FCC TEST REPORT

for

47 CFR Part 15 Subpart C

Equipment	**:**	**PDA Phone**
Trade Name	**:**	**Opticon**
Model No.	**:**	**H-19A, H-19B**
FCC ID	**:**	**UFOBC0164AAA390**
Filing Type	**:**	**Certification**
Applicant	**:**	**OPTOELECTRONICS CO., LTD.** 12-17, Tsukagoshi 4-chome, Warabi-shi, Saitama, 335-0002, Japan

- The test result refers exclusively to the test presented test model / sample.
- Without written approval of SPORTON International Inc., the test report shall not be reproduced except in full.
- **Certificate or Test Report must not be used by the applicant to claim the product in this test report endorsement by NVLAP or any agency of U.S. government.**
- The data shown in this test report were carried out on Jul. 10, 2007 at **Sporton International Inc. LAB.**
- Report No.: FR762206-B, Report Version: Rev. 01.

Jones Tsai
Manager

SPORTON International Inc.

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

Table of Contents

History of this test report

Report Issue Date: Jul. 17, 2007

Report No.	Description

1. General Description of Equipment under Test

1.1. Applicant

OPTOELECTRONICS CO., LTD.
12-17, Tsukagoshi 4-chome, Warabi-shi, Saitama, 335-0002, Japan

1.2. Manufacturer

OPTOELECTRONICS CO., LTD.
12-17, Tsukagoshi 4-chome, Warabi-shi, Saitama, 335-0002, Japan

1.3. Basic Description of Equipment under Test

Equipment		PDA Phone
Trade Name		Opticon
Model Name		H-19A, H-19B
AC Adapter 1	**Brand Name**	PI Electronics
	Model Name	AD7112B 03LF
	Power Rating	I/P:100-240Vac, 50-60Hz, 0.25A; O/P: 5Vdc, 1A
	AC Power Cord Type	1.6 meter shielded cable with ferrite core
AC Adapter 2	**Brand Name**	HP
	Model Name	HSTNN-P05A
	Power Rating	I/P:100-240Vac, 50-60Hz, 0.6A; O/P: 5Vdc, 3.6A
	AC Power Cord Type	1.6 meter shielded cable without ferrite core
Battery	**Brand Name**	Opticon
	Model Name	H-19
	Rating	4.2Vdc, 1440mA
	Type	Li-ion
Earphone	**Brand Name**	TECHWIN Communication Co. Ltd
	Model Name	EE-624A-8EN
	Signal line Type	1.2 meter non-shielded cable without ferrite core
USB Cable for Phone	**Brand Name**	WIESON
	Model Name	160035
	Signal line Type	0.9 meter shielded cable without ferrite core
USB Cable for Cradle	**Brand Name**	WIESON
	Model Name	160035
	Signal line Type	1 meter shielded cable without ferrite core
Cradle	**Brand Name**	Opticon
	Model Name	CRD-19
Scanner 1	**Brand Name**	OPTOELECTRONICS
	Model Name	MDL-2000
Scanner 2	**Brand Name**	OPTOELECTRONICS
	Model Name	MDI-1000

Remark : Scanner 1 was used for H-19A, and scanner 2 was used for H-19B.

1.4. Feature of Equipment under Test

Product Feature & Specification				
1. Modulation Type/Data Rate	GFSK			
2. Frequency Range.	2400 MHz ~ 2483.5 MHz			
3. Number of Channels	79			
4. Carrier Frequency of each channel	2402+ n*1 MHz, n= 0~78			
5. Channel Spacing	1 MHz			
6. Maximum Output Power to Antenna (Normal condition)	2.51 dBm			
7. Type of Antenna Connector	N/A			
8. Antenna Type	Chip Antenna			
9. Antenna Gain	-3 dBi			
10. Function Type	Transmitter		Transceiver	V

2. Test Configuration of Equipment under Test

2.1. Test Manner

a. The EUT has been associated with peripherals pursuant to ANSI C63.4-2003 and configuration operated in a manner tended to maximize its emission characteristics in a typical application.
b. For spurious emission below 1GHz, only one channel of each application was tested because it is not related to channel selection.
c. The EUT is programmed to transmit signal continuously for all testings.
d. Frequency range investigated: conduction 150 kHz to 30 MHz, radiation 30 MHz to 25000MHz.
e. Radiated spurious emission was tested with scanner 2.

2.2. Test Mode

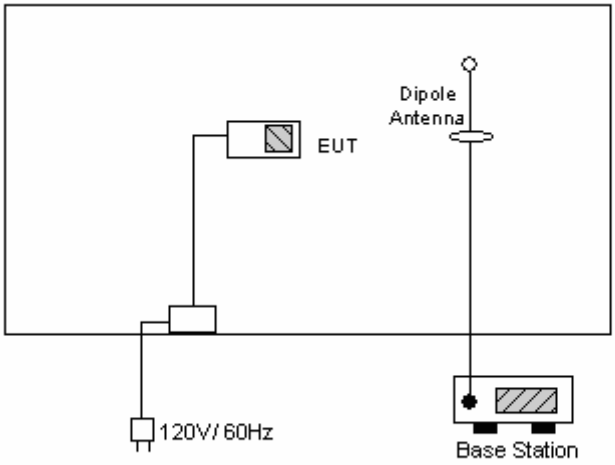
Application	Bluetooth
Radiated Emission, RF Conducted	Mode 1 : Tx_CH00_2402 MHz Mode 2 : Tx_CH39_2441 MHz Mode 3 : Tx_CH78_2480 MHz
Conducted Emission	Mode 1 : GSM 850 Idle Mode + Earphone + BT Link + WLAN Link + Scanner 1 + Adapter 1+ MPEG4 Mode 2 : GSM 850 Idle Mode + Earphone + BT Link + WLAN Link + Scanner 2 + Adapter 1+ MPEG4 Mode 3 : GSM 850 Idle Mode + Earphone + BT Link + WLAN Link + Scanner 2 + USB Link + MPEG4 Mode 4 : GSM 850 Idle Mode + USB Link + BT Link + WLAN Link + Scanner 2 + Adapter 2 + MPEG4 + Cradle Mode 5 : PCS 1900 Idle Mode + Earphone + BT Link + WLAN Link + Scanner 2 + USB Link + MPEG4

2.3. Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Power Cord / Cable
1.	Base Station	R&S	CMU200	N/A	N/A
2.	Notebook	DELL	D400	E2K24GBRL	1.2m
3.	Bluetooth Device	Engotech	ET-BD201	PQY471087	N/A
4.	WLAN AP	SMC	SMC-100	HEDWG4005ACC	1.8m
5.	RS-232 Mouse	State	MS-303	DoC	N/A

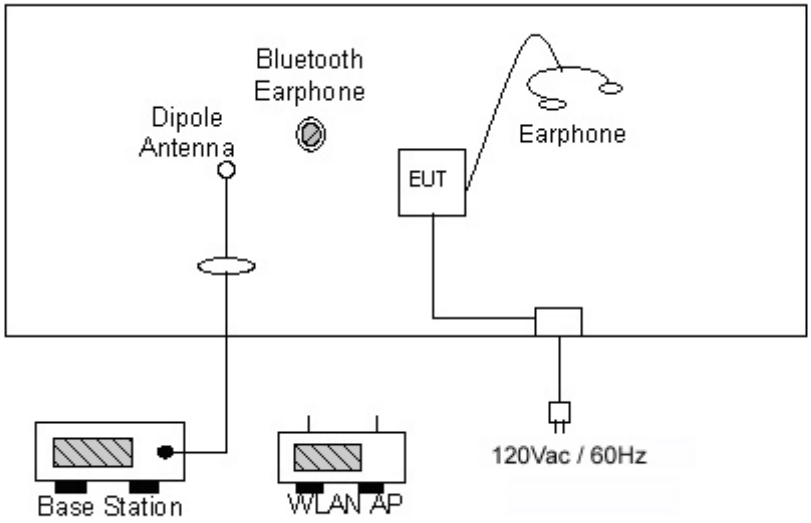
2.4. Connection Diagram of Test System

<Radiated Emission >

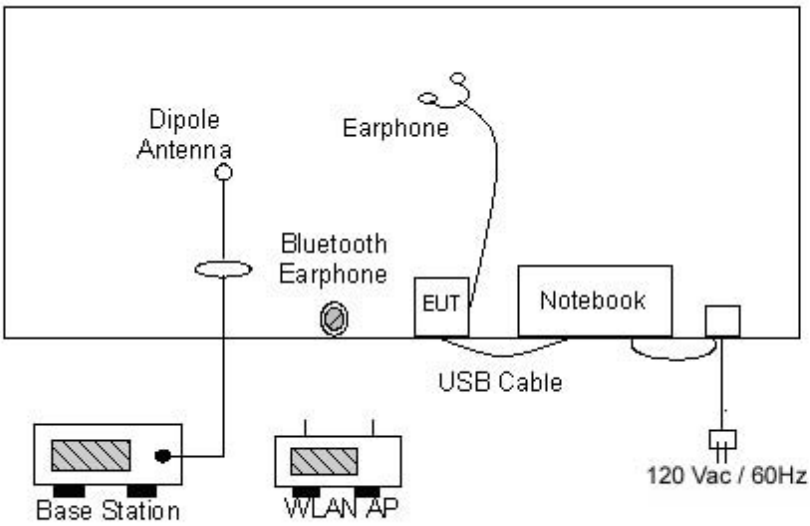


<Conducted Emission>

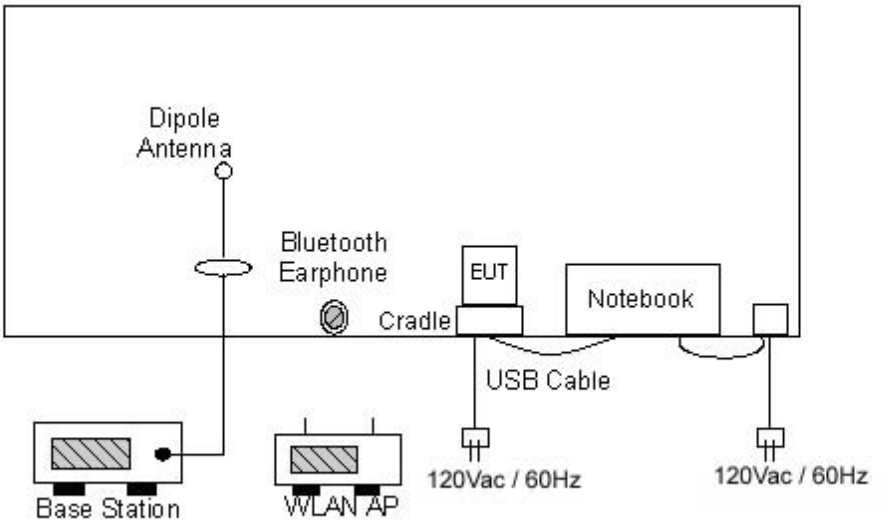
EUT + Earphone + Adapter



EUT + Adapter + USB Link



EUT + Adapter + USB Link + Cradle



3. RF Utility

The EUT is in BT Link mode with mobile phone for conducted emission or in BT continuous Tx Mode controlled by base station simulator for radiation emission.

4. General Information of Test

Test Site Location	:	No. 52, Hwa Ya 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C. TEL : 886-3-327-3456 FAX : 886-3-318-0055
Test Site No	:	CO01-HY, 03CH06-HY

4.1. Test Voltage

AC 120V / 60Hz

4.2. Standard for Methods of Measurement

ANSI C63.4-2003

4.3. Test Compliance

47 CFR Part 15 Subpart C

4.4. Frequency Range

Conduction: from 150 kHz to 30 MHz
Radiation: from 30 MHz to 25000MHz

4.5. Test Distance

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

5. Report of Measurements and Examinations

5.1. List of Measurements and Examinations

FCC Rule	Description of Test	Result	Section
15.247(a)(1)	Hopping Channel Separation	Pass	5.2
15.247(a)(1)(iii)	Number of Hopping Frequency Used	Pass	5.3
15.247(a)(1)	Hopping Channel Bandwidth	Pass	5.4
15.247(a)(1)(iii)	Dwell Time of Each Frequency	Pass	5.5
15.247(b)(1)	Output Power	Pass	5.6
15.247(c)	100kHz Bandwidth of Frequency Band Edges	Pass	5.7
15.207	Conducted Emission	Pass	5.8
15.209	Radiated Emission	Pass	5.9
15.203	Antenna Requirement	Pass	5.10

5.2. Hopping Channel Separation

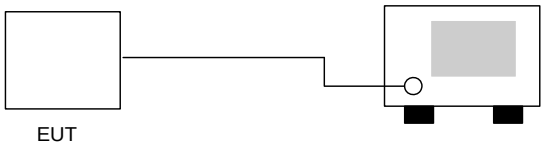
5.2.1. Measuring Instruments：

As described in chapter 6 of this test report.

5.2.2. Test Procedure：

1. The output of EUT was connected to the spectrum analyzer by a low loss cable.
2. Set RBW of spectrum analyzer to ≧1% of the span and VBW ≧ RBW.
3. The Hopping Channel Separation is defined as the channel is separated with the next channel.

5.2.3. Test Setup Layout：



5.2.4. Test Result：The spectrum analyzer plots are attached as below

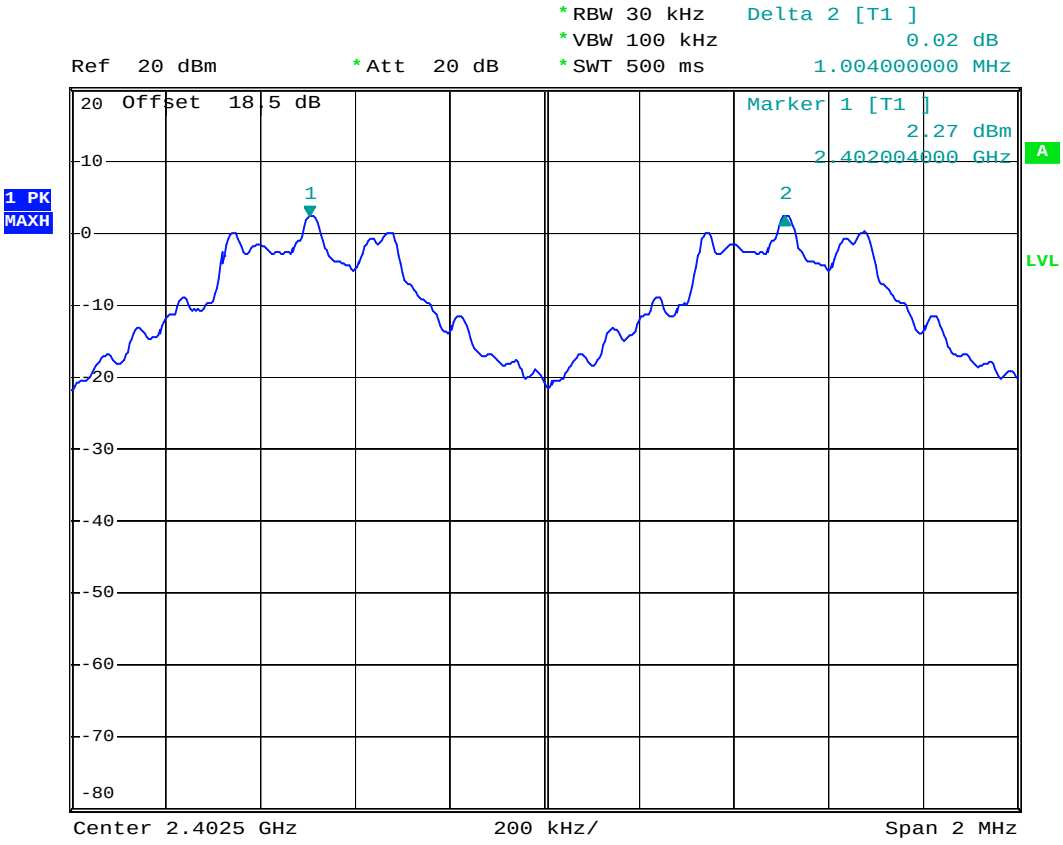
- Temperature: 24~25°C
- Relative Humidity: 51~53%
- Test Engineer : Louis

Channel	Frequency (MHz)	Hopping Channel Separation (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	1.004	0.824	Mode 1
39	2441	1.004	0.826	Mode 2
78	2480	1.000	0.826	Mode 3

Note: Hopping Channel Separation shall be greater 2/3 of 20dB bandwidth. Refer the result of 20dB bandwidth to section 5.4.

