FCC Test Report

EQUIPMENT	:	**NX 594**
BRAND NAME	:	**NX 594**
MODEL NAME	:	**NX 594 (Radio module: 19-25133-842 in NX4 Alarm panel: NX4)**
FCC ID	:	**TWV19251390X2**
STANDARD	:	**FCC 47 CFR FCC Part 15 Subpart B**
CLASSIFICATION	:	**Declaration of Conformity**
APPLICANT	:	**Numerex Corp** 1600 Parkwood Circle Suite 200 Atlanta GA 30339
CONTACT NAME OF APPLICANT	:	**Ed Jansson**

The product sample received on Nov. 24, 2008 and completely tested on Nov. 28, 2008. 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: Roy Wu / Manager

Lab Code: 200079-0

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

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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 11.2 dB at 0.422 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 3.37 dB at 59.97 MHz

REVISION HISTORY

REPORT NO.	VERSION	DESCRIPTION	ISSUED DATE
FD8O1411-02	Rev. 01	Initial issue of report	Dec. 02, 2008

1. General Description

1.1 Applicant

Numerex Corp
1600 Parkwood Circle Suite 200 Atlanta GA 30339
(Contact Name of Applicant: Ed Jansson)

1.2 Manufacturer

Numerex
1600 Parkwood Circle Suite 200 Atlanta GA 30339

1.3 Feature of Equipment Under Test

Product Feature & Specification	
Equipment	NX 594
Brand Name	NX 594
Model Name	NX 594 (Radio module: 19-25133-842 in NX4 Alarm panel: NX4)
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
Channel Spacing	200 kHz
Antenna Type	Dipole Antenna
HW Version	A
SW Version	RV001
Type of Modulation	GMSK
EUT Stage	Production Unit

Accessories List:

Accessories Specification		
AC Adapter	**Brand Name**	Universal
	Model Name	UB16401
	Power Rating	Pri.:120Vac, 60Hz, 48W; Sec.: 16.5Vac, 40VA

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 1st Rd., Hwa Ya Technology Park, Kwei-Shan Hsiang, Tao Yuan Hsien, Taiwan, R.O.C TEL: +886-3-327-3456 FAX: +886-3-328-4978		
Test Site No.	Sporton Site No.		FCC/IC Registration No.
	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

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.	GSM Base Station	R&S	CMU 200	N/A	N/A	Unshielded, 1.8 m

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.

EUT Configure Mode	Mode Description	Test Condition		
		EMI AC	EMI RE<1G	EMI RE≥1G
1	Operating Mode (EUT with Adapter)	✔	✔	✔

Abbreviations:

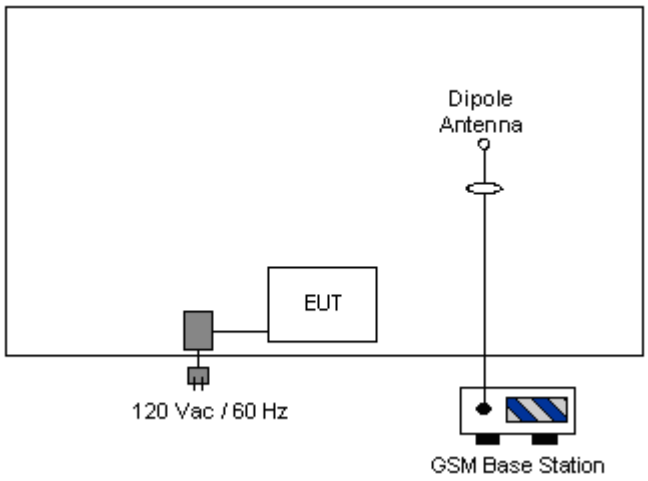
EMI AC: AC conducted emissions;

EMI RE ≥ 1G: EUT radiated emissions ≥ 1GHz;

EMI RE < 1G: EUT radiated emissions < 1GHz ;

Test Items	EUT Configure Mode	Function Type
AC Conducted Emission	1	Mode 1: GSM850 Idle + Adapter Mode 2: GSM1900 Idle + Adapter
Radiated Emissions < 1GHz	1	Mode 1: GSM850 Idle + Adapter Mode 2: GSM1900 Idle + Adapter
Radiated Emissions ≥ 1GHz	1	Mode 1: GSM850 Idle + Adapter Mode 2: GSM1900 Idle + Adapter

2.2 Connection Diagram of Test System



2.3 Test Software

In GSM idle mode, the EUT is synchronized to the BCCH, and is in continuous receiving mode by setting system simulator's paging reorganization.

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.

