

FCC/IC Test Report

APPLICANT : Nokia Corporation
EQUIPMENT : Internet Stick
BRAND NAME : Nokia
MODEL NAME : CS-11-1
TYPE DESIGNATION : RD-16
MARKETING NAME : Nokia Internet Stick CS-11
FCC ID : PYARD-16
IC : 661V-RD16
STANDARD : FCC 47 CFR FCC Part 15 Subpart B
IC RSS-Gen, RSS-132 Issue 2, RSS-133 Issue 5
CLASSIFICATION : Certification

The product was received on Mar. 03, 2010 and completely tested on Mar. 06, 2010. We, SPORTON INTERNATIONAL INC., would like to declare that the tested sample has been evaluated in accordance with the procedures given in ANSI C63.4-2003 and shown the 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:



Anderson Chiu / Deputy Manager



SPORTON INTERNATIONAL INC.

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FCC ID : PYARD-16

IC : 661V-RD16

Page Number : 1 of 31

Report Issued Date : Dec. 28, 2010

Report Version : Rev. 02



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REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FD030309-02	Rev. 01	Initial issue of report	Dec. 21, 2010
FD030309-02	Rev. 02	Add information of test sample	Dec. 28, 2010

SUMMARY OF TEST RESULT

Report Section	FCC Rule	IC Rule	Description	Limit	Result	Remark
3.1	15.107	7.2.2	AC Conducted Emission	< 15.107 limits < RSS-Gen table 2 limits	PASS	Under limit 13.4 dB at 1.558 MHz
3.2	15.109	7.2.3.2	Radiated Emission	< 15.109 limits or < RSS-Gen table 1 limits (Section 6)	PASS	Under limit 10.52 dB at 242.49 MHz

Remark: The test results of PYARD-15 are re-used for certification of the PYARD-16. The table above indicates the results, which will be re-used.

1. General Description

1.1. Applicant

Nokia Corporation

Joensuunkatu 7

24100 Salo

FINLAND

1.2. Manufacturer

Nokia Corporation

Joensuunkatu 7

24100 Salo

FINLAND

1.3. Feature of Equipment

Product Feature & Specification	
Equipment	Internet Stick
Brand Name	Nokia
Model Name	CS-11-1
Type Designation	RD-16
Marketing Name	Nokia Internet Stick CS-11
FCC ID	PYARD-16
IC	661V-RD16
IMEI Code	004402130194180
Tx Frequency Range	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz
Rx Frequency Range	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz
Antenna Type	Fixed Internal Antenna
HW Version	1.0
SW Version	2.16
ME Version	2.0
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK
EUT Stage	Production Unit

<Test Sample>

Product Feature & Specification	
Equipment	Internet Stick
Brand Name	Nokia
Model Name	CS-11
Type Designation	RD-15
Marketing Name	Nokia Internet Stick CS-11
FCC ID	PYARD-15
IC	661V-RD15
IMEI Code	004402130194180
Tx Frequency Range	GSM850 : 824 MHz ~ 849 MHz GSM1900 : 1850 MHz ~ 1910 MHz WCDMA Band V : 824 MHz ~ 849 MHz WCDMA Band II : 1850 MHz ~ 1910 MHz
Rx Frequency Range	GSM850 : 869 MHz ~ 894 MHz GSM1900 : 1930 MHz ~ 1990 MHz WCDMA Band V : 869 MHz ~ 894 MHz WCDMA Band II : 1930 MHz ~ 1990 MHz
Antenna Type	Fixed Internal Antenna
HW Version	1.8
SW Version	2.11
ME Version	2.0
Type of Modulation	GSM / GPRS : GMSK EDGE : 8PSK WCDMA : QPSK HSDPA : QPSK / 16QAM HSUPA : BPSK
EUT Stage	Production Unit

List of Accessory:

Specification of Accessory		
USB Cable	Brand Name	Nokia
	Model Name	CA-175D
	Signal Line Type	0.22 meter shielded cable without ferrite core
	HW Version	1.0
	Mechanical Version	1.0

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. For accessories equipped with this EUT, please refer to the appendix of the external photo.

1.4. Test Site

Test Site	SPORTON INTERNATIONAL INC.		
Test Site Location	No. 52, Hwa Ya 1 st 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.
	CO05-HY	03CH06-HY	TW1022/4086B-1

1.5. Applied Standards

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

- FCC 47 CFR FCC Part 15 Subpart B
- ANSI C63.4-2003
- IC RSS-Gen Issue 2
- IC RSS-132 Issue 2
- IC RSS-133 Issue 5

Remark: All test items were verified and recorded according to the standards and without any deviation during the test.

1.6. Ancillary Equipment List

Item	Equipment	Trade Name	Model Name	FCC ID	Data Cable	Power Cord
1.	System Simulator	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m
2.	Notebook	DELL	Vostro 1510	FCC DoC	N/A	AC I/P: Unshielded, 1.2 m DC O/P: Shielded, 1.8 m
3.	LCD Monitor	Lenovo	6135-AB1	FCC DoC	Shielded, 1.6 m	Unshielded, 1.8 m
4.	iPod	Apple	A1199	FCC DoC	Unshielded, 1.0 m	N/A
5.	iPod	Apple	A1285	FCC DoC	Unshielded, 1.0 m	N/A

2. Test Configuration of Equipment Under Test

2.1. Test Mode

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.

Frequency range investigated: conduction (150 kHz to 30 MHz), radiation (30MHz to the 5th harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower).

Pre-scanned tests were conducted to determine the final configuration from all possible combinations.

The following tables are showing the test modes as the worst cases and recorded in this report.

Item	EUT Configuration	Test Condition		
		EMI AC	EMI RE<1G	EMI RE≥1G
1.	Operating Mode (EUT was linked with the notebook via USB cable)	☒	☒	☒
2.	Operating Mode (EUT was plugged into the notebook directly)	☒	☒	Note 1

Abbreviations:

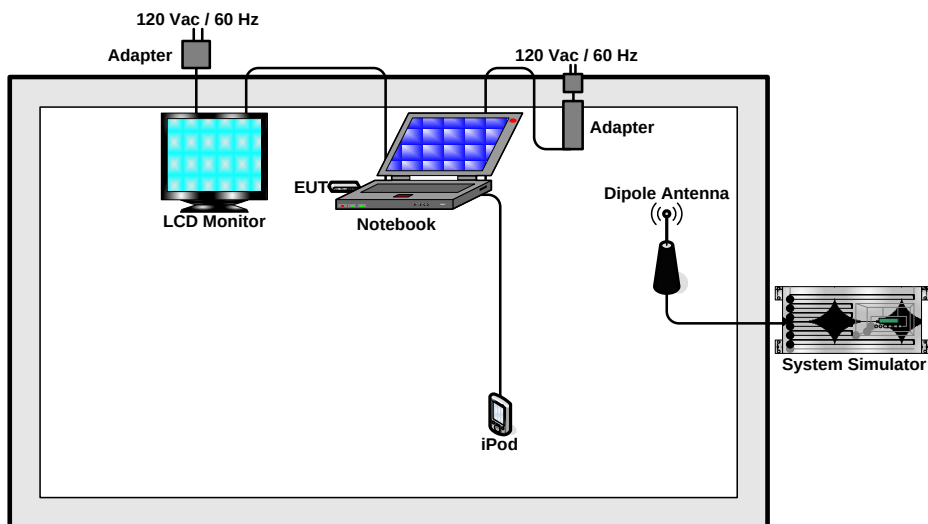
- EMI AC: AC conducted emissions
- EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz
- EMI RE < 1G: EUT radiated emissions < 1GHz

Note 1: Testing for this mode is not required or not the worst case.

