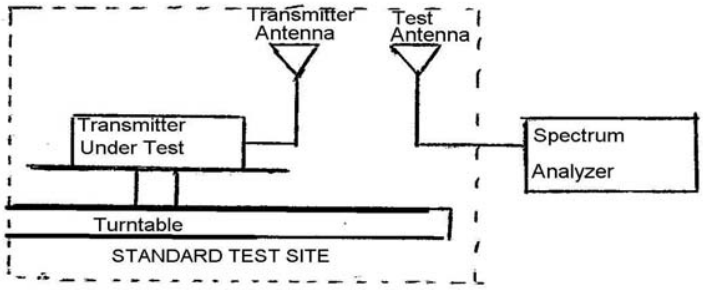
Measurement results, unless otherwise noted, are worst-case measurements.

Name of Test: EIRP Carrier Power (Radiated)

Specification: TIA/EIA 603A (Substitution Method)

Definition: The average radiated power of device is the equivalent power required, when delivered to a substitution antenna, to produce at a distant point the same average received power as produced by the licensed device.

Method Of Measurement:
a) Connect the equipment as illustrated. Place the transmitter to be tested on the turntable in the standard test site.



b) Raise and lower the test antenna from 1m to 4m and rotate turntable from 0° to 360°. Record the highest received signal showed in spectrum analyzer as Rt .
Calculate electric field strength in receive antenna as Et.

Et = Rt + AF

AF (dB/m): Receive Antenna Factor

c) Replace the transmitter under test with a substitution antenna. The center of the antenna should be at the same location as the transmitter under test. Connect the antenna to a signal generator with a known output power level Ps. Raise and lower the test antenna like in step b) and record the highest received signal showed in spectrum analyzer as R_S. Calculate electric field strength in receive antenna as Es.

Es = Rs + AF

AF (dB/m): Receive Antenna Factor

d) Calculate radiated power as following:
EIRP = Ps + Et – Es + Gs

Ps (dBm): Input Power to Substitution Antenna
Gs (dBi) : Substitution Antenna Gain

Results Attached

Test Results For: EIRP Carrier Power (Radiated)

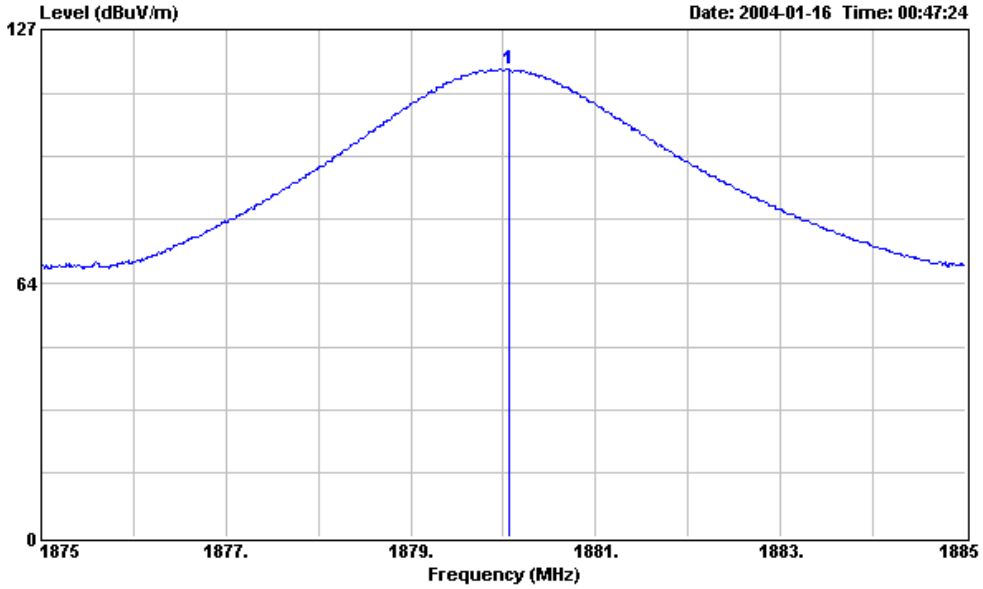
Conducted Power

Bands	Channel	Frequency (MHz)	Conducted Power (dBm)
GSM1900	512	1850.2 (Low)	29.2
	661	1880.0 (Mid)	28.9
	810	1909.8 (High)	28.3

GSM1900 EIRP

Freq MHz	Ps dBm	Gs dBi	Et	Es	Et - Es dB	Pol	Radiated P Out dBm	Radiated P Out Watts
1850.2	-0.6	6.7	115.4	105.6	9.8	H	15.9	0.039
1880	-0.6	6.7	117.0	105.7	11.2	H	17.4	0.054
1909.8	-0.6	6.8	114.6	105.9	8.7	H	14.9	0.031
1850.2	-0.6	6.7	118.5	105.3	13.2	V	19.3	0.085
1880	-0.6	6.7	119.5	105.3	14.2	V	20.3	0.107
1909.8	-0.6	6.8	119.9	105.4	14.5	V	20.7	0.117

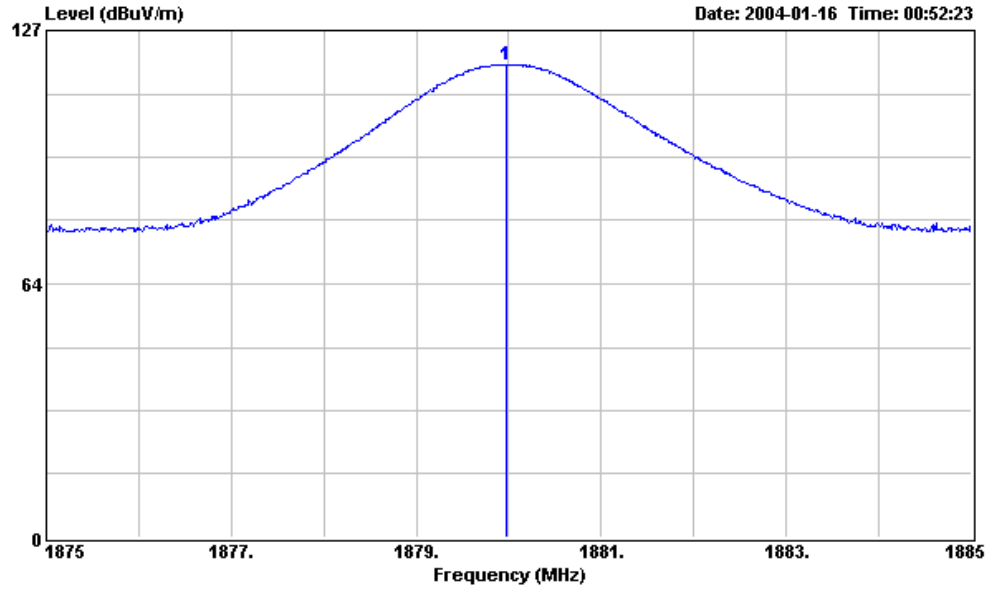
GSM/GPRS1900 CH661 Horizontal Polarization



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1880.060	116.96	------	------	84.59	26.91	5.46	0.00	Peak	---	---

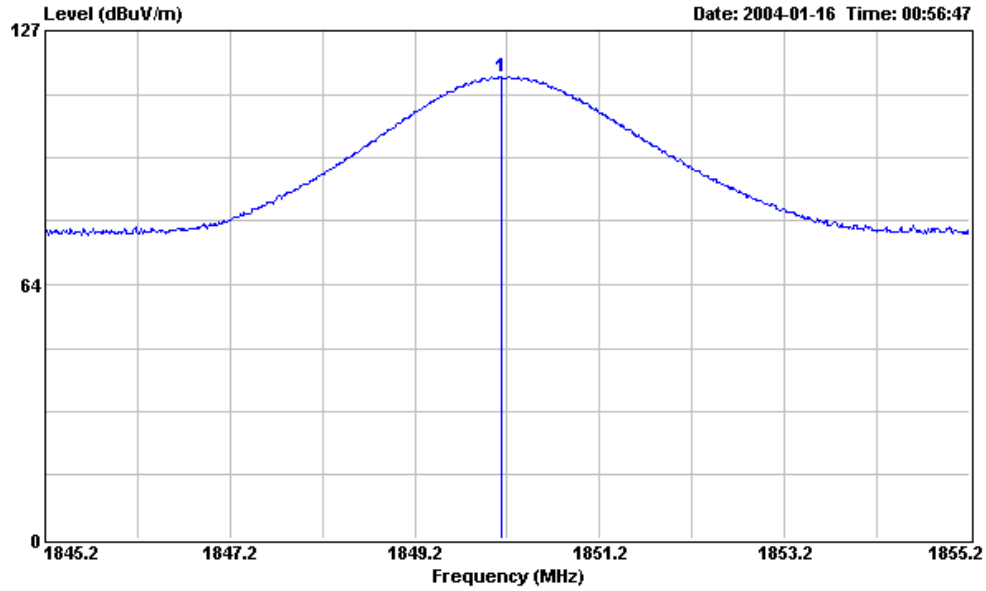
GSM/GPRS1900 CH661 Vertical Polarization



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1879.980	118.48	------	------	86.11	26.91	5.46	0.00		---	---

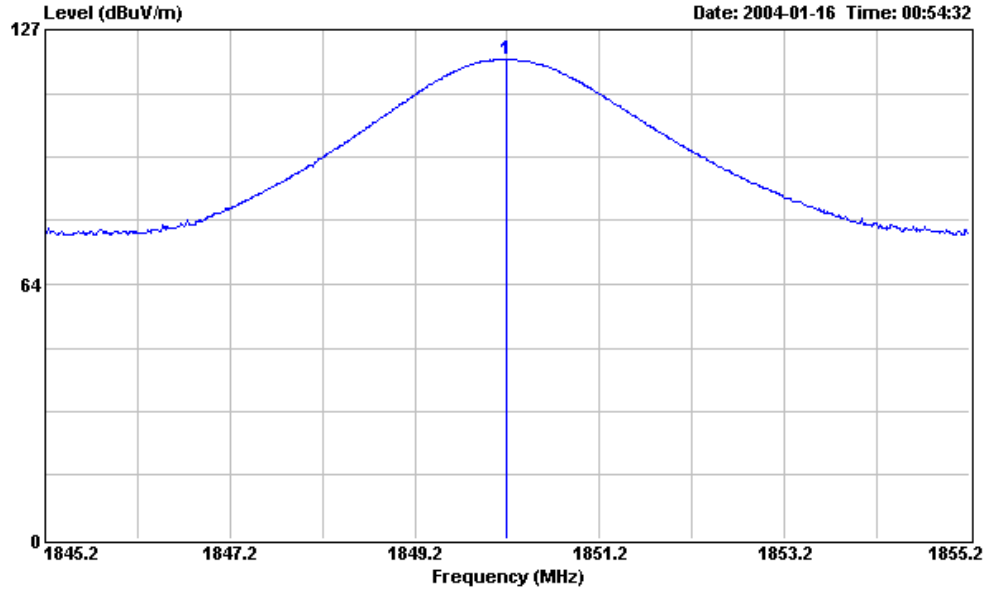
GSM/GPRS1900 CH512 Horizontal Polarization