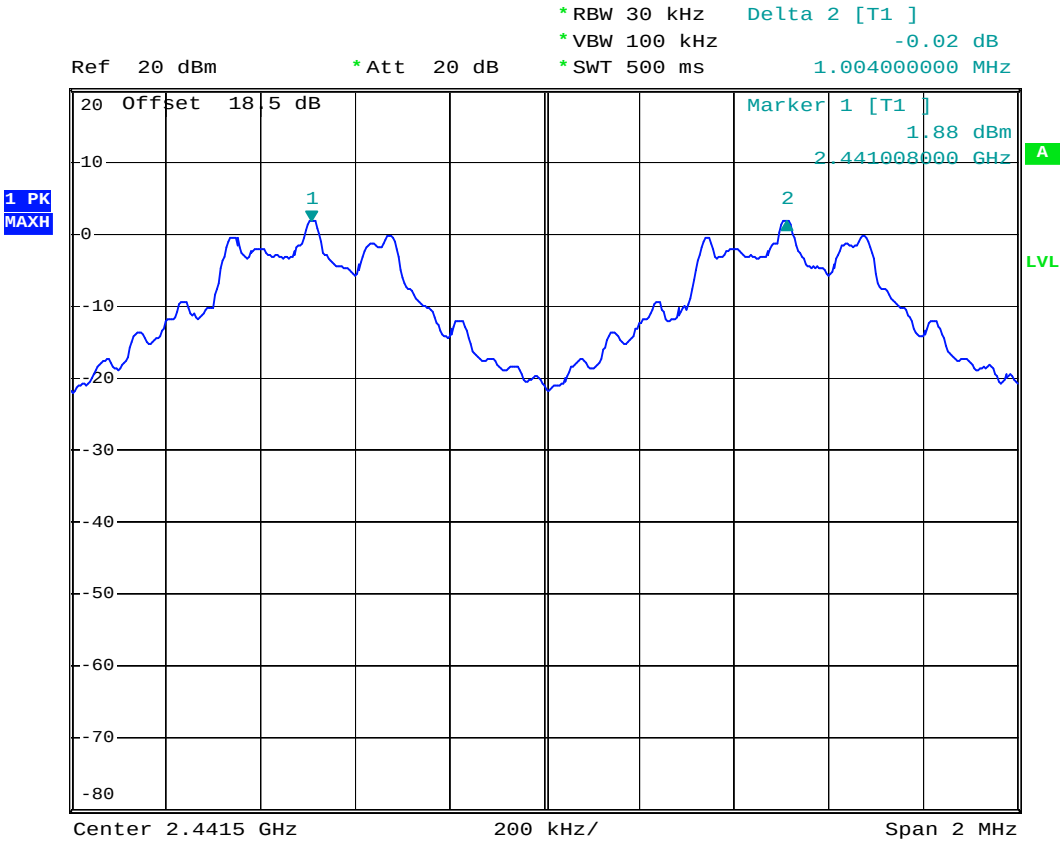
5.2.5 Hopping Channel Separation

Mode 1: CH00 (2402MHz)



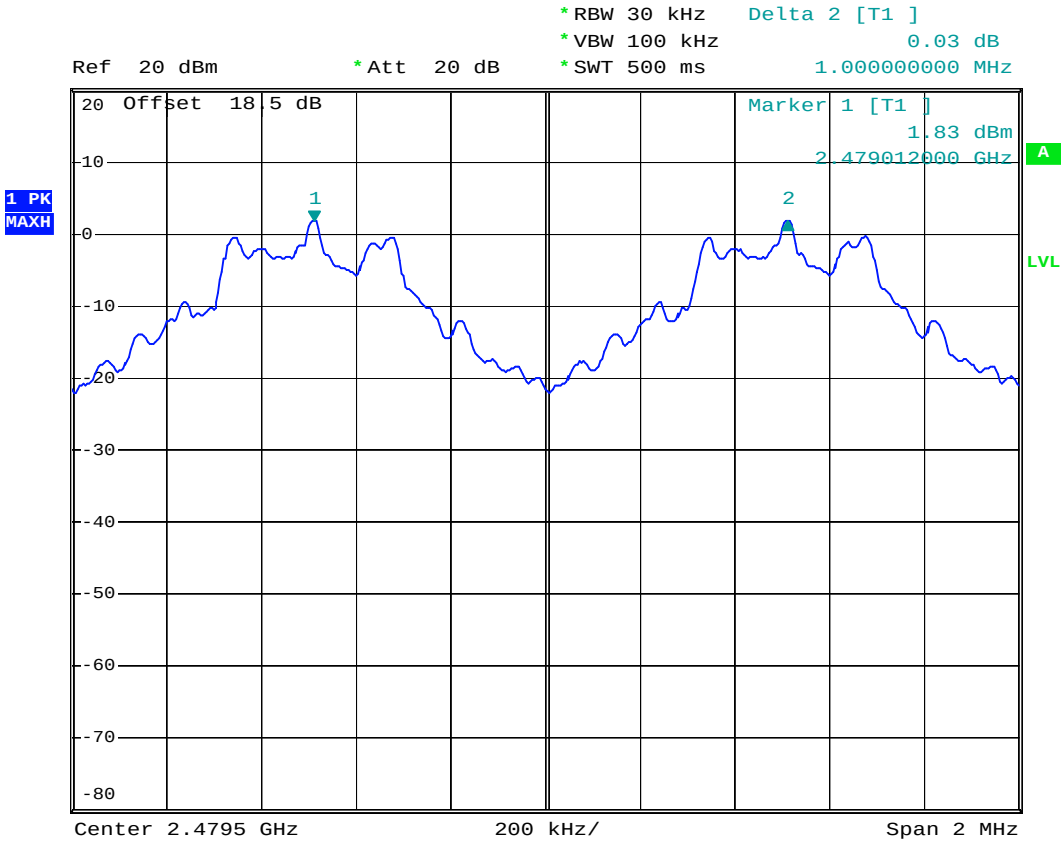
Date: 11.JUL.2007 22:09:40

Mode 2: CH39 (2441MHz)



Date: 11.JUL.2007 22:10:11

Mode 3: CH78 (2480MHz)



Date: 11.JUL.2007 22:10:49

5.3. Number of Hopping Frequency

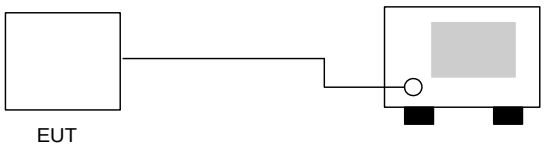
5.3.1. Measuring Instruments：

As described in chapter 6 of this test report.

5.3.2. Test Procedure：

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 100kHz and VBW to 100kHz.
3. The number of hopping frequency used is defined as the device has the numbers of total channel.

5.3.3. Test Setup Layout：

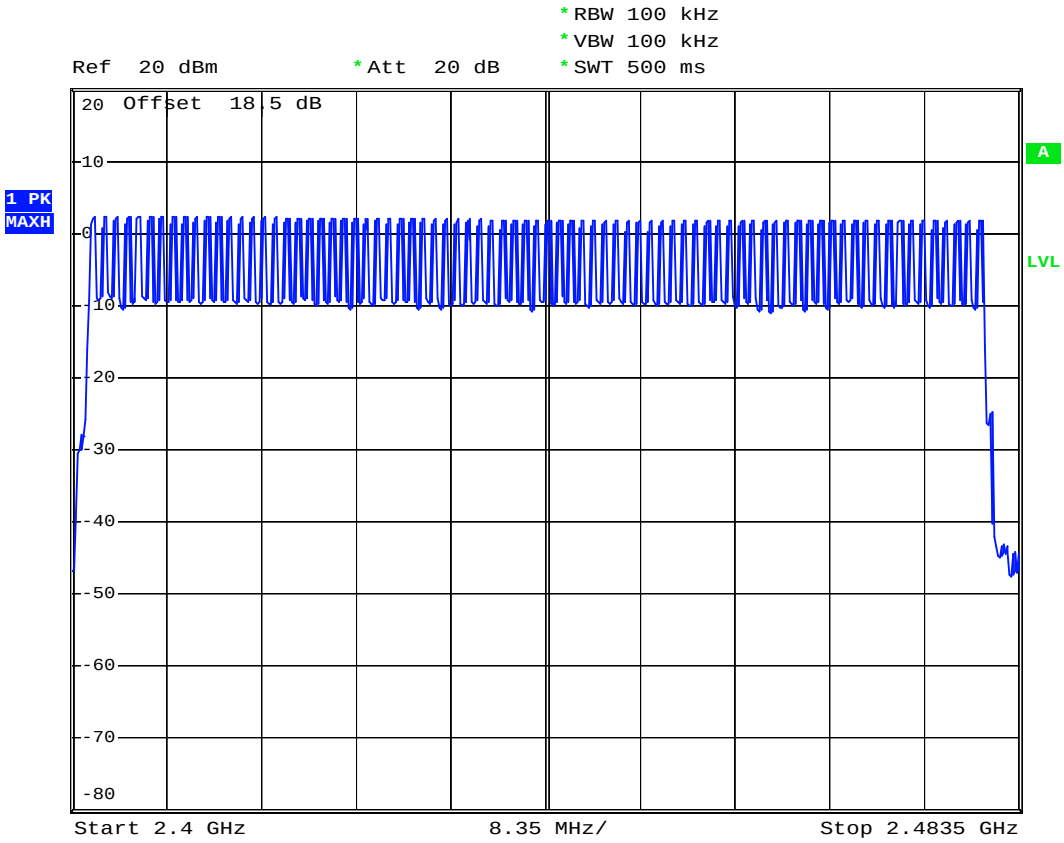


5.3.4. Test Result：See spectrum analyzer plots below

- Temperature: 24~25°C
- Relative Humidity: 51~53%
- Test Engineer : Louis

Number of Hopping Frequency (Channel)	Limits (Channel)
79	15

5.3.5 Number of Hopping Frequency



Date: 11.JUL.2007 22:47:37

5.4 Hopping Channel Bandwidth

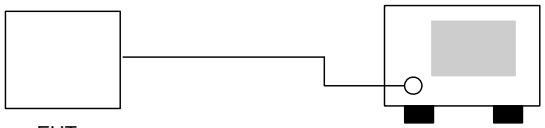
5.4.1 Measuring Instruments：

As described in chapter 6 of this test report.

5.4.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 30kHz and VBW to 300kHz.
3. The Hopping Channel bandwidth is defined as the frequency range where the power is higher than peak power minus 20dB.

5.4.3 Test Setup Layout：



5.4.4 Test Result：See spectrum analyzer plots below

- Temperature: 24~25°C
- Relative Humidity: 51~53%
- Test Engineer : Louis

Channel	Frequency (MHz)	Hopping Channel Bandwidth (MHz)	Limits (MHz)	Plot Ref. No.
00	2402	0.824	1.0	Mode 1
39	2441	0.826	1.0	Mode 2
78	2480	0.826	1.0	Mode 3

5.4.5 Hopping Channel Bandwidth

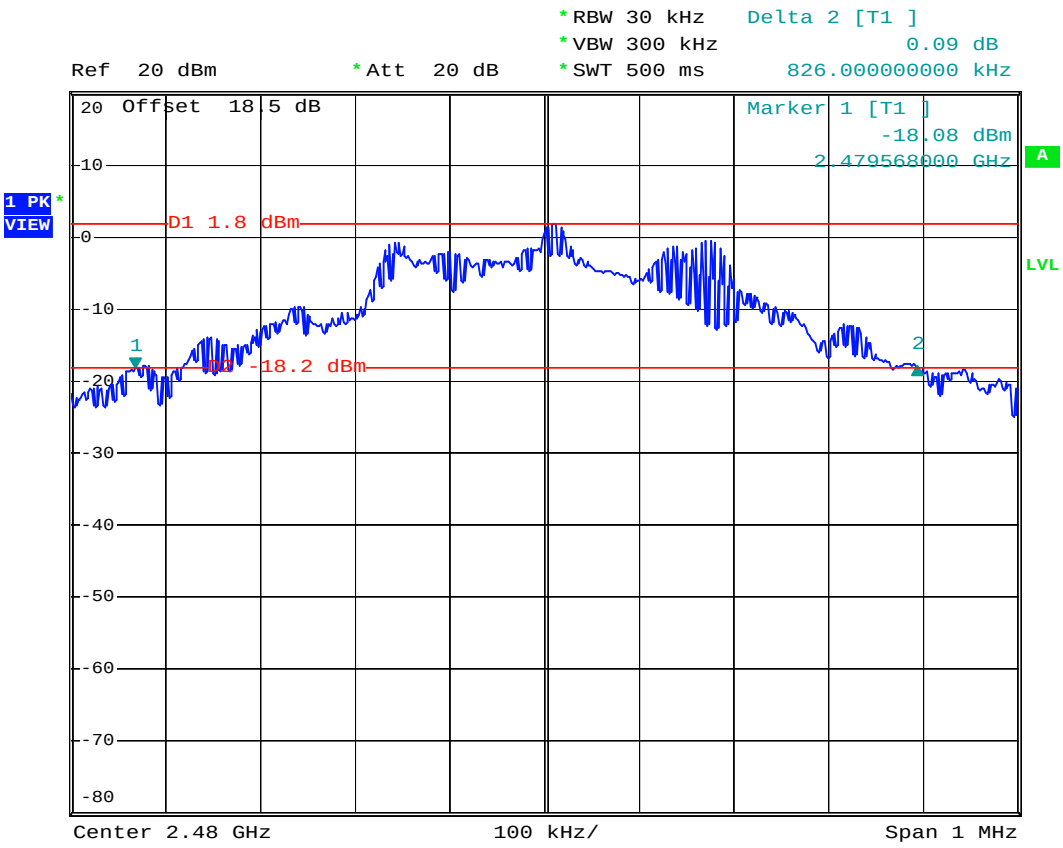
Mode 1: CH00 (2402MHz)

Date: 11.JUL.2007 22:01:13

Mode 2: CH39 (2441MHz)

Date: 11.JUL.2007 22:02:00

Mode 3: CH78 (2480MHz)



Date: 11.JUL.2007 22:03:22

5.5 Dwell Time of Each Frequency

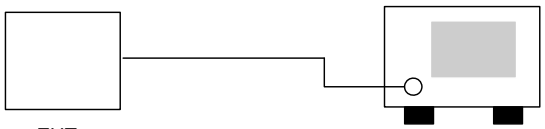
5.5.1 Measuring Instruments：

As described in chapter 6 of this test report.

5.5.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer directly.
2. Set RBW of spectrum analyzer to 1MHz and VBW to 1MHz.
3. Set the center frequency on any frequency would be measured and set the frequency span to zero span.
4. The calculate equals 79 * 0.4 * (1600/79) * t (t = the time duration of one single pulse)

5.5.3 Test Setup Layout：



5.5.4 Test Result：See spectrum analyzer plots below

- Temperature: 24~25°C
- Relative Humidity: 51~53%
- Test Engineer : Louis

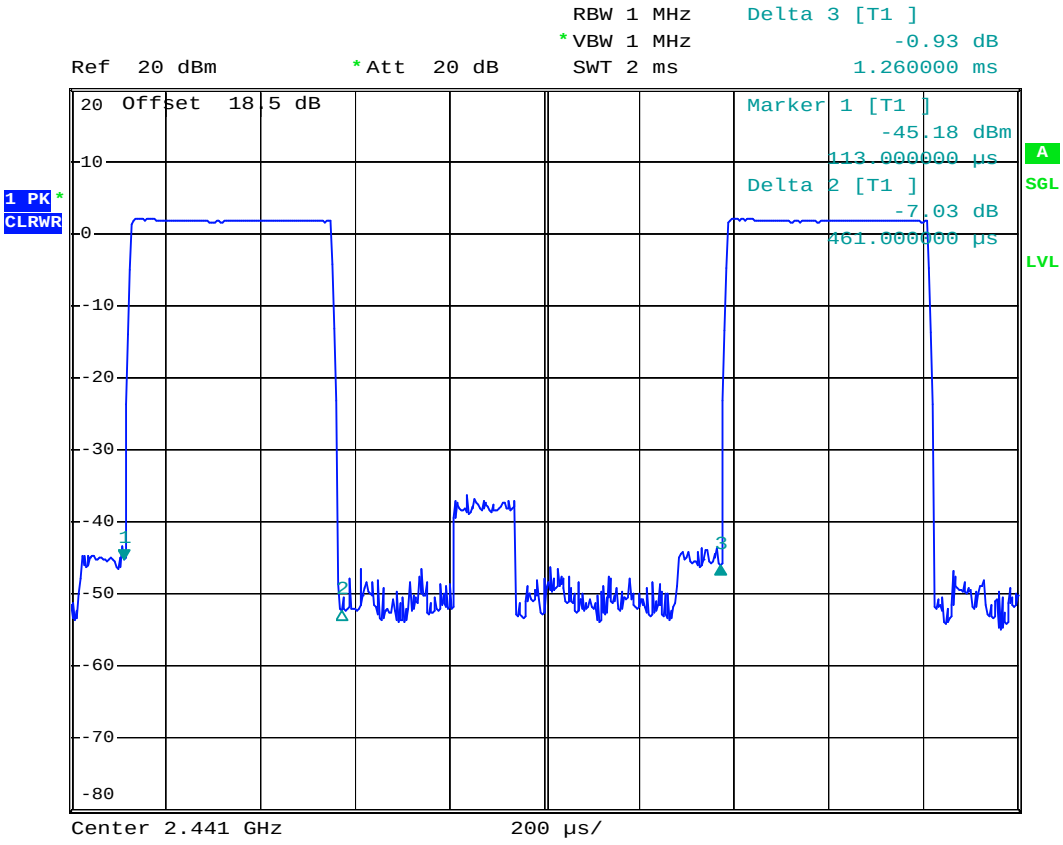
CH39

Package Mode	Average Hopping Channel	Package Transfer Time (us)	Dwell Time (s)	Limit (s)
DH1	9.5	461.00	0.138	0.4
DH3	5.4	1771.00	0.302	0.4
DH5	3.4	3011.00	0.324	0.4