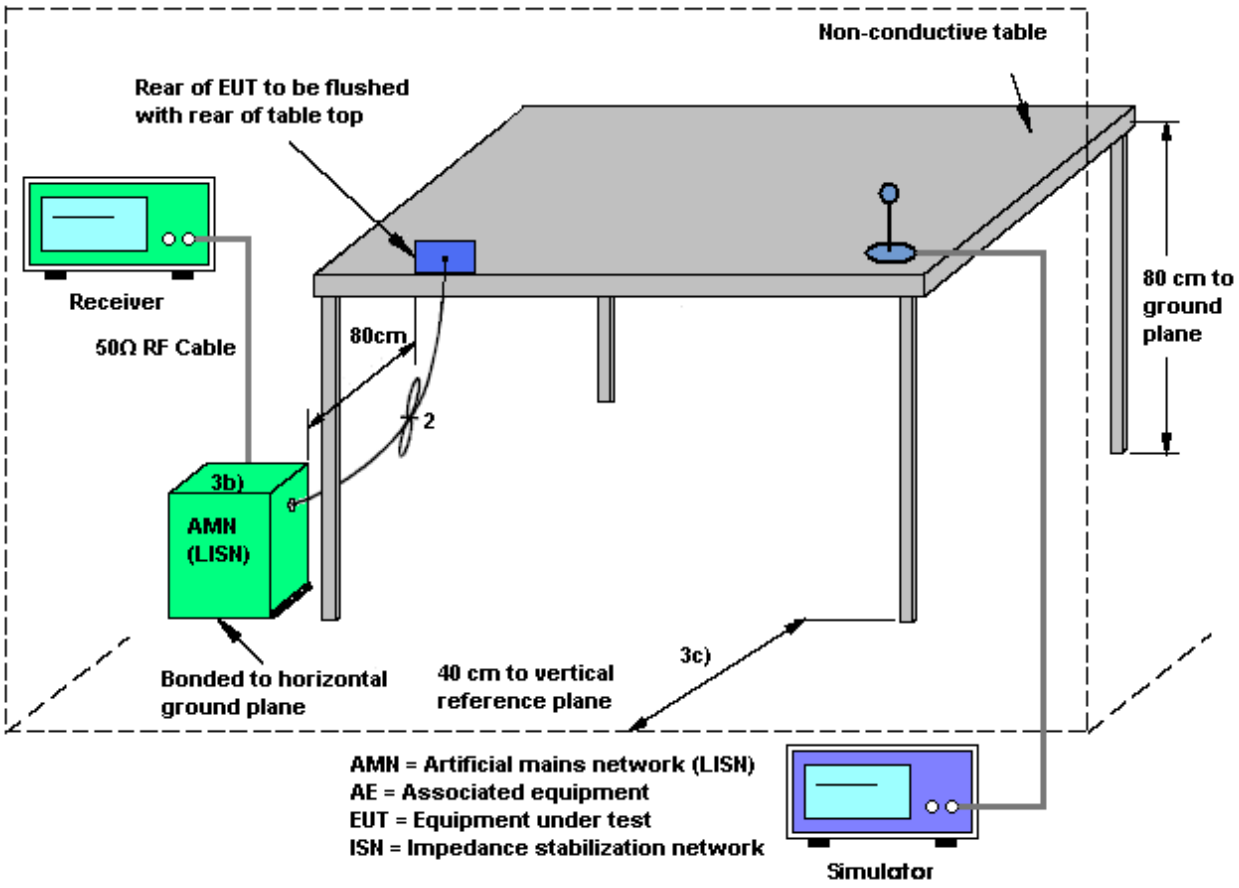
3.1.2 Measuring Instruments

See list of measuring instruments of this test report.

3.1.3 Test Procedure

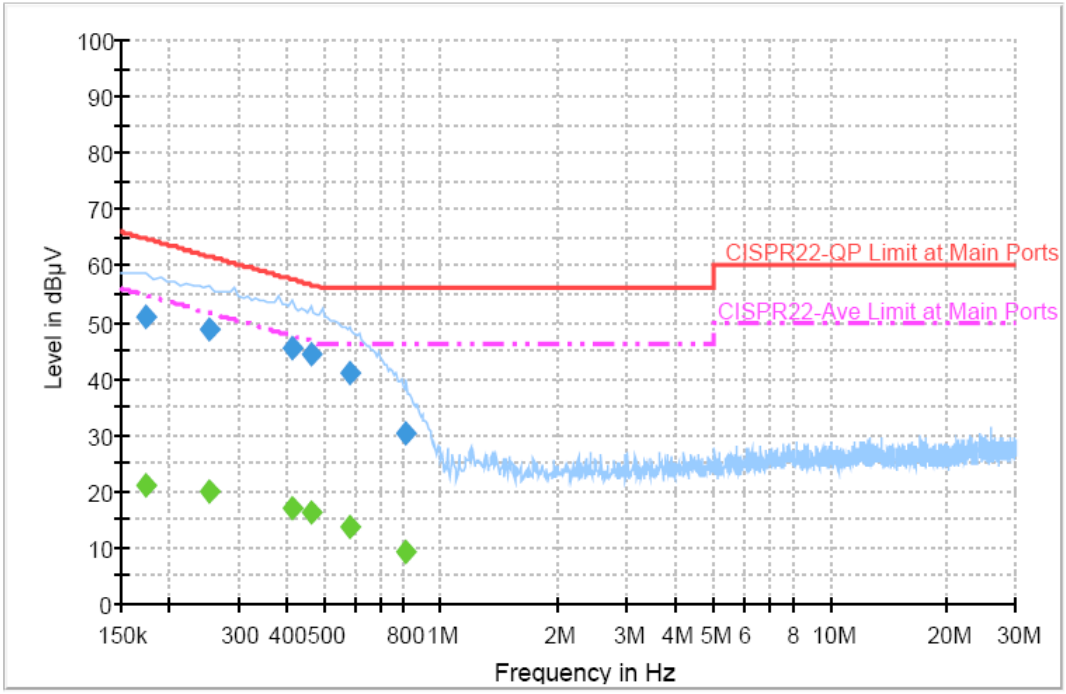
1. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
2. Connect EUT to the power mains through a line impedance stabilization network (LISN).
3. All the support units are connecting to the other LISN.
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 :	23~24℃
Test Engineer :	Cona Huang	Relative Humidity :	35~36%
		Phase :	Line
Function Type :	GSM850 Idle + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