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH512

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1850.140	115.39	------	------	83.24	26.77	5.38	0.00		---	---

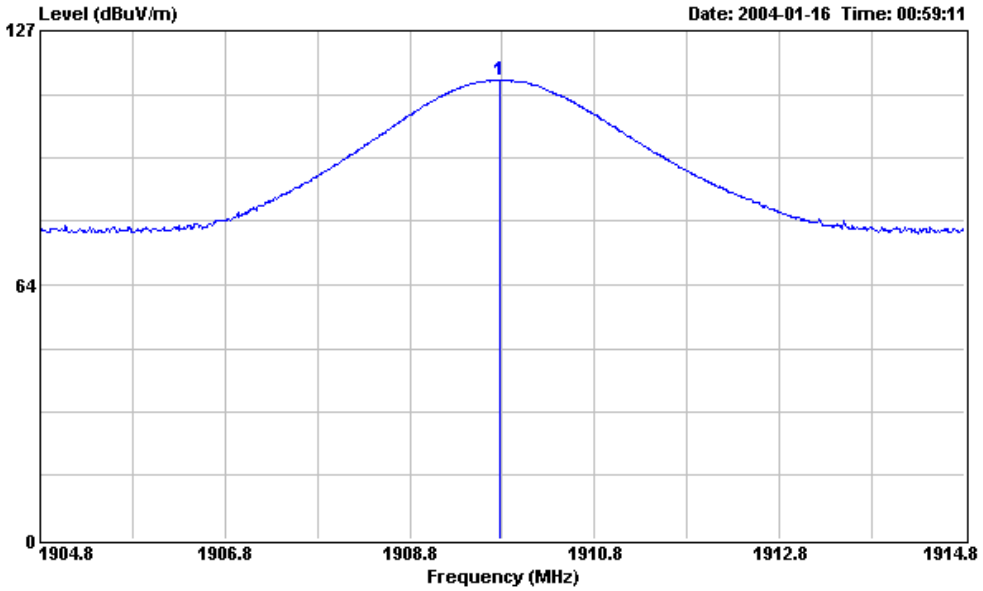
GSM/GPRS1900 CH512 Vertical Polarization



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH512

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1850.190	119.49	------	------	87.34	26.77	5.38	0.00		---	---

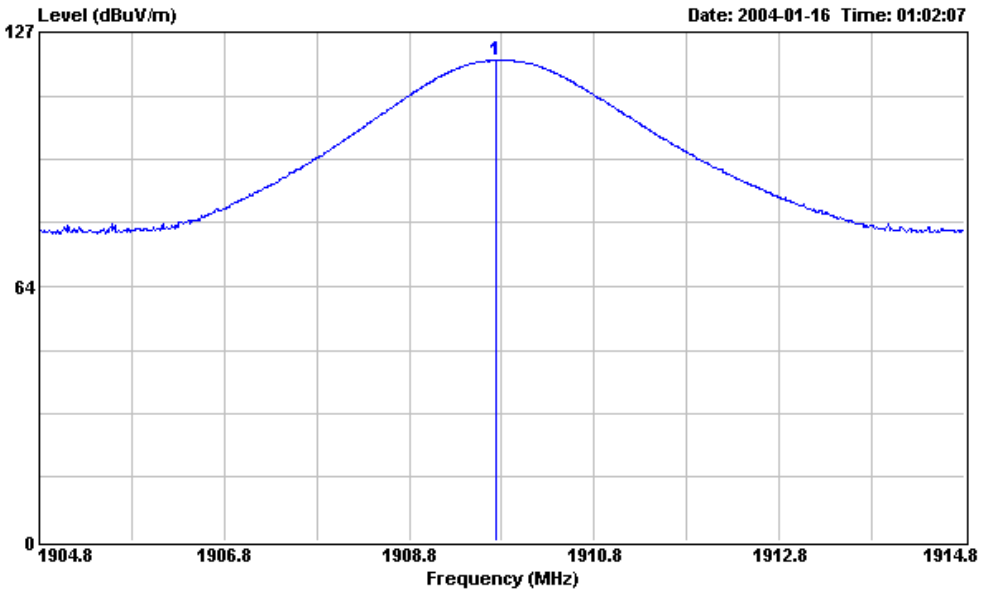
GSM/GPRS1900 CH810 Horizontal Polarization



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH810

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1909.780	114.58	------	------	82.02	27.05	5.51	0.00		---	---

GSM/GPRS1900 CH810 Vertical Polarization



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH810

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1909.740	119.87	------	------	87.31	27.05	5.51	0.00		---	---

Name of Test: Transmitter Conducted Measurements

Specification: 47 CFR 2.1051: Unwanted (spurious) Emissions
2.1049(c), 24.238(b): Occupied Bandwidth
24: Emissions at Band Edges

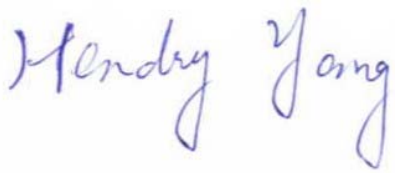
Test Equipment: As per attached page

Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page with the Spectrum Analyzer connected.

2. The low and high channels for all RF powers within the Transmitting frequency band were measured.

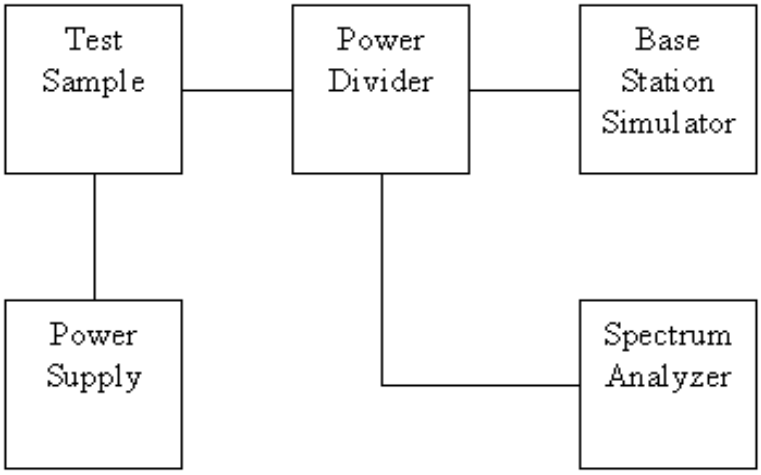
3. Measurement Results: Attached



Performed By: Hendry Yang

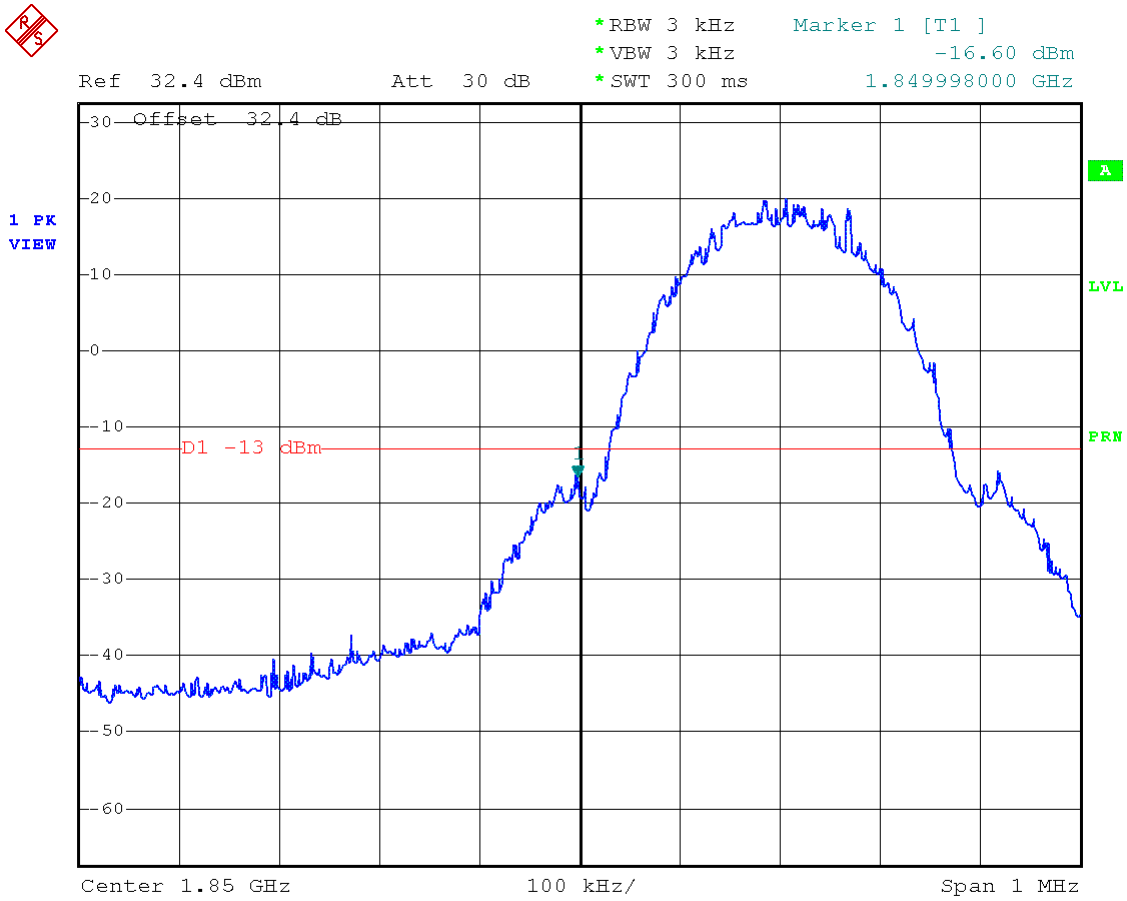
Transmitter Spurious Emission

Test A. Occupied Bandwidth (In-Band Spurious)
Test B. Out-of-Band Spurious



Asset	Model Name	S/N
Base Station Simulator	CMU200	102278
Spectrum Analyzer	FSP30	838858/014
AC/DC Power Source	HPA-500W	HPA0100024