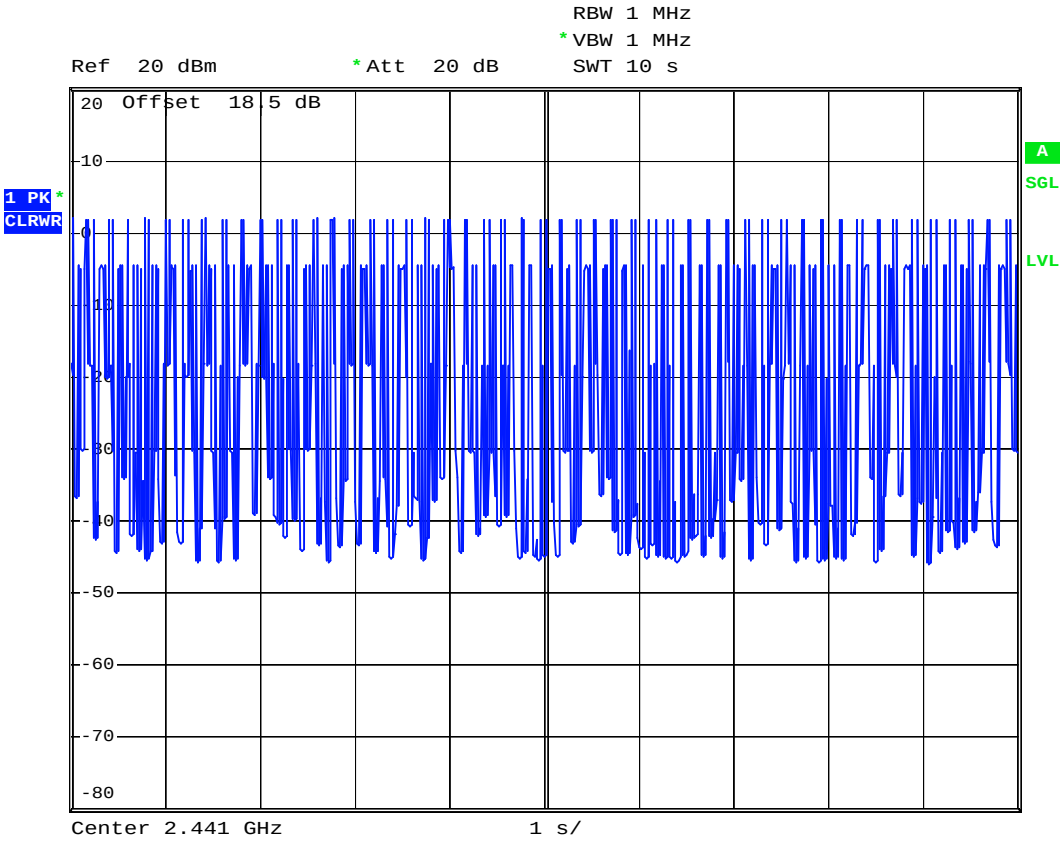
※ Remark:
1. Dwell Time=79(channels) x 0.4(s) x average hopping channel x package transfer time
2. 79channels come from the Hopping Channel number.
3. Average Hopping Channel = hops/sweep time
4. t: Package Transfer Time(us)

5.5.5 Dwell Time

DH1 (CH39)

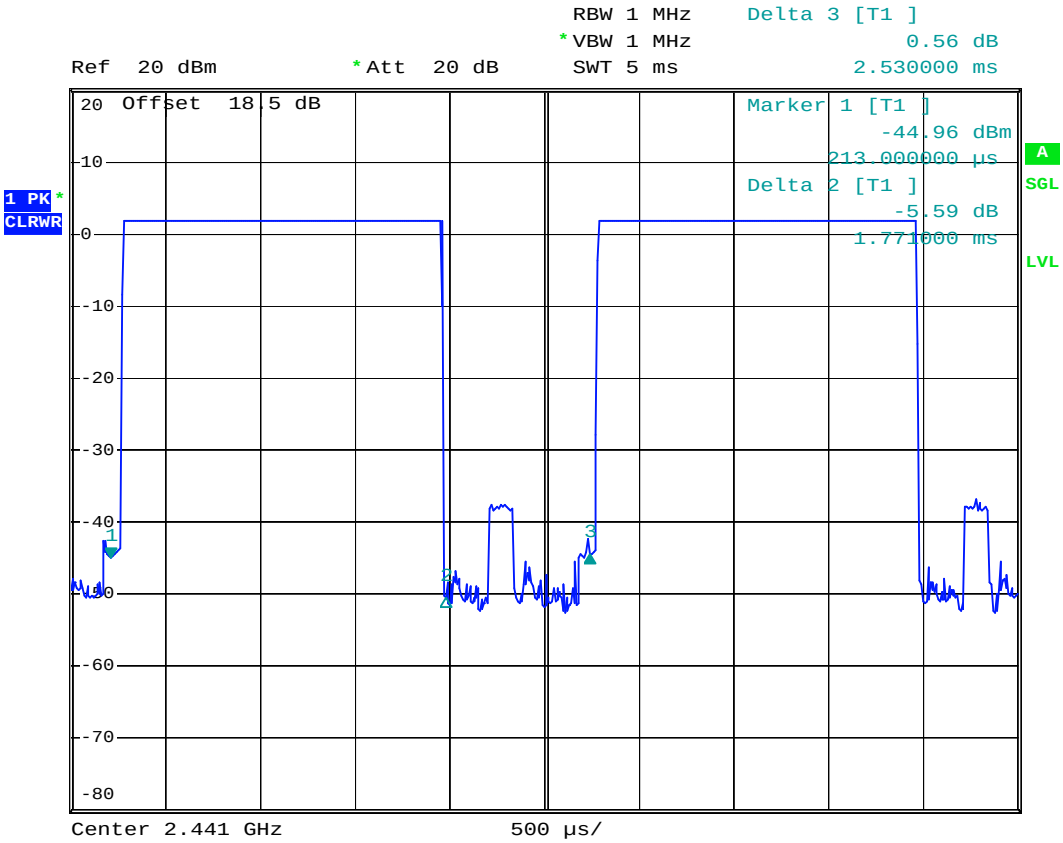


Date: 11.JUL.2007 22:12:24

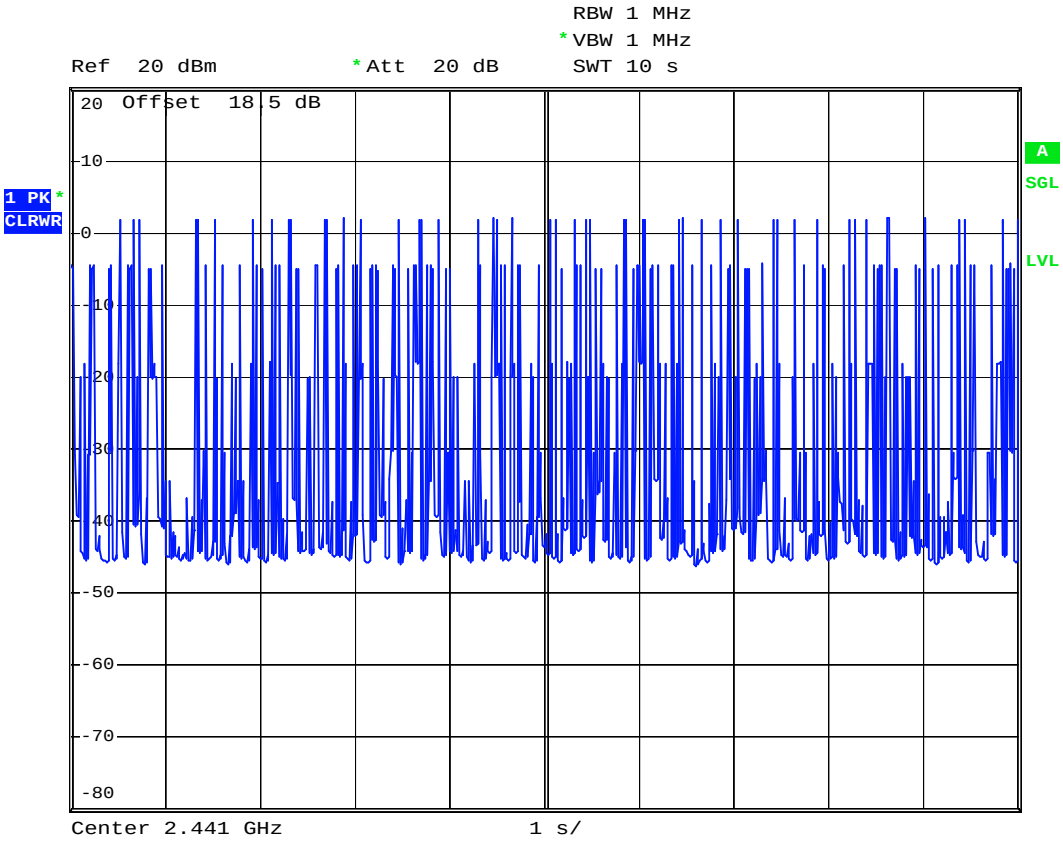


Date: 11.JUL.2007 22:15:03

DH3 (CH39)

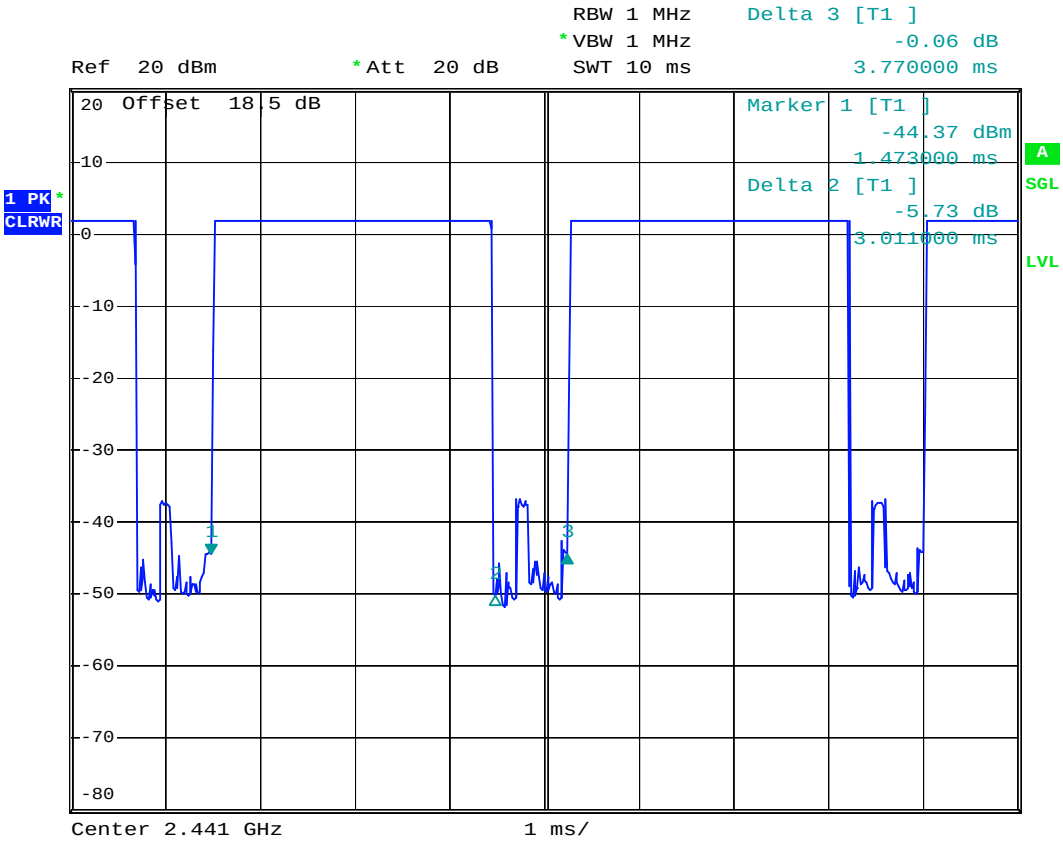


Date: 11.JUL.2007 22:13:34

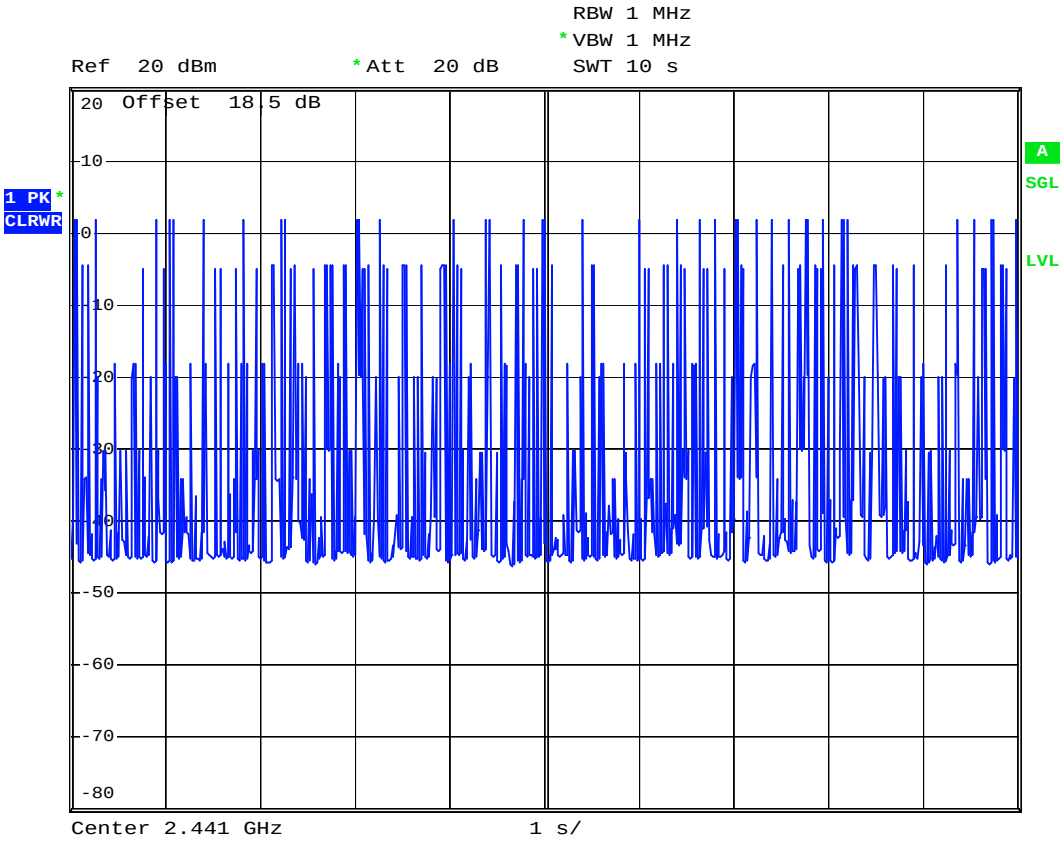


Date: 11.JUL.2007 22:24:49

DH5 (CH39)



Date: 11.JUL.2007 22:14:13



Date: 11.JUL.2007 22:25:13

5.6 Output Power

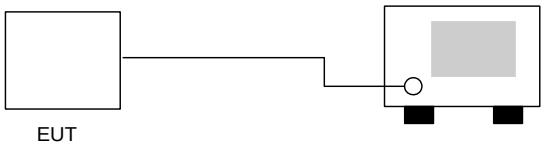
5.6.1 Measuring Instruments：

As described in chapter 6 of this test report.

5.6.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer directly.
2. The center frequency of the spectrum analyzer was set to the fundamental frequency and set RBW to 3MHz and VBW to 3MHz.