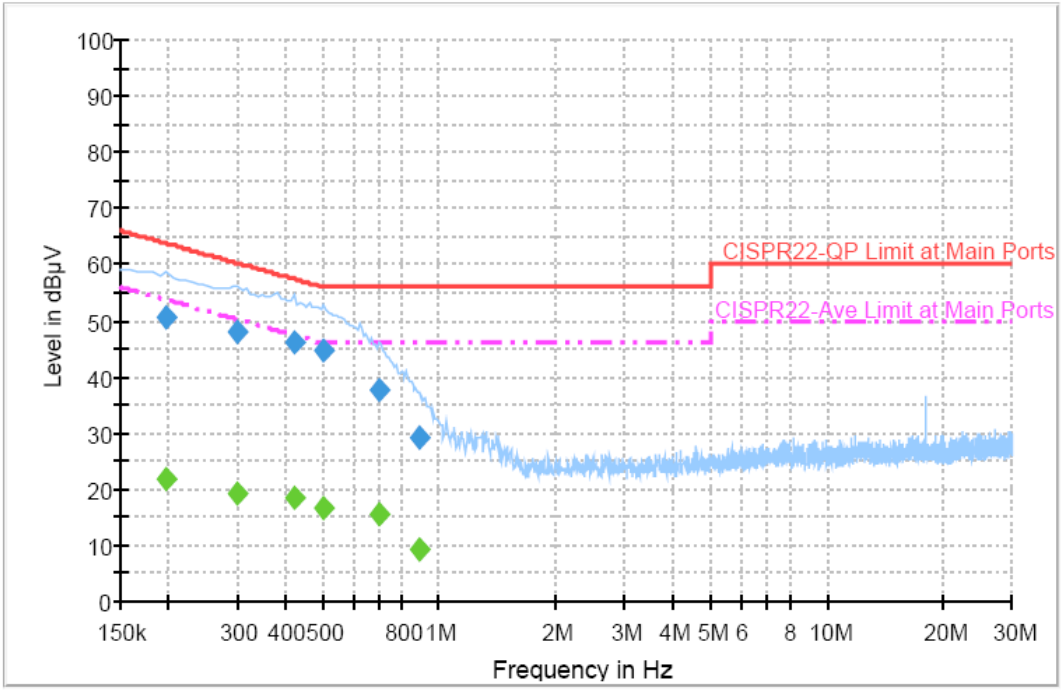
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	51.0	Off	L1	19.3	13.8	64.8
0.254000	48.7	Off	L1	19.3	12.9	61.6
0.414000	45.3	Off	L1	19.4	12.3	57.6
0.462000	44.4	Off	L1	19.3	12.3	56.7
0.582000	41.0	Off	L1	19.3	15.0	56.0
0.814000	30.3	Off	L1	19.4	25.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.174000	21.0	Off	L1	19.3	33.8	54.8
0.254000	20.1	Off	L1	19.3	31.5	51.6
0.414000	17.1	Off	L1	19.4	30.5	47.6
0.462000	16.3	Off	L1	19.3	30.4	46.7
0.582000	13.7	Off	L1	19.3	32.3	46.0
0.814000	9.1	Off	L1	19.4	36.9	46.0

Test Mode :	Mode 1	**Temperature :**	23~24℃
Test Engineer :	Cona Huang	**Relative Humidity :**	35~36%
		Phase :	Neutral
Function Type :	GSM850 Idle + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



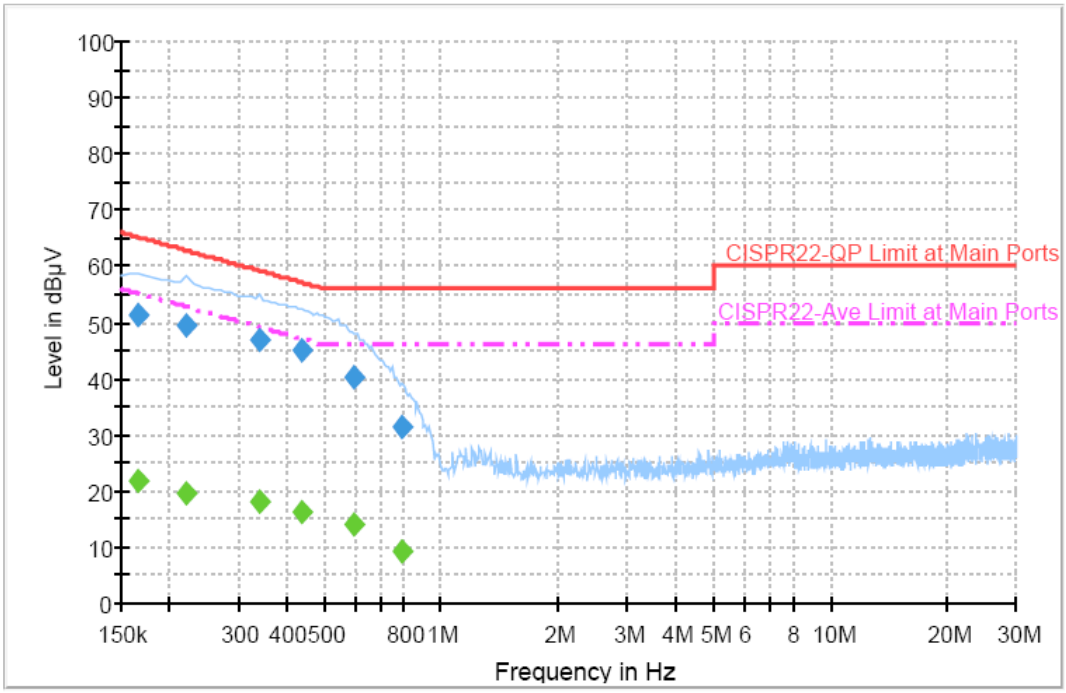
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	50.4	Off	N	19.3	13.3	63.7
0.302000	48.0	Off	N	19.3	12.2	60.2
0.422000	46.1	Off	N	19.4	11.3	57.4
0.502000	44.7	Off	N	19.3	11.3	56.0
0.702000	37.7	Off	N	19.5	18.3	56.0
0.886000	29.3	Off	N	19.4	26.7	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.198000	21.9	Off	N	19.3	31.8	53.7
0.302000	19.4	Off	N	19.3	30.8	50.2
0.422000	18.5	Off	N	19.4	28.9	47.4
0.502000	16.6	Off	N	19.3	29.4	46.0
0.702000	15.4	Off	N	19.5	30.6	46.0
0.886000	9.0	Off	N	19.4	37.0	46.0

Test Mode :	Mode 2	**Temperature :**	23~24℃
Test Engineer :	Cona Huang	**Relative Humidity :**	35~36%
		Phase :	Line
Function Type :	GSM1900 Idle + Adapter		
Remark :	All emissions not reported here are more than 10 dB below the prescribed limit.		