Name of Test: Emission Masks (Occupied Bandwidth)
State: 2:High Power

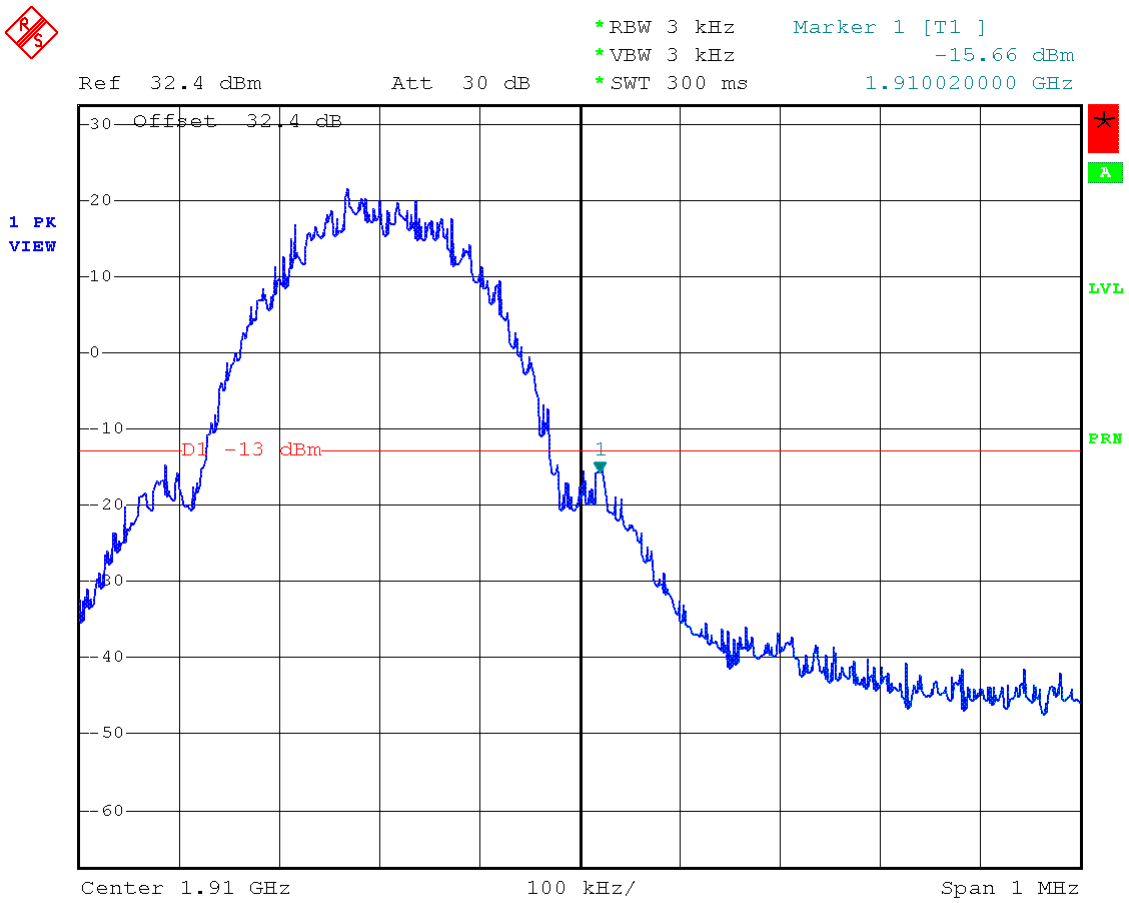


Date: 16.JAN.2004 21:42:31

Power: HIGH
Modulation: GSM/GPRS1900
LOWER BAND EDGE

Performed By: Hendry Yang

Name of Test: Emission Masks (Occupied Bandwidth)
State: 2:High Power

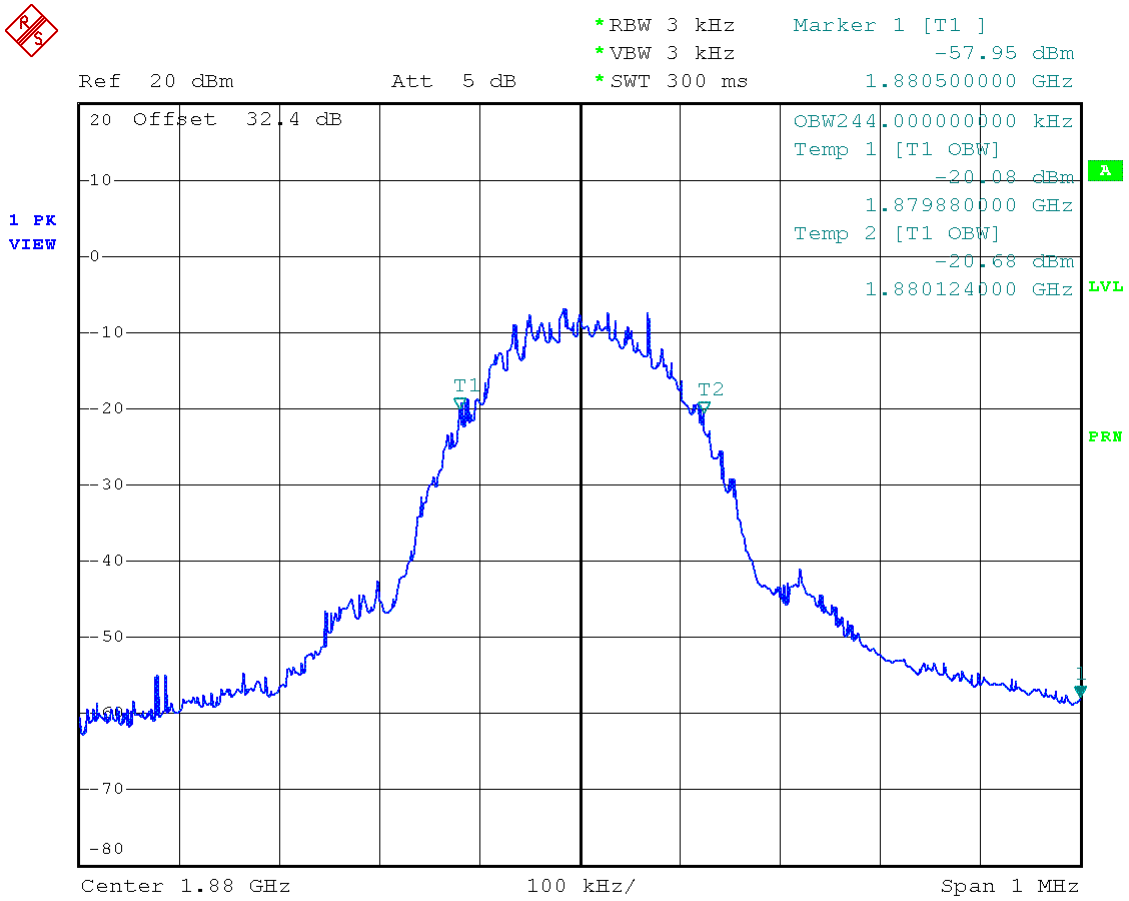


Date: 16.JAN.2004 21:47:39

Power: HIGH
Modulation: GSM/GPRS1900
UPPER BAND EDGE

Performed By: Hendry Yang

Name of Test: Emission Masks (Occupied Bandwidth)
State: 1:Low Power

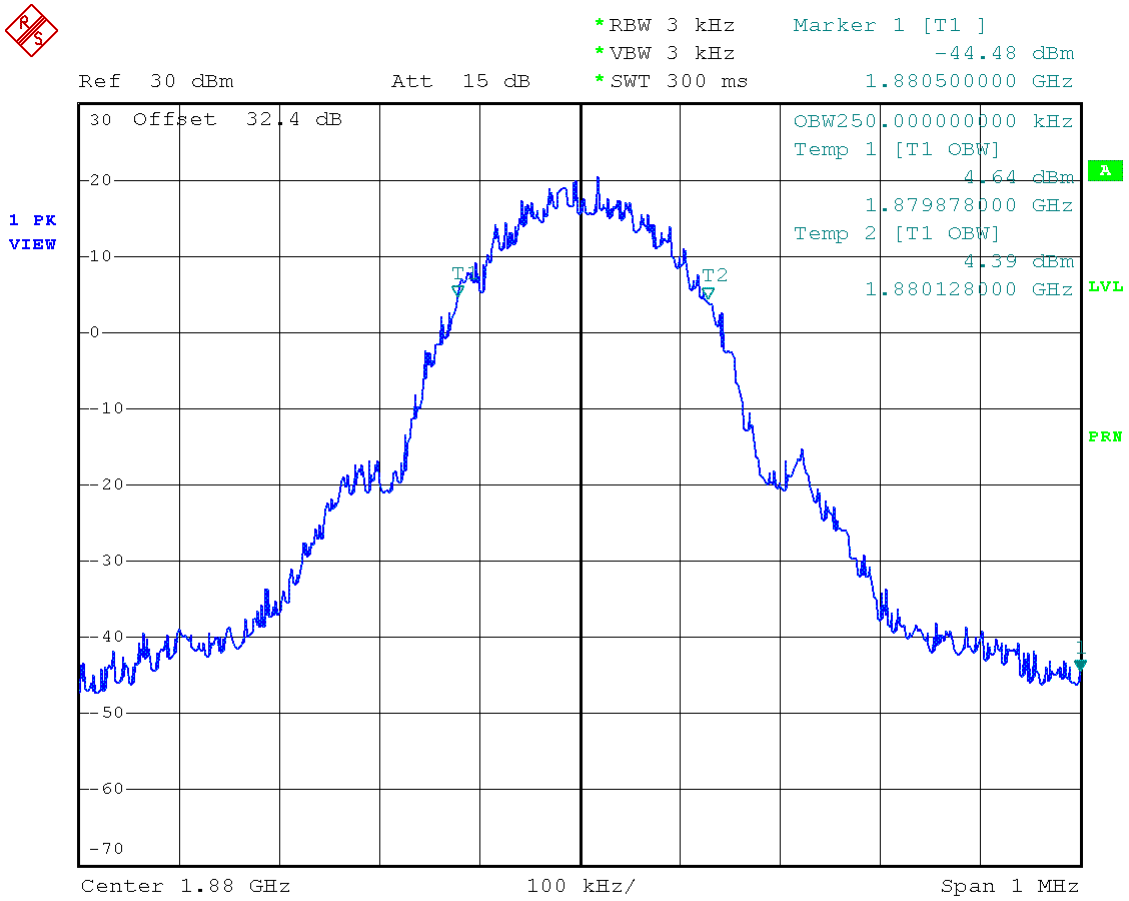


Date: 16.JAN.2004 21:53:06

Power: LOW
Modulation: GSM/GPRS1900
99% BANDWIDTH

Performed By: Hendry Yang

Name of Test: Emission Masks (Occupied Bandwidth)
State: 2:High Power



Date: 16.JAN.2004 22:01:10

Power: HIGH
Modulation: GSM/GPRS1900
99% BANDWIDTH

Performed By: Hendry Yang

Name of Test: Field Strength of Spurious Radiation

Specification: 47 CFR 2.1053(a)