5.6.3 Test Setup Layout：



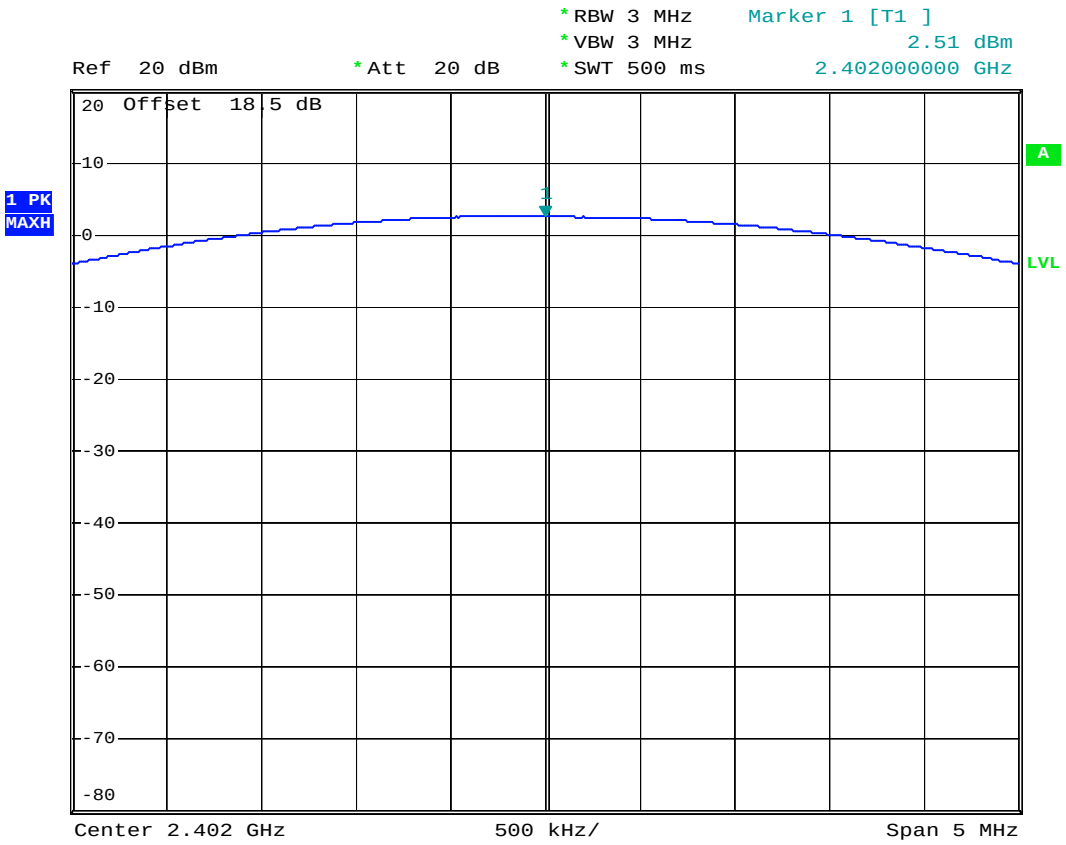
5.6.4 Test Result：See spectrum analyzer plots below

- Temperature: 24~25°C
- Relative Humidity: 51~53%
- Test Engineer : Louis

Channel	Frequency (MHz)	Measured Output Power (dBm)	Limits (Watt/dBm)	Plot Ref. No.
00	2402	2.51	1W/30 dBm	Mode 1
39	2441	2.07	1W/30 dBm	Mode 2
78	2480	1.99	1W/30 dBm	Mode 3

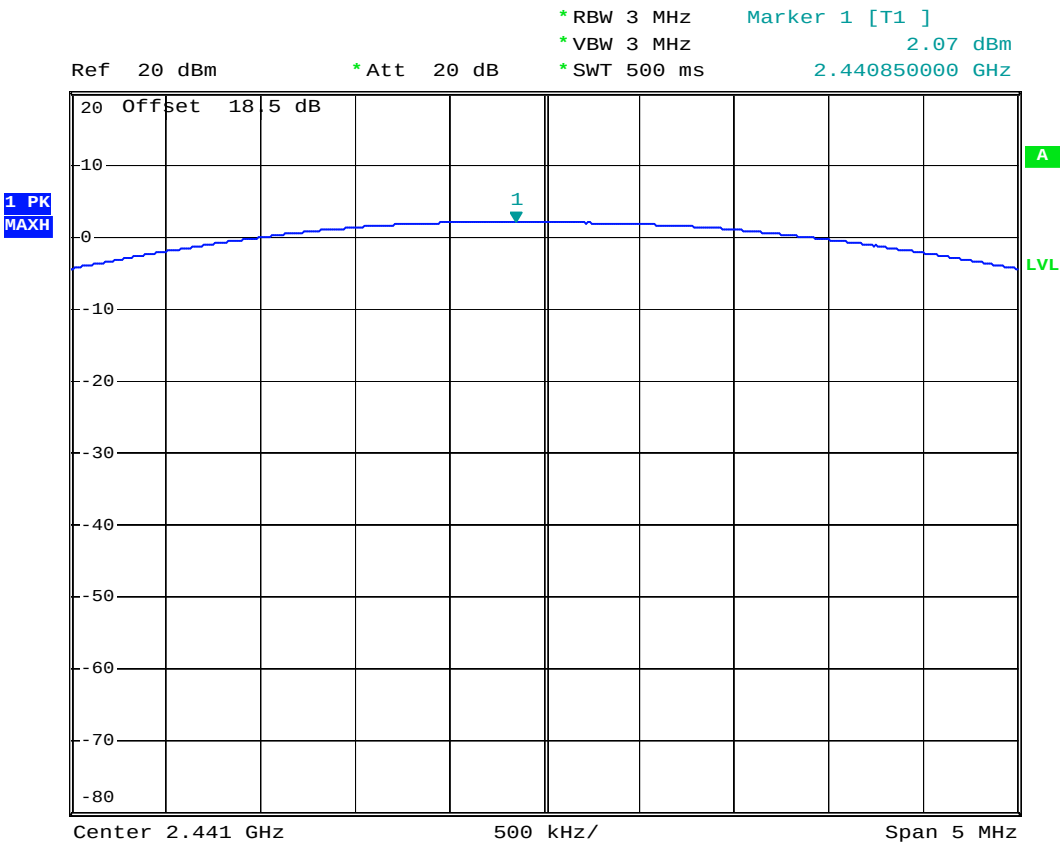
5.6.5 Output Power

Mode 1: CH00 (2402MHz)



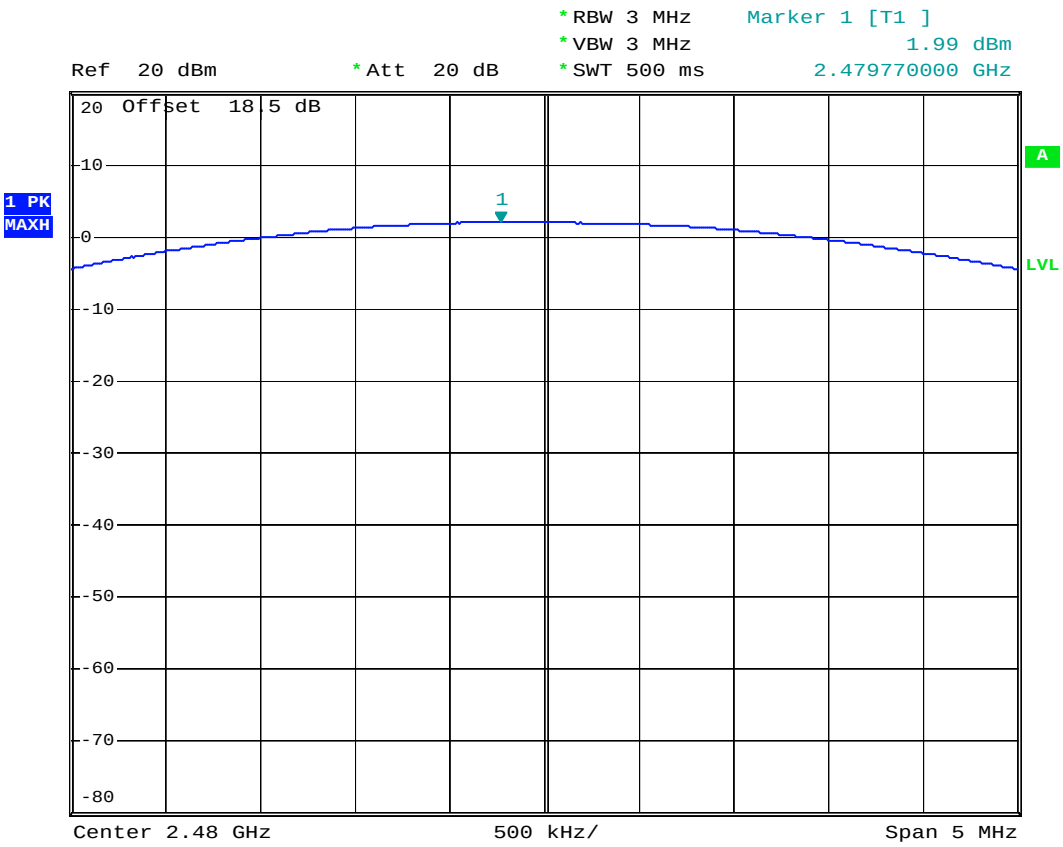
Date: 11.JUL.2007 21:59:53

Mode 2: CH39 (2441MHz)



Date: 11.JUL.2007 22:00:05

Mode 3: CH78 (2480MHz)



Date: 11.JUL.2007 22:00:18

5.7 100kHz Bandwidth of Frequency Band Edges

5.7.1 Measuring Instruments：

As described in chapter 6 of this test report.

5.7.2 Test Procedure：

1. The transmitter output was connected to the spectrum analyzer via a low lose cable.
2. Set both RBW and VBW of spectrum analyzer to 100kHz with suitable frequency span for the conducted measurement, and RBW/VBW=1MHz/1MHz for peak measurement and RBW/VBW=1MHz/300Hz for average measurement in the radiated measurement.
3. The band edges was measured and recorded.

5.7.3 Test Result：

- Temperature: 24~25°C
- Relative Humidity: 51~53%
- Test Engineer : Louis

Test Result in lower band (Channel 00)： PASS

Test Result in higher band(Channel 78)： PASS

5.7.4 Note on Band Edge Emission

CH00 (Horizontal)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	Mode
2341.92	48.24	-25.76	74.00	49.69	30.26	3.75	35.46	100	0	Peak
2341.92	37.89	-16.11	54.00	39.37	30.24	3.71	35.42	100	339	Average

CH00 (Vertical)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	Mode
2387.36	49.24	-24.76	74.00	50.72	30.24	3.71	35.42	100	0	Peak
2387.36	38.88	-15.12	54.00	40.31	30.26	3.75	35.44	100	278	Average

CH78 (Horizontal)

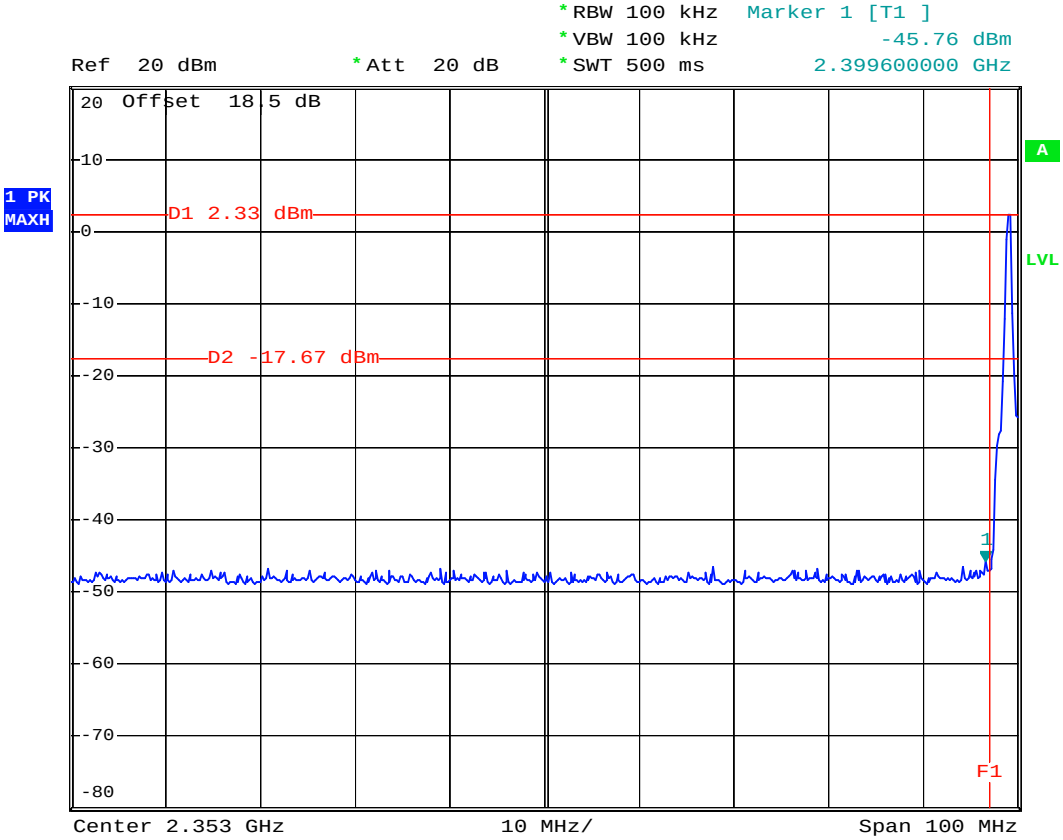
Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	Mode
2483.50	58.21	-15.79	74.00	59.57	30.29	3.86	35.51	100	0	Peak
2483.50	51.06	-2.94	54.00	52.42	30.29	3.86	35.51	100	6	Average

CH78 (Vertical)

Frequency	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Detect
(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dBuV)	(dB)	(dB)	(dB)	(cm)	(deg)	Mode
2483.50	60.06	-13.94	74.00	61.42	30.29	3.86	35.51	100	0	Peak
2483.50	50.68	-3.32	54.00	52.04	30.29	3.86	35.51	100	280	Average

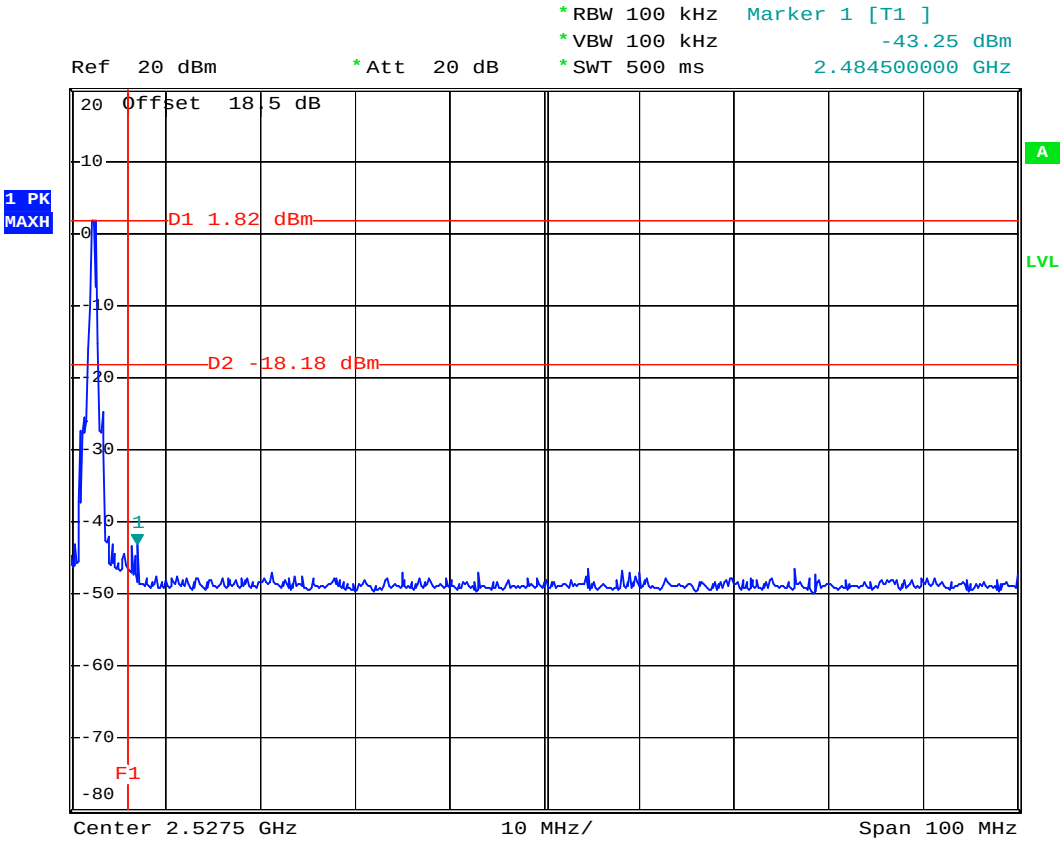
5.7.5 Frequency Band Edge

CH00 (2402 MHz)



Date: 11.JUL.2007 22:06:23

CH78 (2480 MHz)



Date: 11.JUL.2007 22:04:13

5.8 Conducted Emission

5.8.1 Measuring Instruments

As described in chapter 6 of this test Report.

The receiver setting :

150 KHz ~ 30 MHz	Detector : Quasi – Peak and Average Bandwidth : 9 KHz

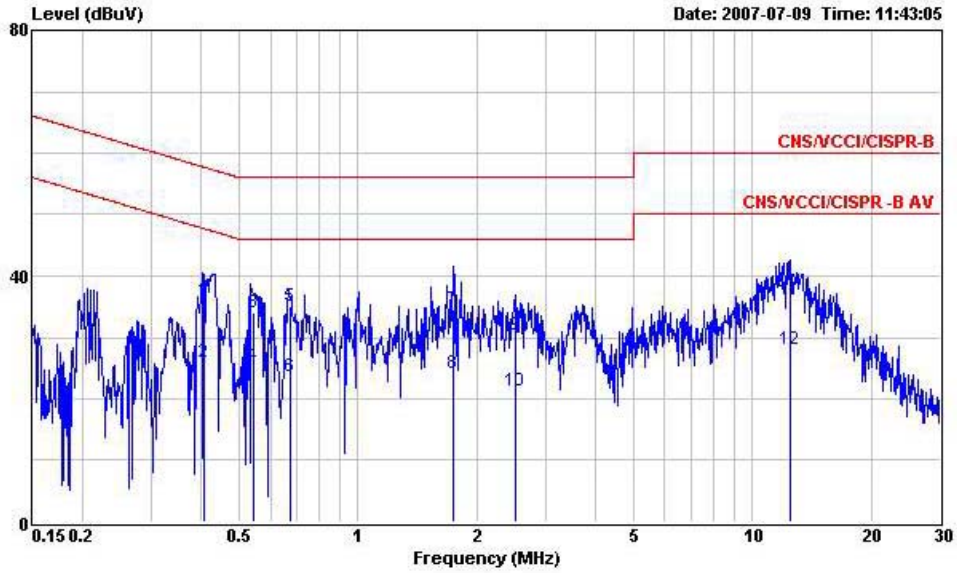
5.8.2 Test Procedures：

a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power port of a line impedance stabilization network (LISN).
c. All the support units are connected to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 microhenry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and specified bandwidth with Maximum Hold Mode.