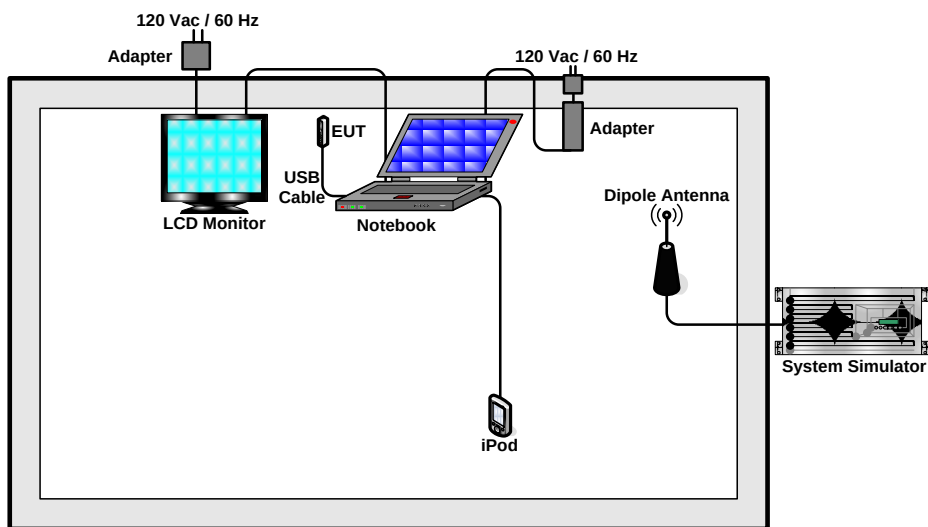
Test Items	EUT Configure Mode	Function Type
AC Conducted Emission	1/2	Mode 1: GSM850 Idle + USB Cable (Link with Notebook) Mode 2: GSM1900 Idle + USB Cable (Link with Notebook) Mode 3: EDGE1900 Idle + USB Cable (Link with Notebook)
Radiated Emissions < 1GHz	1/2	Mode 1: GSM850 Idle + USB Cable (Link with Notebook) Mode 2: GSM1900 Idle + USB Cable (Link with Notebook) Mode 3: EDGE1900 Idle + USB Cable (Link with Notebook) Mode 4: GSM850 Idle + Notebook
Radiated Emissions ≥ 1GHz	1	Mode 1: GSM850 Idle + USB Cable (Link with Notebook)

2.2. Connection Diagram of Test System

<EUT with Notebook Mode>



<EUT with USB Cable (Link with Notebook) Mode>





2.3. Test Software

The EUT was linked with the notebook via USB cable or plugged into the notebook directly during the testing. Therefore, the EUT was controlled by the software, "Nokia Internet Modem". Execute the program, "Nokia Internet Modem" under WINXP installed in notebook to drive EUT and synchronized with system simulator. The notebook was continuously receiving BCCH signal data from system simulator via EUT during radiated emission and conducted emission testing.

3. Test Result

3.1. Test of AC Conducted Emission Measurement

3.1.1 Limits of AC Conducted Emission

For equipment that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table.

Frequency of emission (MHz)	Conducted limit (dBuV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

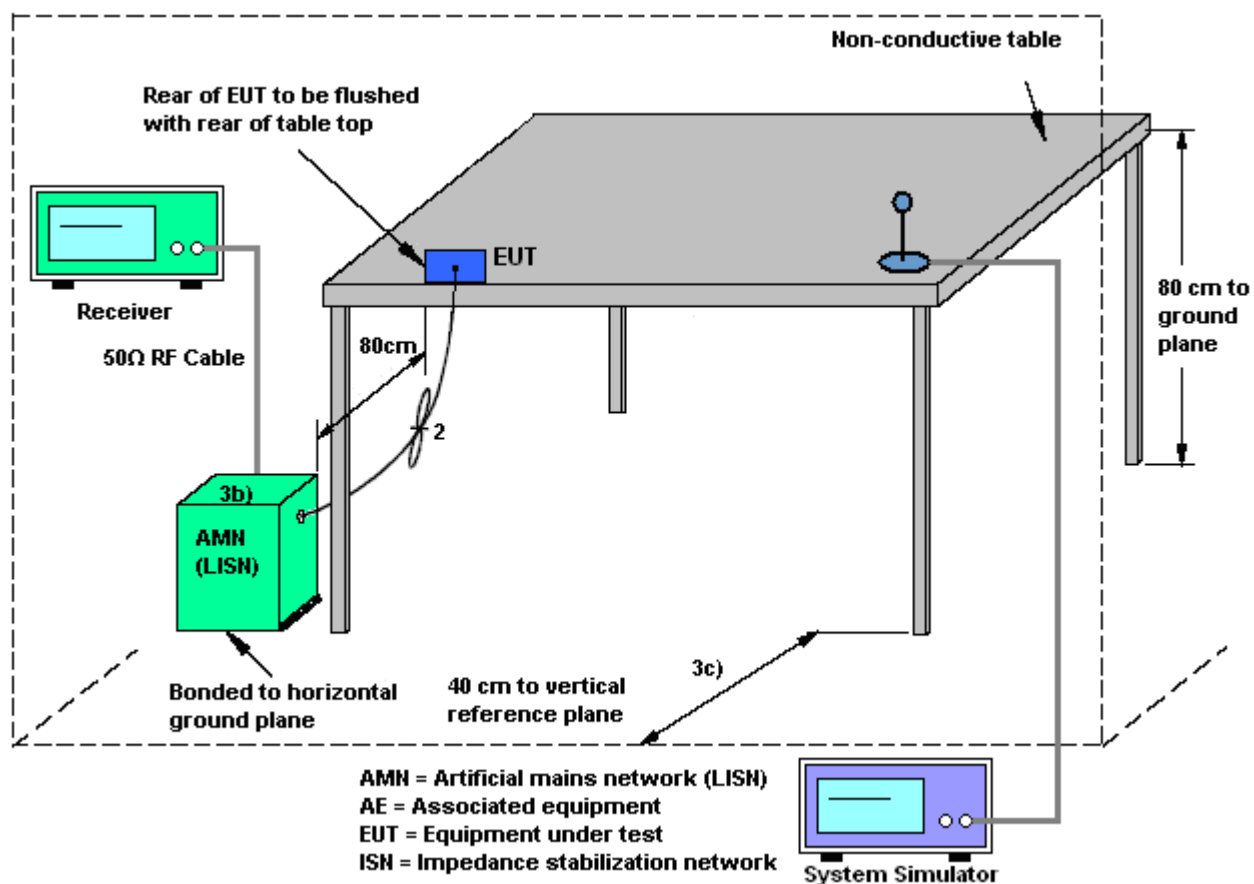
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

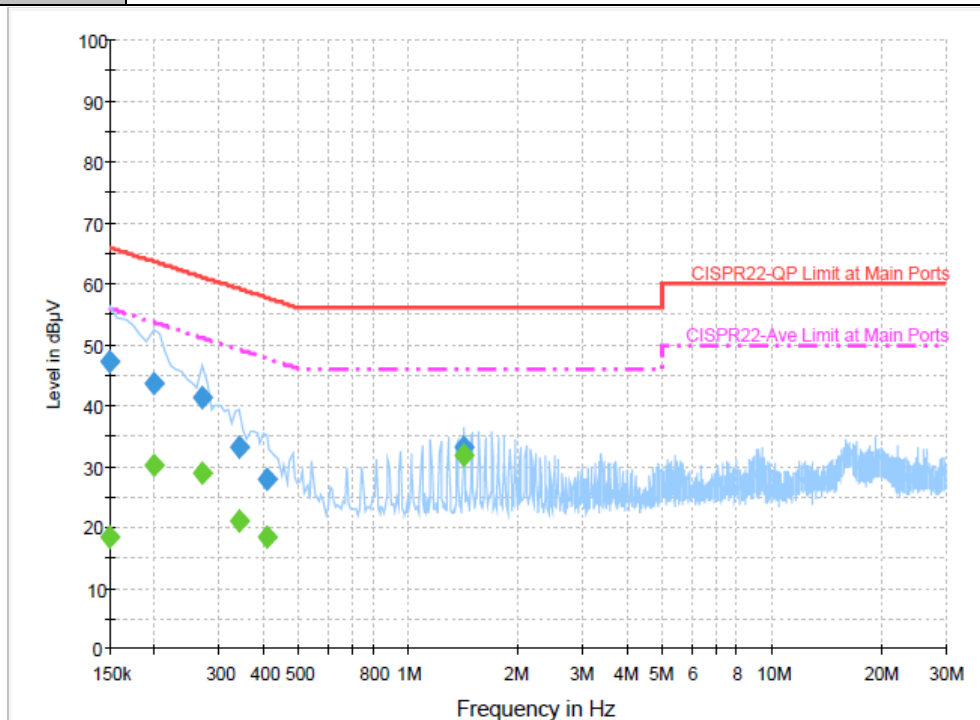
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.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

3.1.4 Test Setup



3.1.5 Test Result of AC Conducted Emission

Test Mode :	Mode 1	Temperature :	20~22℃
Test Engineer :	Novic Jiang	Relative Humidity :	43~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM850 Idle + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