Guide: ANSI/TIA/EIA-603-1992/2001, Paragraph 1.2.12 and Table 16

Measurement Procedure

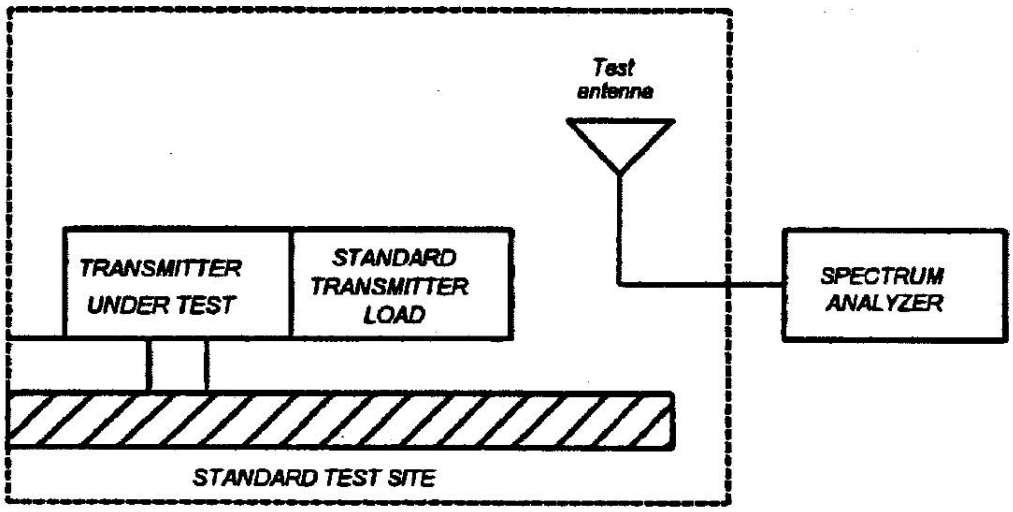
1.2.12.1 Definition: Radiated spurious emissions are emissions from the equipment when transmitting into a non-radiating load on a frequency or frequencies which are outside an occupied band sufficient to ensure transmission of information of required quality for the class of communications desired.

1.2.12.2 Method of Measurement

A) Connect the equipment as illustrated

B) Adjust the spectrum analyzer for the following settings:
1) Resolution Bandwidth 100 kHz (<1 GHZ), 1 MHZ (> 1GHz).
2) Video Bandwidth ≥ 3 times Resolution Bandwidth
3) Sweep Speed ≤2000 Hz/second
4) Detector Mode = Mean or Average Power

C) Place the transmitter to be tested on the turntable in the standard test site. If the antenna is detatchable, The transmitter is transmitting into a non-radiating load which is placed on the turntable. The RF cable to this load should be of minimum length.

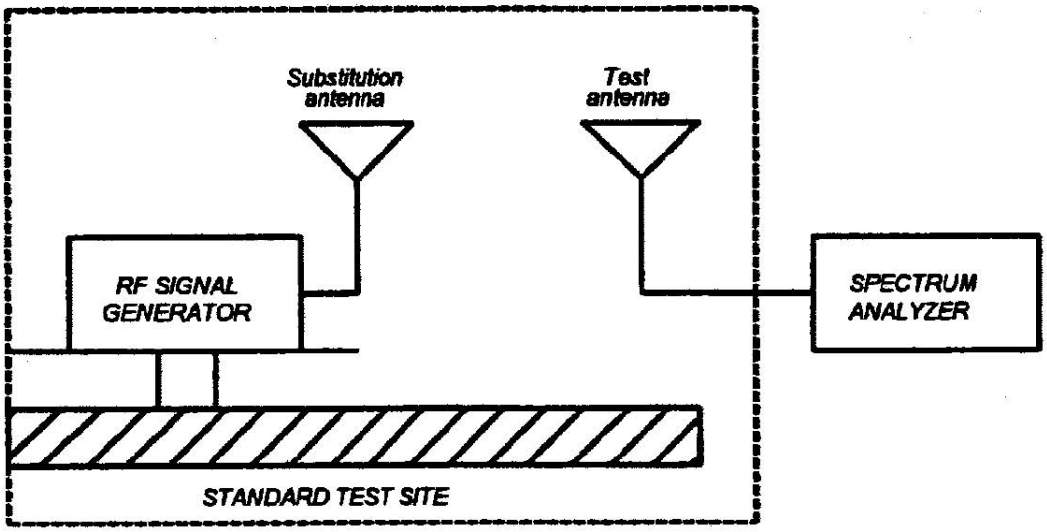


Name of Test: Field Strength of Spurious Radiation (Cont.)

D) For each spurious measurement the test antenna should cover the measured frequency. Measurements shall be made from the lowest radio frequency generated in the equipment to the tenth harmonic of the carrier, except for the region close to the carrier equal to ± the test bandwidth (see section 1.3.4.4).

E) For each spurious frequency, raise and lower the test antenna from 1 m to 4 m to obtain a maximum reading on the spectrum analyzer with the test antenna at horizontal polarity. Repeat this procedure to obtain the highest possible reading. Record this maximum reading.

F) Repeat step E) for each spurious frequency with the test antenna polarized vertically.



G) Reconnect the equipment as illustrated.

H) Keep the spectrum analyzer adjusted as in step B).

I) Remove the transmitter and replace it with a substitution antenna. The center of the substitution antenna should be approximately at the same location as the center of the transmitter. At lower frequencies, where the substitution antenna is very long, this will be impossible to achieve when the antenna is polarized vertically. In such case the lower end of the antenna should be 0.3 m above the ground.

Name of Test: Field Strength of Spurious Radiation (Cont.)

J) Feed the substitution antenna at the transmitter end with a signal generator connected to the antenna by means of a non-radiating cable. With the antennas at both ends horizontally polarized and with the signal generator tuned to a particular spurious frequency, raise and lower the test antenna to obtain a maximum reading at the spectrum analyzer. Adjust the level of the signal generator output until the previously recorded maximum reading for this set of conditions is obtained. This should be done carefully repeating the adjustment of the test antenna and generator output.

K) Repeat step J) with both antennas vertically polarized for each spurious frequency.

L) Calculate power in dBm into a reference ideal half-wave dipole antenna by reducing the readings obtained in steps J) and K) by the power loss in the cable between the generator and the antenna and further corrected for the gain of the substitution antenna used relative to an ideal half-wave dipole antenna.

NOTE: It is permissible that other antennas provided can be referenced to a dipole.

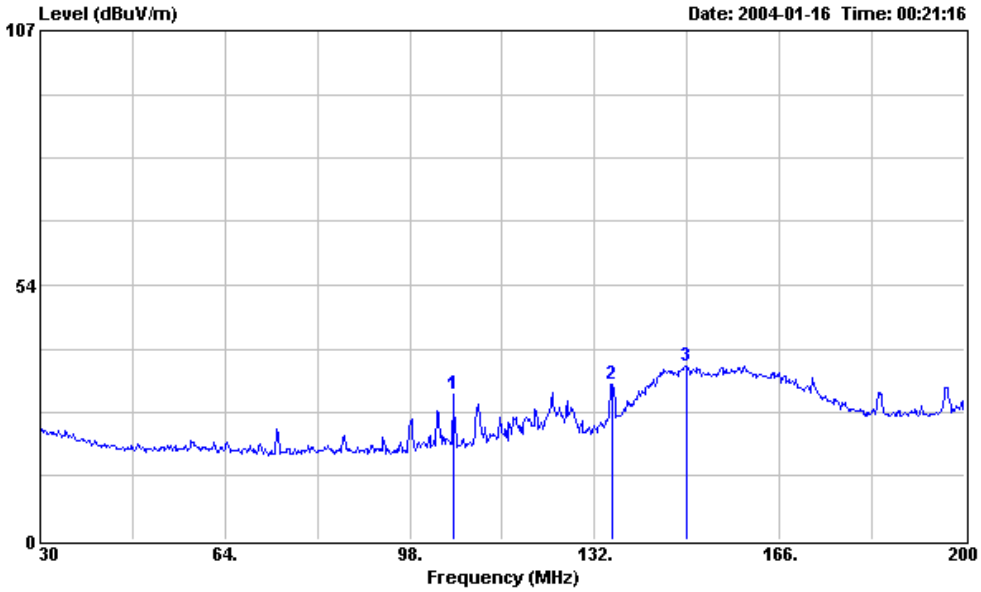
Name of Test: Field Strength of Spurious Radiation

Frequency Tuned : 1880 MHz

Freq MHz	Pol	Substitution Antenna Input Level (dBm)	Antenna Gain dBi	EIRP, dBm	Limit (dBm)	Margin (dBm)
106.0	H	-71.3	1.0	-70.3	-13.0	-57.3
135.2	H	-70.2	1.7	-68.4	-13.0	-55.4
148.8	H	-65.8	1.8	-64.0	-13.0	-51.0
332.8	H	-57.9	8.2	-49.7	-13.0	-36.7
400.8	H	-77.9	22.3	-55.6	-13.0	-42.6
598.4	H	-83.5	25.7	-57.7	-13.0	-44.7
960.0	H	-89.5	29.9	-59.7	-13.0	-46.7
3753.0	H	-56.3	10.3	-46.0	-13.0	-33.0
5637.0	H	-46.3	10.4	-35.8	-13.0	-22.8
9714.0	H	-44.5	11.1	-33.3	-13.0	-20.3
73.4	V	-66.3	1.5	-64.8	-13.0	-51.8
110.6	V	-64.5	1.1	-63.4	-13.0	-50.4
123.5	V	-63.6	1.5	-62.1	-13.0	-49.1
332.8	V	-61.5	8.2	-53.3	-13.0	-40.3
598.4	V	-80.4	25.7	-54.6	-13.0	-41.6
960.0	V	-86.0	29.9	-56.1	-13.0	-43.1
5637.0	V	-52.0	10.4	-41.5	-13.0	-28.5
9714.0	V	-44.8	11.1	-33.7	-13.0	-20.7