5.8.3 Test Data

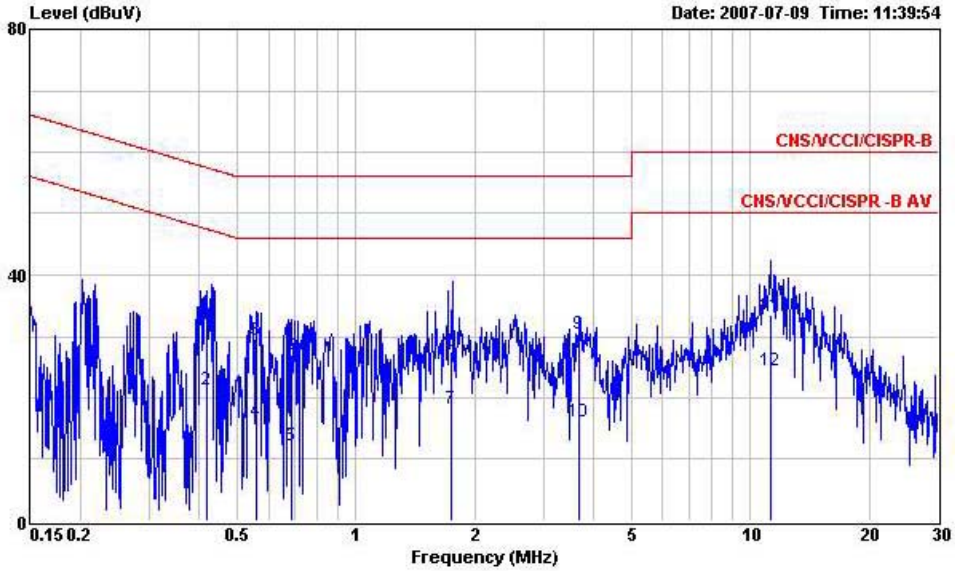
- Temperature : 24~25 °C
- Relating Humidity : 51~53 %
- Test Engineer : Louis
- Test Mode : Mode 1

■ **The test that passed at minimum margin was marked by the frame in the following table.**



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 LINE
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : GSM850 IDLE+BT LINK+WLAN LINK
Memo : SCANER 1+ADAPTOR 1+MPEG4+Earphone
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.406	36.22	-21.51	57.73	36.08	0.10	0.04	QP
2	0.406	25.93	-21.80	47.73	25.79	0.10	0.04	Average
3	0.541	34.14	-21.86	56.00	33.96	0.10	0.08	QP
4	0.541	25.52	-20.48	46.00	25.34	0.10	0.08	Average
5	0.672	34.99	-21.01	56.00	34.78	0.10	0.11	QP
6	0.672	23.55	-22.45	46.00	23.34	0.10	0.11	Average
7	1.740	34.62	-21.38	56.00	34.29	0.10	0.23	QP
8	1.740	24.09	-21.91	46.00	23.76	0.10	0.23	Average
9	2.499	30.52	-25.48	56.00	30.18	0.13	0.21	QP
10	2.499	21.27	-24.73	46.00	20.93	0.13	0.21	Average
11	12.447	36.18	-23.82	60.00	35.64	0.30	0.24	QP
12	12.447	28.14	-21.86	50.00	27.60	0.30	0.24	Average

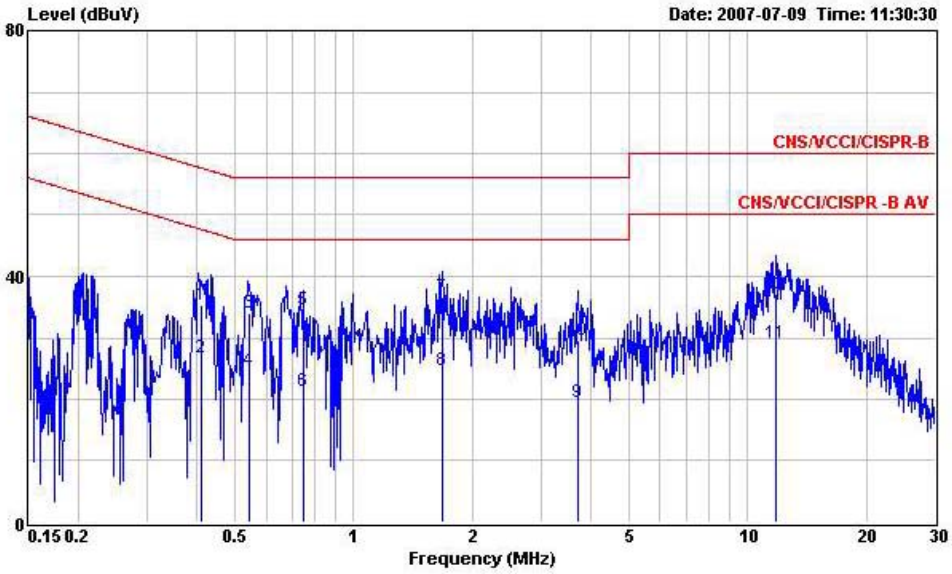


Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 NEUTRAL
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : GSM850 IDLE+BT LINK+WLAN LINK
Memo : SCANER 1+ADAPTOR 1+MPEG4+Earphone
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.418	33.68	-23.80	57.48	33.53	0.10	0.05	QP
2	0.418	21.31	-26.17	47.48	21.16	0.10	0.05	Average
3	0.558	29.41	-26.59	56.00	29.22	0.10	0.09	QP
4	0.558	16.05	-29.95	46.00	15.86	0.10	0.09	Average
5	0.687	12.09	-33.91	46.00	11.87	0.10	0.12	Average
6	0.687	26.89	-29.11	56.00	26.67	0.10	0.12	QP
7	1.747	18.13	-27.87	46.00	17.80	0.10	0.23	Average
8	1.747	27.44	-28.56	56.00	27.11	0.10	0.23	QP
9	3.679	30.29	-25.71	56.00	30.02	0.10	0.17	QP
10	3.679	16.21	-29.79	46.00	15.94	0.10	0.17	Average
11	11.260	33.59	-26.41	60.00	33.07	0.23	0.29	QP
12	11.260	24.48	-25.52	50.00	23.96	0.23	0.29	Average

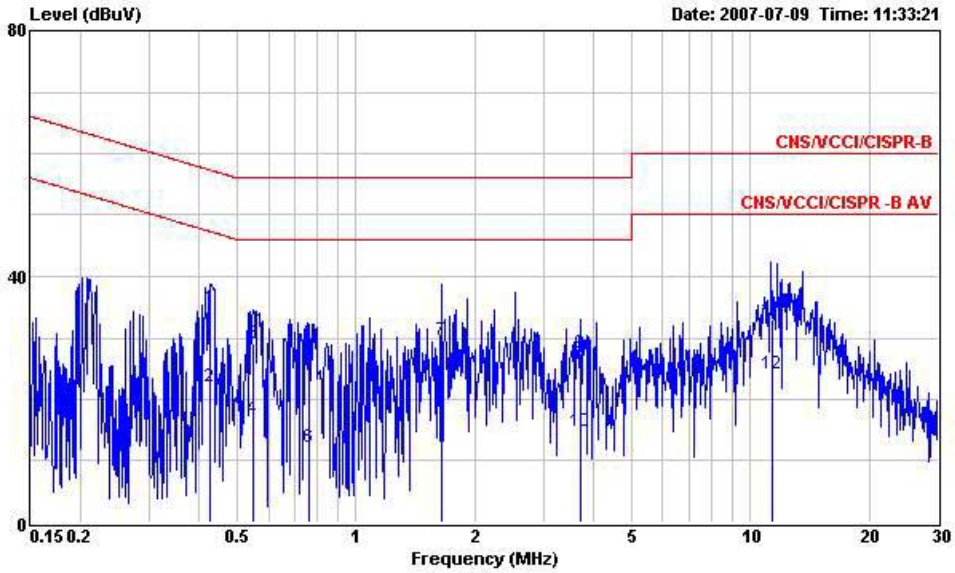
- Temperature : 24~25 °C
- Relating Humidity : 51~53 %
- Test Engineer : Louis
- Test Mode : Mode 2

■ **The test that passed at minimum margin was marked by the frame in the following table.**



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 LINE
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : GSM850 IDLE+BT LINK+WLAN LINK
Memo : SCANER 2+ADAPTOR 1+MPEG4+Earphone
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.412	35.22	-22.40	57.62	35.08	0.10	0.04	QP
2	0.412	26.62	-21.00	47.62	26.48	0.10	0.04	Average
3	0.544	34.06	-21.94	56.00	33.88	0.10	0.08	QP
4	0.544	24.80	-21.20	46.00	24.62	0.10	0.08	Average
5	0.743	34.45	-21.55	56.00	34.22	0.10	0.13	QP
6	0.743	21.18	-24.82	46.00	20.95	0.10	0.13	Average
7	1.679	36.68	-19.32	56.00	36.36	0.10	0.22	QP
8	1.679	24.73	-21.27	46.00	24.41	0.10	0.22	Average
9	3.720	19.36	-26.64	46.00	19.00	0.19	0.17	Average
10	3.720	29.67	-26.33	56.00	29.31	0.19	0.17	QP
11	11.810	28.97	-21.03	50.00	28.40	0.30	0.27	Average
12	11.810	37.04	-22.96	60.00	36.47	0.30	0.27	QP

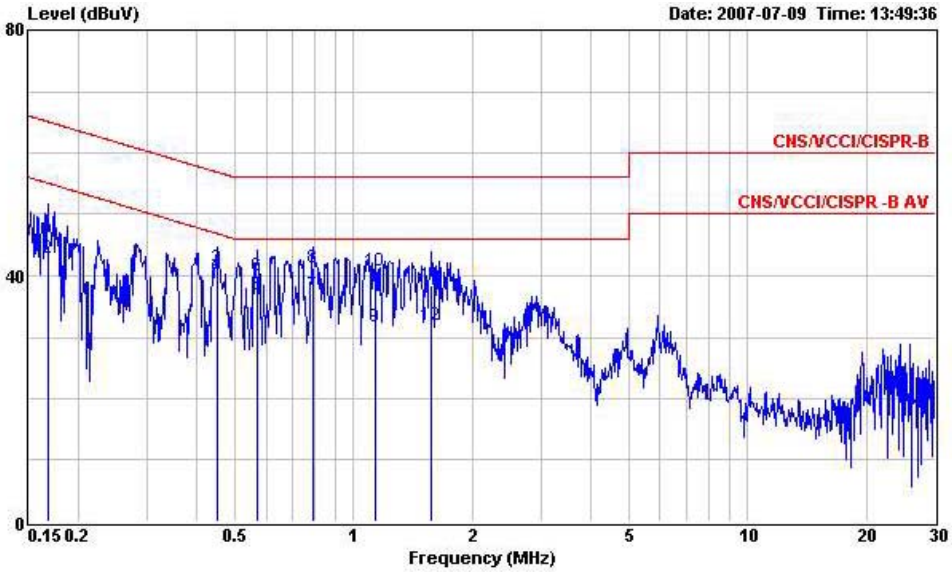


Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 NEUTRAL
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : GSM850 IDLE+BT LINK+WLAN LINK
Memo : SCANER 2+ADAPTOR 1+MPEG4+Earphone
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.426	34.69	-22.64	57.33	34.54	0.10	0.05	QP
2	0.426	22.07	-25.26	47.33	21.92	0.10	0.05	Average
3	0.550	29.16	-26.84	56.00	28.98	0.10	0.08	QP
4	0.550	16.84	-29.16	46.00	16.66	0.10	0.08	Average
5	0.759	26.25	-29.75	56.00	26.02	0.10	0.13	QP
6	0.759	12.09	-33.91	46.00	11.86	0.10	0.13	Average
7	1.650	29.67	-26.33	56.00	29.35	0.10	0.22	QP
8	1.650	19.36	-26.64	46.00	19.04	0.10	0.22	Average
9	3.720	27.45	-28.55	56.00	27.18	0.10	0.17	QP
10	3.720	14.87	-31.13	46.00	14.60	0.10	0.17	Average
11	11.319	32.88	-27.12	60.00	32.36	0.23	0.29	QP
12	11.319	24.25	-25.75	50.00	23.73	0.23	0.29	Average

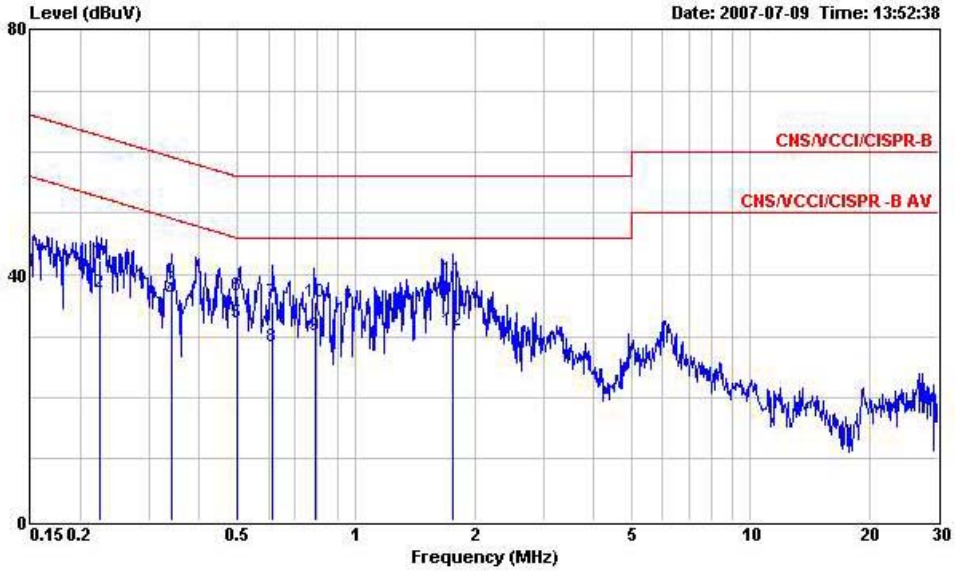
- Temperature : 24~25 °C
- Relating Humidity : 51~53 %
- Test Engineer : Louis
- Test Mode : Mode 3

The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 LINE
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : GSM850 IDLE+BT LINK+WLAN LINK
Memo : SCANER 2+USB 1 LINK+MPEG4+Earphone
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.168	44.57	-20.49	65.06	44.38	0.10	0.09	QP
2	0.168	42.83	-12.23	55.06	42.64	0.10	0.09	Average
3	0.450	41.36	-15.51	56.87	41.20	0.10	0.06	QP
4	0.450	40.17	-6.70	46.87	40.01	0.10	0.06	Average
5	0.567	36.88	-9.12	46.00	36.69	0.10	0.09	Average
6	0.567	40.09	-15.91	56.00	39.90	0.10	0.09	QP
7	0.789	36.85	-9.15	46.00	36.61	0.10	0.14	Average
8	0.789	41.24	-14.76	56.00	41.00	0.10	0.14	QP
9	1.134	31.74	-14.26	46.00	31.46	0.10	0.18	Average
10	1.134	40.74	-15.26	56.00	40.46	0.10	0.18	QP
11	1.579	38.49	-17.51	56.00	38.17	0.10	0.22	QP
12	1.579	31.86	-14.14	46.00	31.54	0.10	0.22	Average