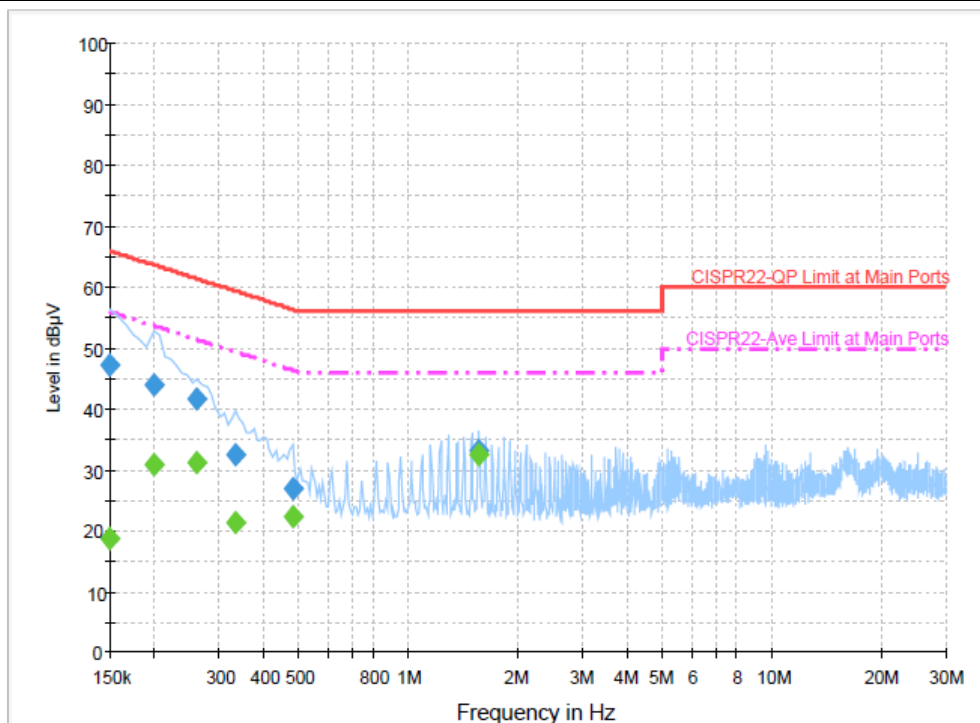
Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	47.3	Off	L1	19.5	18.7	66.0
0.198000	43.5	Off	L1	19.6	20.2	63.7
0.270000	41.4	Off	L1	19.4	19.7	61.1
0.342000	33.2	Off	L1	19.5	26.0	59.2
0.406000	27.7	Off	L1	19.4	30.0	57.7
1.422000	33.0	Off	L1	19.5	23.0	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	18.5	Off	L1	19.5	37.5	56.0
0.198000	30.3	Off	L1	19.6	23.4	53.7
0.270000	28.9	Off	L1	19.4	22.2	51.1
0.342000	21.1	Off	L1	19.5	28.2	49.2
0.406000	18.2	Off	L1	19.4	29.5	47.7
1.422000	31.7	Off	L1	19.5	14.3	46.0

Test Mode :	Mode 1	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	43~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM850 Idle + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

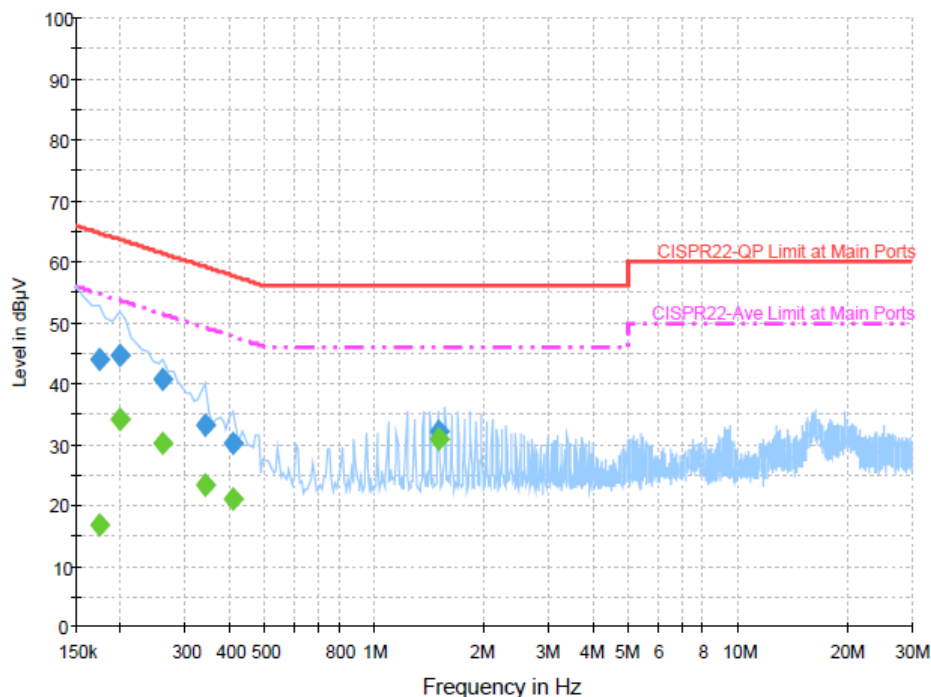

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	47.1	Off	N	19.5	18.9	66.0
0.198000	43.9	Off	N	19.5	19.8	63.7
0.262000	41.6	Off	N	19.4	19.8	61.4
0.334000	32.3	Off	N	19.5	27.1	59.4
0.478000	26.9	Off	N	19.4	29.5	56.4
1.558000	33.0	Off	N	19.5	23.0	56.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.150000	18.6	Off	N	19.5	37.4	56.0
0.198000	30.9	Off	N	19.5	22.8	53.7
0.262000	31.0	Off	N	19.4	20.4	51.4
0.334000	21.2	Off	N	19.5	28.2	49.4
0.478000	22.5	Off	N	19.4	23.9	46.4
1.558000	32.3	Off	N	19.5	13.7	46.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	43~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	GSM1900 Idle + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

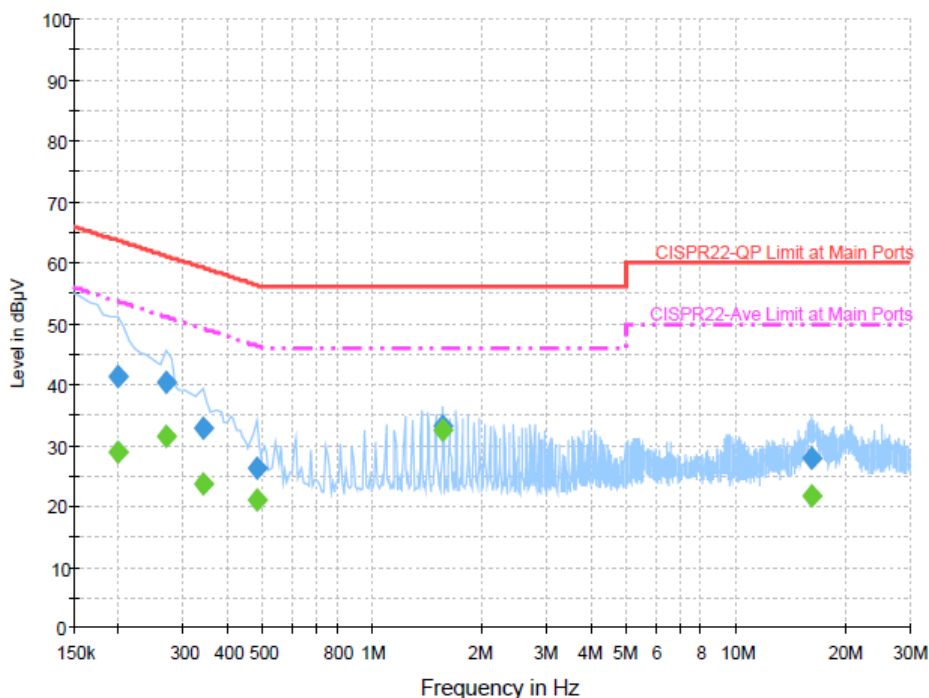

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	43.9	Off	L1	19.5	20.9	64.8
0.198000	44.7	Off	L1	19.6	19.0	63.7
0.262000	40.6	Off	L1	19.4	20.8	61.4
0.342000	33.0	Off	L1	19.5	26.2	59.2
0.406000	30.0	Off	L1	19.4	27.7	57.7
1.494000	32.1	Off	L1	19.5	23.9	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	16.6	Off	L1	19.5	38.2	54.8
0.198000	34.0	Off	L1	19.6	19.7	53.7
0.262000	30.1	Off	L1	19.4	21.3	51.4
0.342000	23.2	Off	L1	19.5	26.0	49.2
0.406000	21.1	Off	L1	19.4	26.6	47.7
1.494000	31.0	Off	L1	19.5	15.0	46.0

Test Mode :	Mode 2	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	43~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	GSM1900 Idle + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