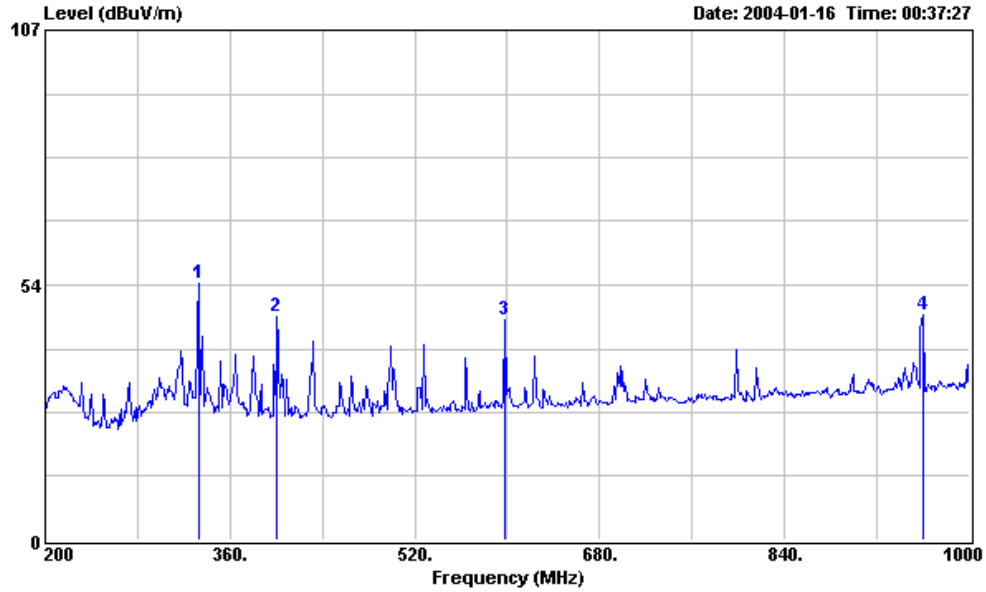
Radiated Scanned Data

GSM1900, Horizontal Polarization



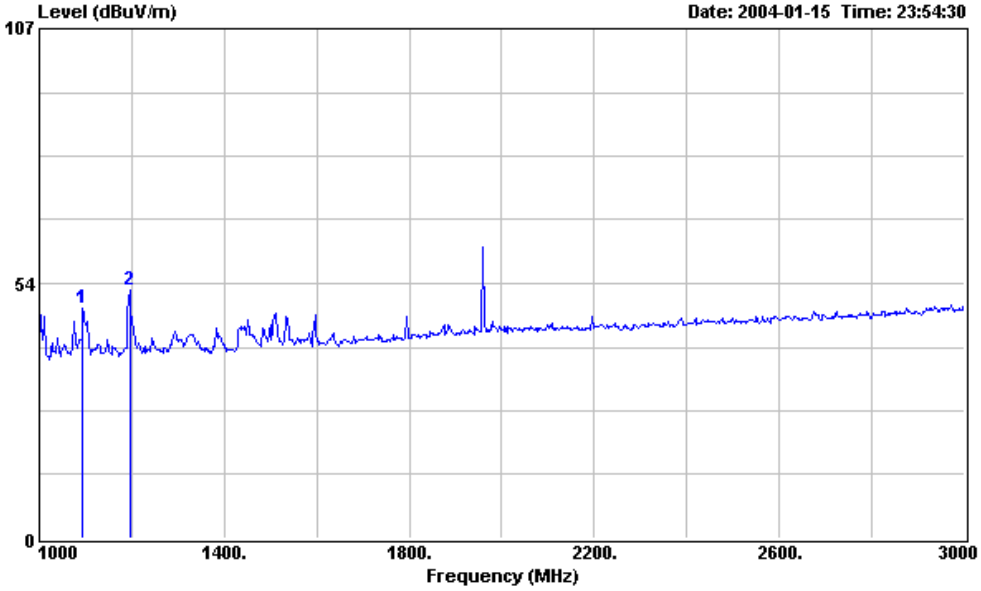
Site : 03CH03-HY
Condition : 3m BIC-9124--301 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	105.990	30.56	------	------	47.76	10.18	0.51	27.89		---	---
2	135.230	32.66	------	------	48.26	11.56	0.67	27.83		---	---
3	148.830	36.60	------	------	51.32	12.31	0.77	27.80		---	---



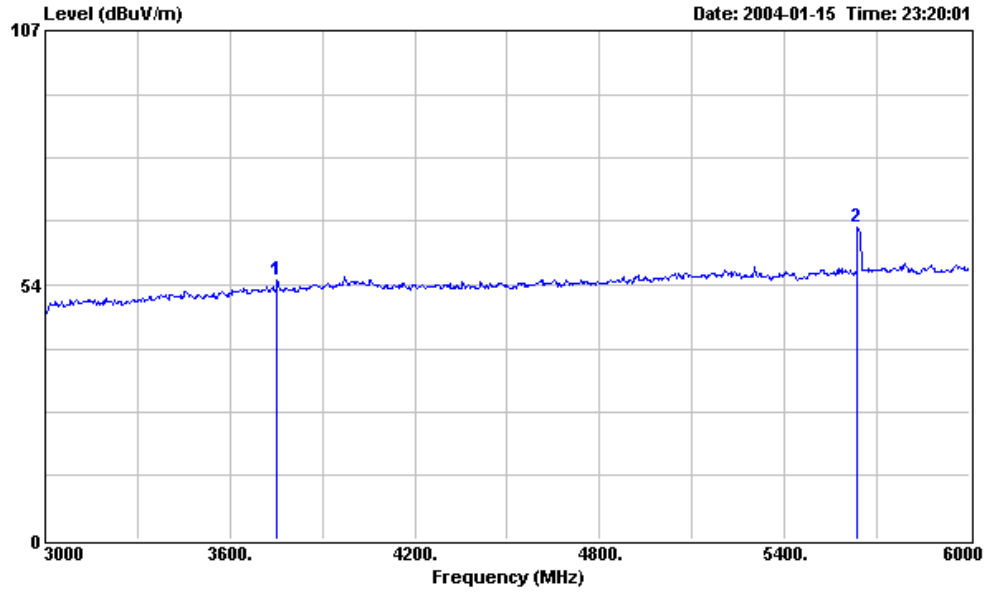
Site : 03CH03-HY
Condition : 3m LOG-9111-221 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	332.800	53.91	------	------	65.29	14.97	1.11	27.46		---	---
2	400.800	47.06	------	------	57.89	15.80	1.18	27.81		---	---
3	598.400	46.15	------	------	54.28	18.96	1.71	28.80		---	---
4	960.000	47.27	------	------	52.09	21.92	1.50	28.24		---	---



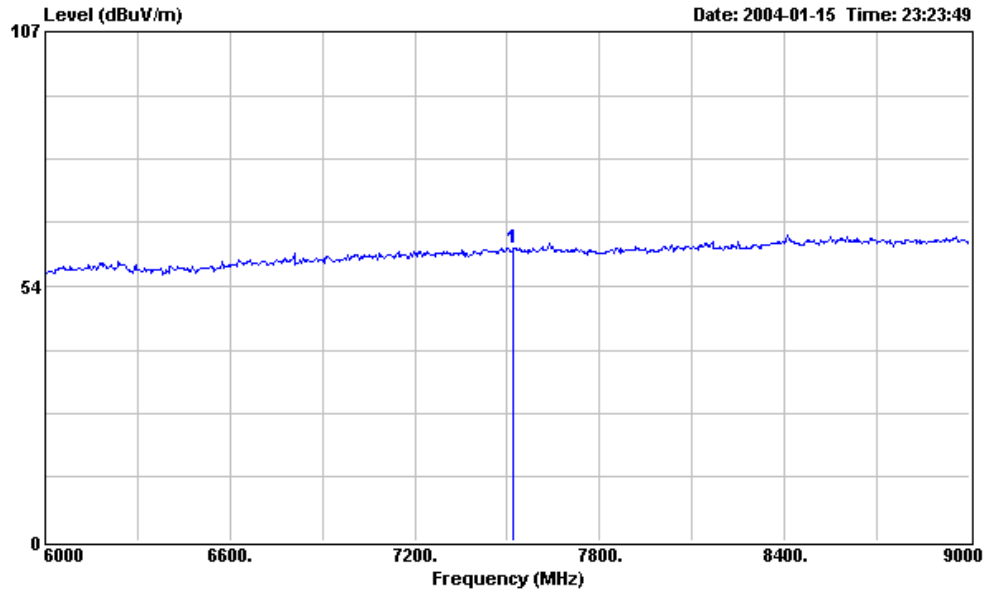
Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1094.000	48.45	------	------	56.64	24.35	4.08	36.62		---	---
2	1196.000	52.03	------	------	59.80	24.60	4.24	36.61		---	---



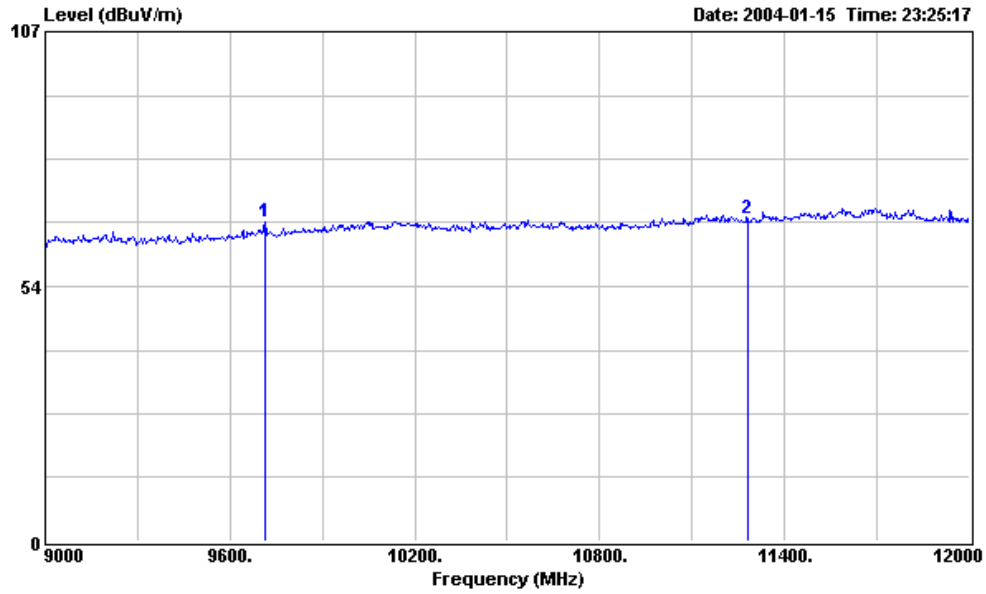
Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	3753.000	54.45	------	------	49.89	31.94	8.75	36.13		---	---
2	5637.000	65.82	------	------	58.24	34.06	10.32	36.80		---	---