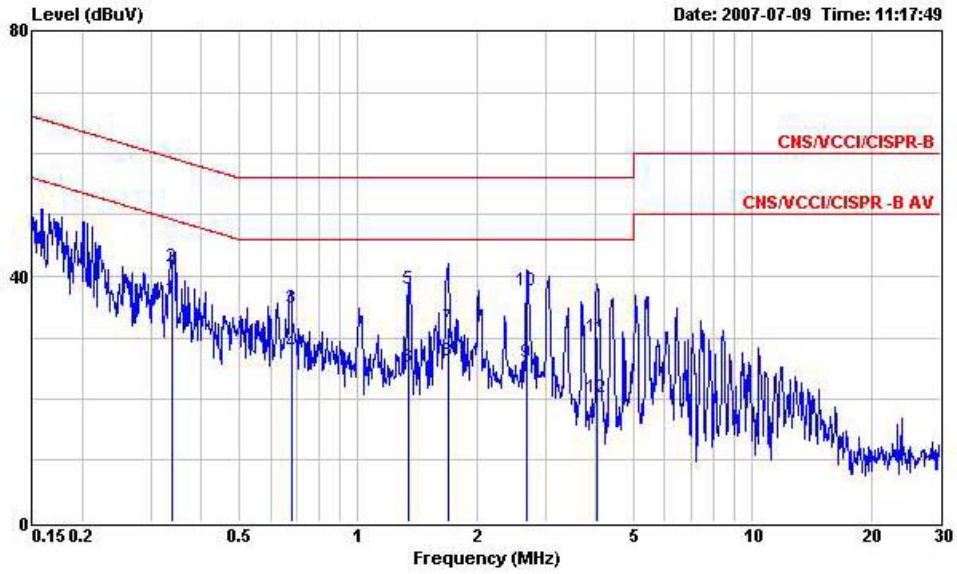


Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 NEUTRAL
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : GSM850 IDLE+BT LINK+WLAN LINK
Memo : SCANER 2+USB 1 LINK+MPEG4+Earphone
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.223	42.26	-20.44	62.70	42.07	0.10	0.09	QP
2	0.223	37.05	-15.65	52.70	36.86	0.10	0.09	Average
3	0.340	37.72	-21.49	59.21	37.57	0.10	0.05	QP
4	0.340	35.80	-13.41	49.21	35.65	0.10	0.05	Average
5	0.501	32.25	-13.75	46.00	32.08	0.10	0.07	Average
6	0.501	36.63	-19.37	56.00	36.46	0.10	0.07	QP
7	0.615	35.60	-20.40	56.00	35.40	0.10	0.10	QP
8	0.615	28.28	-17.72	46.00	28.08	0.10	0.10	Average
9	0.787	30.01	-15.99	46.00	29.77	0.10	0.14	Average
10	0.787	35.52	-20.48	56.00	35.28	0.10	0.14	QP
11	1.754	39.34	-16.66	56.00	39.01	0.10	0.23	QP
12	1.754	30.79	-15.21	46.00	30.46	0.10	0.23	Average

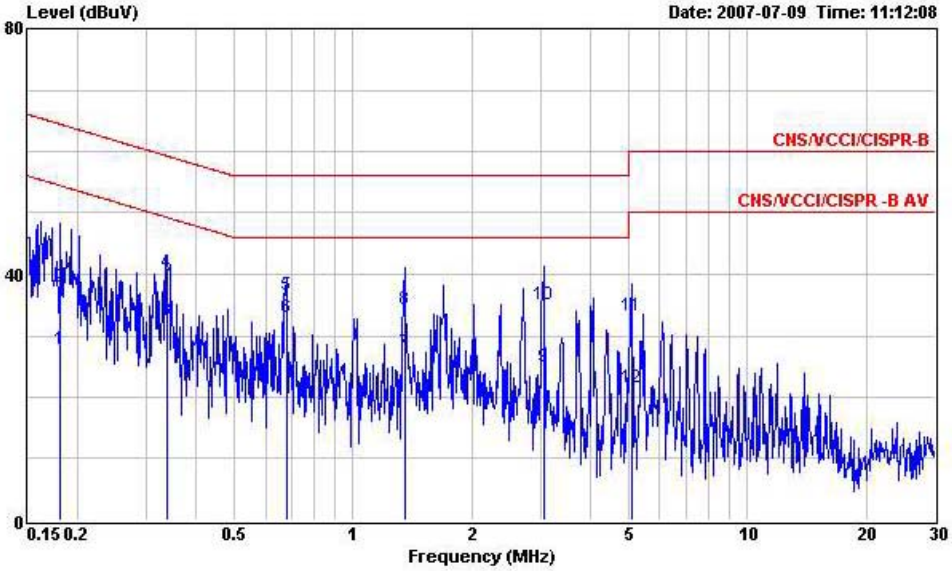
- Temperature : 24~25 °C
- Relating Humidity : 51~53 %
- Test Engineer : Louis
- Test Mode : Mode 4

The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 LINE
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : GSM850 IDLE+USB2 LINK+BT LINK+WLAN LINK
Memo : SCANER 2+ADAPTOR 2+MPEG4+CRADLE
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.339	36.36	-12.86	49.22	36.21	0.10	0.05	Average
2	0.339	41.61	-17.61	59.22	41.46	0.10	0.05	QP
3	0.679	34.73	-21.27	56.00	34.52	0.10	0.11	QP
4	0.679	27.45	-18.55	46.00	27.24	0.10	0.11	Average
5	1.349	38.02	-17.98	56.00	37.72	0.10	0.20	QP
6	1.349	25.29	-20.71	46.00	24.99	0.10	0.20	Average
7	1.689	31.76	-24.24	56.00	31.44	0.10	0.22	QP
8	1.689	26.15	-19.85	46.00	25.83	0.10	0.22	Average
9	2.683	26.00	-20.00	46.00	25.65	0.14	0.21	Average
10	2.683	37.74	-18.26	56.00	37.39	0.14	0.21	QP
11	4.049	30.00	-26.00	56.00	29.64	0.20	0.16	QP
12	4.049	20.37	-25.63	46.00	20.01	0.20	0.16	Average

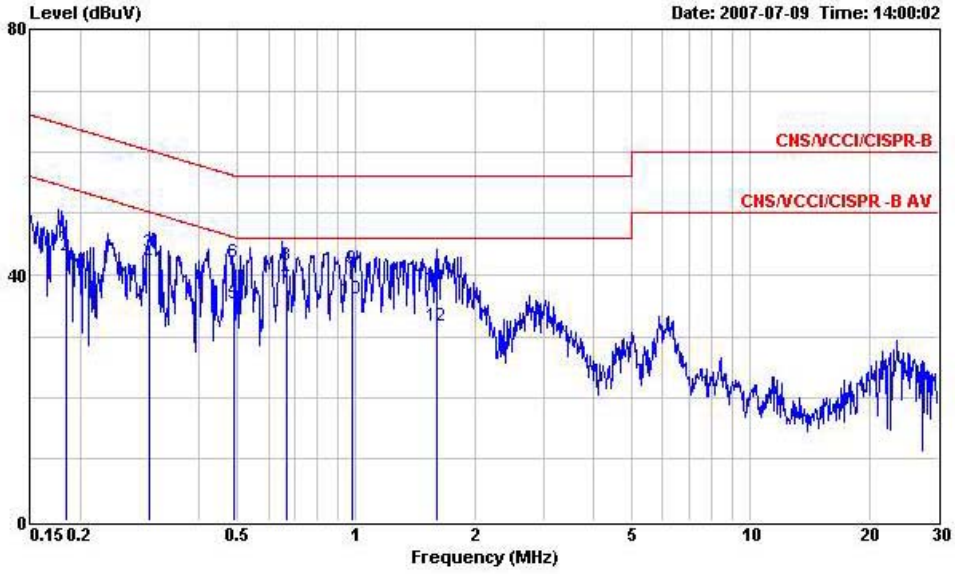


Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 NEUTRAL
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : GSM850 IDLE+USB2 LINK+BT LINK+WLAN LINK
Memo : SCANER 2+ADAPTOR 2+MPEG4+CRADLE
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.181	27.75	-26.70	54.45	27.56	0.10	0.09	Average
2	0.181	37.93	-26.52	64.45	37.74	0.10	0.09	QP
3	0.337	32.44	-16.83	49.27	32.29	0.10	0.05	Average
4	0.337	40.28	-18.99	59.27	40.13	0.10	0.05	QP
5	0.678	36.53	-19.47	56.00	36.32	0.10	0.11	QP
6	0.678	33.08	-12.92	46.00	32.87	0.10	0.11	Average
7	1.350	27.28	-18.72	46.00	26.98	0.10	0.20	Average
8	1.350	34.38	-21.62	56.00	34.08	0.10	0.20	QP
9	3.047	25.04	-20.96	46.00	24.75	0.10	0.19	Average
10	3.047	35.08	-20.92	56.00	34.79	0.10	0.19	QP
11	5.080	33.16	-26.84	60.00	32.82	0.13	0.21	QP
12	5.080	21.54	-28.46	50.00	21.20	0.13	0.21	Average

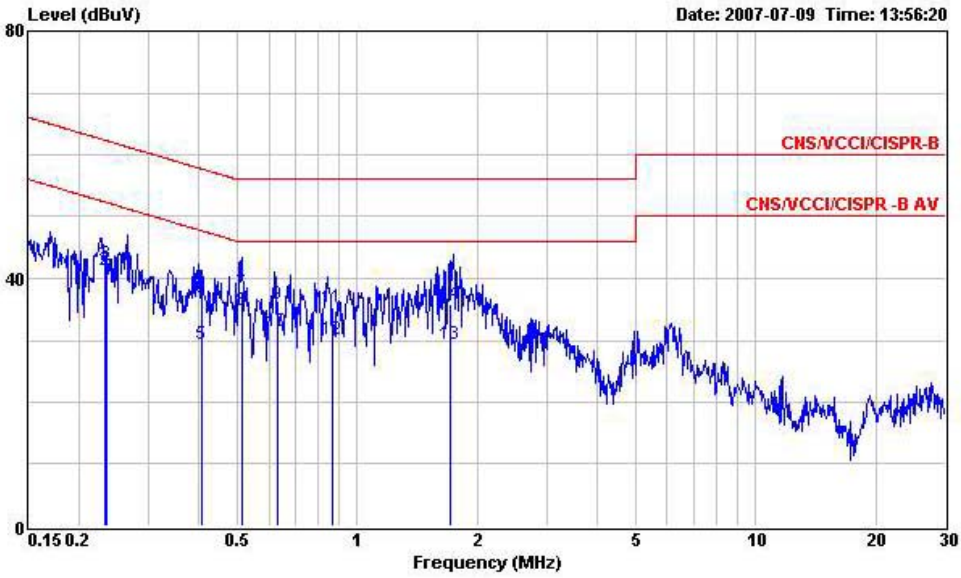
- Temperature : 24~25 °C
- Relating Humidity : 51~53 %
- Test Engineer : Louis
- Test Mode : Mode 5

The test that passed at minimum margin was marked by the frame in the following table.



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 LINE
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : PCS1900 IDLE+BT LINK+WLAN LINK
Memo : SCANER 2+USB 1 LINK+MPEG4+Earphone
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
		44.56	-19.70	64.26	44.37	0.10	0.09	QP
		42.99	-11.27	54.26	42.80	0.10	0.09	Average
3	0.299	43.52	-16.75	60.27	43.35	0.10	0.07	QP
4	0.299	41.71	-8.56	50.27	41.54	0.10	0.07	Average
5	0.490	35.28	-10.88	46.16	35.11	0.10	0.07	Average
6	0.490	42.00	-14.16	56.16	41.83	0.10	0.07	QP
7	0.665	38.00	-8.00	46.00	37.79	0.10	0.11	Average
8	0.665	41.65	-14.35	56.00	41.44	0.10	0.11	QP
9	0.982	41.04	-14.96	56.00	40.77	0.10	0.17	QP
10	0.982	36.12	-9.88	46.00	35.85	0.10	0.17	Average
11	1.597	37.90	-18.10	56.00	37.58	0.10	0.22	QP
12	1.597	31.71	-14.29	46.00	31.39	0.10	0.22	Average



Site : CO01-HY
Condition : CNS/VCCI/CISPR-B 2001/004 200604 NEUTRAL
EUT : Mobile Phone
Power : 120V/60Hz
Model : FR762206
Memo : PCS1900 IDLE+BT LINK+WLAN LINK
Memo : SCANER 2+USB 1 LINK+MPEG4+Earphone
Memo :

	Freq	Level	Over Limit	Limit Line	Read Level	Probe Factor	Cable Loss	Remark
	MHz	dBuV	dB	dBuV	dBuV	dB	dB	
1	0.232	42.56	-19.80	62.36	42.37	0.10	0.09	QP
2	0.232	41.20	-11.16	52.36	41.01	0.10	0.09	Average
3	0.235	42.43	-19.86	62.29	42.24	0.10	0.09	QP
4	0.235	41.68	-10.61	52.29	41.49	0.10	0.09	Average
5	0.406	29.38	-18.34	47.72	29.24	0.10	0.04	Average
6	0.406	36.79	-20.93	57.72	36.65	0.10	0.04	QP
7	0.516	37.57	-18.43	56.00	37.39	0.10	0.08	QP
8	0.516	34.92	-11.08	46.00	34.74	0.10	0.08	Average
9	0.631	35.76	-20.24	56.00	35.56	0.10	0.10	QP
10	0.631	31.42	-14.58	46.00	31.22	0.10	0.10	Average
11	0.863	35.23	-20.77	56.00	34.98	0.10	0.15	QP
12	0.863	30.24	-15.76	46.00	29.99	0.10	0.15	Average
13	1.711	29.28	-16.72	46.00	28.96	0.10	0.22	Average
14	1.711	35.80	-20.20	56.00	35.48	0.10	0.22	QP

5.9 Radiated Emission Measurement

5.9.1 Measuring Instruments

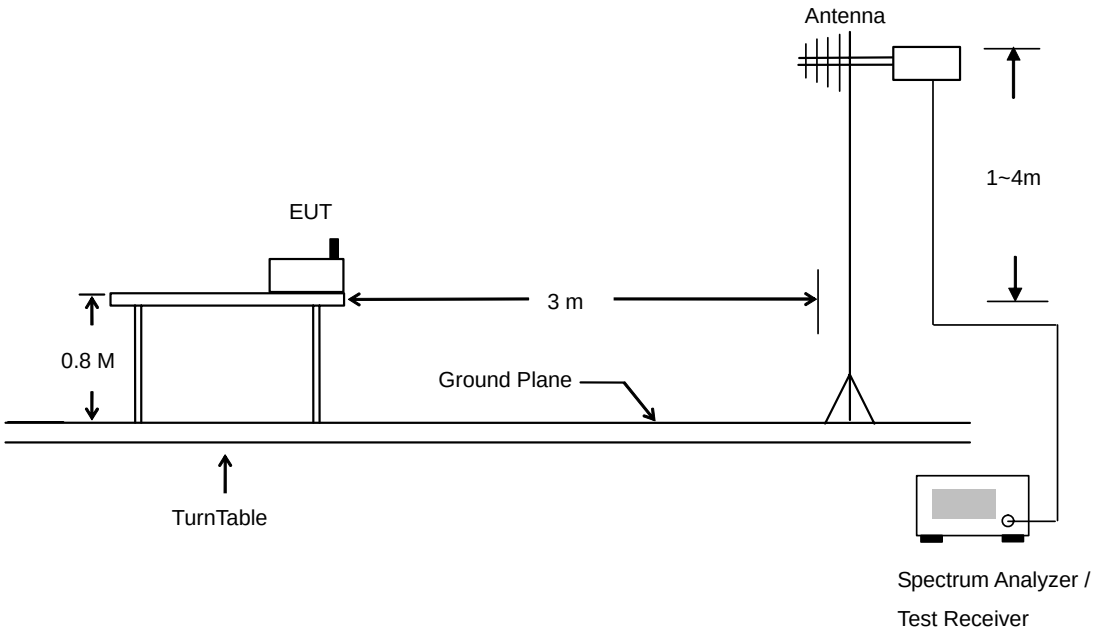
As described in chapter 6 of this Report.
The spectrum analyzer setting :

30 ~ 1000 MHz	Detector : Quasi – Peak Bandwidth : 120 KHz
1 ~ 25 GHz	Detector : Peak and Average Bandwidth : 1 MHz

5.9.2 Test Procedures

1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength for both horizontal polarization and vertical polarization of the antenna.
5. For each suspected emission, the EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading.
6. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
7. For testing below 1GHz, If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be repeated one by one using the quasi-peak method and reported.
8. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in average mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.