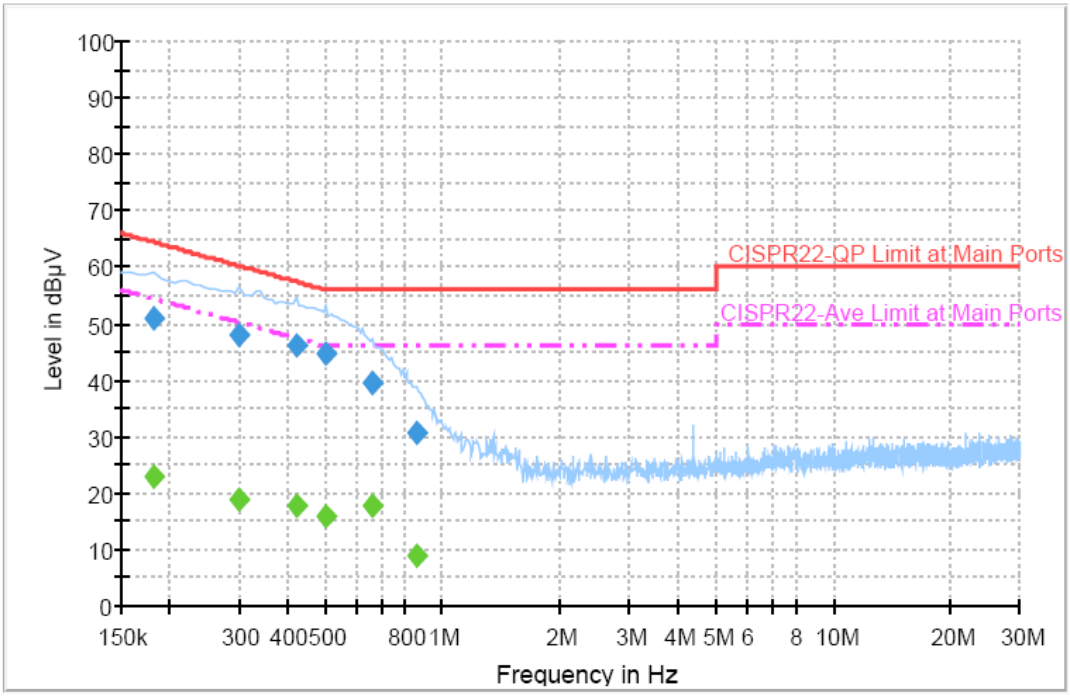
Final Result 1

Frequency (MHz)	QuasiPeak (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	51.3	Off	L1	19.3	13.9	65.2
0.222000	49.5	Off	L1	19.3	13.2	62.7
0.342000	46.7	Off	L1	19.3	12.5	59.2
0.438000	45.1	Off	L1	19.4	12.0	57.1
0.598000	40.4	Off	L1	19.4	15.6	56.0
0.790000	31.4	Off	L1	19.4	24.6	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.166000	21.7	Off	L1	19.3	33.5	55.2
0.222000	19.6	Off	L1	19.3	33.1	52.7
0.342000	17.9	Off	L1	19.3	31.3	49.2
0.438000	16.3	Off	L1	19.4	30.8	47.1
0.598000	13.9	Off	L1	19.4	32.1	46.0
0.790000	9.1	Off	L1	19.4	36.9	46.0

Test Mode :	Mode 2	**Temperature :**	23~24℃
Test Engineer :	Cona Huang	**Relative Humidity :**	35~36%
		Phase :	Neutral
Function Type :	GSM1900 Idle + Adapter		
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	51.0	Off	N	19.4	13.4	64.4
0.302000	48.0	Off	N	19.3	12.2	60.2
0.422000	46.2	Off	N	19.4	11.2	57.4
0.502000	44.6	Off	N	19.3	11.4	56.0
0.662000	39.3	Off	N	19.4	16.7	56.0
0.862000	30.5	Off	N	19.5	25.5	56.0

Final Result 2

Frequency (MHz)	Average (dBµV)	Filter	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)
0.182000	23.1	Off	N	19.4	31.4	54.4
0.302000	18.8	Off	N	19.3	31.4	50.2
0.422000	17.8	Off	N	19.4	29.6	47.4
0.502000	15.8	Off	N	19.3	30.2	46.0
0.662000	17.6	Off	N	19.4	28.4	46.0
0.862000	9.0	Off	N	19.5	37.0	46.0