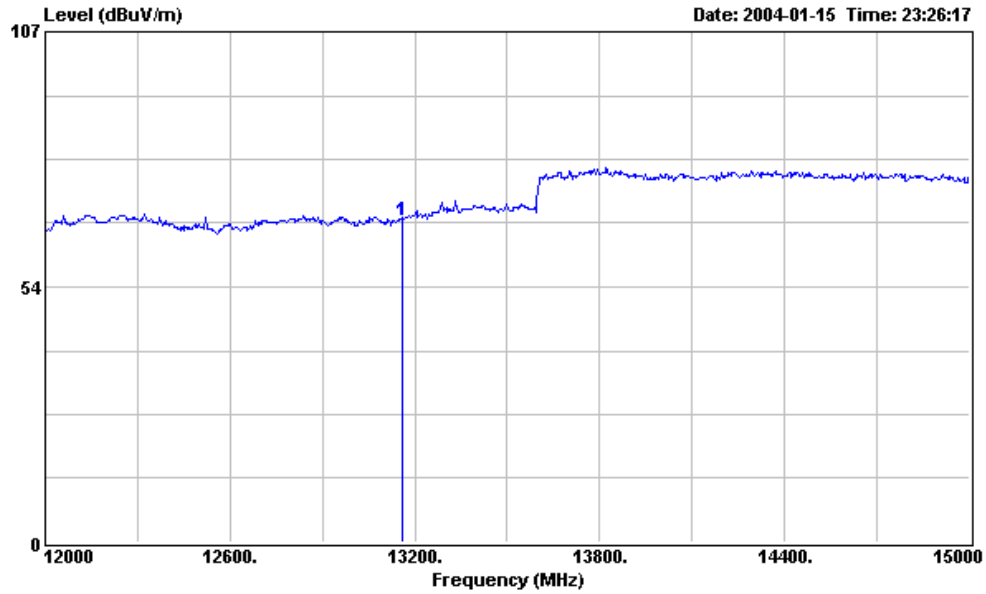
Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	7520.000	61.59	------	------	49.07	36.53	12.58	36.59		---	---



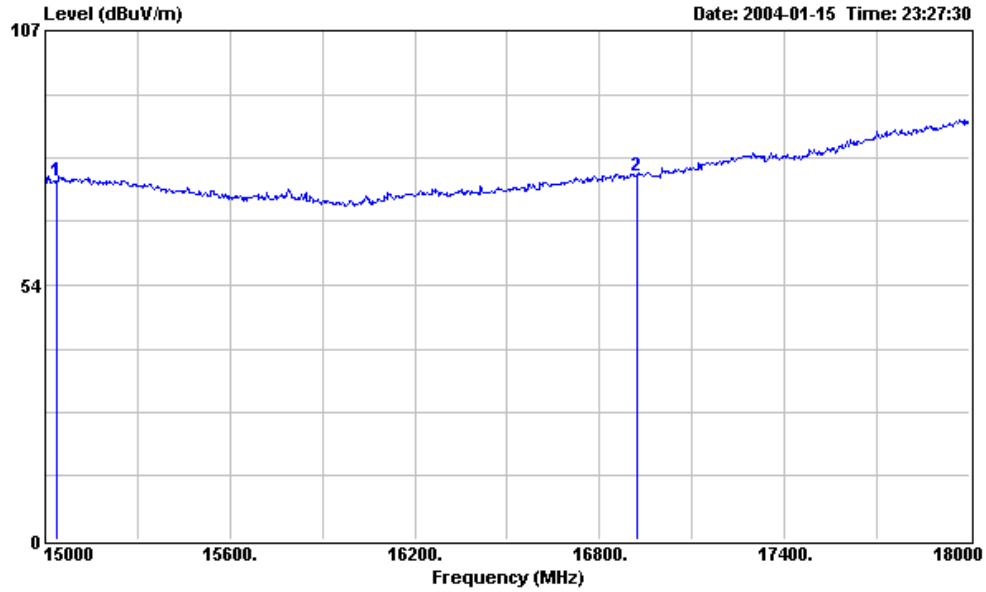
Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	9714.000	66.91	------	------	47.68	38.39	14.33	33.49		---	---
2	11280.000	67.84	------	------	45.26	38.94	16.64	33.00		---	---



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

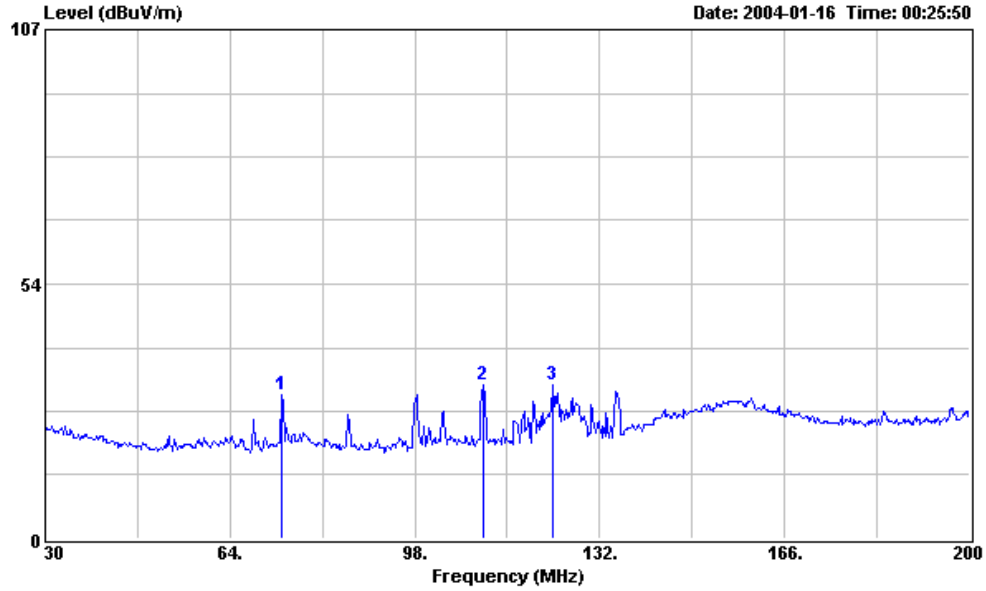
	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	13160.000	67.44	------	------	45.50	39.64	18.04	35.74		---	---



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 HORIZONTAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

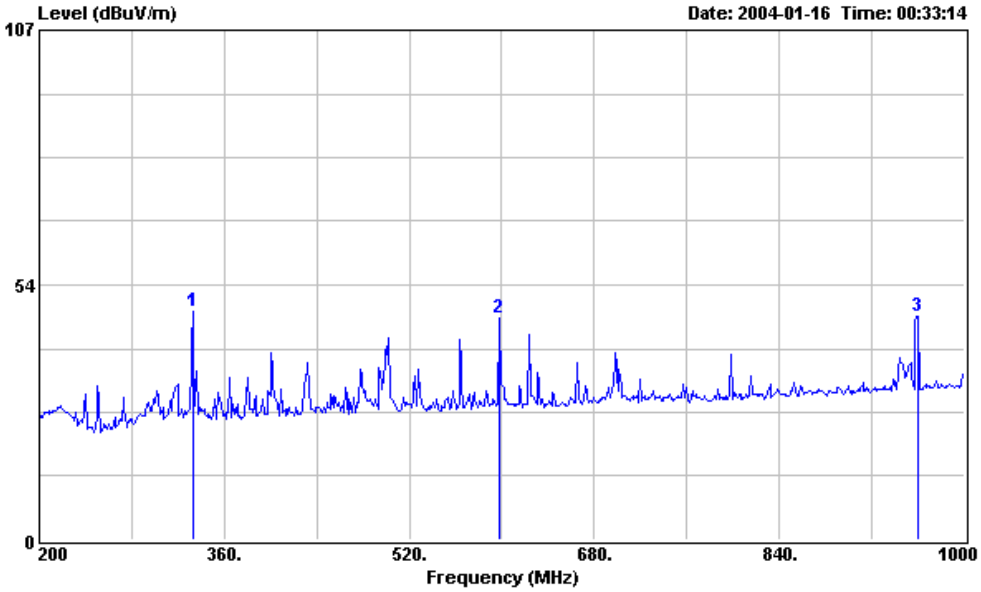
	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	15040.000	75.34	------	------	53.10	40.40	19.12	37.28		---	---
2	16920.000	76.57	------	------	51.84	39.86	21.82	36.95		---	---

GSM1900, Vertical Polarization



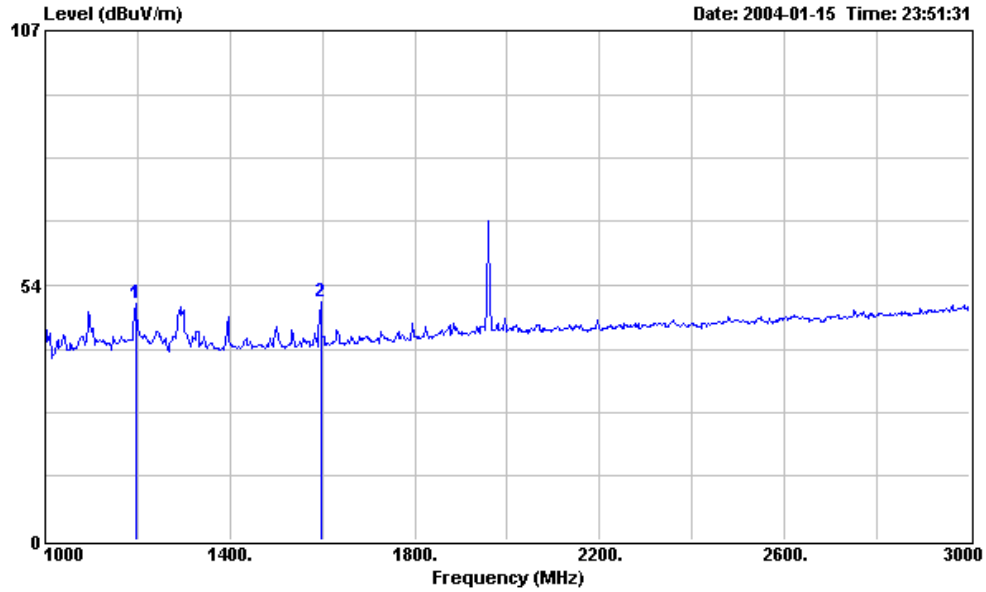
Site : 03CH03-HY
Condition : 3m BIC-9124--301 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	73.350	30.21	------	------	48.71	9.04	0.41	27.95		---	---
2	110.580	32.45	------	------	49.32	10.45	0.56	27.88		---	---
3	123.500	32.17	------	------	48.59	10.86	0.57	27.85		---	---