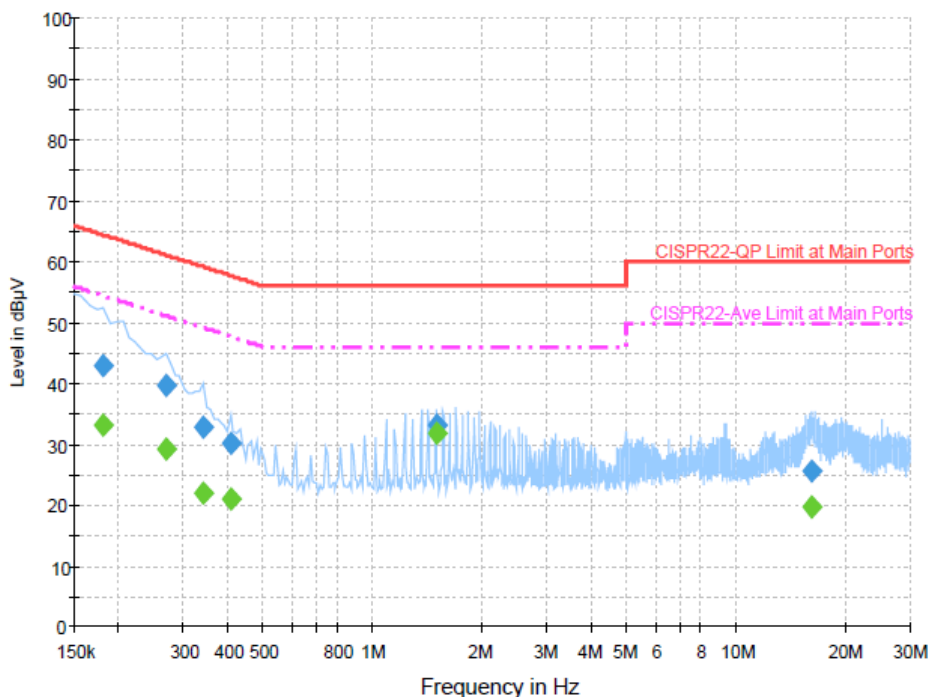

Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.198000	41.4	Off	N	19.5	22.3	63.7
0.270000	40.4	Off	N	19.4	20.7	61.1
0.342000	32.8	Off	N	19.4	26.4	59.2
0.478000	26.2	Off	N	19.4	30.2	56.4
1.558000	33.2	Off	N	19.5	22.8	56.0
16.134000	28.0	Off	N	19.8	32.0	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.198000	29.0	Off	N	19.5	24.7	53.7
0.270000	31.4	Off	N	19.4	19.7	51.1
0.342000	23.5	Off	N	19.4	25.7	49.2
0.478000	21.0	Off	N	19.4	25.4	46.4
1.558000	32.6	Off	N	19.5	13.4	46.0
16.134000	21.5	Off	N	19.8	28.5	50.0

Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	43~46%
Test Voltage :	120Vac / 60Hz	Phase :	Line
Function Type :	EDGE1900 Idle + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		

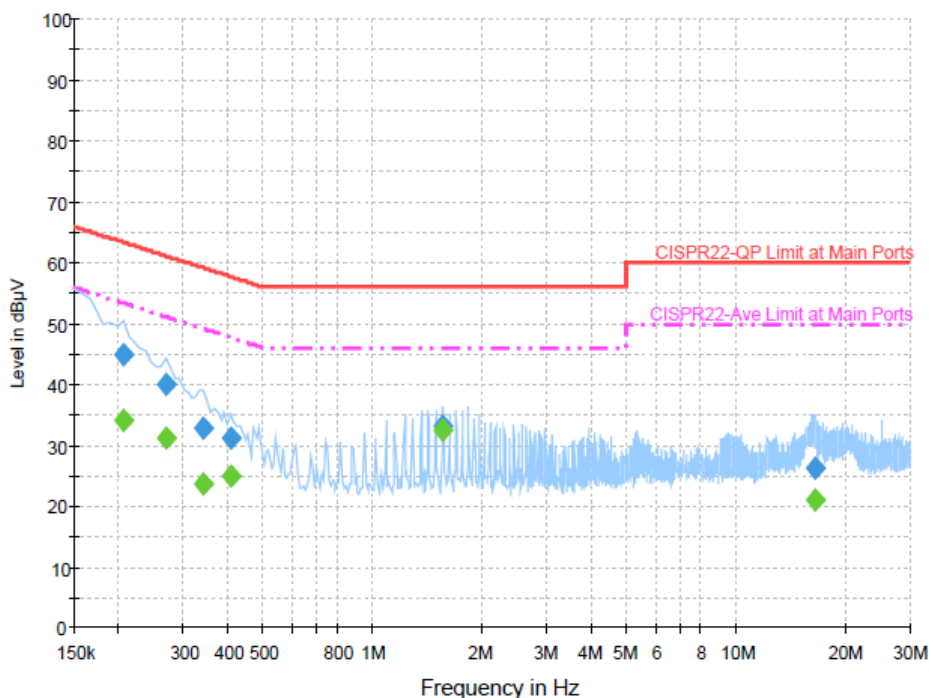

Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	43.0	Off	L1	19.5	21.4	64.4
0.270000	39.6	Off	L1	19.4	21.5	61.1
0.342000	32.9	Off	L1	19.5	26.3	59.2
0.406000	30.0	Off	L1	19.4	27.7	57.7
1.494000	33.0	Off	L1	19.5	23.0	56.0
16.054000	25.5	Off	L1	19.7	34.5	60.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	33.0	Off	L1	19.5	21.4	54.4
0.270000	29.2	Off	L1	19.4	21.9	51.1
0.342000	22.0	Off	L1	19.5	27.2	49.2
0.406000	21.1	Off	L1	19.4	26.6	47.7
1.494000	31.8	Off	L1	19.5	14.2	46.0
16.054000	19.6	Off	L1	19.7	30.4	50.0

Test Mode :	Mode 3	Temperature :	20~22°C
Test Engineer :	Novic Jiang	Relative Humidity :	43~46%
Test Voltage :	120Vac / 60Hz	Phase :	Neutral
Function Type :	EDGE1900 Idle + USB Cable (Link with Notebook)		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		


Final Result 1

Frequency (MHz)	QuasiPeak (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.206000	45.0	Off	N	19.5	18.4	63.4
0.270000	40.1	Off	N	19.4	21.0	61.1
0.342000	32.7	Off	N	19.4	26.5	59.2
0.406000	31.0	Off	N	19.4	26.7	57.7
1.558000	33.1	Off	N	19.5	22.9	56.0
16.550000	26.3	Off	N	19.8	33.7	60.0

Final Result 2

Frequency (MHz)	Average (dBμV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)
0.206000	34.0	Off	N	19.5	19.4	53.4
0.270000	31.1	Off	N	19.4	20.0	51.1
0.342000	23.5	Off	N	19.4	25.7	49.2
0.406000	24.8	Off	N	19.4	22.9	47.7
1.558000	32.6	Off	N	19.5	13.4	46.0
16.550000	21.1	Off	N	19.8	28.9	50.0

3.2. Test of Radiated Emission Measurement

3.2.1. Limit of Radiated Emission

The emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

Frequency (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 – 0.490	2400/F(kHz)	300
0.490 – 1.705	24000/F(kHz)	30
1.705 – 30.0	30	30
30 – 88	100	3
88 – 216	150	3
216 - 960	200	3
Above 960	500	3

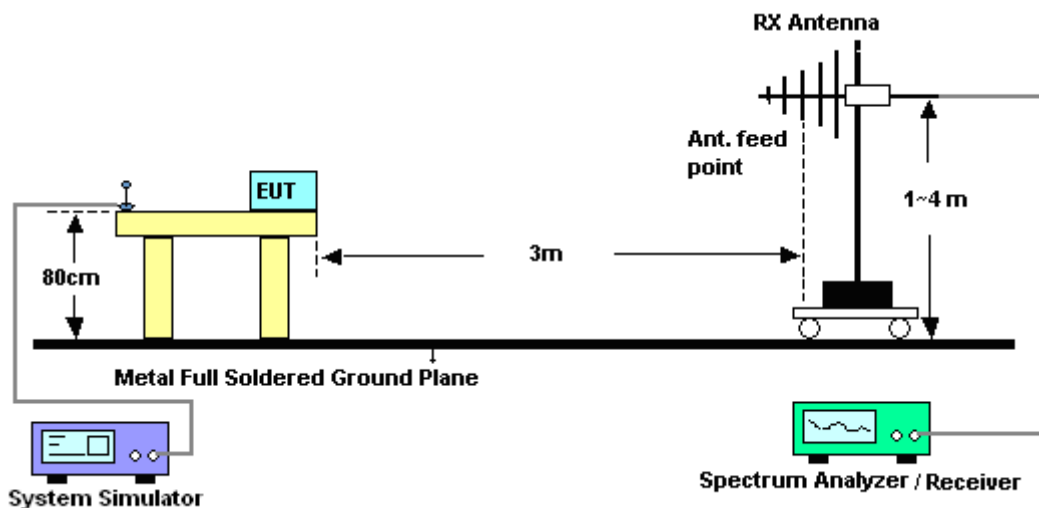
3.2.2. Measuring Instruments

See list of measuring instruments of this test report.