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

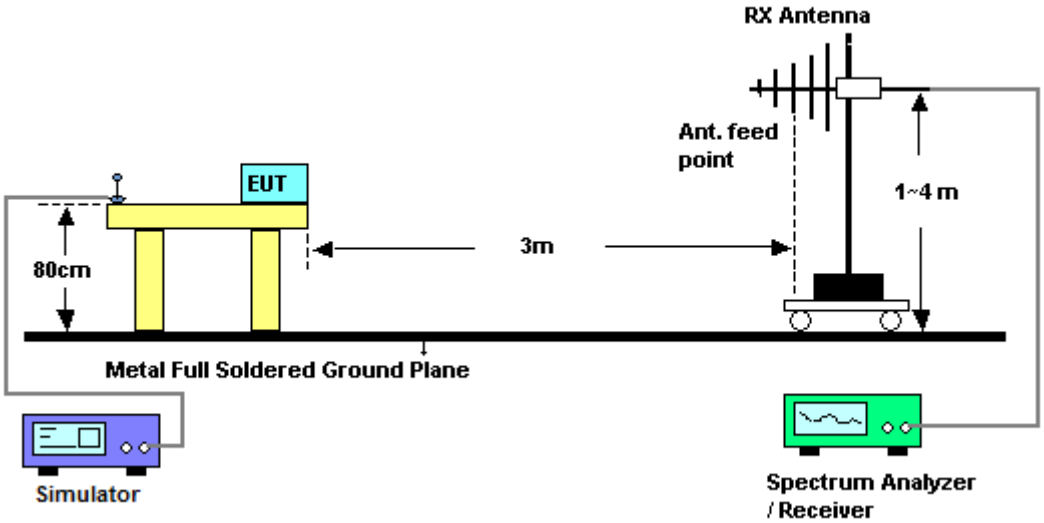
3.2.2 Measuring Instruments

See list of measuring instruments of this test report.

3.2.3 Test Procedures

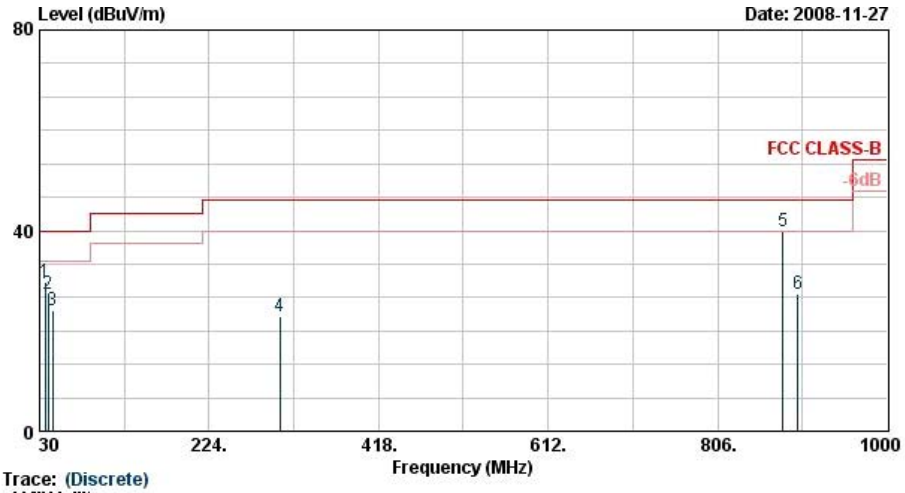
1. The EUT was placed on a turntable with 0.8 meter above ground.
2. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
3. The table was rotated 360 degrees to determine the position of the highest radiation.
4. The antenna 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: Probe Factor + Cable Loss + Read Level - Preamp Factor = Level

3.2.4 Test Setup of Radiated Emission



3.2.5 Test Result of Radiated Emission < 1GHz

Test Mode :	Mode 1	**Temperature :**	26~27°C
Test Engineer :	Mac Lin	**Relative Humidity :**	42~43%
Test Distance :	3m	**Polarization :**	Horizontal
Function Type :	GSM850 Idle + Adapter		
Remark :	#5 is Base Station Signal.		

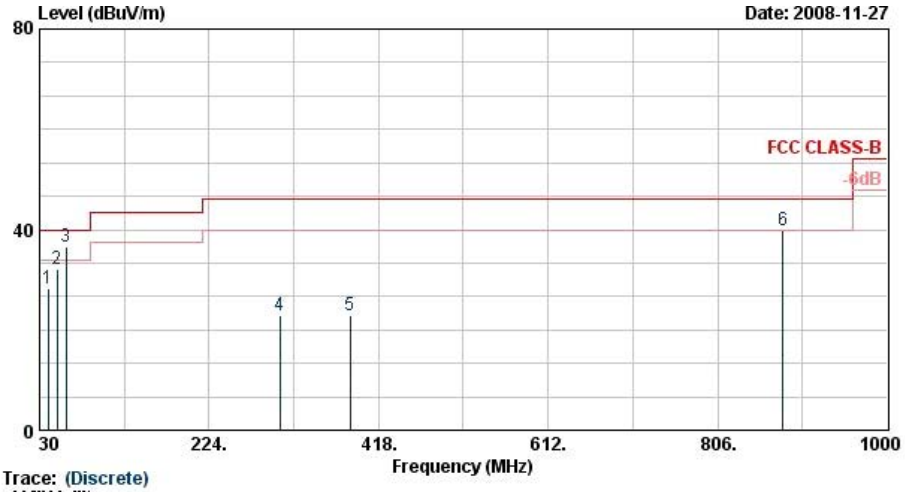


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BILOG_081124 HORIZONTAL
Model : FD 8O1411-02
Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	36.48	29.86	-10.14	40.00	45.63	15.70	0.30	31.77	100	166	Peak
2	39.99	27.35	-12.65	40.00	44.84	13.90	0.30	31.69	---	---	Peak
3	44.58	24.10	-15.90	40.00	44.52	11.00	0.30	31.72	---	---	Peak
4	304.90	22.96	-23.04	46.00	40.29	14.03	0.75	32.11	---	---	Peak
5 @	880.30	39.86			48.95	21.58	1.30	31.96	---	---	Peak
6	897.80	27.38	-18.62	46.00	36.09	21.69	1.30	31.70	---	---	Peak

Test Mode :	Mode 1	Temperature :	26~27°C
Test Engineer :	Mac Lin	Relative Humidity :	42~43%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM850 Idle + Adapter		
Remark :	#6 is Base Station Signal.		