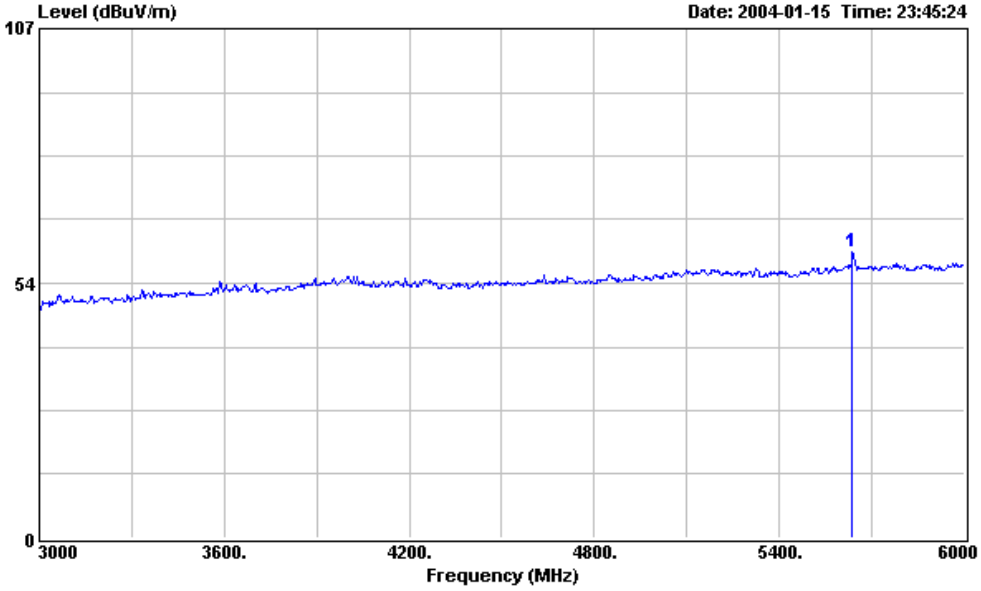
Site : 03CH03-HY
Condition : 3m LOG-9111-221 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	332.800	48.05	------	------	59.43	14.97	1.11	27.46		---	---
2	598.400	46.55	------	------	54.68	18.96	1.71	28.80		---	---
3	960.000	46.99	------	------	51.81	21.92	1.50	28.24		---	---



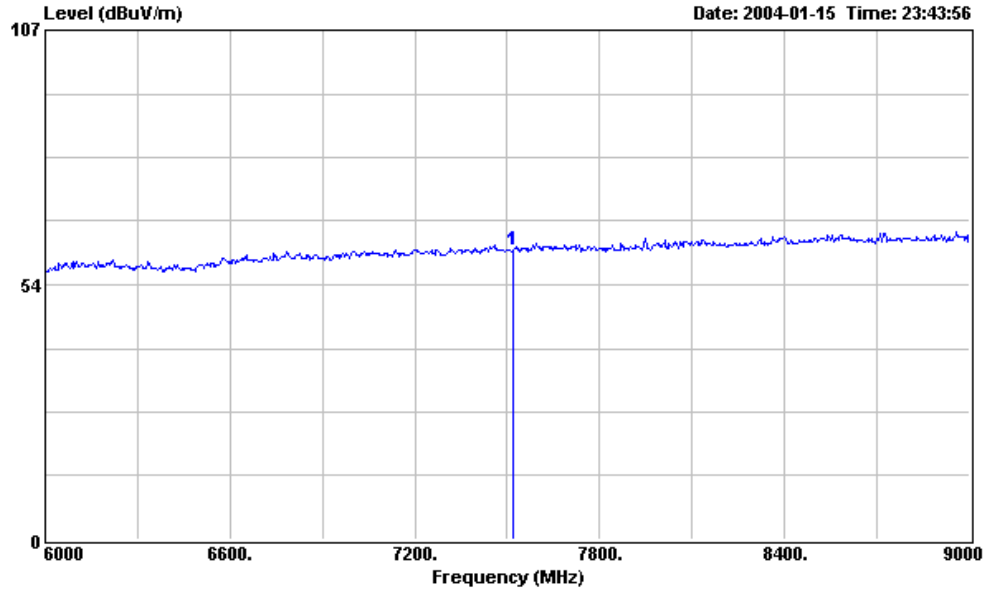
Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	1196.000	49.78	------	------	57.55	24.60	4.24	36.61		---	---
2	1596.000	49.86	------	------	55.74	25.75	4.89	36.52		---	---



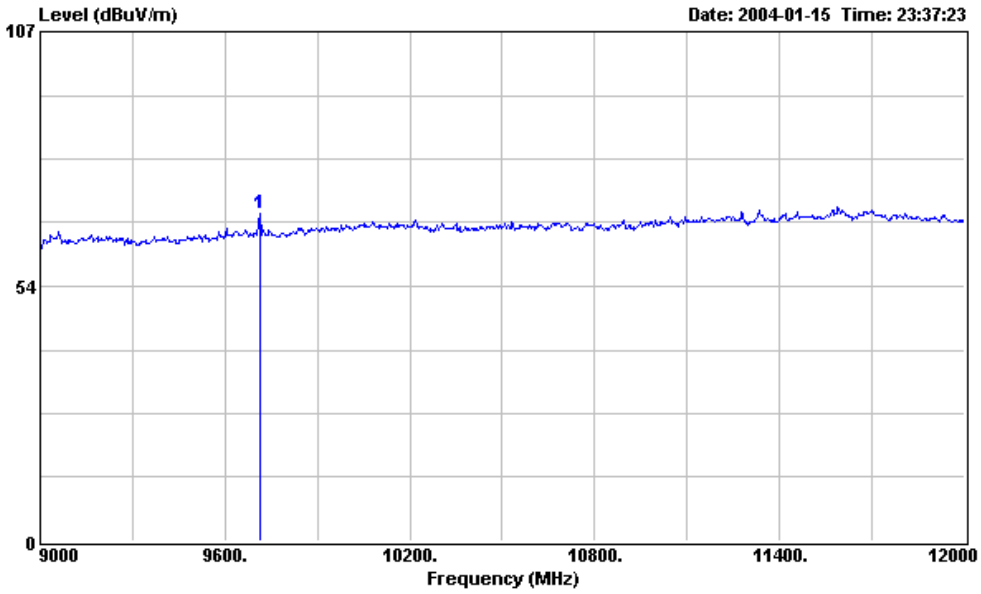
Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	5637.000	60.09	------	------	52.51	34.06	10.32	36.80		---	---



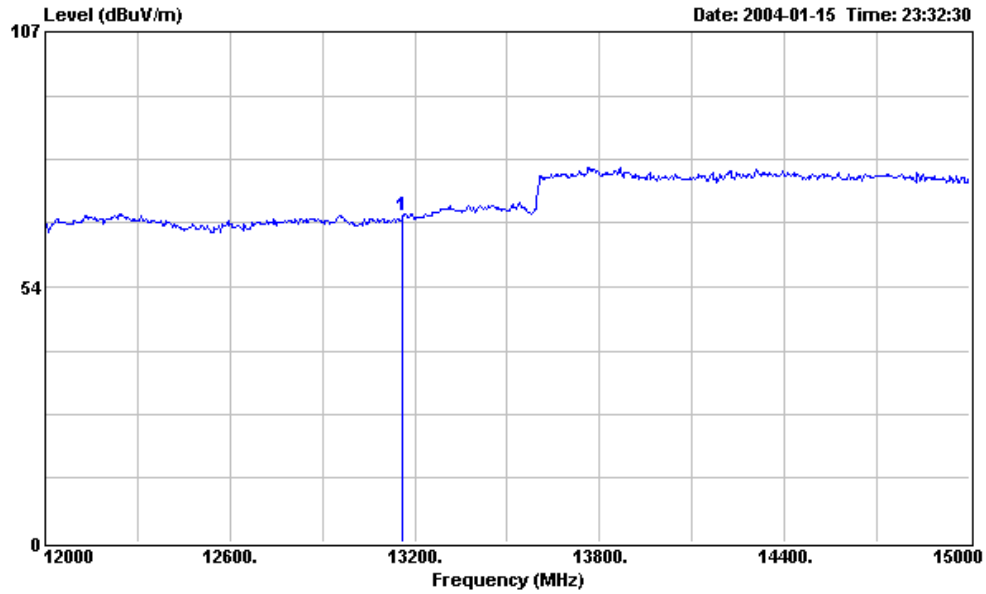
Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	7520.000	60.77	------	------	48.25	36.53	12.58	36.59		---	---



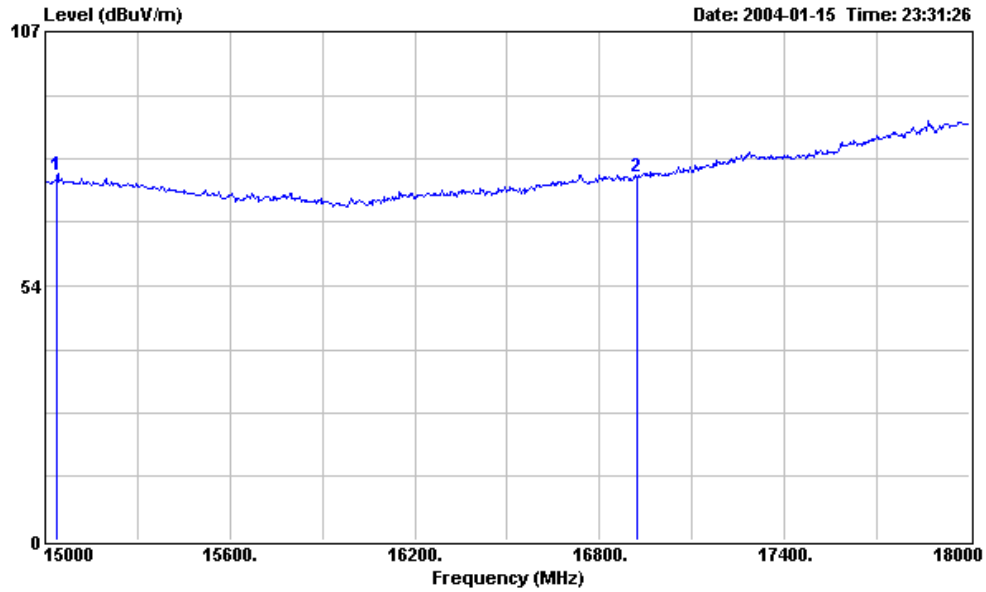
Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	9714.000	68.64	------	------	49.41	38.39	14.33	33.49		---	---