3.2.3. Test Procedures

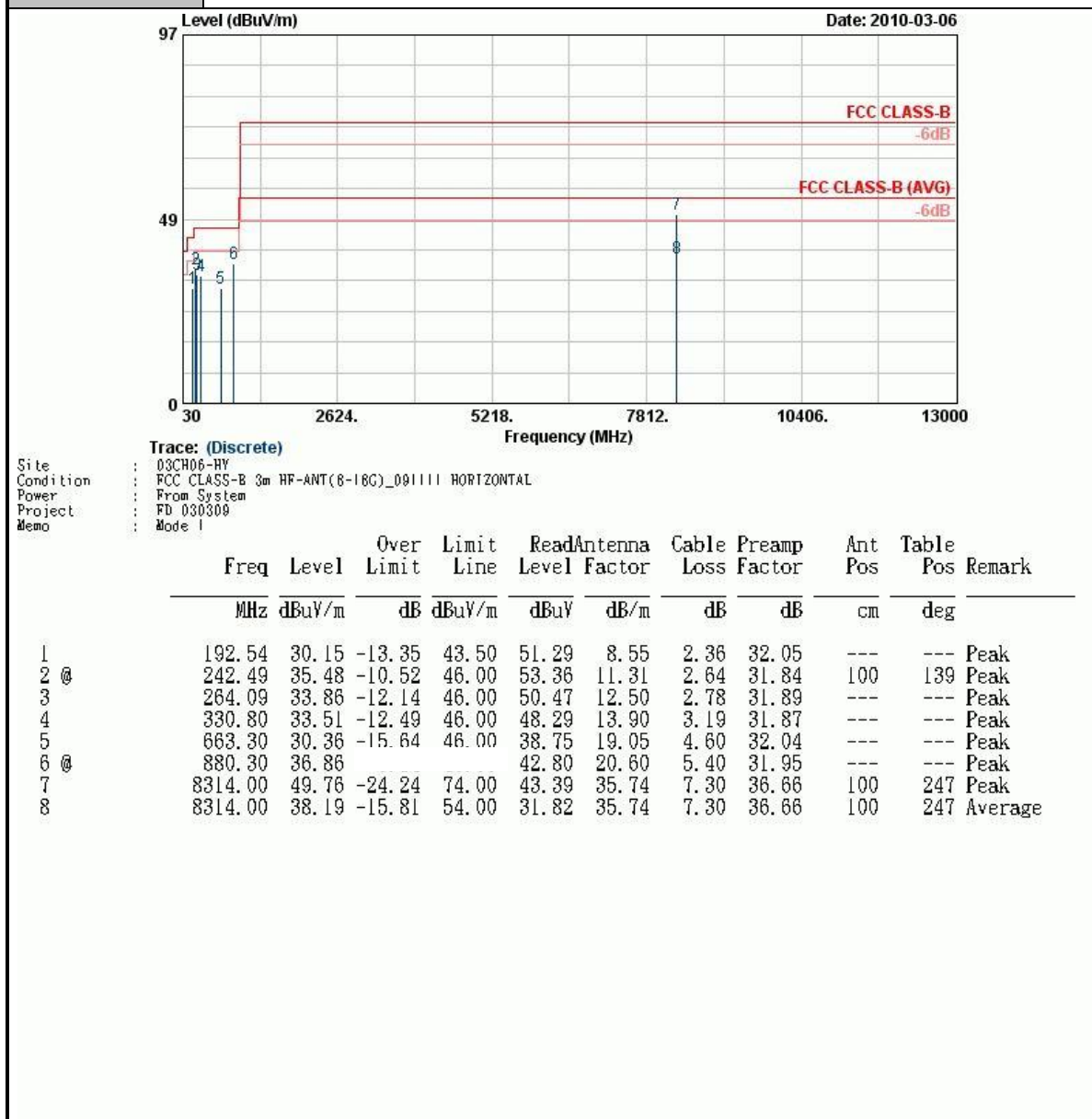
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna is a Bi-Log antenna and its height is adjusted 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 Detect Function and specified bandwidth with Maximum Hold Mode.
7. 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. Emission level (dBuV/m) = 20 log Emission level (uV/m)
9. Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level