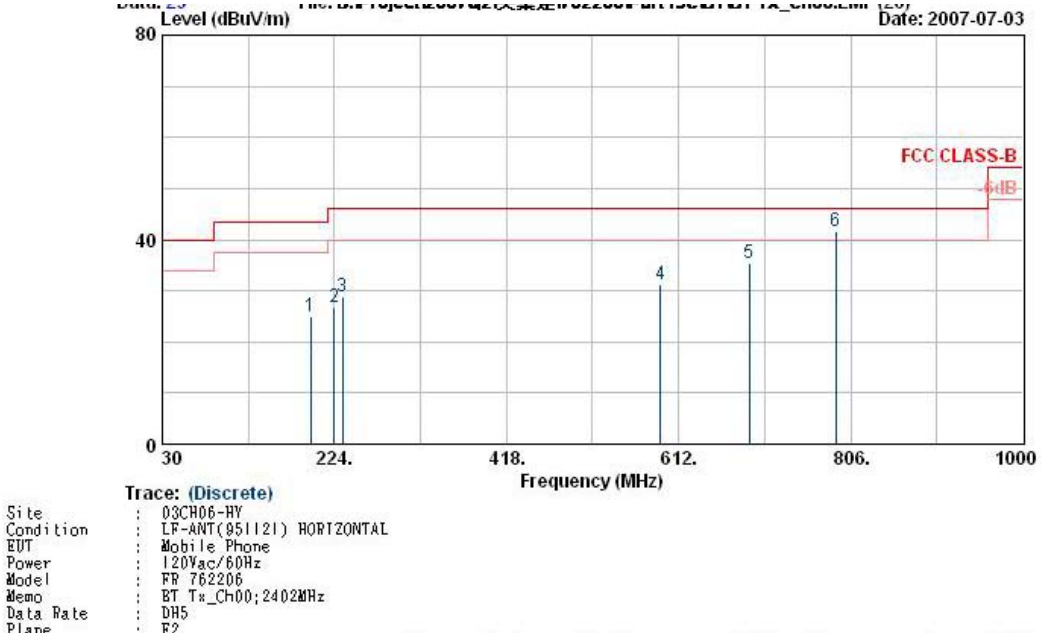
5.9.3 Typical Test Setup Layout of Radiated Emission



5.9.4 Test Data

- Temperature : 24~25°C
- Relating Humidity : 48~49%
- Test Engineer : Sam
- Test Mode : Mode 1
- Polarization : Horizontal (30MHz-1GHz)

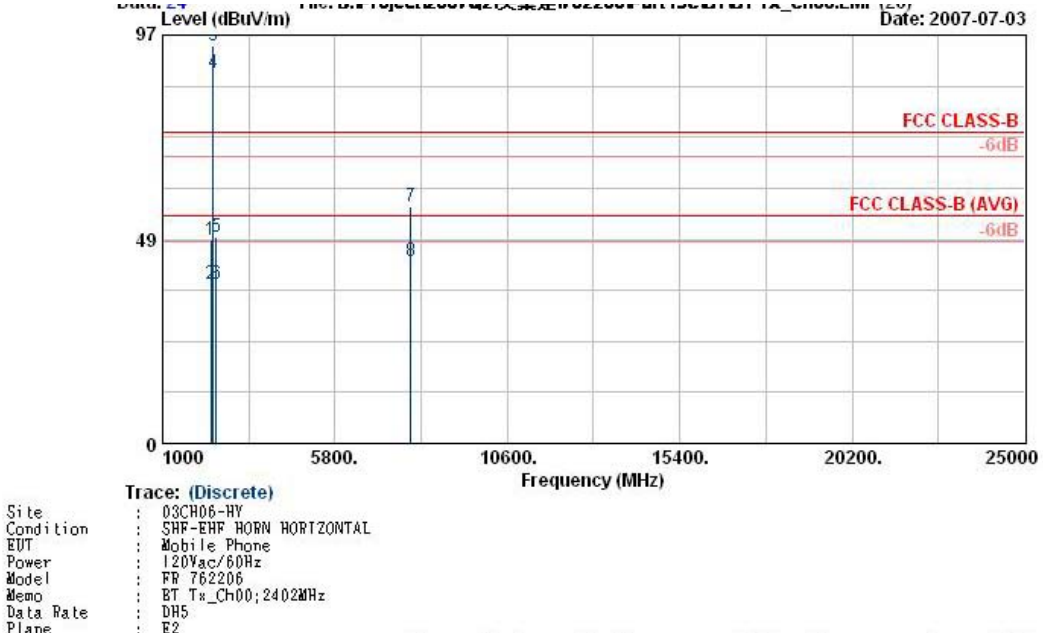
■ The test that passed at the minimum margin was marked by the frame in the following test record



		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		197.13	24.85	-18.65	43.50	45.02	9.32	1.53	31.02	-	-	Peak
2		224.13	26.63	-19.37	46.00	45.26	10.73	1.63	30.99	-	-	Peak
3		233.58	28.81	-17.19	46.00	46.77	11.30	1.67	30.93	-	-	Peak
4		591.90	31.33	-14.67	46.00	40.69	18.38	2.93	30.67	-	-	Peak
5		691.30	35.47	-10.53	46.00	44.00	18.85	3.22	30.60	-	-	Peak
6	!	789.30	41.60	-4.40	46.00	48.99	19.72	3.39	30.50	100.00	24.00	Peak

- Polarization : Horizontal (1GHz-25GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.

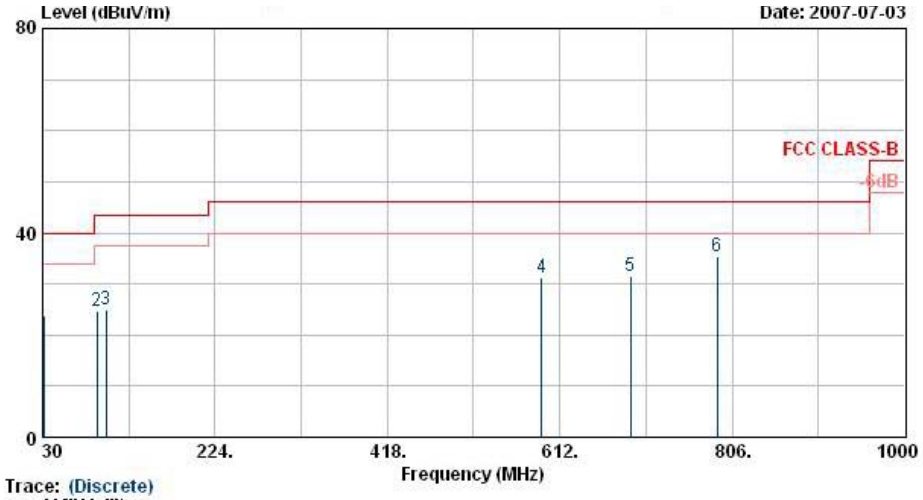


		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		2341.92	48.24	-25.76	74.00	49.69	30.26	3.75	35.46	100.00	0.00	Peak
2		2341.92	37.89	-16.11	54.00	39.36	30.24	3.71	35.42	100.00	339.00	Average
3	X	2402.00	94.47			95.90	30.26	3.77	35.46	100.00	0.00	Peak
4	X	2402.00	87.90			89.33	30.26	3.77	35.46	100.00	339.00	Average
5		2488.00	49.16	-24.84	74.00	50.51	30.30	3.86	35.51	100.00	0.00	Peak
6		2488.00	37.98	-16.02	54.00	39.33	30.30	3.86	35.51	100.00	339.00	Average
7		7902.00	56.30	-17.70	74.00	44.96	39.46	7.76	35.88	100.00	0.00	Peak
8		7902.00	43.13	-10.87	54.00	31.79	39.46	7.76	35.88	100.00	255.00	Average

Remark: “X” represents the Fundamental Signal

- Polarization : Vertical (30MHz-1GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.

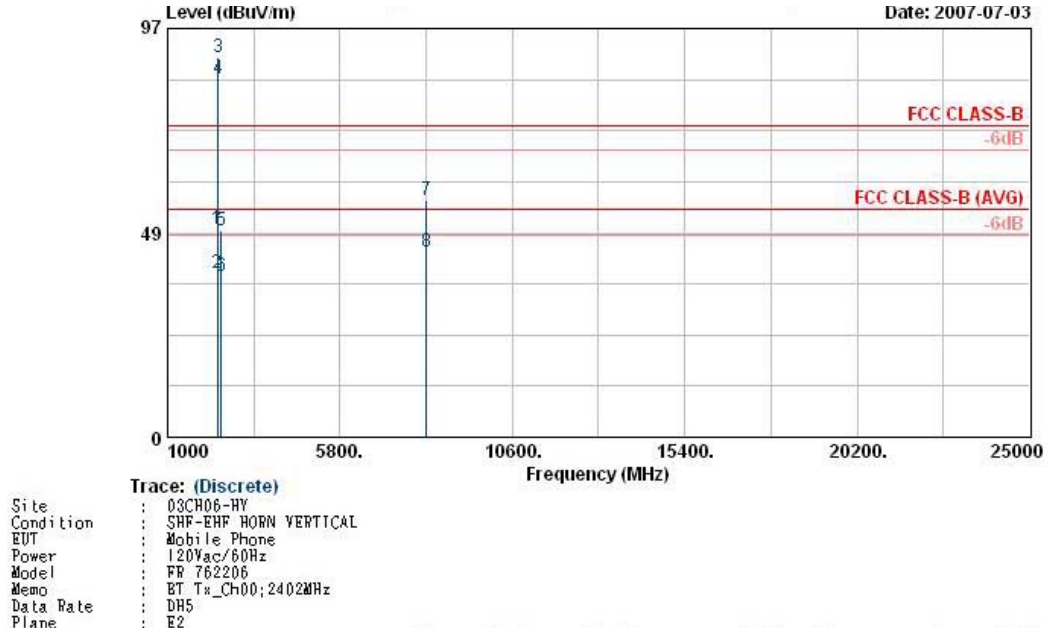


Site : 03CH06-HY
Condition : LF-ANT(9511211) VERTICAL
EUT : Mobile Phone
Power : 120Vac/60Hz
Model : FR 762206
Memo : BT Tx_Ch00;2402MHz
Data Rate : DH5
Plane : E2

	Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1	31.08	23.84	-16.16	40.00	35.68	18.95	0.64	31.43	-	-	Peak
2	91.29	24.57	-18.93	43.50	45.42	9.23	1.04	31.12	-	-	Peak
3	101.28	24.93	-18.57	43.50	43.94	11.07	1.07	31.15	-	-	Peak
4	591.90	31.18	-14.82	46.00	40.54	18.38	2.93	30.67	-	-	Peak
5	691.30	31.51	-14.49	46.00	40.04	18.85	3.22	30.60	-	-	Peak
6	789.30	35.51	-10.49	46.00	42.90	19.72	3.39	30.50	100.00	53.00	Peak

- Polarization : Vertical (1GHz-25GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.

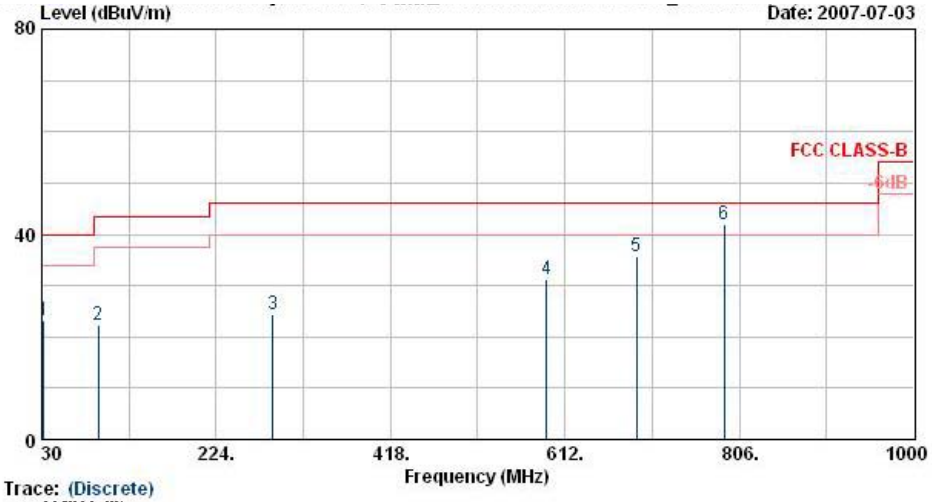


		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		2387.36	49.24	-24.76	74.00	50.71	30.24	3.71	35.42	100.00	0.00	Peak
2		2387.36	38.88	-15.12	54.00	40.31	30.26	3.75	35.44	100.00	278.00	Average
3	X	2402.00	90.30			91.73	30.26	3.77	35.46	100.00	0.00	Peak
4	X	2402.00	84.95			86.38	30.26	3.77	35.46	100.00	278.00	Average
5		2483.50	48.94	-25.06	74.00	50.30	30.29	3.86	35.51	100.00	0.00	Peak
6		2483.50	38.06	-15.94	54.00	39.42	30.29	3.86	35.51	100.00	278.00	Average
7		8202.00	56.29	-17.71	74.00	44.80	39.43	8.02	35.96	100.00	0.00	Peak
8		8202.00	43.88	-10.12	54.00	32.39	39.43	8.02	35.96	100.00	255.00	Average

Remark: “X” represents the Fundamental Signal

- Test Mode : Mode 2
- Polarization : Horizontal (30MHz-1GHz)

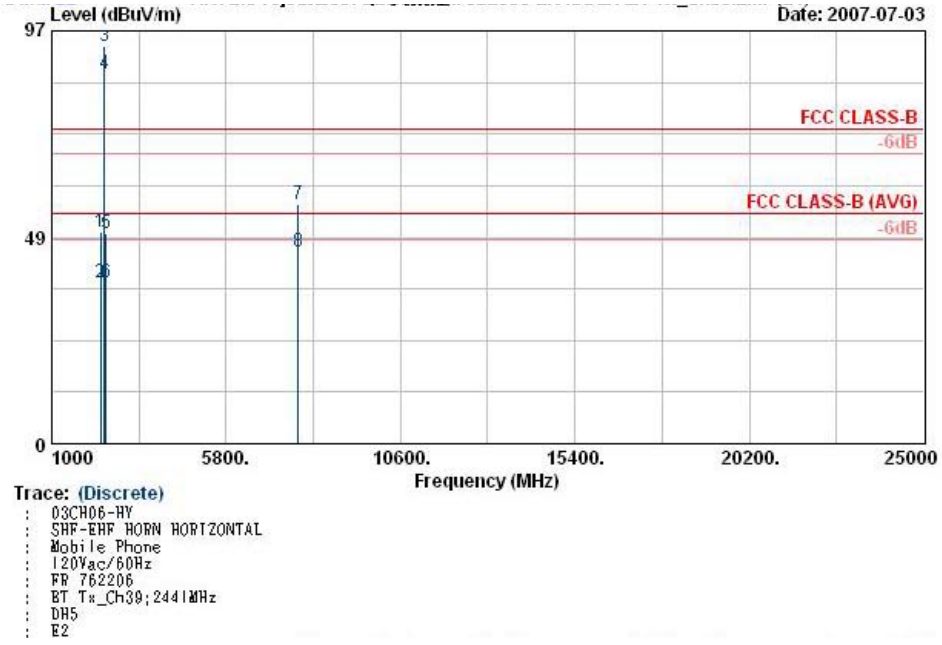
■ The test that passed at minimum margin was marked by the boldface in the following table.



		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		31.89	23.30	-16.70	40.00	35.79	18.25	0.65	31.39	-	-	Peak
2		92.64	22.35	-21.15	43.50	42.79	9.62	1.05	31.11	-	-	Peak
3		287.04	24.32	-21.68	46.00	40.42	12.97	1.89	30.96	-	-	Peak
4		591.90	31.23	-14.77	46.00	40.59	18.38	2.93	30.67	-	-	Peak
5		691.30	35.76	-10.24	46.00	44.29	18.85	3.22	30.60	-	-	Peak
6	!	789.30	42.06	-3.94	46.00	49.45	19.72	3.39	30.50	100.00	259.00	Peak

- Polarization : Horizontal (1GHz-25GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.

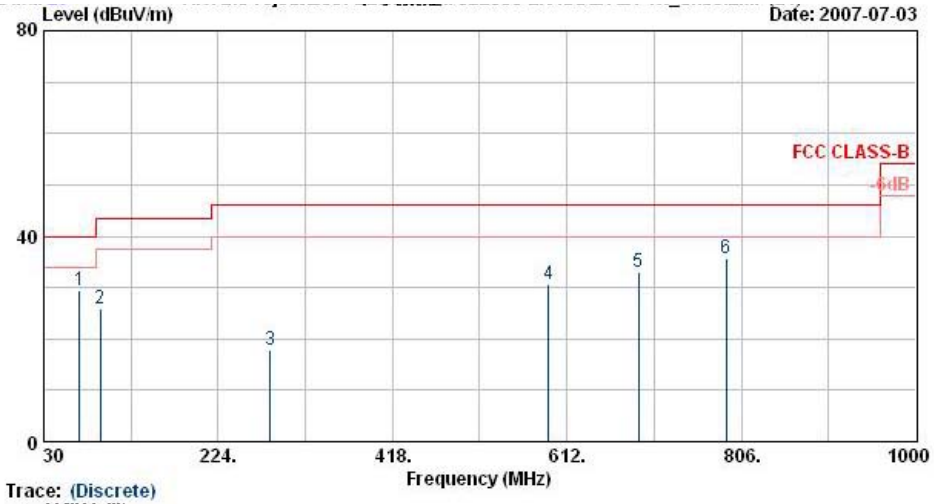


		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		2338.00	49.69	-24.31	74.00	51.16	30.24	3.69	35.40	100.00	0.00	Peak
2		2338.00	37.97	-16.03	54.00	39.44	30.24	3.69	35.40	100.00	335.00	Average
3	X	2441.00	93.22			94.59	30.28	3.82	35.47	100.00	0.00	Peak
4	X	2441.00	86.92			88.29	30.28	3.82	35.47	100.00	335.00	Average
5		2484.00	49.57	-24.43	74.00	50.93	30.29	3.86	35.51	100.00	0.00	Peak
6		2484.00	38.04	-15.96	54.00	39.40	30.29	3.86	35.51	100.00	335.00	Average
7		7791.00	56.19	-17.81	74.00	45.12	39.30	7.71	35.94	100.00	0.00	Peak
8		7791.00	44.93	-9.07	54.00	33.86	39.30	7.71	35.94	100.00	255.00	Average

Remark: “X” represents the Fundamental Signal

- Polarization : Vertical (30MHz-1GHz)

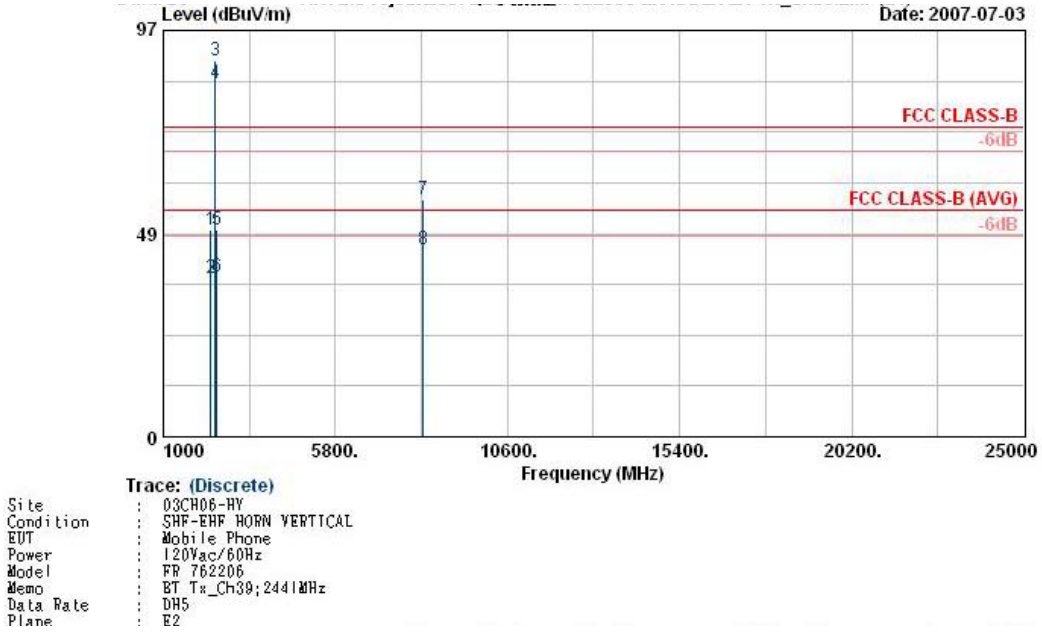
■ The test that passed at minimum margin was marked by the boldface in the following table.



	Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1	69.69	29.51	-10.49	40.00	52.87	6.89	0.92	31.17	-	-	Peak
2	92.64	25.95	-17.55	43.50	46.39	9.62	1.05	31.11	-	-	Peak
3	282.18	17.89	-28.11	46.00	34.11	12.88	1.87	30.97	-	-	Peak
4	591.90	30.51	-15.49	46.00	39.87	18.38	2.93	30.67	-	-	Peak
5	691.30	32.97	-13.03	46.00	41.50	18.85	3.22	30.60	-	-	Peak
6	789.30	35.74	-10.26	46.00	43.13	19.72	3.39	30.50	100.00	273.00	Peak

- Polarization : Vertical (1GHz-25GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.



		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		2314.00	49.43	-24.57	74.00	50.95	30.22	3.66	35.40	100.00	0.00	Peak
2		2314.00	37.83	-16.17	54.00	39.35	30.22	3.66	35.40	100.00	276.00	Average
3	X	2441.00	89.94			91.31	30.28	3.82	35.47	100.00	0.00	Peak
4	X	2441.00	84.27			85.64	30.28	3.82	35.47	100.00	276.00	Average
5		2484.00	49.28	-24.72	74.00	50.64	30.29	3.86	35.51	100.00	0.00	Peak
6		2484.00	38.06	-15.94	54.00	39.42	30.29	3.86	35.51	100.00	276.00	Average
7		8241.00	56.51	-17.49	74.00	45.02	39.41	8.06	35.98	100.00	0.00	Peak
8		8241.00	44.60	-9.40	54.00	33.11	39.41	8.06	35.98	100.00	255.00	Average

Remark: “X” represents the Fundamental Signal

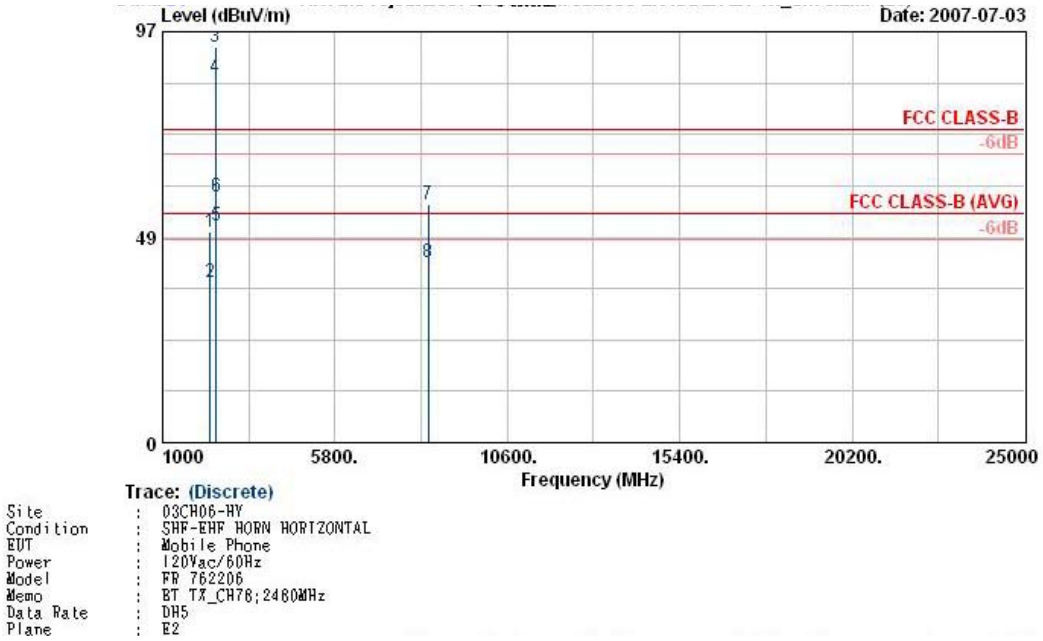
- Test Mode : Mode 3
- Polarization : Horizontal (30MHz-1GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.

		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		31.89	22.94	-17.06	40.00	35.43	18.25	0.65	31.39	-	-	Peak
2		139.89	20.84	-22.66	43.50	40.34	10.25	1.29	31.04	-	-	Peak
3		287.04	24.24	-21.76	46.00	40.34	12.97	1.89	30.96	-	-	Peak
4		591.90	30.80	-15.20	46.00	40.16	18.38	2.93	30.67	-	-	Peak
5		691.30	35.25	-10.75	46.00	43.78	18.85	3.22	30.60	-	-	Peak
6	!	789.30	41.78	-4.22	46.00	49.17	19.72	3.39	30.50	100.00	47.00	Peak

- Polarization : Horizontal (1GHz-25GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.

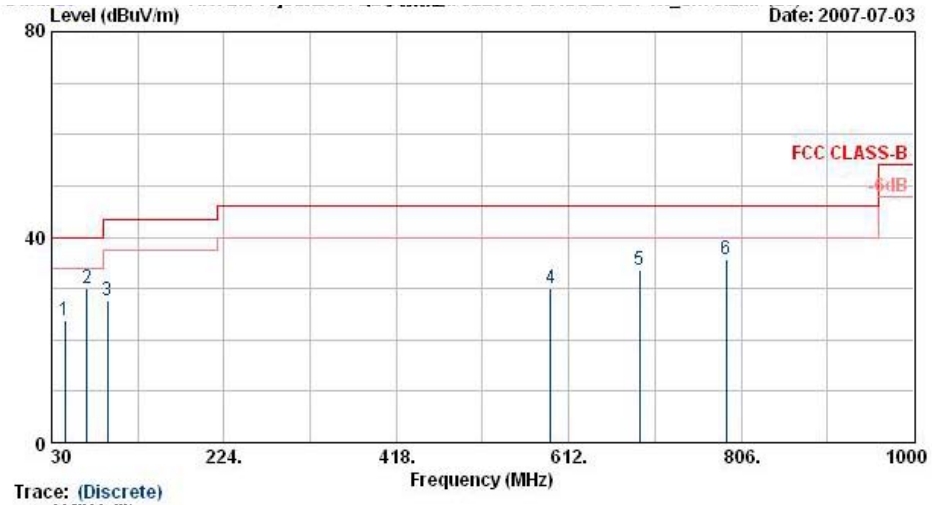


		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		2328.00	49.67	-24.33	74.00	51.15	30.23	3.69	35.40	100.00	0.00	Peak
2		2328.00	38.00	-16.00	54.00	39.48	30.23	3.69	35.40	100.00	6.00	Average
3	X	2480.00	93.42			94.78	30.29	3.86	35.51	100.00	0.00	Peak
4	X	2480.00	86.01			87.37	30.29	3.86	35.51	100.00	6.00	Average
5	!	2483.50	51.06	-2.94	54.00	52.42	30.29	3.86	35.51	100.00	6.00	Average
6		2483.50	58.21	-15.79	74.00	59.57	30.29	3.86	35.51	100.00	0.00	Peak
7		8391.00	56.18	-17.82	74.00	44.73	39.28	8.23	36.06	100.00	0.00	Peak
8		8391.00	42.72	-11.28	54.00	31.27	39.28	8.23	36.06	100.00	267.00	Average

Remark: “X” represents the Fundamental Signal

- Polarization : Vertical (30MHz-1GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.



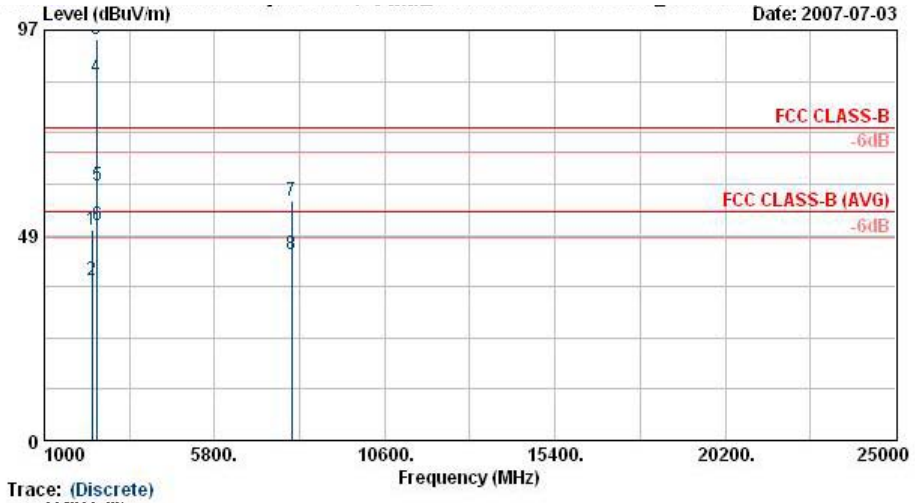
Trace: (Discrete)

Site	: 03CH06-HY
Condition	: LF-ANT(95112I) VERTICAL
EUT	: Mobile Phone
Power	: 120Vac/60Hz
Model	: FR 762206
Memo	: BT TX_CH78;2480MHz
Data Rate	: DH5
Plane	: E2

	Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1	44.58	23.80	-16.20	40.00	43.14	11.02	0.76	31.12	-	-	Peak
2	69.69	30.02	-9.98	40.00	53.38	6.89	0.92	31.17	100.00	143.00	Peak
3	92.64	27.68	-15.82	43.50	48.12	9.62	1.05	31.11	-	-	Peak
4	591.90	29.97	-16.03	46.00	39.33	18.38	2.93	30.67	-	-	Peak
5	691.30	33.70	-12.30	46.00	42.23	18.85	3.22	30.60	-	-	Peak
6	789.30	35.79	-10.21	46.00	43.18	19.72	3.39	30.50	-	-	Peak

- Polarization : Vertical (1GHz-25GHz)

■ The test that passed at minimum margin was marked by the boldface in the following table.



		Frequency (MHz)	Level (dBuV/m)	Over Limit (dB)	Limit Line (dBuV/m)	Read Level (dBuV)	Antenna Factor (dB/m)	Cable Loss (dB)	Preamp Factor (dB)	Ant Pos (cm)	Table Pos (deg)	Remark
1		2344.00	49.82	-24.18	74.00	51.29	30.24	3.71	35.42	100.00	0.00	Peak
2		2344.00	37.92	-16.08	54.00	39.39	30.24	3.71	35.42	100.00	280.00	Average
3	X	2480.00	94.76			96.12	30.29	3.86	35.51	100.00	0.00	Peak
4	X	2480.00	85.76			87.12	30.29	3.86	35.51	100.00	280.00	Average
5		2483.50	60.06	-13.94	74.00	61.42	30.29	3.86	35.51	100.00	0.00	Peak
6	!	2483.50	50.68	-3.32	54.00	52.04	30.29	3.86	35.51	100.00	280.00	Average
7		7971.00	56.49	-17.51	74.00	45.02	39.55	7.78	35.86	100.00	0.00	Peak
8		7971.00	44.11	-9.89	54.00	32.64	39.55	7.78	35.86	100.00	267.00	Average

Remark: “X” represents the Fundamental Signal

5.10 Antenna Requirements

5.10.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no other antenna except assembled by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if directional gain of transmitting antennas is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

5.10.2 Antenna Connected Construction

The antenna used in this product is a PIFA antenna without connecter and it is considered to meet antenna requirement of FCC.

5.10.3 Antenna Gain

The antenna gain of EUT is less than 6dBi. Therefore, it is not necessary to reduce maximum peak output power limit.

6. List of Measuring Equipments Used

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMC Receiver	R&S	ESCS 30	100132	9kHz – 2.75GHz	Aug. 30, 2006	Aug. 29, 2007	Conduction (CO01-HY)
LISN	MessTec	NNB-2/16Z	2001/004	9kHz – 30MHz	Mar. 30, 2007	Mar. 29, 2008	Conduction (CO01-HY)
LISN (Support Unit)	MessTec	NNB-2/16Z	2001/009	9kHz – 30MHz	Mar. 30, 2007	Mar. 29, 2008	Conduction (CO01-HY)
EMI Filter	LINDGREN	LRE-2060	1004	< 450Hz	N/A	N/A	Conduction (CO01-HY)
EMI Filter	LINDGREN	N6006	201052	0 – 60Hz	N/A	N/A	Conduction (CO01-HY)
RF Cable-CON	Suhner Switzerland	RG223/U	CB029	9kHz – 30MHz	Dec. 04, 2006	Dec. 03, 2007	Conduction (CO01-HY)
Isolation Transformer	Erika Fiedler OHG	D-65396 Walluf	58	45MHz-2.15GHz	N/A	N/A	Conduction (CO01-HY)
Spectrum analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Oct. 05, 2006	Oct. 04, 2007	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESCS30	100356	9KHz-2.75GHz	Jul. 26, 200	Jul. 25, 2008	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Nov. 20, 2006	Nov. 19, 2007	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Com-Power	AH118	071025	1G~18G	Jun. 04, 2007	Jun. 03, 2008	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-249	14G - 40G	Nov. 20, 2006	Nov. 19, 2008	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G - 26.5G	Nov. 15, 2006	Nov. 14, 2007	Radiation (03CH06-HY)
Pre Amplifier	Mini Circuits	ZKL-2	D092004-1	10~2500MHz	Nov. 15, 2006	Nov. 14, 2007	Radiation (03CH06-HY)
Base Station Simulator	R & S	CMU200	106656	WCDMA	Nov. 20, 2006	Nov. 19, 2007	Radiation (03CH06-HY)
Controller	INN-CO	CO2000	N/A	N/A	N/A	N/A	Radiation (03CH06-HY)
Turn Table	INN-CO	DS2000	420/650/00	0 ~ 360 degree	N/A	N/A	Radiation (03CH06-HY)
Antenna Mast	INN-CO	MM3000	114/8000604/L	1 m - 4 m	N/A	N/A	Radiation (03CH06-HY)

7. Uncertainty Evaluation

Uncertainty of Conducted Emission Measurement (150kHz ~ 30MHz)

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.10	Normal(k=2)	0.05
Cable loss	0.10	Normal(k=2)	0.05
AMN insertion loss	2.50	Rectangular	0.63
Receiver Spec	1.50	Rectangular	0.43
Site imperfection	1.39	Rectangular	0.80
Mismatch	+0.34/-0.35	U-shape	0.24
combined standard uncertainty Uc(y)	**1.13**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**2.26**		

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

Contribution	Uncertainty of x_i		$u(x_i)$
	dB	Probability Distribution	
Receiver reading	0.15	Normal(k=2)	0.08
Antenna factor calibration	1.12	Normal(k=2)	0.56
Cable loss calibration	0.12	Normal(k=2)	0.06
Pre Amplifier Gain calibration	0.13	Normal(k=2)	0.07
RCV/SPA specification	2.5	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1	Rectangular	0.29
Site imperfection	2.1	Rectangular	1.21
Mismatch	+0.39/-0.41	U-shaped	0.28
combined standard uncertainty Uc(y)	**1.58**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**3.16**		

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

Contribution	Uncertainty of x_i		$u(x_i)$	Ci	$Ci*u(x_i)$
	dB	Probability Distribution			
Receiver reading	±0.10	Normal(k=1)	0.10	1	0.10
Antenna factor calibration	±1.70	Normal(k=2)	0.85	1	0.85
Cable loss calibration	±0.50	Normal(k=2)	0.25	1	0.25
Receiver Correction	±2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	±1.50	Rectangular	0.87	1	0.87
Site imperfection	±2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR Γ1= 0.197 Antenna VSWR Γ2= 0.194 Uncertainty=20log(1-Γ1*Γ2*Γ3)	+0.34/-0.35	U-shaped	0.244	1	0.244
Combined standard uncertainty Uc(y)	**2.36**				
Measuring uncertainty for a level of confidence of 95% U=2Ue(y)	**4.72**				