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	13160.000	68.28	------	------	46.34	39.64	18.04	35.74		---	---



Site : 03CH03-HY
Condition : 3m HORN-ANT-6741 VERTICAL
EUT : Flybook
Power : AC 110V / 60Hz
MODEL : A33i series
Memo : GSM1900 CH661

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Preamp Factor	Remark	Ant Pos	Table Pos
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB	dB	dB		cm	deg
1	15040.000	76.70	------	------	54.46	40.40	19.12	37.28		---	---
2	16920.000	76.44	------	------	51.71	39.86	21.82	36.95		---	---

Name of Test: Frequency Stability (Temperature Variation)

Specification: 47 CFR 2.1055(a)(1)

Test Conditions: As Indicated

Test Equipment: As per previous page

Measurement Procedure

1. The EUT and test equipment were set up as shown on the following page.

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.

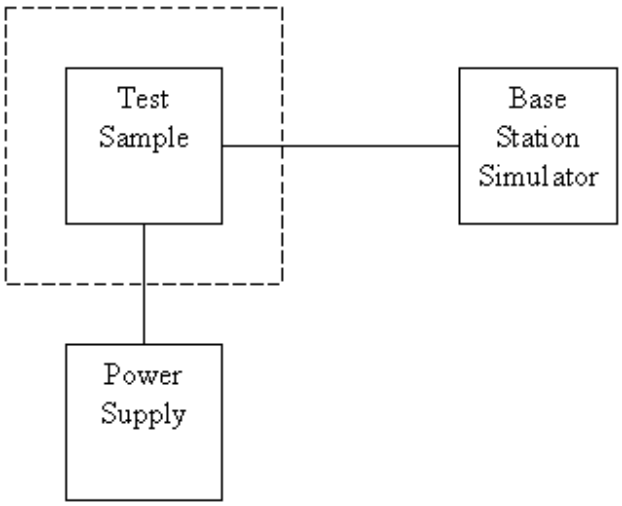
3. With power OFF, the temperature was raised in 10°C steps. The sample was permitted to stabilize at each step for at least one-half hour. Power was applied and the maximum frequency change was noted within one minute.

4. The temperature tests were performed for the worst case.

5. Measurement Results: Attached

Transmitter Test Set-Up

Frequency Stability: Temperature Variation
Frequency Stability: Voltage Variation



Asset	Model Name	S/N
Temperature & Humidity Controller	P-9000	612
AC/DC Power Source	HPA-500W	HPA0100024
Base Station Simulator	CMU200	102278

Name of Test: Frequency Stability (Temperature Variation)

GSM/GPRS PCS BAND
Frequency Tuned : 1880 MHz

Temperature(°C)	Change, Hz	Change, ppm
-30	-78	-0.04
-20	-64	-0.03
-10	-59	-0.03
0	-53	-0.03
10	-54	-0.03
20	-52	-0.03
30	-53	-0.03
40	-57	-0.03
50	-61	-0.03

Name of Test: Frequency Stability (Voltage Variation)

Specification: 47 CFR 2.1055 (b)(1)

Test Equipment: As per previous page

Measurement Procedure

1. The EUT was placed in a temperature chamber at 25±5°C and connected as for "Frequency Stability - Temperature Variation" test.

2. The power supply voltage to the EUT was varied from 85% to 115% of the nominal value measured at the input to the EUT.

3. The variation in frequency was measured for the worst case.

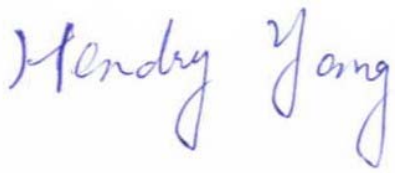
Results: Frequency Stability (Voltage Variation)

GSM/GPRS PCS BAND
Frequency Tuned : 1880 MHz

Nominal Value (Voltage) = 19.0

Voltage(Volt)	Change, Hz	Change, ppm
19	-61	-0.03
16.15	-53	-0.03
21.85	-58	-0.03

Limit: Must remain within authorized frequency block.



Performed By: Hendry Yang

Antenna Factor & Cable Loss

Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)	Frequency (MHz)	Antenna Factor (dB)	Cable Loss (dB)
30	15.35	1.01	1000	24.10	3.92
35	13.63	1.04	2000	27.40	5.66
40	11.11	1.09	3000	30.00	7.20
45	10.59	1.24	4000	32.60	9.36
50	6.47	1.43	5000	33.40	9.16
55	5.83	1.39	6000	34.20	10.70
60	5.18	1.59	7000	35.30	12.16
65	4.81	1.41	8000	36.90	13.12
70	4.43	1.43	9000	38.10	13.81
75	5.10	1.55	10000	39.00	14.83
80	5.91	1.56	11000	38.60	15.83
85	7.33	1.62	12000	39.50	17.11
90	8.74	1.41	13000	39.30	17.62
95	9.05	1.81	14000	41.60	18.37
100	9.36	1.68	15000	40.60	19.10
110	9.65	1.73	16000	37.20	19.72
120	9.97	1.79	17000	40.20	21.98
130	10.51	1.93	18000	48.90	21.22
140	10.32	2.06	19000	37.60	23.90
150	9.42	2.09	20000	37.30	24.07
160	8.09	2.12	21000	37.00	25.49
170	7.43	2.12	22000	38.00	24.92
180	7.60	2.12	23000	38.70	25.60
190	7.43	2.21	24000	38.60	25.70
200	7.26	2.29	25000	24.10	3.92
220	9.11	2.42	14000	27.40	5.66
240	10.88	2.54	15000	30.00	7.20
260	11.75	2.66	16000	32.60	9.36
280	11.55	2.76	17000	33.40	9.16
300	11.36	2.85	18000	34.20	10.70
320	12.03	3.10	19000	35.30	12.16
340	12.69	3.36	20000	36.90	13.12
360	13.33	3.49	21000	38.10	13.81
380	14.00	3.50	22000	39.00	14.83
400	14.63	3.51	23000	38.60	15.83
450	15.33	3.55	24000	39.50	17.11
500	16.03	3.81	25000	39.30	17.62
550	16.65	4.05			
600	17.29	4.23			
650	17.64	4.63			
700	18.00	4.74			
750	18.39	4.95			
800	18.79	5.06			
850	19.10	5.18			
900	19.42	5.40			
950	19.58	5.91			
1000	19.75	5.58			

List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz~1GHz 3m	Jun. 21, 2003	Radiation (03CH03-HY)
Spectrum analyzer	R&S	FSP40	100004	9KHZ~40GHz	Aug. 07, 2003	Radiation (03CH03-HY)
Amplifier	MITEQ	AFS44	879981	100MHz~26.5GHz	Jul. 23, 2003	Radiation (03CH03-HY)
Horn Antenna	COM-POWER	AH-118	10094	1GHz – 18GHz	Apr. 10, 2003	Radiation (03CH03-HY)
Turn Table	HD	DS 420	420/650/00	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	HD	MA 240	240/560/00	1 m - 4 m	N/A	Radiation (03CH03-HY)
RF Cable-HIGH	Jye Bao	RG142	CB030-HIGH	1GHz~29.5GHz	Mar. 14, 2003	Radiation (03CH03-HY)
Temperature & Humidity Controller	LABTEK	P-9000	612	-40°C~+70°C	Oct. 01,2003	Conductive (TMH)
AC/DC Power Source	HPA	HPA-500W	HPA-9100024	0V~240V	Mar 05, 2003	Conductie (TMH)
Spectrum analyzer	R&S	FSP30	100004	9KHZ~30GHz	Sep. 03, 2003	Conductive (TMH)
Base Station Simulator	R&S	CMU200	102278	9KHz~2.7GHz	Mar. 26, 2003	Both Radiation and Conductive

※ Calibration Interval of instruments listed above is one year, except for Horn Antenna, BBHA9170.

Uncertainty of Test Site

Uncertainty of Radiated Emission Measurement

Contribution	Probability Distribution	3m
Antenna factor calibration	normal(k=2)	±1
cable loss calibration	normal(k=2)	±0.3
RCV/SPA specification	rectangular	±2
Antenna Directivity	rectangular	±3
Antenna Factor V.S. Height	rectangular	±2
Antenna Factor Interpolation for Frequency	rectangular	±0.25
site imperfection	rectangular	±2
Mismatch Receiver VSWR Γ1=0.09 Antenna VSWR Γ2=0.67 Uncertainty=20log(1-Γ1*Γ2)	U-shaped	±0.54
combined standard uncertainty Ue(y)	normal	±2.7
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	normal (k=2)	±5.4

$U=\sqrt{\{(1/2)^2+(0.3/2)^2+(2^2+0.5^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.2$ for 10m test distance

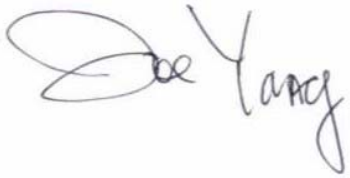
$U=\sqrt{\{(1/2)^2+(0.3/2)^2+(2^2+3^2+2^2+0.25^2+2^2)/3+(0.54)^2/2\}}=2.7$ for 3m test distance

END OF TEST REPORT

Testimonial and Statement of Certification

This is to certify that:

1. **That** the application was prepared either by, or under the direct supervision of, the undersigned.
2. **That** the technical data supplied with the application was taken under my direction and supervision.
3. **That** the data was obtained on representative units, randomly selected.
4. **That**, to the best of my knowledge and belief, the facts set forth in the application and accompanying technical data are true and correct.



Certified by: Joe Yang