3.2.4. Test Setup of Radiated Emission

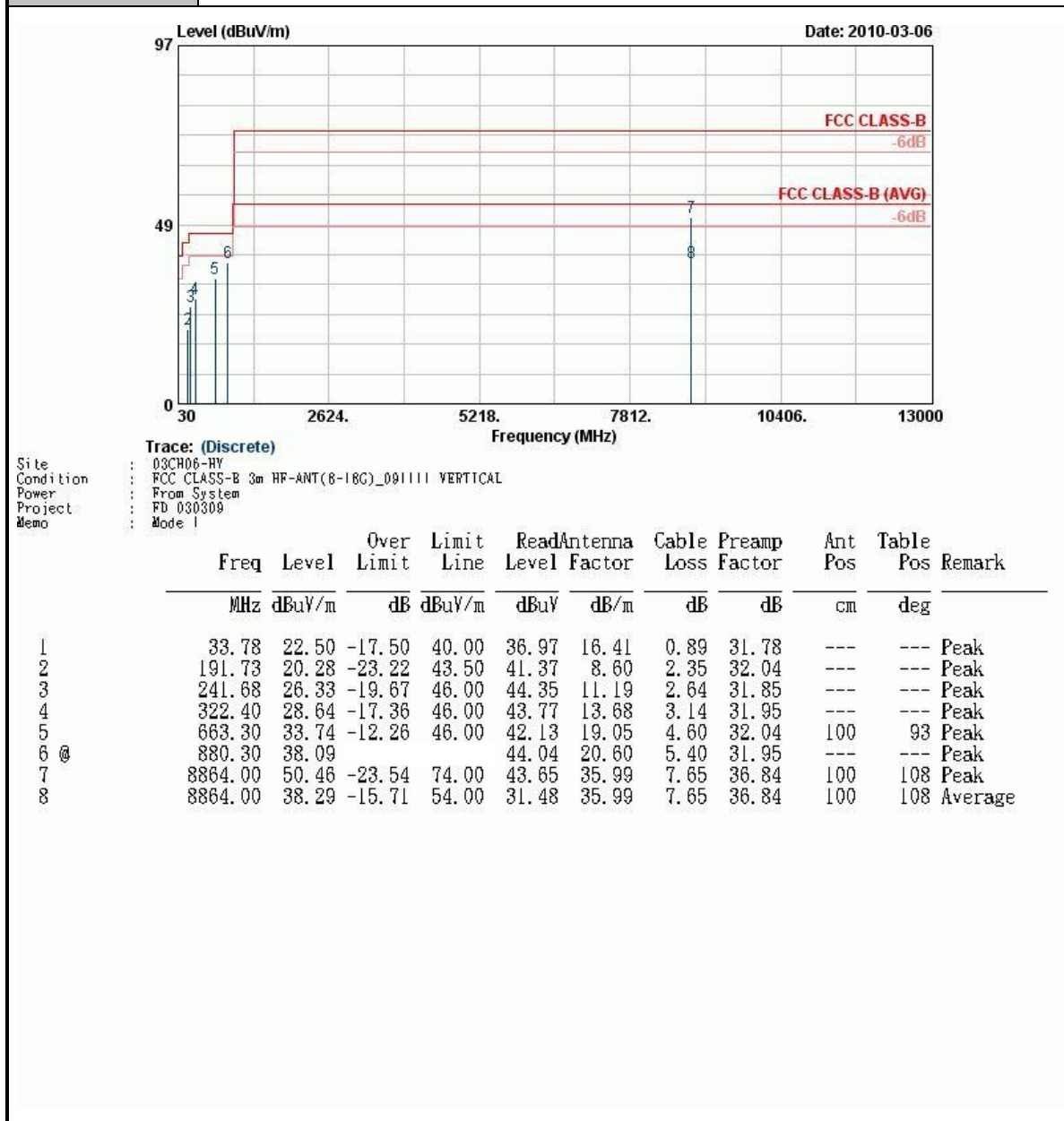


3.2.5. Test Result of Radiated Emission

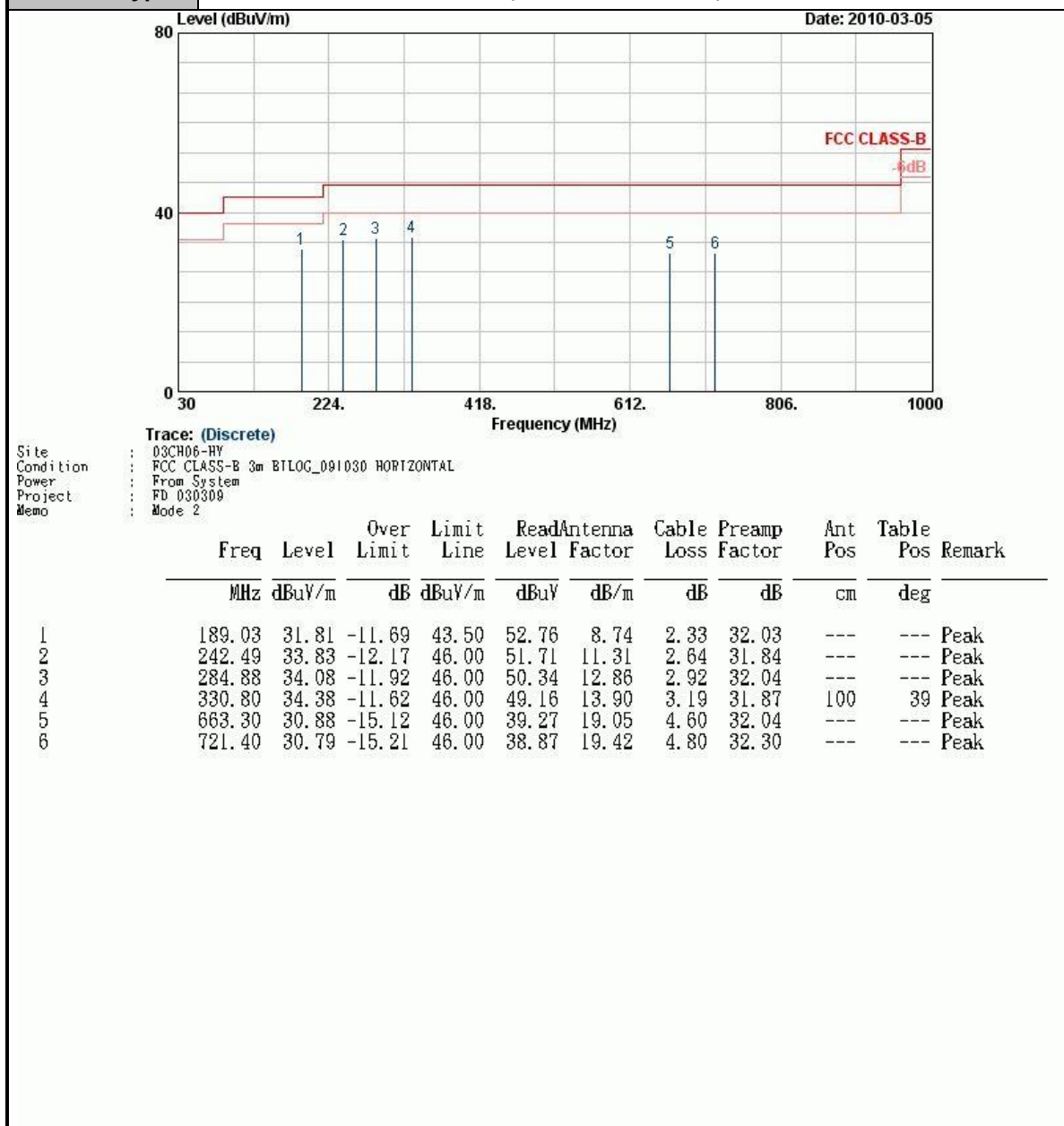
Test Mode :	Mode 1	Temperature :	22~23°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM850 Idle + USB Cable (Link with Notebook)		
Remark :	#6 is System Simulator Signal which can be ignored.		



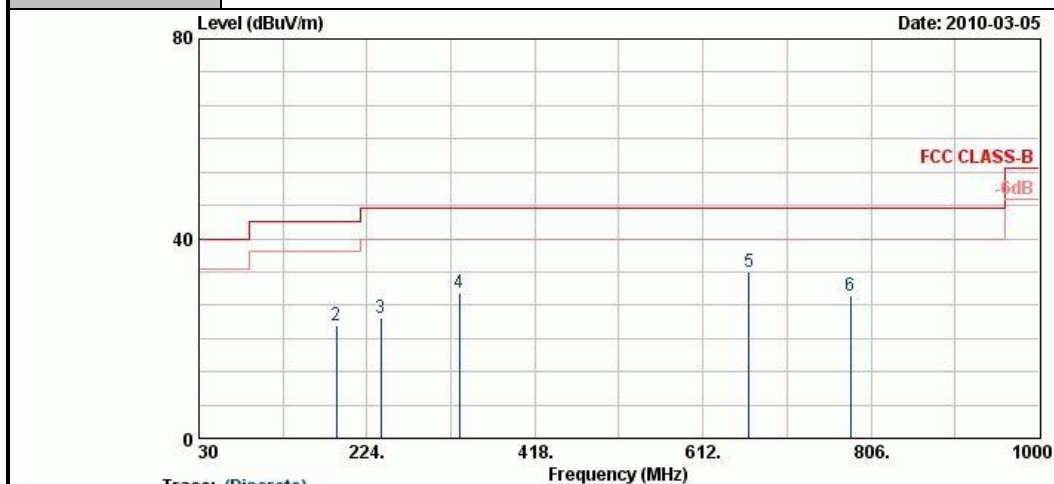
Test Mode :	Mode 1	Temperature :	22~23°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM850 Idle + USB Cable (Link with Notebook)		
Remark :	#6 is System Simulator Signal which can be ignored.		



Test Mode :	Mode 2	Temperature :	22~23°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM1900 Idle + USB Cable (Link with Notebook)		



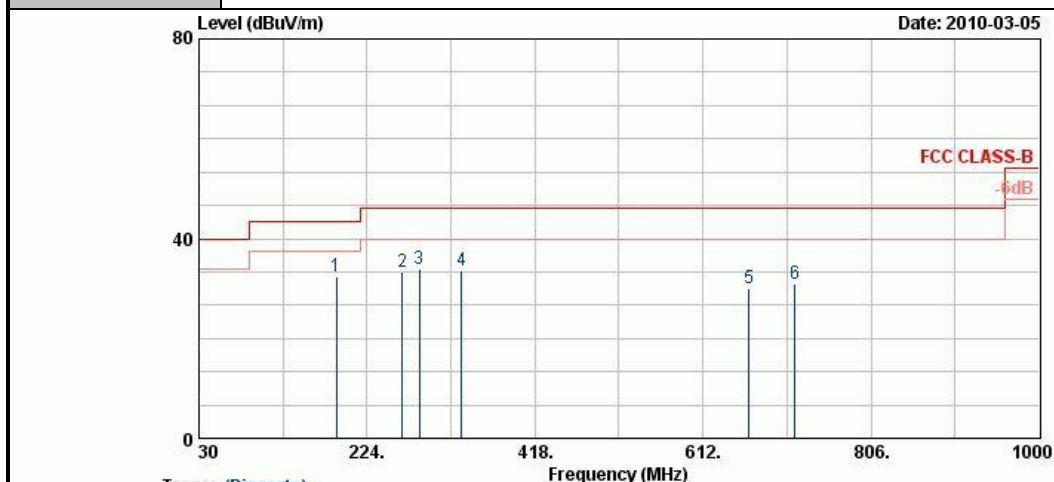
Test Mode :	Mode 2	Temperature :	22~23°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM1900 Idle + USB Cable (Link with Notebook)		



Site : 03CH06-HY
Condition : FCC CLASS-B 3m BTLOG_091030 VERTICAL
Power : From System
Project : FD 030309
Memo : Mode 2

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	cm	deg	
1	30.54	18.01	-21.99	40.00	30.79	17.98	0.85	31.61	---	Peak
2	188.49	22.47	-21.03	43.50	43.39	8.79	2.32	32.03	---	Peak
3	240.33	24.20	-21.80	46.00	42.35	11.07	2.63	31.85	---	Peak
4	330.80	29.05	-16.95	46.00	43.83	13.90	3.19	31.87	---	Peak
5	665.40	33.39	-12.61	46.00	41.79	19.06	4.61	32.06	100	72 Peak
6	782.30	28.67	-17.33	46.00	35.83	19.92	5.05	32.14	---	Peak