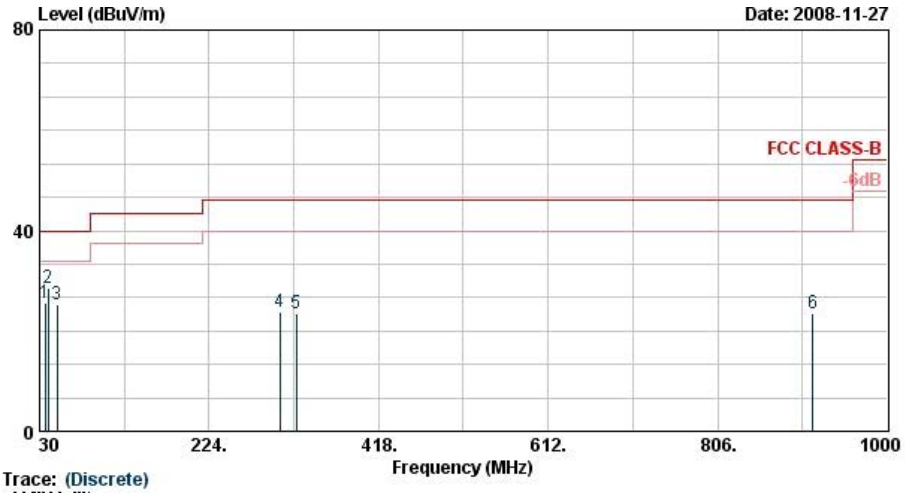


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BTLOG_081124 VERTICAL
Model : FD 8O1411-02
Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	39.99	28.16	-11.84	40.00	45.65	13.90	0.30	31.69	---	---	Peak
2	49.98	32.12	-7.88	40.00	54.83	9.00	0.30	32.01	---	---	Peak
3 @	59.97	36.63	-3.37	40.00	61.58	6.70	0.40	32.05	100	236	Peak
4	304.90	22.76	-23.24	46.00	40.08	14.03	0.75	32.11	---	---	Peak
5	385.40	22.93	-23.07	46.00	37.76	16.15	0.85	31.83	---	---	Peak
6	880.30	39.72			48.80	21.58	1.30	31.96	---	---	Peak

Test Mode :	Mode 2	Temperature :	26~27°C
Test Engineer :	Mac Lin	Relative Humidity :	42~43%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM1900 Idle + Adapter		
Remark :			

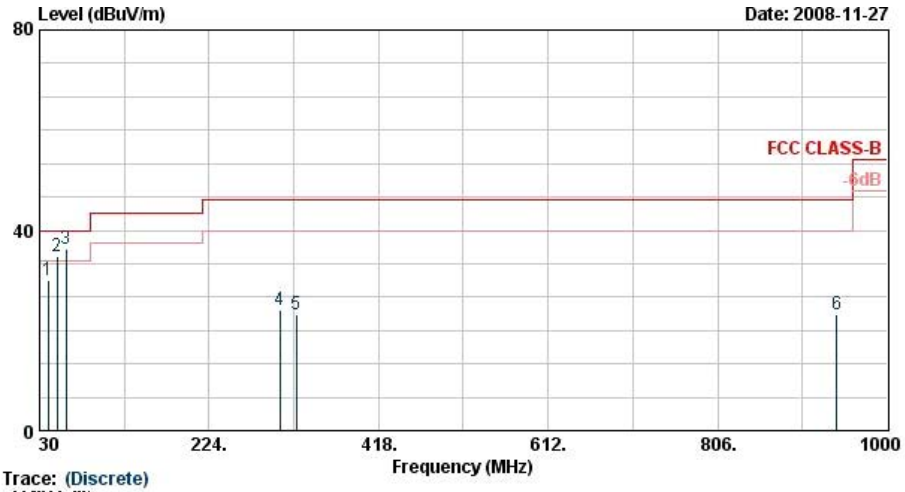


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BILOG_081124 HORIZONTAL
Model : FD 8O1411-02
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	36.48	25.69	-14.31	40.00	41.47	15.70	0.30	31.77	---	---	Peak
2 @	39.99	28.46	-11.54	40.00	45.95	13.90	0.30	31.69	100	119	Peak
3	49.98	25.26	-14.74	40.00	47.97	9.00	0.30	32.01	---	---	Peak
4	304.90	23.82	-22.18	46.00	41.14	14.03	0.75	32.11	---	---	Peak
5	323.80	23.54	-22.46	46.00	40.09	14.57	0.80	31.93	---	---	Peak
6	915.30	23.58	-22.42	46.00	32.10	21.83	1.25	31.59	---	---	Peak

Test Mode :	Mode 2	Temperature :	26~27°C
Test Engineer :	Mac Lin	Relative Humidity :	42~43%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM1900 Idle + Adapter		
Remark :			