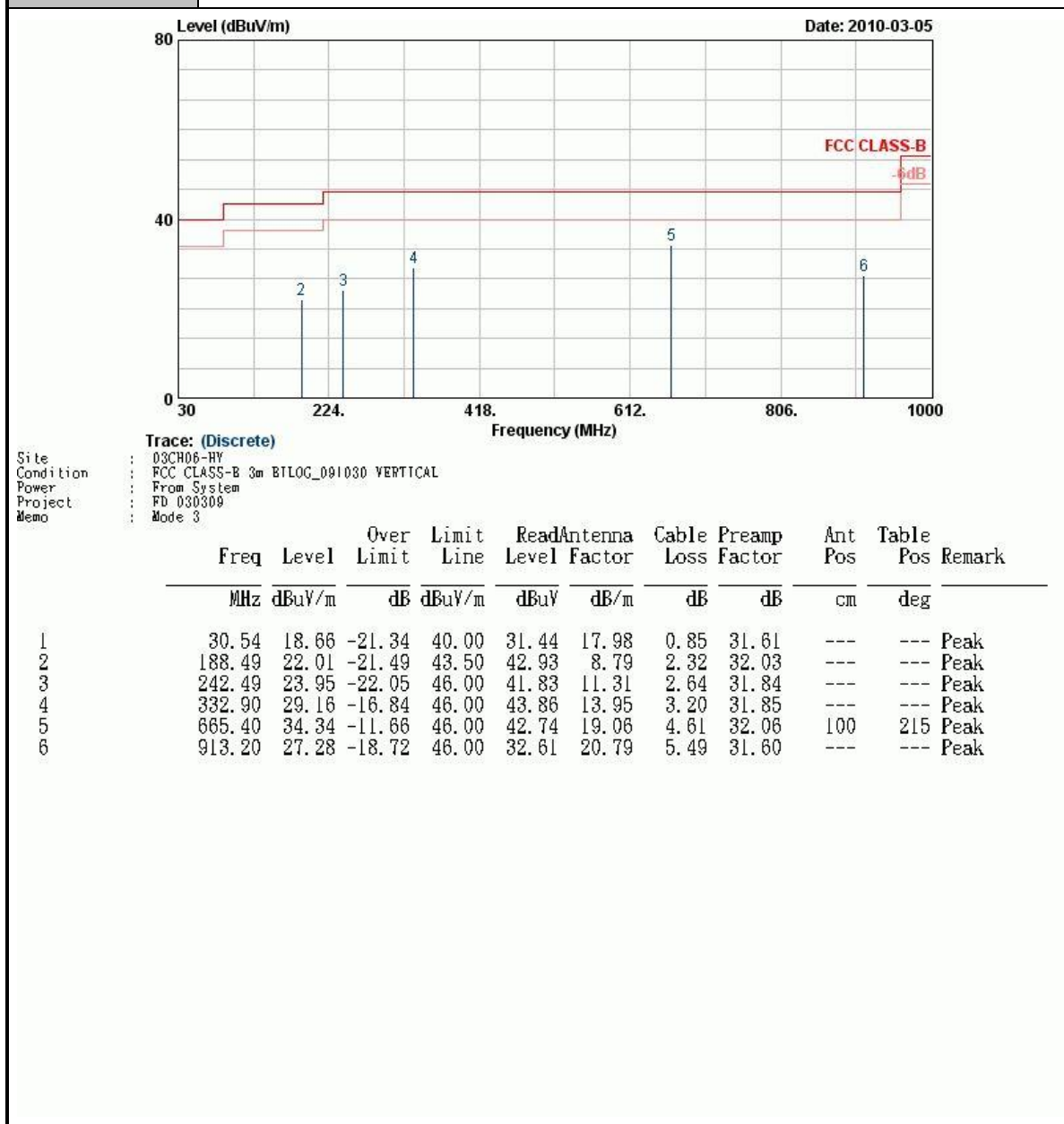
Test Mode :	Mode 3	Temperature :	22~23°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	EDGE1900 Idle + USB Cable (Link with Notebook)		



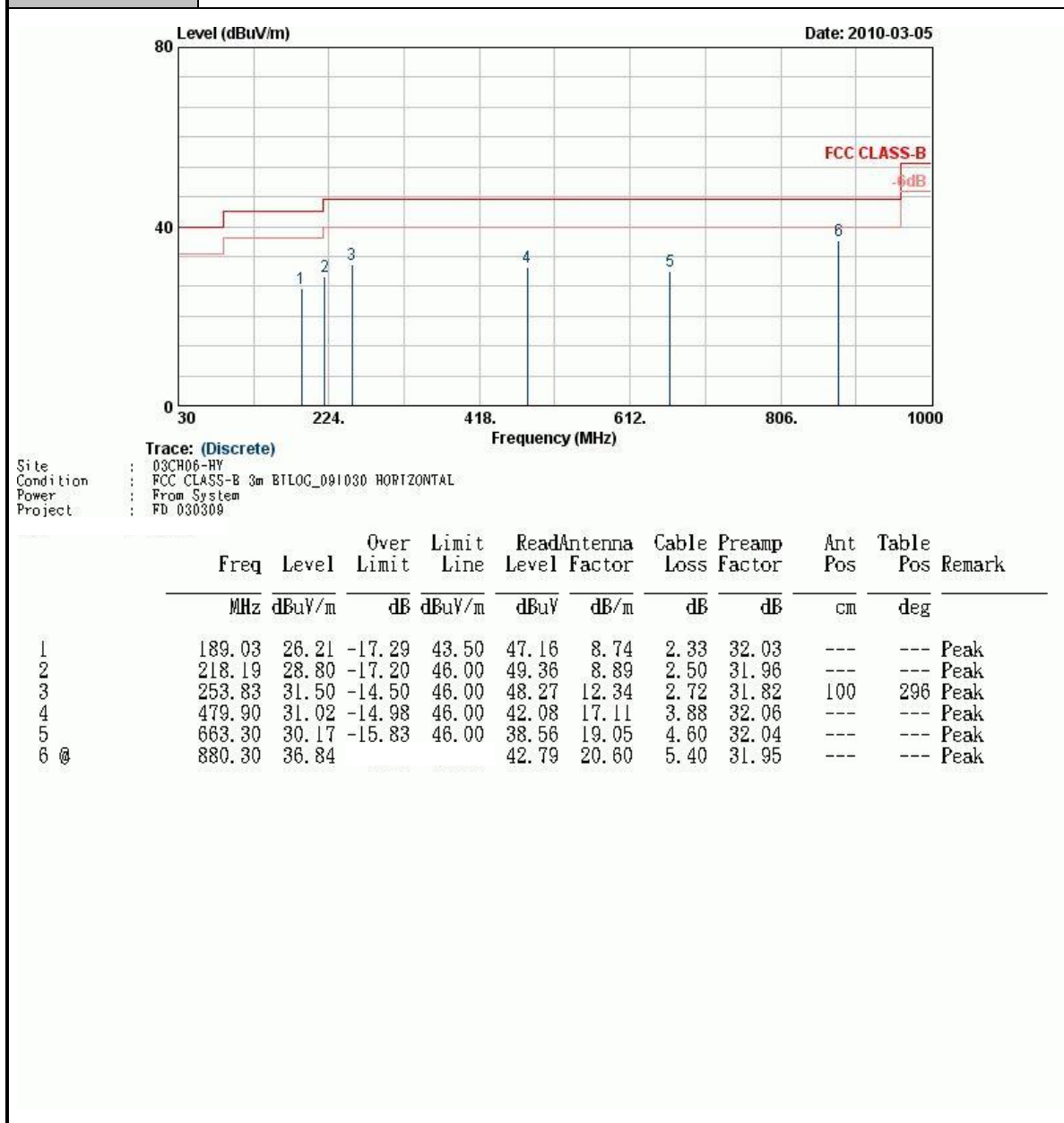
Trace: (Discrete)
 Site : 03CH06-HY
 Condition : FCC CLASS-B 3m BTLOG_091030 HORIZONTAL
 Power : From System
 Project : FD 030309
 Memo : Mode 3

	Freq	Level	Over	Limit	ReadAntenna	Cable	Preamp	Ant	Table	
	MHz	dBuV/m	Limit	Line	Level	Loss	Factor	Pos	Pos	Remark
			dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg
1	188.49	32.40	-11.10	43.50	53.31	8.79	2.32	32.03	100	193 Peak
2	264.63	33.29	-12.71	46.00	49.89	12.52	2.78	31.90	---	---
3	284.88	33.87	-12.13	46.00	50.14	12.86	2.92	32.04	---	---
4	332.90	33.71	-12.29	46.00	48.41	13.95	3.20	31.85	---	---
5	665.40	29.93	-16.07	46.00	38.33	19.06	4.61	32.06	---	---
6	717.90	30.78	-15.22	46.00	38.95	19.39	4.78	32.33	---	---

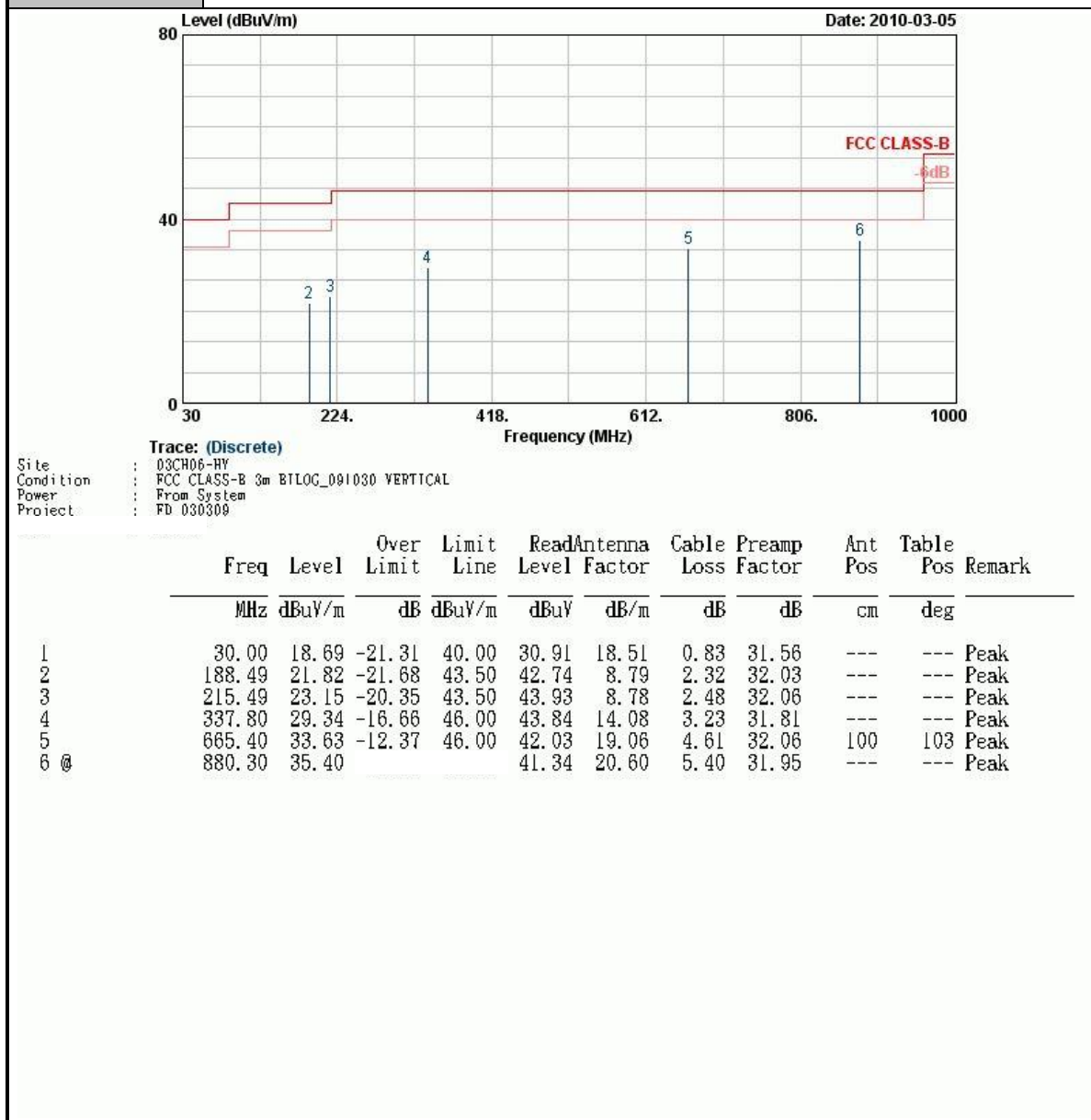
Test Mode :	Mode 3	Temperature :	22~23°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Vertical
Function Type :	EDGE1900 Idle + USB Cable (Link with Notebook)		



Test Mode :	Mode 4	Temperature :	22~23°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM850 Idle + Notebook		
Remark :	#6 is System Simulator Signal which can be ignored.		



Test Mode :	Mode 4	Temperature :	22~23°C
Test Engineer :	Kai Wang	Relative Humidity :	45~46%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM850 Idle + Notebook		
Remark :	#6 is System Simulator Signal which can be ignored.		



4. List of Measuring Equipment

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMI Test Receive	R&S	ESCS 30	100356	9KHz – 2.75GHz	Aug. 05, 2009	Aug. 04, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 30, 2009	Nov. 29, 2010	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 23, 2009	Nov. 22, 2010	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9KHz-26.5GHz	Oct. 23, 2009	Oct. 22, 2010	Radiation (03CH06-HY)
Spectrum Analyzer	R&S	FSP40	100057	9KHz-40GHz	Oct. 20, 2009	Oct. 19, 2010	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz-1000M Hz	Apr. 28, 2009	Apr. 27, 2010	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz -2GHz	Oct. 31, 2009	Oct. 30, 2010	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1GHz~18GHz	Aug. 20, 2009	Aug. 19, 2010	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AH-0801	95119	8GHz~18GHz	Nov. 02, 2009	Nov. 01, 2010	Radiation (03CH06-HY)
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170251	15GHz- 40GHz	Oct. 14, 2009	Oct. 13, 2010	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1GHz- 26.5GHz	Nov. 11, 2009	Nov. 10, 2010	Radiation (03CH06-HY)
Amplifier	Agilent	310N	186713	9KHz~1GHz	Apr. 20, 2009	Apr. 19, 2010	Radiation (03CH06-HY)
Loop Antenna	R&S	HFH2-Z2	860004/001	9KHz~30MHz	May 22, 2008	May 21, 2010	Radiation (03CH06-HY)
System Simulator	R&S	CMU200	117591	N/A	Oct. 15, 2008	Oct. 14, 2010	-

5. Uncertainty of Evaluation

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

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 Specification	1.50	Rectangular	0.43
Site Imperfection	1.39	Rectangular	0.80
Mismatch	+0.34 / -0.35	U-Shape	0.24
Combined Standard Uncertainty $U_c(y)$	1.13		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.26		

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

Contribution	Uncertainty of X_i		$u(X_i)$
	dB	Probability Distribution	
Receiver Reading	0.41	Normal (k=2)	0.21
Antenna Factor Calibration	0.83	Normal (k=2)	0.42
Cable Loss Calibration	0.25	Normal (k=2)	0.13
Pre-Amplifier Gain Calibration	0.27	Normal (k=2)	0.14
RCV/SPA Specification	2.50	Rectangular	0.72
Antenna Factor Interpolation for Frequency	1.00	Rectangular	0.29
Site Imperfection	1.43	Rectangular	0.83
Mismatch	+0.39 / -0.41	U-Shape	0.28
Combined Standard Uncertainty $U_c(y)$	1.27		
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	2.54		

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

Contribution	Uncertainty of X_i		$u(X_i)$	C_i	$C_i * u(X_i)$
	dB	Probability Distribution			
Receiver Reading	± 0.10	Normal (k=2)	0.10	1	0.10
Antenna Factor Calibration	± 1.70	Normal (k=2)	0.85	1	0.85
Cable Loss Calibration	± 0.50	Normal (k=2)	0.25	1	0.25
Receiver Correction	± 2.00	Rectangular	1.15	1	1.15
Antenna Factor Directional	± 1.50	Rectangular	0.87	1	0.87
Site Imperfection	± 2.80	Triangular	1.14	1	1.14
Mismatch Receiver VSWR $\Gamma_1 = 0.197$ Antenna VSWR $\Gamma_2 = 0.194$ Uncertainty = $20\text{Log}(1-\Gamma_1\Gamma_2)$	+0.34 / -0.35	U-Shape	0.244	1	0.244
Combined Standard Uncertainty $U_c(y)$	2.36				
Measuring Uncertainty for a Level of Confidence of 95% ($U = 2U_c(y)$)	4.72				



Appendix A. Photographs of EUT

Please refer to Sporton report number EP030309-02 as below.