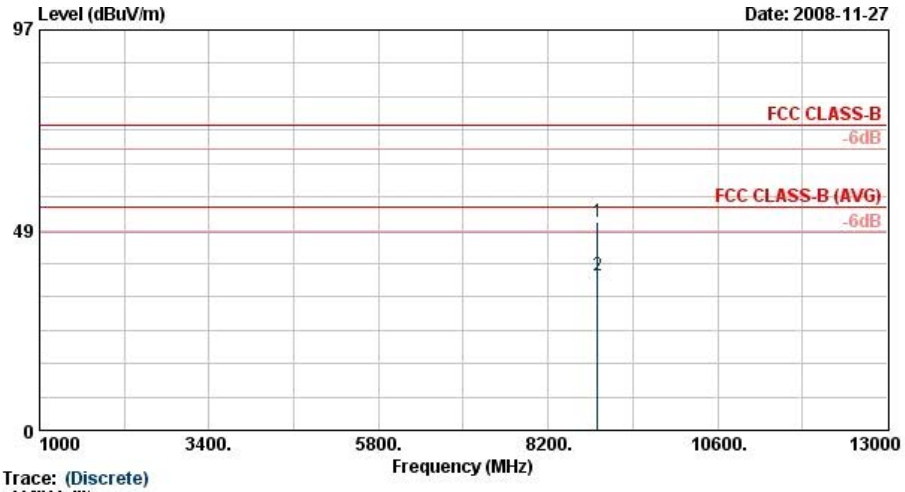
Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m BTLOG_081124 VERTICAL
Model : FD 8O1411-02
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1 @	39.99	30.04	-9.96	40.00	47.53	13.90	0.30	31.69	---	---	Peak
2 @	49.98	34.66	-5.34	40.00	57.37	9.00	0.30	32.01	100	189	Peak
3 @	60.24	36.15	-3.85	40.00	61.10	6.70	0.40	32.05	100	282	QP
4	304.90	23.96	-22.04	46.00	41.28	14.03	0.75	32.11	---	---	Peak
5	323.80	23.08	-22.92	46.00	39.64	14.57	0.80	31.93	---	---	Peak
6	941.90	23.20	-22.80	46.00	31.43	22.04	1.20	31.47	---	---	Peak

3.2.6 Test Result of Radiated Emission ≥ 1GHz

Test Mode :	Mode 1	**Temperature :**	26~27°C
Test Engineer :	Mac Lin	**Relative Humidity :**	42~43%
Test Distance :	3m	**Polarization :**	Horizontal
Function Type :	GSM850 Idle + Adapter		
Remark :			

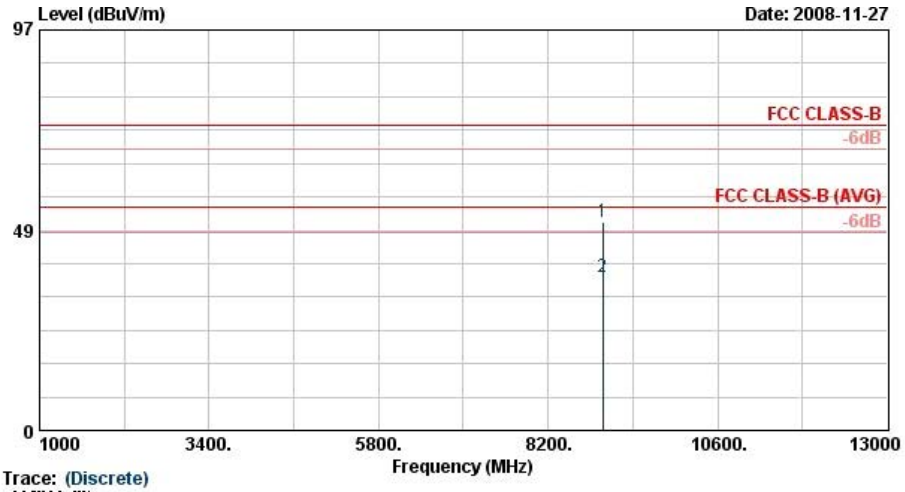


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT(8-18G)_081031 HORIZONTAL
Model : FD 8O1411-02
Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	8904.00	50.63	-23.37	74.00	43.71	36.10	7.68	36.86	100	0	Peak
2	8904.00	37.49	-16.51	54.00	30.57	36.10	7.68	36.86	100	220	Average

Test Mode :	Mode 1	**Temperature :**	26~27°C
Test Engineer :	Mac Lin	**Relative Humidity :**	42~43%
Test Distance :	3m	**Polarization :**	Vertical
Function Type :	GSM850 Idle + Adapter		
Remark :			

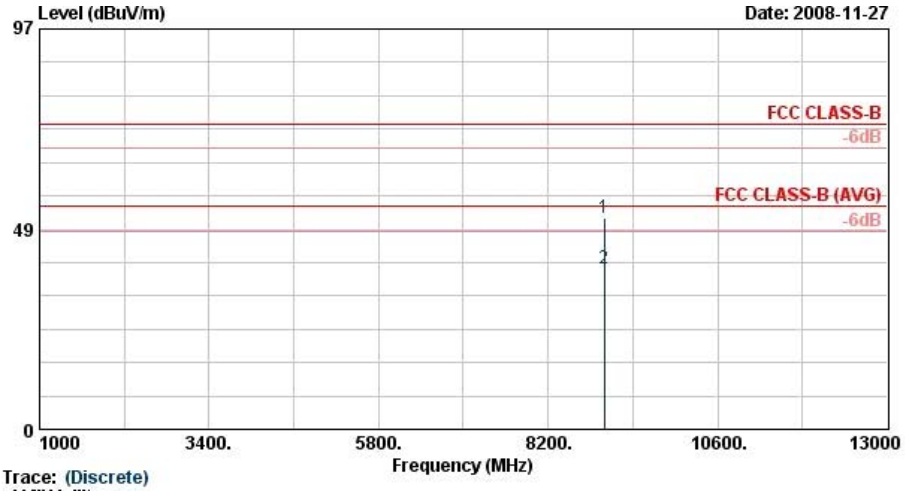


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT(8-18G)_081031 VERTICAL
Model : FD 8O1411-02
Memo : Mode 1

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	8974.00	50.50	-23.50	74.00	43.45	36.17	7.77	36.89	100	0	Peak
2	8974.00	37.22	-16.78	54.00	30.17	36.17	7.77	36.89	100	108	Average

Test Mode :	Mode 2	Temperature :	26~27°C
Test Engineer :	Mac Lin	Relative Humidity :	42~43%
Test Distance :	3m	Polarization :	Horizontal
Function Type :	GSM1900 Idle + Adapter		
Remark :			

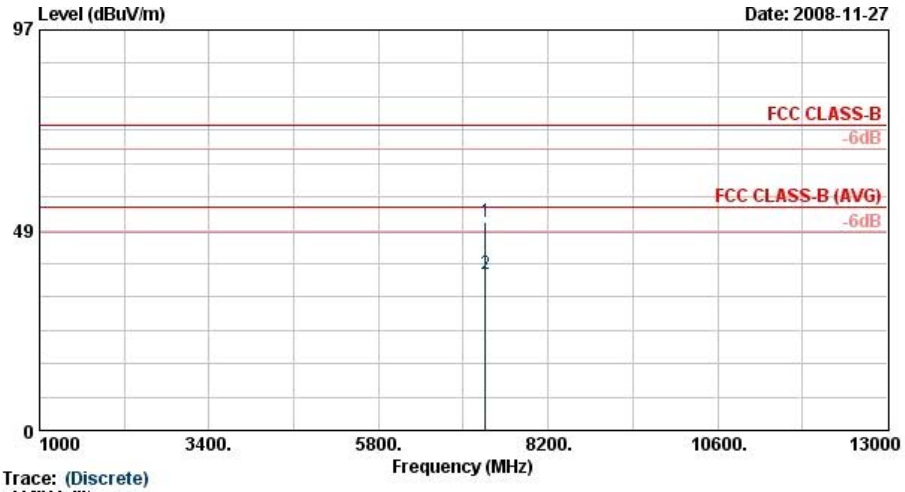


Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT(8-18G)_081031 HORIZONTAL
Model : FD 8O1411-02
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	8994.00	51.30	-22.70	74.00	44.21	36.18	7.80	36.89	100	0	Peak
2	8994.00	38.77	-15.23	54.00	31.68	36.18	7.80	36.89	100	80	Average

Test Mode :	Mode 2	Temperature :	26~27°C
Test Engineer :	Mac Lin	Relative Humidity :	42~43%
Test Distance :	3m	Polarization :	Vertical
Function Type :	GSM1900 Idle + Adapter		
Remark :			



Trace: (Discrete)

Site : 03CH06-HY
Condition : FCC CLASS-B 3m HF-ANT(8-18G)_081031 VERTICAL
Model : FD 8O1411-02
Memo : Mode 2

	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Ant Pos	Table Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	7308.00	50.55	-23.45	74.00	44.29	35.58	7.20	36.52	100	0	Peak
2	7308.00	37.80	-16.20	54.00	31.54	35.58	7.20	36.52	100	315	Average

4. List of Measuring Equipments

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Due Date	Remark
EMI Receiver	R&S	ESCS 30	100356	9kHz~2.75GHz	Aug. 01, 2008	Jul. 31, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100081	9kHz~30MHz	Nov. 26, 2008	Nov. 25, 2009	Conduction (CO05-HY)
Two-LISN	R&S	ENV216	11-100080	9kHz~30MHz	Nov. 26, 2008	Nov. 25, 2009	Conduction (CO05-HY)
AC Power Source	APC	APC-1000W	N/A	N/A	N/A	N/A	Conduction (CO05-HY)
GSM Base Station	R&S	CMU200	106656	N/A	May 06, 2008	May 05, 2009	Conduction (CO05-HY)
Spectrum Analyzer	Agilent	E4408B	MY44211030	9kHz~26.5GHz	Oct. 24, 2008	Oct. 23, 2009	Radiation (03CH06-HY)
Spectrum Analyzer	R&S	FSP40	100057	9kHz~40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH06-HY)
EMI Test Receiver	R&S	ESVS10	834468/003	20MHz~1000MHz	Apr. 24, 2008	Apr. 23, 2009	Radiation (03CH06-HY)
Bilog Antenna	SCHAFFNER	CBL6112B	2885	30MHz~2GHz	Nov. 12, 2008	Nov. 11, 2009	Radiation (03CH06-HY)
Double Ridge Horn Antenna	EMCO	3117	00066583	1G~18GHz	Aug. 18, 2008	Aug. 17, 2009	Radiation (03CH06-HY)
Double Ridge Horn Antenna	Training Research	AF-0801	95119	8G~18G	Oct. 28, 2008	Oct. 27, 2009	Radiation (03CH06-HY)
SHF-EHF Horn	SCHWARZBECK	BBHA 9170	9170-251	14G~40GHz	Oct. 16, 2008	Oct. 15, 2009	Radiation (03CH06-HY)
Pre Amplifier	Agilent	8449B	3008A01917	1G~26.5GHz	Nov. 11, 2008	Nov. 10, 2009	Radiation (03CH06-HY)
Pre Amplifier	Agilent	310N	186713	9kHz~1GHz	Apr. 21, 2008	Apr. 20, 2009	Radiation (03CH06-HY)
GSM Base Station	R&S	CMU200	105934	NA	Nov. 08, 2008	Nov. 07, 2009	Radiation (03CH06-HY)

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 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 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-shaped	0.28
Combined standard uncertainty Uc(y)	**1.27**		
Measuring uncertainty for a level of confidence of 95% U=2Uc(y)	**2.54**		

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

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)	+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=2Uc(y)	**4.72**				

6. Certification of NVLAP Accreditation

United States Department of Commerce
National Institute of Standards and Technology

NVLAP®

Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 200079-0

Sporton International, Inc. Hwa Ya EMC Laboratory
Tao Yuan Hsien 333
TAIWAN

is accredited by the National Voluntary Laboratory Accreditation Program for specific services, listed on the Scope of Accreditation, for:

ELECTROMAGNETIC COMPATIBILITY AND TELECOMMUNICATIONS

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communique dated 18 June 2005).

2008-01-01 through 2008-12-31
Effective dates

DEPARTMENT OF COMMERCE * UNITED STATES OF AMERICA *

Sally S. Bruce
For the National Institute of Standards and Technology

NVLAP-01C (REV. 2006-09-13)